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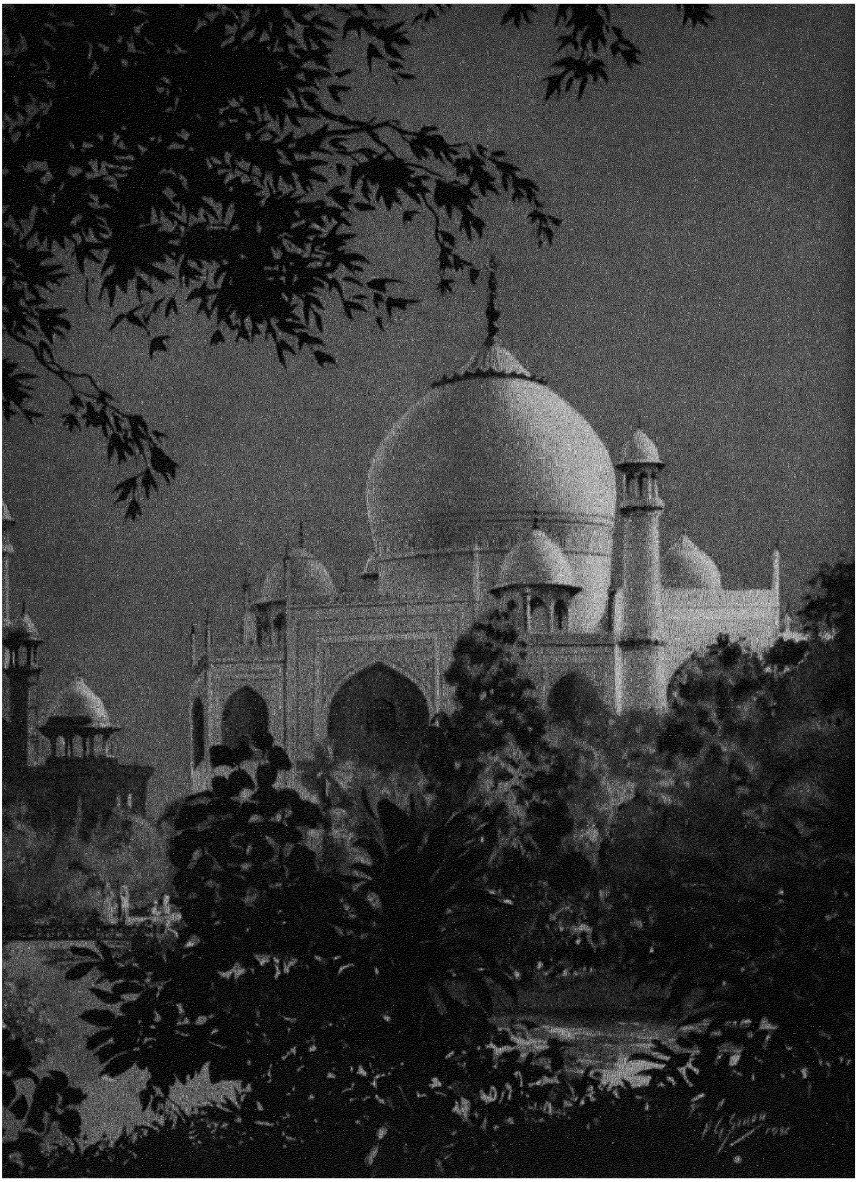
THE NEW STANDARD ENCYCLOPÆDIA AND WORLD ATLAS



THE TAJ MAHAL, AGRA. *Frontispiece*

THE NEW STANDARD ENCYCLOPÆDIA

AND WORLD ATLAS

With an Introduction by

The Very Rev. C. A. Alington, D.D.

Dean of Durham, late Headmaster of Eton

Prepared under the general editorship of J. M. Parrish, M.A. (Oxon), John R. Crossland, F.R.G.S., and A. W. Holland, managing editor of the Encyclopædia Britannica (13th Edition); with the specialist assistance of George Somerville, M.D., D.P.M.; John S. Linnell, B.A. (Oxon), K. M. Gadd, M.A. (Oxon & London); C. H. Knowles, B.Sc. (Lond.); the Rev. Eric Dixon, M.C., B.A., B.D. (Lond.); E. S. Roberts, M.A., and over 40 experts, learned societies and institutions.

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INTRODUCTION

By the Very Rev. C. A. ALINGTON, D.D.,
Dean of Durham, late Headmaster of Eton.

TO attempt to "introduce" an Encyclopædia is a formidable task, but at least it cannot be thought to suggest a claim to encyclopædic knowledge on the part of the writer. On the contrary it marks him out at once from those few but fortunate people who have no need to consult books of reference or can dispense with a dictionary. In these days there can be few indeed who feel able without some assistance to discuss intelligently the vast variety of subjects which confront the average man and are presented for his consideration in our more responsible newspapers. Our memories, even the best of them, are very untrustworthy and very curiously specialised; some of us can remember pages of poetry, but have no secure grasp of fact; some with a wonderful memory for figures fail hopelessly to remember names, and many who love history have to resort to the humiliation of memorising formulæ before they can recall a date; most of us would have to confess that we deserve the gloomy criticism of the great Lord Halifax, "Some Men's Memory is like a Box, where a Man should mingle his Jewels with his old Shoes."

To all these and to many similar classes, this Encyclopædia offers a welcome support; it saves us from having to burden our memories with what they instinctively reject, and it brings before us much new knowledge which we have had no opportunity of acquiring. It is, by definition, "a literary work containing extensive information on all branches of knowledge," and, so far as my researches have allowed me to judge, it well deserves its title. The French Encyclopædists, with whom the word is most frequently associated, confined their attention to "*Les Arts, les Sciences et les Métiers*"; they would never have introduced you, for instance, to the Waterboatman whose acquaintance you will make in these pages probably for the first time. Again, they had a propagandist purpose before them; this Encyclopædia, on the other hand, confines itself to telling you, for example, that the Duke of Albemarle restored Charles II., and leaves you to form your own conclusions whether he was right in doing so.

There can be no doubt that a sound knowledge of fact must be the basis of all profitable discussion, and that we all need the power of checking not only the statements of our opponents, but also our own. A respect for accuracy, whether in the use of words or

of arguments, is the first qualification of a good citizen; we may acquire it by very different methods, by those of the mathematician or by those of the scholar, but we all need not only to acquire it but to fortify it by "verifying our references." It is pitiful to think of the theological, political and economic controversies which have arisen from a simple misunderstanding of ascertainable facts, and have been conducted without any desire on either side to see them fairly stated.

We are forced by circumstances to live in a world which we very imperfectly understand, and to form opinions on subjects for which we are very imperfectly equipped; the least we can do is to make sure that so far as knowledge goes our equipment is as good as we can make it, and for most of us that involves having frequent recourse to some such volume as this.

There are many who will take a frivolous pleasure in turning its pages and will be amused by the vast diversity of information which it contains; to pass in a moment from Almack's to the Alpha Particle and thence to the banks of the Amazon, or to travel from Cronje or Sir William Crookes via Crops to Croquet, is a pleasant and exhilarating pastime. Mr. Pickwick, we are told, on a famous occasion "looked encyclopædias at Mr. Peter Magnus," and no doubt this volume contains many "hard words," but it is commended to you not for its hardness, but for its simplicity. The subjects with which, for the most part, it is concerned are familiar ones, but, if you are honest with yourself, you will probably confess that it has much to tell you even about people, phrases and places, which are often on your lips.

No schoolmaster would argue that the main object of education is to impart information; English schoolmasters are often accused of neglecting that duty for the vaguer task of building up character, but I am glad as a schoolmaster to commend a book which tells us all so much that we did not know and reminds us of so much which we are sorry to have forgotten.



PREFACE

"READING maketh a full man." Modern civilisation does not permit of the leisurely acquisition of knowledge that was for Bacon the *summum bonum* of life, yet its very complexity demands an all-round acquaintance with many subjects unnecessary in a simpler age. For this a compact book of reference is indispensable, and the *New Standard Encyclopædia* seeks to meet this need.

Its references cover a wide field. In biography, history and mythology it reaches far back into the past; in geography, science, politics and sociology it gives the up-to-date information required for an understanding of the modern world. In literature it touches both past and present; information about ancient writers is to be found side by side with that concerning living authors, and its scope is widened by its supplements. Copious cross-references link up the various aspects of connected subjects.

A practical feature is the space devoted to the needs of everyday life; medical entries, instructions regarding first-aid in the home, explanation of the commoner legal terms, and authoritative information about careers are all included. The lighter side of life also finds its appropriate place. The competition devotee, the wireless enthusiast and the sportsman will all find useful information both in the text and in the supplements.

Great care has been taken to ensure ease and rapidity of reference. Main entries stand out in bold clear type; subsidiary and connected meanings are emphasised, and special attention has been paid to the selection of a type for the text which can be studied at length without strain to the eyes, allowing at the same time the maximum amount of information to be contained in a book of handy size.

Rigid accuracy in the facts given and a true representation of the latest modern thought have been the first considerations. Every subject has been newly written and critically examined by experts, the professional institutions and societies have been widely consulted, and particular attention has been paid to the new knowledge not yet to be found in works of reference. In short, every effort has been made to provide an encyclopædia suitable for constant use in the home, school and business.

THE EDITORS.

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THE NEW STANDARD ENCYCLOPÆDIA

AACHEN German name for the old city more generally called Aix-la-Chapelle (*q.v.*).

Aal Native name for Indian shrubs of the madder family, *morinda citrifolia*, and *morinda tinctoria*. It is also used for the red dye obtained from their roots. A tree of the terebinth family grown in the Molucca Islands is called the aal. It has an aromatic bark which is used in seasoning food.

Aaland (or Aland). Group of islands, about 300 in number, at the entrance to the Gulf of Bothnia. They cover about 551 sq. m. and have (1930), 27,375 inhabitants, chiefly fishermen and farmers. Mariehamn is the capital and Aaland the largest island. For long the islands belonged to Sweden and the people are mainly Swedes. In 1809 they were transferred to Russia and in 1856, just after the Crimean War, Britain, France and Russia agreed that they must not be fortified. During the World War the Russians erected forts; the Swedes and Finns objected and they and the Germans sent soldiers there. In 1918 the people, by vote, asked to be made part of Sweden, but the Peace Conference decided that the islands should be under the League of Nations. This rule lasted until 1921 when they were given to Finland, to whom they now belong.

Aardvark Wild animal. It lives mainly underground, has a snout like a pig, large ears and a thick tail. As it feeds on ants it is sometimes called the ant bear. It is found in Africa, and the Dutch name means "ground pig."

Aardwolf Wild animal. It is found in parts of Africa, chiefly the south, and its Dutch name means "ground wolf." It rather resembles the hyena. Its grey coat is striped with black, it has a bushy tail, and it feeds chiefly on ants and carrion.

Aarhus City of Denmark. It stands on the east coast of Jutland, 110 m. from Copenhagen. There is a good deal of shipping, as much of Denmark's produce is sent from here to Great Britain and elsewhere. Pop, (1930), 81,279.

Aaron Elder brother of Moses. High priest of the Jews. He was associated with Moses in the work of leading the Israelites out of Egypt, where he acted as their spokesman. When they were in the wilderness Aaron made the golden calf for the people to worship and later rebelled against his brother. Both were forbidden, for disobedience, to enter the Promised Land, and Aaron died on Mount Hor. When the people murmured against Aaron (Num. xvii.) his rod, taken from an almond tree, is said to have budded as a sign that he was the rightful high priest. An ornament in architecture is called on this account **Aaron's Rod**, and this is also one name of a plant, the common mullein.

The plants known as St. John's Wort and Mother of Thousands are sometimes called **Aaron's Beard**.

Abaco Two islands of the Bahamas, Great and Little Abaco. The former is also called Lucaga. Both are British possessions. Together they cover 880 sq. m. and have about 4000 inhabitants.

Abacus Instrument once used for making calculations. It consists of an oblong wooden frame with several wires stretched across it. On each of these are ten beads, five one colour and five another. By moving these beads about, children can learn the elements of arithmetic. Similar articles are used in China, Russia and other parts of the world. In some examples grooves and counters are used instead of beads and wires. The abacus of the Romans was a board covered with sand in which figures could be traced.

Abalone Sea molluscs of the family *haliotidae*. The form of the shell, which bears a resemblance to the ear of a quadruped, has given the name sea ears to this group. The genus *haliotis* has a shell of nacreous composition which presents beautiful iridescent hues when polished. It is used for button making and other commercial purposes. The flesh is dried and used as food in some parts of the East.

Abana River of Damascus. Mentioned by Naaman, the leper (II Kings v.), it is thought to be the modern Barada. It flows across the plain of Damascus to lose itself in the desert beyond. By cutting canals it has been utilised to make the soil around Damascus very fertile.

Abano Italian watering place called in full Abano Bagni. It is 5 m. from Padua and nearly 30 from Venice. It stands at the foot of the Euganean Hills. Its hot springs, famous in Roman times, are efficacious for persons suffering from fractures and other injuries, and its mud baths are recommended for neuralgia and the like.

Abattoir Place where animals are slaughtered for food. They are found in most large cities on both sides of the Atlantic. In Britain the abattoirs are divided into booths, but in America the killing is done in one large apartment. In addition to places for killing, an abattoir should have rooms for hanging the meat, for offal and condemned meat, as well as chambers for cold storage. In 1929 a new abattoir, one of the largest in the world, was erected at Liverpool.

Abba Aramaic word meaning father. It is found in the New Testament where it is used for God. In the Coptic Church it is a title of respect given to bishops.

Abbas Name of several Oriental rulers. Mahomet's Uncle Abbas became caliph of Bagdad in 750 and his descendants, called Abbasides, were caliphs until 1517. Another famous Abbas was Abbas the Great, shah of Persia. He became shah in 1586, took Bagdad from the Turks and won other victories.

Two rulers of Egypt were named Abbas. The first ruled from 1848 to 1854. Abbas II. became khedive in 1892 and reigned until Dec., 1914, when he was deposed.

Abbess Feminine of abbot and the head of a convent or house for nuns. She is usually elected by the members of the order and has the same powers as an abbot, except that she cannot act as a priest. The title was first used in the 6th century and in the Middle Ages, especially in England and Germany, certain abbesses were very powerful. They were large land-holders and took part in ecclesiastical assemblies. In Germany one or two ranked as princes. The most powerful abbess in England was the abbess of Romsey.

Abbeville City of France. It is on the Somme, 28 miles from Amiens. It has a fine old cathedral and other old buildings. During the World War the British had hospitals and training grounds here. Pop. 21,000.

Abbey Building or set of buildings, where a community of monks or nuns resides. Its head is usually an abbot or abbess. S. Benedict was the real founder of the abbeys which, in the Middle Ages, sprang up all over Christendom. Each had its cloisters round the quadrangle church, cloisters and chapter house, refectory or dining-hall, kitchen, cellars and many other buildings. There was generally a guest house, as the abbeys entertained travellers before inns were plentiful. In some the monks had schools for boys.

In one sense the abbey was a large country estate. The monks farmed some of the land, but other parts were let out. They did all the work themselves, growing and preparing the food, repairing the buildings and making the clothes. Each monk had his own particular duties. Some abbeys kept sheep and sold the wool to traders. The abbots, chosen by the monks, were usually very rich and powerful; some of them sat in the House of Lords.

Most of the British abbeys were destroyed at the Reformation, but the beautiful ruins at Tintern, Fountains, Kirkstall, Melrose, Glastonbury and elsewhere show how large and magnificent they were. Westminster Abbey was the church of the abbey there, and the fine churches at Bath and Tewkesbury were also abbey churches. The Roman Catholics have abbeys in England to-day, two being at Downside, near Bath, and Ampleforth, near York. At Buckfastleigh in Devon, there is one which has been entirely built by the monks themselves.

Abbey **Edwin Austin.** American artist. Born in Philadelphia, April 8, 1852, he studied art, and drew for *Harper's Magazine* and other periodicals. In 1881 he came to England. His paintings soon found recognition, and he was elected A.R.A. in 1896, and R.A. in 1898. He died in Chelsea, Aug. 1, 1911. Abbey's work includes a series on the history of Pennsylvania in the Capitol at Philadelphia, a series at Boston, the official picture of the coronation of Edward VII., and "May Morning." In 1931 his house in Chelsea was bequeathed by his widow to the Royal Academy.

Abbey Theatre Dublin theatre built in 1904, which played a considerable part in the Irish dramatic renaissance. Here were produced the plays of W. B. Yeats, J. B. Synge, Lady Gregory, G. B. Shaw and others.

Abbot Word used for the head of an abbey or monastery. It is a variant of the word abba, meaning father. The French form is abbé. An abbot must be in priest's orders and at least 25 years old. In England, before the dissolution of the monasteries, some of the abbots had great power and their privileges included seats in the House of Lords.

Abbot's Bromley Village of Staffordshire, 14 m. from Stafford and 128 from London. It is famous because a mediaeval performance called the Horn Dance takes place here at the fair in July, and at the Wakes on a Monday in September.

Abbotsbury Market town of Dorset, 7 m. from Dorchester, on the G. W. Rly. There are ruins of an abbey. Here is Abbotsbury House, a seat of the earl of Ilchester, famous for its swannery and its sub-tropical gardens. Pop. 620.

Abbotsford Residence of Sir Walter Scott. It is on the River Tweed, 3 m. from Melrose, and quite near the border between England and Scotland. Sir Walter built the house and lived here until his death. Part of it is now a museum where are many Scott relics.

Abdomen Lower part of the trunk. The old name for it is the belly. It is divided into two parts: the abdomen proper containing the stomach, intestines, liver, spleen and kidneys, and the pelvis that contains the bladder and the genital organs. It is lined with a membrane called the peritoneum. To-day surgeons are able to open up the abdomen and in this way they have done some remarkable work in curing disease. All animals have abdomens, but in the lower orders there is no marked distinction between the abdomen and the chest.

Abduction Taking away a woman or child by force. In Great Britain this is a crime, provided it is done for purposes of robbery or of acting immorally. The punishment is penal servitude for not more than seven years, but the sentence can be

more severe if the person abducted is the owner of property or the heiress to property. Special penalties are inflicted upon those who abduct girls under 18.

Abdul Hamid Two sultans of Turkey. Abdul Hamid I. reigned from 1773 to 1789. Abdul Hamid II., born Sept. 22, 1842, began to rule in 1876. Turkey was in dreadful disorder, and in his reign she lost much territory, but the Sultan himself was very clever in his dealings with Great Britain and other countries, who rarely got the better of him. The massacres of the Armenians made him known as the Great Assassin and Abdul the Damned, but he went on his way undisturbed until a revolt broke out in 1909. He was then deposed and was a prisoner until he died in Constantinople, Feb. 11, 1918.

Abd-ur-Rahman Name of several Arab rulers. Three of them were Caliphs of Cordova between 786 and 961. An earlier one led a vast horde of Saracens who were routed by Charles Martel (Charles the Hammer), at Tours in 732. Later an Abd-ur-Rahman was Sultan of Morocco, 1823-59, but the most famous was an Amir of Afghanistan. He seized the throne in 1880 and remained amir until his death, Oct. 3, 1901, during which time he won for his country an influential position.

Abecedarian Word, made of the letters A B C D, meaning "concerning the alphabet." Abecedarians were an Anabaptist sect founded in Germany in the 16th century by Nicolaus Storch. They refused to learn anything, even the A B C, their idea being that knowledge prevented the soul's close contact with the Deity. Abecedarian hymns are hymns or poems in which each verse or line commences with a letter of the alphabet in order, a, b, c, etc.

Abednego One of the three men who were thrown into the "burning fiery furnace" of Nebuchadnezzar (Daniel i. 3). His real name was Azariah.

Abel Second son of Adam and Eve. He was a shepherd and his story is told in Gen. iv. He and his brother Caln sacrificed to God. Abel's sacrifice was the more pleasing, whereupon Cain killed him.

Abel Sir Frederick Augustus. English inventor and chemist. He was born at Woolwich, July 17, 1827. In 1851 he was made Professor of Chemistry at the R.M.A., Woolwich, and in 1856 chemist to the War Office. In 1887 he became the first director of the Imperial Institute, and in 1890 President of the British Association. In 1893 he was made a baronet, and he died on Sept. 6, 1902. He invented the Abel Test for petroleum. Abel worked at finding out new explosives and with Sir James Dewar was the inventor of cordite.

Abel Robert. English cricketer, born at Rotherhithe, Nov. 30, 1859. In 1881 he first played for Surrey and for the next 20 years or more he was one of the greatest batsmen in England. In 1899 he scored 357 not out against Somerset, his highest score. He made over 70 centuries and between 1895 and 1902, when he was at his best, scored over 2000 runs in each season. In 1901 he scored over 3300. He played for England several times, and two of his sons played for Surrey.

Abelard Pierre. French scholar, and the lover of Heloise. He was born in Brittany in 1079 and, after spending some years in study, began to lecture in Paris. Like other thinkers he was accused of heresy, and this interfered with his work. He left Paris and after a time became head of an abbey in Brittany. In Paris one of his pupils was the beautiful Heloise. The two were secretly married, whereupon the lady's uncle, Fulbert, thinking she had been seduced, caused Abelard to be mutilated. He died April 21, 1142, but Heloise, who became a nun at the time of the separation, lived until 1164. The letters between the lovers have been published. In 1877 they were buried together in Père Lachaise, Paris.

Abele Another name of the white poplar (*populus alba*). This is a British tree from 60 to 100 feet in height. It has a smooth grey bark, and the leaves are smooth on the surface and covered underneath with a soft, white cottony substance. The wood is used for flooring and box making. *See* POPLAR.

Abelia Evergreen shrub. A hardy plant, it can be grown out of doors in Great Britain. A sheltered position and a good deal of sun are desirable. They can be grown from cuttings taken in October.

Abeokuta Town of Nigeria. It is on the Ogun River, 60 m. from Lagos. It has a good deal of trade and is the capital of the district of Egba.

Aberavon District of Glamorganshire, once a separate borough. In 1921 it was made part of the new borough of Port Talbot (*q.v.*).

Abercarn Town and urban district of Monmouthshire, 10 m. from Newport on the G. W. Rly., and is chiefly a coal mining centre. Pop. (1931) 20,554.

Aberconway Lord. British iron-master. Charles Benjamin Bright M'Laren, a nephew of John Bright, and a son of Duncan M'Laren, M.P., was born May 12, 1850, in Edinburgh, became a barrister, but soon adopted a business career, and in a few years was at the head of some very important concerns, being one of the leaders of the coal, iron and steel industries. He was a Liberal M.P., with intervals from 1880 to 1910, and he was made a baron in 1911, taking the title of Aberconway. He had been a baronet since 1902. Aberconway's younger son, Francis M'Laren, M.P., was killed while flying, Aug. 20, 1917.

Abercorn Duke of. Irish title held by the family of Hamilton. In 1603 James Hamilton, a Scottish nobleman, was made a baron. In 1606 he was made an earl and in 1790 his descendant became a marquess. The family settled in Ireland, and in 1868 James Hamilton, the 2nd marquess, was made a duke. He was Lord Lieutenant of Ireland. His family is described by Lord Beaconsfield in *Lothair*. The duke died Oct. 31, 1885.

James, the 2nd duke (1838-1913), was chairman of the British South African Co. James, the 3rd duke, was made Governor-General of Northern Ireland in 1922. His eldest son is called the Marquess of Hamilton.

Two places in Rhodesia are named Abercorn after the 2nd duke. One is a trading station about 10 m. from Lake Tanganyika, where, on Nov. 14 1918, the last Germans in arms in Africa surrendered. The other is 90 m. from Salisbury.

Aberdare Market town and urban district in Glamorganshire. It is on the G.W. Rly., 4 m. from Merthyr Tydvil, and 167¼ m. from London. Pop. (1931) 48,751.

The title of Baron Aberdare was taken by Henry Austin Bruce. A landowner here, he was M.P. for Merthyr, 1852-73, and was Home Secretary 1868-73. He became a peer in 1873 and died Feb. 25, 1895. The Aberdare Mts. in E. Africa are named after him.

Aberdeen City of Scotland and the county town of Aberdeenshire. Called the granite city, it is on the east coast of the country, round the mouths of the rivers Dee and Don. It is 112 m. from Edinburgh and 508 from London, and can be reached by the L.M.S. and L.N.E. Rlys. It is an important seaport, a university town, and sends two members to Parliament. The city is the see of a Roman Catholic bishop.

The chief buildings include Marischal College, King's College and other parts of the university, the Art Gallery and St. Machar's Cathedral. In 1932 it was proposed to build a new cathedral as a memorial to Samuel Seabury. The city cross is nearly 250 years old. Two of the old bridges still stand; Balgownie built in the 13th century and Dee in the 16th, the latter famous for its coats of arms and inscriptions. There is a wireless station and several parks beautify the city. There is a promenade along the sea front, nearly 3 m. long. Fishing employs many of the inhabitants, and there is a large fish market. Shipbuilding yards, engineering and chemical works, and paper mills are other industries. Granite polishing is carried on. There is a large harbour and modern docks. Pop. (1931) 167,259.

Aberdeen Earl of. Scottish title borne by the family of Gordon. The first earl, George Gordon, was a lawyer and a baronet. In 1682 he was made Lord Chancellor of Scotland and Earl of Aberdeen, and he died April 20 1720. His descendant, George Hamilton Gordon, became the 4th earl in 1801, and spent many years in politics. He helped to make the peace of 1814 with France, and was Foreign Minister in 1828-30, and 1841-46, and Prime Minister, 1852-55. He died Dec. 14, 1860.

His grandson John Campbell Gordon, became the 7th earl in 1870, and in 1915 was made Marquess of Aberdeen and Temair. He was Lord Lieutenant of Ireland in 1886 and from 1905-15, Governor-General of Canada, 1893-98. With his wife, a daughter of the 1st Baron Tweedmouth, he wrote *We Twa*, a book of memories and a further volume, *More Cracks with We Twa*. The marquess owned much land in Aberdeenshire. He died in 1934, and his eldest son, Lord Haddo, became 2nd marquess.

Aberdeenshire County or Scotland. It is in the north-east, and has a long stretch of coast-line on the North Sea and its openings. It is 84 miles long and covers 1971 sq. m. Aberdeen is the county town. Other places are Peterhead and Fraserburgh, on the coast, and Inverurie, Alford, Turriff and Huntly inland. With Kincardineshire it sends three members to Parliament. The railway lines are the L.M.S. and L.N.E. The county is divided into five districts, Mar, Garioch, Buchan, Formartine and Strathbogie, and the chief rivers are the Dee, Don, Ythan and Deveron. The district in the south, through which the Dee runs, is famous for its associations with royalty. Here are Balmoral and Braemar around which are the royal and other deer forests. Some of the highest mountains in Scotland are herein, notably Ben Macdhui (4296 ft.), and Cairntoul (4241 ft.), two of the Grampians. The Gordons were long the great family in Aberdeenshire. Pop. (1931) 300,430

Aberdour Pleasure resort of Fifeshire. It stands on the Firth of Forth, 18 m. from Edinburgh, on the L.N.E. Rly. Near are the ruins of a castle, where the Earls of Morton lived. Pop. 3100.

Aberdovey Pleasure resort, in Merionethshire. It is 4 m. from Towyn on the G.W. Rly., just where the River Dovey flows into the sea. Pop. 1500.

Aberfeldy Burgh and market town of Perthshire. It stands on the Tay, 32 m. from Perth and 73 from Edinburgh, and is reached by the L.M.S. Rly. The scenery around, referred to by Burns in *The Birks of Aberfeldy*, is very beautiful, the Falls of Moness being a great attraction. Pop. (1931) 1505.

Aberfoyle Village of Perthshire. It stands on the Laggan, 27 m. from Glasgow, and 54 from Edinburgh on the L.N.E. Rly. In the midst of beautiful scenery, it is the scene of incidents mentioned in *Rob Roy*. There is the inn where Rob Roy met Bailie Nichol Jarvie, while the ruins of Jean Mac-Alpine's Inn are just outside the village. Pop. 1100.

Abergavenny Borough and market town of Monmouthshire. It stands at the mouth of the Gavenny, which here falls into the Usk, 13 m. from Monmouth and 151 from London, and is on the G.W. Rly. Pop. (1931) 8608.

The great family of Neville had here a castle, now in ruins, and in 1392 one of them took the title of Baron Abergavenny. In 1784 his descendant was made an earl, and in 1876 another descendant was made a marquess. Having sold much of its property here, the family is now chiefly associated with Sussex and Kent, where is Eridge Castle, his chief seat.

Abergele Watering place and market town of Denbighshire, 12 m. from Llandudno and 214 from London, on the L.M.S. Rly. Pop. (1931) 2651.

Aberglaslyn Pass in Wales. It is near Beddgelert, on the borders of Carnarvonshire and Merionethshire, and is made by the little River Glaslyn flowing between steep rocks.

Abernethy John. English surgeon. He was born in London, April 3, 1764, and educated at Wolverhampton. For long he worked at S. Bartholomew's Hospital, London, and in 1814 he was made Professor of Anatomy at the Royal College of Surgeons, London. His chief work was to show that local diseases are chiefly due to digestive troubles. He died at Enfield, April 28, 1831.

Abersychan Urban district of Monmouthshire. It is 10 m. from Newport on the G.W. Rly. The chief industries are coal mining, tin and iron working. Pop. (1931) 25,627.

Abertillery Town and urban district of Monmouthshire. It is on the G.W. Rly., 16 m. from Newport. Coal miners, iron and tin workers, and their dependents form a large part of the population. Pop (1931) 31,799.

Aberystwyth Borough, pleasure resort and market town of Cardiganshire. It is 210 m. from London, and can be reached by the G.W. Rly. The town has a good beach and a fine promenade along the sea front. In the neighbourhood is the Devil's Bridge and some of the most magnificent scenery in Wales. There is a small harbour. In 1872

the first university college in Wales was opened here. The National Library of Wales is also in the town. Pop. (1931) 9474.

Abeyance Period during which an estate or title has no holder. In England it is chiefly used in connection with peerages. Certain titles, when there are no sons, descend to daughters. If there is only one daughter she inherits, but if more than one the peerage goes into abeyance, as all are equally entitled to it. An abeyance is ended when only one heiress is left, or when the crown gives the title to one of the co-heiresses. Abeyance chiefly affects baronies created by writ of summons. In most other titles the patent states how the title shall descend. There is no abeyance in Scottish peerages.

Abiathar Jewish high priest. He was a son of Ahimelech, also high priest. He fled to David when his father was killed by Saul and became one of his friends. In the time of Solomon he revolted with Adonijah "so Solomon thrust out Abiathar from being priest unto the Lord" (1 Kings ii. 27).

Abigail Two characters in the Bible. One was the wife of Nabal and afterwards of King David. When David was an outlaw in the wilderness of Paran and Nabal refused to feed him, he became acquainted with Abigail and after Nabal's death he married her (1 Sam. xxv.). The other Abigail was David's sister, the mother of Amasa.

Abingdon Borough of Berkshire. It is on the Thames, 6 m. from Oxford, on the G.W. Rly. Clothing and carpets are made, and there is a trade in agricultural produce. As abbots' town the place grew up around an abbey, one of the richest in England, and was important in the Middle Ages, sending members to Parliament until 1885. Pop. (1931) 7240.

The title of **Earl of Abingdon** has been held by the Bertie family since 1682. The present earl lives at Wytham Abbey, near Oxford, and his eldest son is called Lord Norreys.

Abington Frances. English actress. Born in 1731, Frances Barton, as she was until her marriage, sold flowers and sang in the streets before appearing on the stage. In 1755 she appeared at the Haymarket Theatre, London, and after a few years was invited by Garrick to join him at Drury Lane. There, and later at Covent Garden, she was for over 20 years the leading actress. She played Lady Teazle when *The School for Scandal* first appeared, and her portrait was painted by Reynolds. She died in 1815.

Abishai Biblical character. A son of Zeruiah, he was a nephew of King David, who took him with him into Saul's camp where he had a chance to kill the sleeping king. Abishai's other exploits are told in 2 Samuel.

Abkhasia Soviet republic in the Caucasus. It is part of the Republic of Georgia. Sukhum is the capital.

Abner Biblical character. He was Saul's cousin and the captain of his army (1 Sam. xiv. and 2 Sam. ii. and iii.).

Abney Park District of London. It is famous for its cemetery which was opened in 1840. It is in the borough of Stoke Newington and is named after Sir Thomas Abney.

Abo City and seaport of Finland, called by the Finns Turku. It stands on a river near the Baltic Sea, 160 m. from Helsinki. There is a good deal of shipping, and shipbuilding is carried on. Pop. (1930) 66,654.

Aborigines First inhabitants of a country. In North America the Indians are regarded as aborigines, and in New Zealand the Maoris. There are aborigines also in Australia.

The **Aborigines Protection Society**, now included in the Anti-Slavery Society, has done much to prevent their extinction.

Abortion Emptying of the pregnant womb. In English law it is a crime to use artificial means to expel the contents of the womb during pregnancy. Any person who assists in such an act, either by using drugs or instruments, may be charged with murder. Abortion may be caused by natural means, in which case it is popularly known as a miscarriage.

Aboukir Village of Egypt on Aboukir Bay, 10 m. from Alexandria. Near are the ruins of Canopus and other remains of Egyptians and Romans. In the bay Nelson won the battle of the Nile (1794), and near the village Napoleon defeated the Turks, July 25, 1799, and Sir Ralph Abercrombie defeated the French, March 21, 1801.

Aboyne Village of Aberdeenshire, sometimes called Charleston. It is famous for its castle, a seat of the Gordons. It is 10 m. from Ballater, and is on the L.N.E. Rly. Highland games are held here every year. Pop. 1500.

Abracadabra Magic word, at one time used to charm away illness or danger. It was usually written out on parchment in the form of a triangle, each line being a little shorter than the one before it, and was worn round the neck.

Abraham Founder of the Jewish nation, also called Abram. He was the son of Terah and lived at Ur of the Chaldees, a Babylonian city, between 2000 and 1800 B.C. Later he moved into Canaan, taking with him his nephew Lot. Owing to famine he was for a time in Egypt, but soon he returned to Canaan and settled near Hebron. By his wife Sarah he had a son, Isaac, the ancestor of the Jews. His other sons included Ishmael, borne by another wife, Hagar. He was buried at Machpelah, where a Christian church and a mosque were built.

The incidents of Abraham's long life are found in Genesis, xi.-xxv.

At one time lunatics from Bethlem Hospital, London, were allowed to go out and beg. As they came from Abraham's ward, as it was called, they were known as **Abraham Men**, and so were the many vagabonds who followed their example.

ABRAHAM, PLAINS OF. Heights outside the city of Quebec. Here, on Sept. 13, 1759, the British under Wolfe beat the French under Montcalm, and so won Canada. The Plains have been public ground since 1908, and on them is a monument to Wolfe and Montcalm.

Abrasive Polishing material employed in many manufacturing industries. Carborundum and emery are examples, both being used in preparing metal. A grindstone is an abrasive and so is pumice stone. Artificial abrasives are now made by electric power.

Abraxas Mystic word. It was engraved on precious stones used in rings and other ornaments. It contains seven Greek

letters which when used for numbers make up 365, supposed to be a mystic figure. It was first used by the Gnostics early in the Christian era. In the Middle Ages abraxas amulets were much worn as charms.

The Abraxas Moth, sometimes called the Magpie Moth, is very harmful to small fruit trees.

Abruzzi Plural of Abruzzo and used to describe three districts in the central part of Italy. The title of Duke of the Abruzzi was given to Luigi, a cousin of the King of Italy. Born in Madrid, Jan. 29, 1873, he became famous as a mountaineer and explorer. In 1897 he ascended Mt. S. Elias, and in 1909 he went up 24,600 ft. in the Himalayas. Other feats stand to his credit, including expeditions to the North Pole. In the World War he commanded the Italian Navy.

Absalom David's favourite son. His mother was Bathsheba, and as he grew up he was noted for his beauty and his waywardness. He was exiled, so he headed a revolt and soon David was driven from Jerusalem, and Absalom took his place as king. In a battle which followed David's men won, and Absalom rode off on a mule. As he went, his hair caught on a tree and thus he was found and killed, against David's orders, by Joab (2 Sam. xviii.).

Abscess Collection of pus or purulent matter formed in the body. Acute abscesses form quickly and cause great pain in so doing; cold abscesses form slowly with little or no pain, and are due to tuberculosis. Injury followed by septic germ infection may also produce an abscess.

Treatment.—An Abscess of the Gum or Gum-boil, causes severe pain and throbbing in the neighbourhood of the affected tooth, and a dentist should be consulted as soon as possible, since the removal of the tooth will probably be the only cure. If delay is unavoidable, apply heat to relieve the pain—hot fomentations to the cheek and hold hot water in the mouth containing a mild disinfectant such as glycothymoline. An aspirin will also be helpful if the patient is able to take this drug.

A Painless Abscess sometimes forms at the root of a dead tooth, and is dangerous to health, since it continuously supplies germs and their poisons to the blood. In a persistent "run-down" condition for which no cause can be found, it is a good plan to have the teeth X-rayed, when any such focus of infection will be revealed.

Abscess within the Ear.—Earache accompanied by discharge, or of an unusually severe or persistent nature, should receive immediate medical attention, as an abscess may have formed and an operation may be imperative. Do not attempt any treatment other than the application of heat in the form of hot flannels or a rubber bottle to the outside of the ear.

Absinthe Liqueur containing a large proportion of alcohol. It is made from wormwood, anise, hyssop, angelica and other aromatic substances, the wormwood being the potent ingredient. It is green in colour. Much is made in Switzerland; its sale is forbidden in some countries, because of its destructive effect on mind and body if taken to excess.

Absolution Forgiveness of sins, pronounced in the name of God by a priest to a penitent. In the Church of England it is pronounced by the minister at both morning and evening prayer, just after the people have said the general confession. In the Roman Catholic Church it is pronounced by the priest to the individual after confession and this practice is followed by some Anglican clergymen. The Roman Church has an office of absolution for the dead.

Absorption Sucking up of one substance by another. For instance, some light is absorbed by the air or water through which it passes and so it gradually loses strength. Gases are also absorbed, the absorption of carbon by plants being an example. Liquids as well as solids are able to absorb other substances.

Abu Arabic word for father. It is much used in the names of places. Abu Klea and Abu Kru are in Egypt. Here on Jan. 17 and 19, 1885, a small British force, going to relieve Gordon at Khartoum, was attacked by dervishes. The attack was beaten back, but the British leader, Sir Herbert Stewart, was killed. At Abu Simbel on the Nile there are some wonderful rock temples, with sculptured figures 65 ft. high, built by Rameses II. At Abu Tellul in Palestine the British defeated the Turks, July 14, 1918.

Abydos Name of two ancient cities. One was on the Hellespont, just where it is narrowest. Here Leander swam across to see Hero, and here the Persians under Xerxes crossed on a bridge of boats in 480 B.C. on their way to Greece. There was another Abydos in Egypt. On the Nile, 350 m. from Cairo, it was one of the greatest cities in the land and the burial place of many Egyptian kings. Here is the famous Table of Abydos, a list of the rulers of Egypt, carved in the stone by order of Sete I.

Abyssinia Country of Africa, its official name being Ethiopia. It is an independent state or empire. Its area is about 350,000 sq. m., or seven times that of England, and it has about 5,500,000 inhabitants. Egypt lies to the north, and to the east, but separated by a strip of Italian, French and British territory, is the Red Sea. There are many mountains, some as high as 15,000 ft., especially in the north, and this makes the climate rather less hot than it would otherwise be. The numerous rivers help to feed the Nile. Lake Tsana in the north is the largest lake.

The capital is Addis Ababa, almost exactly in the centre. Other towns are Harrar, Dire Dawa and Gondar. There is a railway from the capital to the Red Sea, and in 1928 the Italians agreed to allow Abyssinia to build a port on that coast. The dollar, worth about 2s., is the chief coin, but much trade is done by barter. The chief exports are coffee and skins, but rubber, sugar, cotton, bananas, oranges and other tropical fruits grow easily. In the forests, where elephants, lions and other wild animals roam, there is plenty of good hard timber such as ebony and mahogany. The people keep cattle, sheep and goats. A little gold is mined, but there are no manufactures.

Very little was known about Abyssinia until modern times. At one time it consisted of three kingdoms, Tigré in the north, Amhara and Shoa. Amhara was generally the most powerful and to-day most of the people speak the Amharic language. The others, however, remained and there are now many Tigrians and Shoans in the land. Other peoples are the Galles, who also are about half the population, and the Danakilis. Most of these are Christians belonging to the Abyssinian church, a branch

of the Coptic Church from Egypt, but the Danakilis are Mahommedans. There are also a number of Jews.

In 1868 a British army invaded Abyssinia, because the Emperor Theodore, who had made himself ruler, imprisoned some British officials. Theodore was soon defeated, and after a time, in 1889, Menelek, King of Shoa, became emperor. He made Abyssinia really independent, and there was great surprise when in 1896 his soldiers defeated an Italian army at Adowa. Menelek died in 1913, and there was a certain amount of disorder. The new ruler was deposed in 1916, and Menelek's daughter was declared empress. A regent, Ras Taffari, was appointed to govern and to succeed when she died. In 1928, after some trouble between the two, the regent was crowned king, and in 1930 emperor, under the style of Haile Silassie I. In 1923 Abyssinia joined the League of Nations.

In Oct., 1935, following a frontier dispute, Italian troops invaded Abyssinia, and a few days later war was declared. A notable incident in the 1935 operations was the fall of Adowa. The League of Nations, when peace plans fell through, imposed sanctions against Italy as the aggressor.

Acacia Name of several shrubs and trees, one being the wattle of Australia. They grow chiefly in tropical countries and are usually found on the edges of deserts. Drugs and gums are obtained from some of them. Some acacias will grow in greenhouses in England. The tiny flowers, which are grouped into globular heads, are yellow, white or red. The acacia tree which is found in British gardens is a false, not a real, acacia (*robinia*).

Academy Centre of learning. Plato lectured in a place near Athens called the Academy. This was a grove of olive and plane trees called after **Academus**, who once owned it. Thus the word has come to be used for learned societies, schools, etc.

The most famous foreign academies are the **Academie Française**, founded in 1635 with its 40 members, known as the Immortals, and the **Accadémia della Crusca**, founded in Florence in 1582. In Britain the chief academies are the **Royal Academy of Arts** which holds an annual exhibition of pictures at Burlington House, London, and the **British Academy**, for the promotion of historical, philosophical and philological studies, which was founded in 1900. Dublin has the **Royal Irish Academy**. The **Royal** Society and the Royal Society of Edinburgh are really academies. The Royal **Scottish Academy** of Painting, Sculpture and Architecture was founded in 1826 and incorporated in 1838. In Scotland schools are often called academies.

Acadia French name for Nova Scotia, (*q.v.*). It was used until the British took it in 1713. A university at Wolfville in that country is called **Acadia University.**

Acanthus Herb grown in Southern Europe, and sometimes seen in English gardens. There are two kinds—one smooth, the other prickly. They have very fine leaves and their design was probably copied by the Greeks when they first carved the capitals for their Corinthian columns.

Accent In pronunciation the prominence given to a certain syllable in a word. It is also used for the way in which a person speaks, as when we say a man has a French, a Cockney or Lancashire accent. An accent is also a mark used to help pronunciation. These are not found in English, except occasionally in poetry to show that e, ed, or en are separate syllables. The French have three, the grave (`) and the acute (´), placed over the letter e, and the circumflex (^) which shows that an s has been omitted. Spanish has an accent, the tilde (~), which shows that n should be pronounced as nyi, as in cañon. The cedilla (¸) placed under c to soften its sound, and the diaresis (¨) which shows that two vowels coming together must be pronounced separately are not really accents.

Accentor Name of a group of birds that includes the hedge sparrow, quite a different bird from the house sparrow. The Alpine Accentor lives in the mountains of Central Europe. It is a little larger than the hedge sparrow.

Acceptance Legal and business term. The acceptance of a contract makes it valid, but it must be acceptance without reservation. A bill of exchange (*q.v.*) is accepted when the person against whom it is drawn signs it and writes, or stamps, the word accepted across it.

Accessory Term used in English Law. There are two kinds of accessory, as a person who takes a secondary part in an offence is called. An accessory before the fact is one who, though he was absent when the crime was committed, yet assisted in some way. An accessory after the fact is one who, although he knows a crime has been committed, assists the committer of it to escape. Both accessories can be punished, though less severely than a principal.

Accident Happening or event that is without premeditation, or deliberation; something due entirely to chance. Accidents may be divided into industrial, those that happen in the course of one's employment, and non-industrial. Provided that he or she does not earn over £350 a year, every employee can obtain damages from his employer if he is injured, without negligence on his own part, while at work. The law is contained in the Workmen's Compensation Acts and the employers usually cover the risk by insuring.

Railways and other companies that carry passengers for hire are liable to pay damages if persons are killed or injured through any negligence on the part of the company's servants. Persons injured on the roads can obtain damages, if they can prove negligence, and motorists are now obliged to insure against accidents to third parties.

Some penny daily papers pay compensation to registered readers who meet with accidents, and accident insurance forms an important branch of insurance work. Accidents on railways and mines are followed by an inquiry into their causes. These are conducted by officials of the Home Office. Flying accidents are inquired into by the Air Ministry.

Accordion Small musical instrument. It was invented in Vienna in 1529. It has a keyboard and by pressing the keys the bellows force the wind on to metal reeds which sound the various notes.

Accountancy The profession of one who deals with accounts. It is an open one, that is, any person can practise accountancy in the United Kingdom without being required to hold any qualifications. He will, however, have a better chance of success if he qualifies for membership of one of the leading Institutes or Societies, which are as follows :—

(1) The Institute of Chartered Accountants of England and Wales; chief office in London.
(2) The Institutes of Chartered Accountants in Scotland, of which there are three, with offices in Edinburgh, Glasgow, and Aberdeen.
(3) The Society of Incorporated Accountants and Auditors with its headquarters in London.

Membership of (1) and (2) secures the right to the title "Chartered Accountant"; in the case of (1) the distinctive letters F.C.A. and A.C.A. may be used; in the case of (2), the letters C.A. Members of the Society of Incorporated Accountants and Auditors use the letters F.S.A.A. and A.S.A.A. respectively, and are styled "Incorporated Accountants." Since 1919 women are admitted as members of the Society of Incorporated Accountants.

In the case of the Chartered Accountant, five years' service under Articles (reduced in the case of graduates of the universities of the United Kingdom to three years) is essential. Before commencing service under Articles, the prospective articled clerk must pass a Preliminary Examination in general educational subjects, unless he can produce certificates showing that he has satisfactorily passed another examination of similar character.

The Society of Incorporated Accountants and Auditors admits to its intermediate examination accountancy clerks to public accountants who have passed the Preliminary Examination, and have completed six years approved professional service. These candidates, when they have passed the intermediate examination and have attained the age of 25 and completed nine years approved professional service as accountancy clerks to public accountants, are permitted to sit for the Final.

The employer generally requires the payment of a premium which may be anything from 100 to 300 guineas, according to the standing of the firm, and may even amount to 500 guineas. The conditions of service may also provide for no salary during service, but since the War it has become largely the practice for a part, if not the whole, of the premium to be repaid as salary during the period of service.

The Preliminary Examination of the English Institute includes English, Mathematics, History, Geography, and two optional subjects selected from a long list, one of which must be a language. The Intermediate Examination, which is taken after half the term of service has expired, is in professional subjects including Book-keeping, the Accounts of Limited Companies, Partnership and Executorship Accounts, Auditing and General Commercial Knowledge, whilst the Final Examination, which is taken two years after passing the Intermediate Examination (one year in the case of graduates) and at the termination of the service, is of a more advanced nature in the above professional subjects with the addition of papers set in the Principles of the Law of Bankruptcy, Arbitrations and Awards, Mercantile Law, Costing and Taxation, and the Principles of Banking or Economics.

The salary of a moderately successful Accountant is, say, from £600 to £1000 per annum, but many are much more successful than this. It is usual after passing the examinations to serve with a firm of Accountants at an annual salary which may commence at £200 to £300 a year, whilst many very valuable mercantile posts and appointments in financial houses are open to those who can show an Accountancy qualification of the above description. (*See also* BUSINESS.)

Accra Capital of the Gold Coast Colony. It is on the coast of West Africa. There is a good deal of business in the town and from it ivory, gold dust and other products are sent to Europe. It has a wireless station and the Church of England has a bishop here. A railway line runs to Kumasi. As there is no harbour, goods are landed by lighters. Pop. (1931) 59,895.

Accrington Borough and market town of Lancashire. It is on the little River Hindburn and the L.M.S. Rly, 20 m. from Manchester. It is one of the cotton manufacturing towns, the cotton being spun, bleached and dyed here. The town has also works where machinery and chemicals are made. Pop. (1931) 42,973.

Accumulator Apparatus for the storage of electrical or other forms of energy. An electrical accumulator, otherwise known as a storage battery or secondary cell, in its simplest form consists of a vessel (usually glass) containing a number of lead plates coated with red lead or litharge and placed in dilute sulphuric acid of a certain specific gravity. The cell or series of cells is then charged with an electric current. The storage capacity of the accumulator depends upon the size of the plates.

There are many kinds of storage batteries which are used in power stations and for smaller electrical installations, also portable accumulators of wireless apparatus, motor ignition and lighting, and for medical apparatus.

In 1932 the jubilee of the invention of the accumulator was celebrated in London.

Hydraulic Accumulators for storing water under pressure, and similar appliances where steam or compressed air are substituted for water, are used for driving machinery, especially in shipbuilding and heavy work. These accumulators usually consist of a cylinder in which works a loaded ram.

Ace Playing card with one pip on it. In some games it ranks as the highest card; in others as the lowest. In dicing it is always the lowest. An ace is a point at tennis and rackets. During the World War an airman in the French and German forces who brought down five opponents was called an ace.

Aceldama Field purchased with the thirty pieces of silver given to Judas Iscariot for the betrayal of Christ.

Acetal Colourless liquid. It is found in alcohol and is obtained by distilling a mixture of alcohol, manganese dioxide, sulphuric acid and water. The flavour of good wine is partly due to acetal. Its chemical formula is $C_4H_{10}O_2$.

Acetic acid Acid found in the juice of certain plants. It can be made by purifying the liquor obtained from the distillation of wood. Vinegar contains a good deal of acetic acid, from which it derives its sour taste. The strongest form is glacial acetic acid which is used to remove warts and corns. In a concentrated form the acid forms salts called acetates which are used in calico printing. Its chemical formula is $C_2H_4O_2$.

Acetone Colourless volatile liquid. It is obtained by distilling wood or by the dry distillation of acetates. It tastes rather like peppermint and is used to make cordite, chloroform and other substances. It is also used as a solvent for resins, fats, gun

cotton, etc., as a solvent for acetylene it is a very powerful illuminant, as it will take 24 times its volume of acetylene. Its formula is C_4H_8O.

Acetylene Gas used for lighting purposes. It is obtained by mixing calcium carbide, which is made by fusing lime and coke together in an electric furnace, with water. It gives out a white, but powerful light about 15 times stronger than ordinary gas. Acetylene generators are sometimes used to provide light for lamps on cycles, etc.

With oxygen, acetylene is used to make an oxy-acetylene flame, the hottest gas flame known. It has a temperature of 3500 degrees centigrade and is used for cutting iron and steel, and for welding metals.

Achaea One of the divisions of Greece in olden times. The name is still used for a district along the south side of the Gulf of Corinth. The **Achaean League** was an alliance of cities in Achæa. It was formed about 280 B.C. to resist the Macedonians, and was very powerful when Aratus was at its head. Ten cities composed it, but later Athens and many others joined. It lasted until 146 B.C. when it was destroyed by the Romans.

Achates Friend and follower of the hero Æneas. He is always called by Virgil *fidus*, or faithful, and the phrase *fidus Achates* is proverbial for a stalwart friend or attendant.

Achelous A Greek river-god, the son of Oceanus and Tethys. The Greek river Aspropotamo was formerly called Achelous. It is 130 m. long and flows south into the Ionian Sea.

Acheron River in Hades. It is referred to in classical mythology. There is actually a small river of this name in Greece and another in Italy.

Achi Baba Hill in Gallipoli. It is 600 ft. high and is at the end of the peninsula. Fortified by the Turks, it was attacked several times by the British during the fighting in 1915.

Achill Largest island off the Irish coast. Also called Eagle Isle, it is a part of the County of Mayo in the Irish Free State. Achill Sound divides it from the mainland. It covers 57 sq. m., is mountainous and has about 5000 inhabitants. Dooagh is the chief place.

Achillea Group of hardy perennial plants. Some are suitable for the flower garden; others for the rock garden. They thrive in ordinary soil, produce double white flowers in summer, and spread rapidly. A sunny position suits them best. One kind (*achillea millefolium*), produces rose-coloured flowers.

Achilles Son of Peleus and Thetis and one of the greatest of the Greek heroes. His mother dipped him in the Styx to make him invulnerable, but the water did not touch his heel. He was king of the Myrmidons and went with the other Greeks to attack Troy. In the *Iliad* Homer tells of his wonderful deeds and of his quarrel with Agamemnon, after which he stayed in his tent and refused to fight. However, when his friend, Patroclus, had been killed, he went to the fight again and killed Hector. Achilles himself was killed by an arrow striking him on the heel.

The Achilles Club consists of athletes who form teams to engage in contests with public schools, etc.

Achromatism State of being achromatic or without colour. Achromatic lenses are used in telescopes, and in cameras, etc., to refract light without breaking it up into colours as an ordinary prism of glass does. They are formed by two lenses, one concave and the other convex, each of a different kind of glass, usually flint and crown.

Acid Sour substance soluble in water. Acids are the opposites of alkalis. All contain hydrogen and most, but not all, contain oxygen. Those without oxygen are distinguished by *hydro*, *e.g.*, hydro-cyanic acid, and those with a high proportion of oxygen by *per*, *e.g.*, perchloric acid. The science of measuring the amount of acid in solids or liquids is called **Acidimetry.**

Acis Sicilian shepherd. His sad story is told by Ovid. The son of Faunus he was loved by Galatea, so his rival, Polyphemus, killed him with a rock and the gods changed his blood into a little river.

Ackworth Town of Yorkshire. It is 4 m. from Pontefract, and is famous for its school. This is chiefly for members of the Society of Friends and there John Bright was educated. It is on the L.N.E. and L.M.S. joint line. Pop. 4800.

Acland Famous English family. One of the Aclands was made a baronet in 1645, and this title came to his descendant, Thomas Dyke Acland (1787-1871) as the 10th baronet. Of his sons Thomas Dyke, the 11th baronet, was a Liberal politician; Henry Wentworth Acland, Professor of Medicine at Oxford, was made a baronet in 1890; J. B. Arundel Acland settled in New Zealand, where members of the family still live. Arthur Henry Dyke Acland (1847-1926), a Liberal politician and an authority on education, succeeded his brother as 13th baronet in 1919, and the 14th baronet was his son Francis, also a leading figure in the Liberal party. The Aclands own much land in Devon and Somerset, and their old residence is Holmcote near Taunton. They are buried in Selworthy Church.

Acle Market town of Norfolk. It is on the Bure, 11 m. from Norwich and 122 from London, and is on the L.N.E. Rly. It is a good centre for visitors to the Broads and the church is old and interesting. Pop. 1042.

Acne Skin disease. It causes small pimples to appear, especially on the face and upper parts of the body. The pimples are due to obstructions in the ducts of the sebaceous glands and the blackheads which are seen in their centres are the obstructed heads of these ducts. This, the ordinary form of acne, occurs usually in young people and is best cured by attention to the general health. A more severe form, often caused by alcohol, shows itself in the redness and inflammation of the nose.

Acolyte In the Roman Catholic Church a junior cleric. His duty it is to attend on the higher clergy when they celebrate mass. They have been known since the 3rd century.

Acoma Indian village in New Mexico. It has the reputation of being the oldest inhabited place in the United States. It is 80 m. from Albuquerque, and is on a rock 6000 ft. above sea level. Here is a large Indian reservation.

Aconcagua Highest mountain in South America. It is an extinct volcano, in the Andes. Its height is 23,100 ft.

and it was first climbed in 1897. It is 90 m. from Valparaiso on the borders of Chile and Argéntina. A province of Chile is named after it, as is a river.

Aconite Flowering plant, of which there are several kinds. It is very deadly, as it contains aconitine, a most powerful poison. Minute quantities of this are sometimes given to ease toothache and other pains as it produces numbness. *See* MONKSHOOD.

Acoustics Science of sound. It comes from a Greek word meaning to hear. A knowledge of it explains the peculiarities of whispering galleries and the like, and is useful to architects when designing churches, theatres and other large buildings. In order that a building's acoustic properties shall be good it is necessary to prevent echoes. This can be done to some extent by putting up sounding boards, or hanging tapestries on the walls, but a better result is produced by having broken and not unbroken surfaces. A very high roof is bad for hearing. It has been proved that echoes are more noticeable in an empty building than in one full of people, as the very presence of bodies helps to break up the sounds. *See* SOUND.

Acre Seaport of Palestine, 80 m. from Jerusalem. It was taken by the Crusaders, and after Saladin had retaken it, Richard I. won it again. The knights of S. John held it for some years, this being why it is sometimes called S. Jean d'Acre, and from 1517 until the end of the World War it was Turkish. A railway runs from here to Damascus, but there is little trade and few remains of the past. Pop. (1931) 7893.

Acridine Basic substance found in coal tar in association with crude anthracene. It is used as a dye stuff and also in electric snuff. Its chemical symbol is ($C_{13}H_9N$).

Acropolis Highest part of a Greek city. It was fortified and so became the most important part of the city, for here was the citadel, and often the temples. There was an acropolis at Mycenæ, but the most famous was at Athens, where it was a rock 500 ft. high and inaccessible except on one side. On it were the greatest buildings of the city, including the Parthenon.

Acrostic Lines of printed or written matter, often in verse, of which the first letters taken together form a word. In a double acrostic the final letters also form a word, and a triple acrostic is sometimes seen in which the middle letters serve the same purpose.

In its modern form the acrostic is a puzzle. A proverb or rhyme gives a clue to the uprights, as the words formed by the initial and final letters are called. Below these are lines each of which gives a clue to a word which begins and ends with the required letters.

Act Division of a play. For long plays, Shakespeare's being an example, were always divided into five acts, but there is now no fixed number. An act is divided into scenes.

In Great Britain an **Act of Parliament** is the proper name for a law. The Acts of each session are arranged in chapters and are quoted according to the year of the reign in which they were passed. For instance, the National Health Insurance Act, passed in 1928, is 18 and 19 Geo. Ch. 14, because it was passed in the eighteenth and nineteenth years of that king's reign. The Parliaments of Canada, Australia and other parts of the Empire, have their own Acts.

An **Act of God** is something due to the violence of the elements, such as a storm at sea or something else for which no human being is responsible. The phrase is much used in insurance policies.

Actaeon Noted hunter in Greek mythology. He watched Artemis bathing. For this offence he was changed into a stag and chased, and killed by his own dogs.

Acting Art of representing historic or fictional characters, or scenes. The art of acting is much older than the Greeks, although from them our early ideas of it have come. It was associated with their religious rites and with the dances which were an important part of those ceremonies. At a later time plays were written for the actors to present and, disguised by masks, they declaimed the magnificent dramas of Aeschylus, Sophocles and the other great writers.

Acting flourished, too, among the Romans, one of whom, Roscius, made his name immortal. In the Middle Ages the acting of miracle plays under the leadership of the church was very popular, and then came the Elizabethan Age, which gave to acting, as to everything else, new and greater ideas. At this time and earlier there were no actresses, female parts being taken by men or boys. In England actors were obliged by law to take out a licence, otherwise they were treated as vagabonds, and everywhere they were rather a despised class. They had little or no scenery to help them, as the plays were usually acted at fairs or in the yards of inns. Shakespeare's plays were often acted in this way.

In the 18th century, or perhaps a little earlier, women appeared on the stage, and acting took its modern form. This was partly due to the influence of David Garrick who, with Sarah Siddons, greatly raised the social status of actors and actresses. In the 19th century scenery became much more elaborate, theatres were built almost everywhere and plays were written in thousands. Acting was regarded as a profession with its clubs, organisations and training schools. The 20th century saw a remarkable development in stagecraft, but no advance in the quality of the acting.

Of modern English actors and actresses perhaps the greatest names are Henry Irving and Ellen Terry, but many others are notable. France and Italy have also had great actors and there, as in Germany, acting has a great hold on the nation. In France, Sara Bernhardt and the elder Coquelin; in Italy Elenora Duse and Salvini are perhaps the outstanding figures. *See* DRAMA; THEATRE.

Actinic Rays of sunlight which produce chemical changes, on photographic plates, for instance. They are also called ultra-violet (*q.v.*) because they fall in wave-length beyond the violet end of the spectrum or Ripperian because they were discovered by Ripper. The **actinometer** is an instrument discovered by Sir John Herschel for measuring the power and properties of the sun's rays, and any variations are recorded by the **actinograph** which works with it.

Actinium Radio-active substance. It was first found in 1899 in pitchblende where it is associated with thorium. It has the property of communicating radio-activity to other bodies. It has not yet been isolated.

Actinomycosis Disease attacking cattle and sometimes men and women. It develops in the tongue or jaw where it causes a tumour which is sometimes called wooden tongue or lumpy jaw. It is due to a parasite, the "ray fungus," which is sometimes found on barley and makes its way into the animal when it is suffering from a sore. It is infectious.

Actium Headland of Greece. It was near here that one of the world's famous battles was fought, Sept. 2, 31 B.C., when Octavian, afterwards the Emperor Augustus, defeated Mark Antony and Cleopatra.

Acton Borough of Middlesex. It can be reached by the L.M.S., G.W. and District Rlys. The industries include factories for making motor cars, aircraft engines, etc., printing, dyeing works, and laundries. At one time Acton, which became a borough in 1921, was noted for its medicinal springs. Pop. (1931) 70,523.

Acton **Lord.** English historian. John Emerich Dalberg Acton, was born at Naples, Jan. 10, 1834, his father being Sir J. F. E. Acton, an English baronet in the service of the King of Naples. He spent most of his time in studying and writing, and was a Liberal M.P. from 1859-65. In 1869 he was made a baron. In 1895 he was chosen Professor of Modern History at Cambridge, and he died June 9, 1902. His famous library was presented to Cambridge University.

Acts of the Apostles Fifth book of the New Testament. It is regarded as having been written by S. Luke about A.D. 65. It relates the history of the Christian Church just after the Crucifixion and an account of the journeys and preachings of S. Paul with whom Luke was associated.

Actuary One who works out numerical calculations. These deal largely with averages and insurance charges.

Actuaries are employed by the big Insurance Companies, and also by the Government for Health Insurance and other purposes. The profession is under the control of the Institute of Actuaries in England and the Faculty of Actuaries in Scotland, the qualifying examinations of the societies entitling the successful candidate to the letters F.I.A. and F.F.A. respectively. Particulars of training and fees can be obtained from the Institute of Actuaries, Staple Inn Hall, Holborn, London, W.C.1, or the Faculty of Actuaries, 14 Queen Street, Edinburgh.

The Fellowship of the Institute of Actuaries or of the Faculty of Actuaries does not of itself entitle the holder to increased remuneration, as in most businesses payment is made for the class of work done rather than for the qualifications held. As a rule, however, an Actuary is of great use in various departments of insurance, and even if he does not obtain an official position he will hold a position of some responsibility.

As regards remuneration the salary of an Actuary, when he is the principal officer of a company, is usually between £1500 and £5000, but may, of course, be considerably more in the very largest companies.

Adalia Seaport of Turkey, on the Gulf of Adalia, a bay of the Mediterranean, 200 m. from Smyrna. It was one of the most important ports of the Levant in the Middle Ages and still does a certain amount of trade. Pop. 12,310.

Adam First man, according to the Bible story (Genesis i-v). He was the husband of Eve, and the two became the parents of the human race. Modern scholars regard the story as an allegory, and similar stories are found in the literatures of other early peoples.

Many places and things are called after Adam. A part of the larynx that may be seen bulging out in the neck is called **Adam's Apple.** **Adam's Needle** is a name given to some species of yucca, a flowering plant, not unlike the lily, that grows in the hotter parts of America. Its leaves are used as fibres for cloth, etc.

ADAM'S BRIDGE is a line of rocks and sandbanks between India and Ceylon. It is 17 m. long and at high tide is covered with water.

ADAM'S PEAK is a mountain in Ceylon. On it can be seen an impression resembling a huge foot, and here it was thought that Adam stood for many years. Others believe the mark was made by Buddha.

Adam **Robert.** Scottish architect. Born at Kirkcaldy in 1748, he studied architecture in Italy, where he was for eight years, and then settled in London. He built Lansdowne House in London, Osterley Park, Middlesex, Ken Wood, Hampstead, and many other residences, but more remarkable perhaps are the staircases, chimney pieces, chairs and other furniture which he designed. A room decorated and furnished by Adam cannot be surpassed for grace and beauty. Adam had three brothers, James, John and William, and the four built the part of London called the Adelphi. Robert died in London, March 3, 1792, and was buried in Westminster Abbey.

Adamant Name given to emery from Naxos. This was because of its unusual hardness, and since then anything exceptionally hard has been known as adamant.

Adamnan Irish saint. He is known because he wrote the *Life* of S. Columba. This has been translated from Latin into English and contains some valuable information about early days in Britain. He lived mainly at Iona, being abbot of the monastery there until his death, Sept. 23, 704.

Adams **John.** English sailor. He took part in the famous mutiny on the ship *Bounty* in the South Seas in 1789. Having married in Tahiti, he, with some others, settled on Pitcairn Island where he lived until his death in 1829. His real name was Alexander Smith.

Adams **John.** American president. A farmer's son, he was born in Massachusetts, Oct. 30, 1735, and became a lawyer. He came to the front during the trouble with Great Britain over the Stamp Act and had a share in the events that followed, ending with the declaration of independence and the peace treaty of 1783. He was head of the war department in Washington's cabinet and was American Minister in London, 1783-88. From 1789-96 he was vice-president, and in 1796 he was elected president in succession to Washington, but in 1800 he was beaten by T. Jefferson. He died July 4, 1826.

Adams **John Quincy.** American president. He was born at Quincy in Massachusetts, July 11, 1767, and finished his education in Europe. From 1794 to 1802 he was in Europe, representing the U.S.A. at several capitals in turn, and from 1803 to 1809 was a senator. From 1809-14 Adams

was at S. Petersburg, and from 1815-17 in London. He next held the post of secretary of state under Monroe, when he was largely responsible for putting forward the Monroe doctrine, and in 1825 was chosen president. He was beaten, however, in 1828, and died, Feb. 23, 1848.

Adamson **William.** Scottish politician. Born in 1863, he worked in the coal mines of Fifeshire until 1902 when he became secretary of a trade union. In 1908 he was made general secretary of the Scottish miners, and in 1910 was elected M.P. for West Fifeshire. In 1917 he was chairman of the Labour Party in the House of Commons, and in 1924 Secretary for Scotland. He held the same post in the second Labour Government, 1929-31, but in Oct. lost his seat in Parliament.

Adana Town of Turkey, on the River Sihur, about 30 m. from the Mediterranean Sea. Cotton goods, wool, wine and other commodities are sent for export to the port of Mersina. Pop. 72,577.

Adaptation Modification in an animal or plant, or in any of its parts and organs, that enables it to live under the conditions that surround it. The skull of a negro has been adapted to stand great heat, and the eyes of the owl to see in the darkness. It is a very gradual process and its results only become noticeable after a long series of generations, through perhaps millions of years.

There are two theories of adaptation. Lamarck thought that animals, plants and their parts and organs became adapted to changed conditions through use or disuse or perhaps injury. These adaptations were then handed on from one generation to another. Darwin taught that only those animals and plants that adapted themselves to their conditions survived —those that did not do so died out.

Addax Kind of antelope found in the deserts of Arabia and Northern Africa. It is about three feet high and has twisted horns, sometimes nearly three feet long, and in winter grows a beautiful mane.

Adder *See* VIPER.

Addington District of Croydon. There was a palace, once a residence of the Archbishops of Canterbury. It was built in 1772, probably on the site of the manor house of the village, and in 1808 was bought for the archbishop. In 1902 it was sold and it is now a country club with a golf course attached.

Addis Ababa Capital of Abyssinia, in a mountainous district 8000 ft. above sea level. In 1885 the Emperor Menelek made it his capital and built a palace here; previously it was only a collection of mud huts. A railway line goes from here to the Red Sea. Addis Ababa was the objective of the Italian forces in the Italo-Abyssinian War (1935-). Pop. 60,000.

Addiscombe Suburb of Croydon. It is notable because from 1812 to 1861 the East India Company had a college here for training officers for its army. This has now been pulled down and the district is covered with houses.

Addison **Christopher.** English politician. Born at Hogsthorpe, Lincolnshire, June 19, 1869, he was educated at Harrogate and in London, and became a doctor. As lecturer at S. Bartholomew's Hospital, professor at Sheffield, and Hunterian Lecturer, he won a high reputation as an authority on anatomy, but soon he turned his attention to politics, and was concerned in preparing the Health Insurance Scheme. In 1910 he was elected M.P. for Hoxton as a Liberal, and in 1914 he became secretary to the Board of Education. Under Mr. Lloyd George he was Minister of Munitions and Minister of Reconstruction, and he was president of the Local Government Board when, in 1919, it became the Ministry of Health. Having put forward a housing scheme, he left office in 1921, lost his seat in Parliament, and broke away from Lloyd George. He then joined the Labour Party and in 1929 was elected M.P. for the Swindon Division. In the Labour Ministry he was made secretary to the Ministry of Agriculture in 1929 and became head of the department in 1931. In Aug. he resigned office and in the following Oct. lost his seat in Parliament.

Addison **Joseph.** English essayist. The son of a clergyman, Rev. Lancelot Addison, he was born at Milston, Wiltshire, May 1, 1672. He was educated at Lichfield, where his father became dean, at the Charterhouse, London, and at Oxford. He became a Fellow of Magdalen College, where Addison's Walk is still a reminder of his residence at the university.

Having left Oxford, Addison was fortunate enough, through his friends, to obtain a pension, on which he travelled in Europe for four years. He then returned to England and for the rest of his life was an active Whig politician. In 1704 he was made a commissioner of the excise and from 1708-11 was secretary to the Lord-Lieutenant of Ireland, a post which he again filled in 1715. In 1717-18, he was a secretary of state. From 1710 to his death he was M.P. for Malmesbury; he also sat in the Irish Parliament. In 1710 Addison married Charlotte, the widowed Countess of Warwick. He died in London, June 17, 1719, and was buried in Westminster Abbey.

Addison wrote Latin verses at Oxford, in 1704 a poem on Blenheim and later several plays, only one of which, *Cato*, was a real success. But his name lives in his essays, which show him as one of the great masters of English prose. They appeared chiefly in the *Spectator*, founded by himself and his friend, Richard Steele, and the *Tatler*. Addison created the character of Sir Roger de Coverley.

Addison's Disease Disease of the suprarenal glands situated on top of the kidneys. Named after Thomas Addison, the Guy's Hospital physician (1793-1860) who first described it, this is usually associated with consumption. Its signs are a general feeling of weakness, then irritability of the stomach and feebleness of the heart. The skin becomes brownish and the sufferer thin and listless, as in anæmia. It is rarely cured, though in recent years the administration of suprarenal extract has been attended with hopeful results.

Addlestone Town of Surrey. It is 19½ m. from London and is reached by the S. Rly. Its industries include motor-car, printing and leather dressing works. It is in the parish of Chertsey, and a suburb of Weybridge. Pop. 8000.

Address In Parliament, thanks sent to the king by each house at the opening of each session for his speech. The custom is for two private members to move and second the Address and in the debate that

follows the opponents of the Government can call attention to its failures and mistakes. They usually do this by proposing an amendment to the Address. If the House of Commons agrees to an amendment to the Address, as it did in 1924, the Government must resign.

Addressograph Machine used for addressing envelopes, wrappers, etc. Each address is engraved on a plate. The plates are fed into the machine one by one and after the addresses have been printed are returned to their drawers.

Adelaide Capital of South Australia. It is eight miles from the sea, where is its port, Port Adelaide. The river Torrens, which has been made into a lake, runs through it. The principal buildings are the Parliament House, and those used by the Government, the city hall and two cathedrals, one Roman Catholic and the other Church of England. The city is laid out in modern style, with wide streets and many parks and other open spaces. Here are the headquarters of the important Bank of Adelaide, founded in 1885. The university was founded in 1874.

As the business centre of the state Adelaide has a large trade in wheat, fruit, wool, wine and copper, and is an important railway centre. Its market for mining shares is notable. Pop. (1931) 324,337.

Adelaide English queen, the wife of William IV. She was born in 1792, being the daughter of the duke of Saxe-Coburg-Meiningen. In 1818 she was married to William, then duke of Clarence, but the pair had no children. She was queen for seven years and queen dowager for twelve, but was never popular. Adelaide died at Bentley Priory, near Stanmore, Middlesex, Dec. 2, 1849. A street in London was named after her, and in this way **Adelaide House,** the great building near London Bridge, got its name.

Adelboden Health and pleasure resort in Switzerland. It is in the canton of Berne, over 4000 feet high, and is beautifully placed amid the mountains. The mineral springs are good for certain complaints, and winter sports are held here.

Adelphi District in London. It was laid out by Robert Adam and his brothers and is named from *adelphos,* the Greek for brother. It is between the Strand and the Thames, and its chief buildings, overlook the river. It is now (1936) being pulled down. The **Adelphi Theatre** is in the Strand, just outside the Adelphi proper.

Aden Town and territory of Asia, both British possessions. The town stands on a little peninsula in Arabia, just at the entrance to the Red Sea, and is chiefly used as a coaling and calling station by ships going to and from the East by the Suez Canal. It has a good harbour and facilities for loading the coal and handling the goods that come from East Africa to be transhipped here. Otherwise the chief industry is obtaining salt from the sea water. The settlement, which consists of the town, the surrounding district and the island of Perim, covers 75 sq. miles and has (1931) 48,338 inhabitants.

The protectorate, which is on the mainland of Arabia, covers about 42,000 sq. miles and is governed from India. A railway runs from Aden into the interior. Aden belonged to the Turks and then to an Arab tribe until 1839, when Great Britain took it as the Arabs there were doing great damage to her shipping. It became of great importance with the opening of the Suez Canal and in 1905 the boundaries of the Protectorate were marked out. There was fighting here during the Great War and part of it, including Lahej, the chief town after Aden, was taken by the Turks, who did not restore it until the peace of 1918. In 1932 the Protectorate was separated from Bombay and placed under the direct control of the Government of India.

The **Gulf of Aden** is a branch of the Indian Ocean leading up to the entrance to the Red Sea.

Adenoids Excessive growths of lymphoid tissue at the back of the nose which interfere with respiration, and also cause general ill-health, should be suspected in children who habitually breathe through the mouth, who snore, who are deaf, or who suffer from recurrent attacks of nasal or bronchial catarrh.

The best informed opinion of to-day holds that most cases of adenoids are related to rickets and are due above all other causes to vitamin deficiencies in the diet. Adenoids have to be removed by an operation, which cannot generally be performed under five years.

Adige River of Italy. It rises in the Tirol and is about 250 miles long. It enters the Adriatic near Chioggia, making a joint delta with the Po. Near the mouth it has been canalised and linked with the Po. Verona and other towns stand on it.

Adipocere Curious substance. It is formed by allowing animal fat, such as butter, to decompose, when it becomes hard and rather like wax. This is done by burying it in damp earth or in water, or it may be done accidentally. In England the decomposition takes about twelve months. In warmer countries the change is more rapid.

Adirondacks Mountains in the state of New York. They lie between Lake Champlain and the S. Lawrence and are a very beautiful stretch of country. The highest is Mt. Marcy, 5344 ft. There are many small lakes in the district and the extensive forests make it a popular holiday resort. Part of the district is a state reserve, covering some 4000 sq. m.

Adjaria Soviet republic in the Caucasus, and part of the larger Soviet republic of Georgia. The capital is Batum.

Adjudication In English law word used for the act of declaring a man a bankrupt. It can only be done in a bankruptcy court, which for this purpose is usually the county court, and the judge must be satisfied that there is good reason for taking the step. Until it is done, the debtor, however much in debt, is not legally a bankrupt. *See* BANKRUPTCY.

Adjutant Bird very like a stork. It is about six feet high when standing and its wings from end to end extend for 14 or 15 feet. It has a bald head and a hanging pouch and feeds on dead and decayed matter; also on small fish and snakes. Owing to its utility as a scavenger it is protected in India, where it is chiefly found, by law.

Adjutant Officer in the British army. Each battalion, cavalry regiment, battery or other unit has an adjutant who is responsible for the secretarial duties, such as keeping the rolls and records and dealing with the correspondence. He also looks after the recruits, arranges the routine work

and in general assists the commanding officer whose orders are signed by him. The adjutant is chosen from among the officers.

The **Adjutant General** is one of the heads of the army. He is a member of the army council and the chief of the department looking after the supply of men, medical services, etc.

Admetus Greek hero. He joined in the Calydonian boar hunt and the voyage of the Argonauts. His wife was Alcestis. When he was ill the Fates promised Apollo that Admetus should live for ever if someone else agreed to die for him. Alcestis did so, and one account says she was brought back from Hades by Hercules.

Administrator Legal term. If a person dies without a will, or does not leave an executor, it is necessary for someone to look after property left by him or her. To do this a relative, if possible the nearest, should take out letters of administration and so become the administrator. He should apply at Somerset House, London, or at a Probate Registry, if he lives in the country, and must sign a bond that he will act according to law. He can then divide up the dead person's property according to the law concerning intestate estates.

Admiral Naval officer of high rank. It means commander of the sea, and was first used about 1300. All navies have admirals and at one time the British navy had a lord high admiral. To-day there are four kinds of admiral; admiral of the fleet, admiral, vice-admiral and rear-admiral. They are called flag officers and their rank is shown by the number of rings on the cuffs. They wear respectively four, three, two or one, with a curl attached to the last one. There are also one or two honorary admirals, such as the lord mayor of London, who is admiral of the port of London.

Admiralty **Board of.** Department that controls the British navy. Other countries have similar bodies, but such are usually known as the ministry of marine. It came into existence in 1628 to carry out the duties of the lord high admiral. In 1831 it took over the duties till then discharged by the navy board and the commissioners for victualling and since then has been responsible for the whole work of the navy. To-day the board consists of a first lord, who is a member of the Cabinet, and two other politicians, the civil lord and the financial secretary. Five sailors are on it, the first, second and third Sea lords and the deputy chief and assistant chief of the naval staff. The first lord has a salary of £4500 a year and a house, less a reduction made in 1931. The headquarters are in Whitehall, London, S.W.

Until 1875 there was a separate court of admiralty, which dealt with matters concerning ships and cargoes. This is now part of the probate, divorce and admiralty division of the High Court. Scotland and Ireland had also courts of admiralty.

Admiralty Is. Group of islands to the north of New Guinea. They are governed by Australia under a mandate from the League of Nations. Manus is the largest and the inhabitants are Papuans. The islands cover 600 sq. m. and are full of coconut trees. The Dutch discovered the islands in 1616. They were a German possession from 1885 to 1914 when they were taken by an Australian force. Pop. (1930) 14,067.

Adobe Spanish word for a brick dried in the sun. Adobes are made of mud with chopped straw added to it, and are much used in hot countries. The straw prevents the bricks from cracking. The bricks used in ancient Egypt were of this kind.

Adonijah Son of David. He claimed to be his father's heir. Joab and Abiathar supported him, but the old king, persuaded by Bathsheba, caused Solomon to be anointed as the next ruler. He then pardoned Adonijah, but after his death Solomon had him killed.

Adonis Greek god. The Greeks thought of him as a youth of exceptional beauty and as loved by the goddess of beauty, Aphrodite. He was killed by a wild boar at the request of the goddess.

Adoption Taking permanent charge of someone or something. In Greece and Rome persons could legally adopt the children of others and many did this in order to prevent their families from dying out. Children can be adopted in Great Britain, and there are in London at least two societies that exist to find homes for parentless and unwanted children, but until 1926 there was no law on the subject. Since 1926, however, an adopted child can be put in exactly the same position as regards name, inheritance, etc., as a natural child. The conditions are that an adoption order must be made by a judge or magistrate and that the adopter must be at least 21 years older than the adopted child. A register of adopted children is kept at Somerset House, London.

After the World War devastated towns in France and Belgium were adopted by British towns, the idea being that the adopter would help to repair the damage done.

Adowa Town of Abyssinia, also called Adua. It is the capital of the province of Tigré and a trading centre. Near here, on March 1, 1896, the Abyssinians defeated the Italians in a famous battle, for which the Italians avenged themselves by the capture of Adowa in 1935, during the Italo-Abyssinian War. Pop. 5000.

Adrenalin Powerful astringent. It is used to stop bleeding, as it causes the arteries to contract. It is a brown powder with a bitter taste, obtained from the suprarenal endocrine glands situated on top of the kidneys. Its use was discovered in 1901.

Adrian Name of six popes. Adrian IV. is noted as the only Englishman who has ever been pope. His name was Nicholas Breakspear and he was born at Langley in Hertfordshire. He became a monk and was head of a monastery in France, where he was made a cardinal. He was pope from 1154 until he died at Anagni, Sept. 1, 1159.

Adrianople City of Turkey, called also Edirne. It stands at the union of the Maritza and the Tunja, about 140 miles from Istanbul, with which it is connected by railway. It exports silk, tobacco and manufactured goods. Pop. 35,000.

The city was rebuilt about 125 by the emperor Hadrian, who renamed it after himself. Later it was taken by the Turks and from 1361 to 1463, when they got Constantinople, it was the capital of their empire. In 378, near here, the Goths defeated the Romans in a great battle, the victory being chiefly won by the Gothic horsemen. In 1913 the city was taken, after a long siege, by the Bulgarians

and Serbians; but the Turks recovered it and have since retained possession.

Adriatic Sea Branch of the Mediterranean lying between Italy and Yugo-Slavia. The western and northern sides of the Sea are Italian; the eastern side belongs to Yugo-Slavia and Albania. It covers just over 50,000 square miles and is nearly 500 m. long. The chief ports are Brindisi, Ancona, Venice, Trieste, Fiume and Pola belonging to Italy; Ragusa and Cattaro belonging to Yugo-Slavia and Durazzo and Avlona belonging to Albania. The western coast is unbroken; the eastern, sometimes called the Dalmatian, is lined with islands.

Adullam Name of a cave in Palestine. Here David, when threatened by Saul, took refuge and was joined by a number of discontented persons (1 Sam. xxii). The Liberals who, in 1866, left their party rather than agree to parliamentary reform, were likened by John Bright to these men, and called **Adullamites**. Their leader was Robert Lowe, Viscount Sherbrooke.

Adult Person 21 years old and over. An adult, unlike a minor, can do as he likes as regards marriage and dealing with money, provided he does not break the law.

Adult Schools are schools where, usually on Sundays, men and women are taught. They exist in many cities and towns of Great Britain, often being conducted by members of the Society of Friends. The British Institute of Adult Education is at 39 Bedford Square, London, W.C.1.

Adulteration Mixing a substance with an inferior or impure one. In Great Britain it is illegal to adulterate food and drink, that is to mix it with something of inferior quality. For example, wheat flour can be adulterated with flour made from maize or rice, butter with margarine, jam with vegetable pulp, cream with preservatives and milk with water.

Various Acts of Parliament have been passed to stop adulteration, and inspectors are appointed by the county and borough councils to visit shops and examine the articles sold. An inspector can buy a sample of anything he thinks is adulterated and have it analysed. If the analyst finds it is adulterated the offender can be heavily fined.

Adultery Sexual intercourse by husband or wife with some other person. The offender may be quite innocent, for instance may think his or her wife or husband is dead, but it is always adultery until the marriage tie is dissolved by death or otherwise. In English law a man can obtain a divorce if his wife has been guilty of adultery, but before 1923 a wife could not obtain one for adultery alone. Since 1923, however, the sexes have been equal in this matter.

Advent The four weeks before Christmas Day, *i.e.* the period just before the birthday of Christ. It is reckoned from the Sunday nearest S. Andrew's Day (Nov. 30). The Anglican Church and the Roman Catholic Church regard Advent as the beginning of the ecclesiastical year, and as a time of solemn preparation for Christmas. The **Second Advent** is the expected coming of Christ and the end of the world.

Advertising Term used for the business of making known the merits of the goods or services that a trader has for sale. It is also known as publicity. These include not only articles of food and drink, clothing and furniture, but railway, shipping and other services, banking and insurance benefits, indeed almost everything that man and woman can need. Professional rules forbid medical men, solicitors, accountants and stockbrokers from advertising; but it has extended to almost every other trade and profession.

Advertising includes notices in the newspapers, posters on the walls and in vehicles, catalogues and circulars sent by post, leaflets delivered in the streets, samples given away, window dressing, electric signs, sky writing, etc.

Advertising agents are firms, many of them very large, who arrange advertising for business houses. Further, most large firms keep an advertisement manager who, with his staff, controls the firm's advertising. **Advertising consultants** are experts who confine themselves to giving advice about the best way of advertising.

Until 1853 a duty on newspaper advertisements retarded the growth of advertising in Great Britain. The removal of this duty helped its development, but a greater impetus came from improvements in printing which enabled illustrations to be used on a lavish scale.

By law an advertisement becomes a contract as soon as a member of the public accepts the offer made to him. The goods must be of the nature described, or the buyer can obtain damages. The law of copyright is also of interest to advertisers, whose writings and drawings are protected by it. Under the town planning acts local authorities have the power to prevent the appearance of advertisements that disfigure the landscape. Indecent advertisements are illegal in Great Britain.

Advertising clubs are The Thirty Club, The Aldwych Club, The Regent Club, etc., and the chief association is the Advertising Association at 10 Fleet Street, London, E.C.4. The chief papers for the trade are *The Advertising World* and *The Advertisers' Weekly*. There are also international advertising organisations and world conferences are held from time to time.

ADVERTISING AS A CAREER is of comparatively recent origin; but it is of continually increasing importance, affording interesting, varied and remunerative posts for both men and women.

Such is the scope of advertising, the personal qualifications for success cannot be pinned down, but whoever would rise to the top of the tree, must have quick wits, be interested in his business, both in and out of business hours, and have the capacity to work hard. Successful advertising is based on a knowledge of marketing methods, economic conditions, and the mode of living and spending capacity of mankind, as well as on the ability to write copy and an understanding of type faces and printing processes.

The best way to enter the advertising profession is to go as a junior into an advertising agency, or into the advertising department of a manufacturer, store or newspaper. The salary paid at the outset is purely nominal, but it takes six months to a year before a junior becomes reasonably useful.

During this period of training, the junior may study for the Advertising Association's Examinations at one of the Schools of Commerce or Technical Colleges where the syllabus is taught. These comprise a Preliminary (certain examinations exempt from this); an Intermediate consisting of:

Division A
English; Psychology; Principle of Accounts or Advertising Administration.
Division B
Reproduction; Media; Layout and Commercial Art; Direct Mail Advertising or Market Research

and a Final which entails an advanced knowledge of Economics, Psychology and Advertising practice in all its spheres. The Intermediate and Final can each be taken in two parts as the Examinations are held annually. These examinations are rapidly becoming the hall-mark of the trained Advertising man.

Salaries in Advertising are progressive and higher than in some professions, their present tendency, however, is to fall. Senior agency positions are usually worth from £500 to £1000 per annum, or, in exceptional circumstances, higher. The advertising manager of a newspaper earns from £500 to £2000 per annum according to the status and circulation of his paper. The salaries of advertising managers of Trading Companies vary according to the amount of advertising done by their firms and under their control; these range, therefore, from £250 to £1500 per annum, but the higher figure is exceptional.

Advocate In Scotland a lawyer, corresponding to the barrister in England. To become one a man must join the Faculty of Advocates and pass certain examinations. No person, unless he is an advocate, can plead in the higher courts of law. The Faculty, which was founded in 1562, possessed a wonderful library, which, in 1925, became the National Library of Scotland. Its head is the dean. The library was in Parliament House, Edinburgh, until a new building was erected for it.

Advowson Right of presenting a clergyman to a living in the Church of England. Its owner is the patron of the living. He may be the king, a bishop or a private person. The patron must not take money for presenting to a living, and advowsons can only be sold under certain conditions. In 1923 a measure was passed which made the advowson incapable of sale after two vacancies from the date of the measure.

Aeacus Son of Zeus by a nymph, Aegina. The Greeks believed the god Aeacus to be particularly just. After his death, therefore, Pluto made him one of the judges of the lower world.

Aedile Magistrate in Rome. The Aediles looked after the aedes or public buildings. Two in number, they were first appointed in 494 B.C.; two others were appointed in 366 B.C.

Aegean Sea Sea that lies between Greece and Asia Minor, a branch of the Mediterranean. It is about 400 m. long and 170 m. wide and in it are many islands. The wonderful civilisation that existed in Greece, Crete and elsewhere in that region before the time of the Greeks is usually called Aegean.

Aegina Island of Greece. About 40 sq. m. in area, it is in the Gulf of Aegina, an opening of the Aegean Sea, and is noted for the springs found there. On it is a small town called Aegina.

Aegir One of the Norse gods. He was the giant of the seashore. His wife was the storm goddess and his daughters the billows. The tidal wave on the Trent is called the aegir.

Aegis Originally a shield, especially one carried by Zeus and other gods. It came, therefore, to mean protection, and in this sense the word is now used.

Aegospotami River of Greece. The name means "river of the goat." Here in 405 B.C. a battle was fought between the Athenians and the Spartan navies, in which the Athenians were beaten and lost the mastery of the sea.

Aeneas Hero of Troy and the subject of Virgil's famous poem, the *Aeneid*. In 12 books this tells of his adventures. He escaped from Troy with his father Anchises and his son Ascanius and travelled to Italy, calling on the way at Carthage where he met Queen Dido. Later he married Lavinia, daughter of Latinus, King of Latium, and was regarded as the founder of the Roman state.

Aeneas Silvius Name by which Pius II. was known before he became pope. *See* PIUS II.

Aeolus King of Aeolia, one of the Lipari islands. He was the god of the winds, which he kept shut up in a cave in the mountains. He gave his name to the **Aeolian Harp.** This is a box across which wires or strings are stretched. If it is placed in a favourable position the wind will produce musical notes as it blows upon them. **Aeolian deposits** are deposits of sand and other materials brought in by the wind.

Aeration Method by which certain foods and drinks are aerated, or charged with carbonic acid gas. Bread is treated in this way, the gas being substituted for yeast. The manufacture of aerated waters is a considerable industry. The lemonade or other drink is made from essences and then the gas is forced into it by pressure.

Aerial Wire or wires used with wireless receiving sets in order to transmit or collect the electrical waves. The wire is supported at a height above the ground and insulated from it, except for a connection to earth through the transmitter or receiver. The insulators are pieces of non-conducting material used for fastening the aerial wire to its supports. They are generally made of glass or porcelain. A condenser or inductance, either fixed or variable, is connected to the aerial circuit of a transmitter or receiver in order to tune the circuit to a particular frequency. In Great Britain a private aerial for the reception of broadcasting must not be more than 100 feet long. Improvements have made it possible to do without external aerials in certain classes of receiving sets.

Aerodrome Term used for the area devoted to the arrival and departure of aircraft and the buildings associated therewith. It may consist of a hangar and workshop, or a large group of buildings such as exist at Croydon and Le Bourget. A modern aerodrome contains landing grounds properly marked and lighted with beacons and marked hangars for the machines, workshops for their repair, store rooms, wireless apparatus, etc. When passengers and goods are landed from abroad there must also be a customs station and a bonded warehouse. Waiting and refreshment rooms are also essential, as are offices and quarters for the staff. If airships are received there must be a mooring mast.

In Great Britain all aerodromes must be licensed and inspected by the Air Ministry.

Since the Great War they have been erected all over the country. In the London area the chief aerodromes are Croydon, Heston and Hendon. Manchester, Liverpool, Bristol, Nottingham, Blackpool and other cities and towns possess aerodromes and many others have been planned.

Aerodynamics Science concerned with the effect of air in motion, a complementary branch being **aerostatics.** It is of great importance to aeronautics as it examines the resistance offered by the air to bodies moving therein and the pressure exerted upon them. The results reached by experiments of various kinds are studied closely by aeroplane engineers and have much bearing upon the type of machine that is built. There is an aerodynamics department at the National Physical Laboratory, Teddington.

Aeronautics Science and practice of navigation in the air. It may be divided into two branches, one dealing with balloons and airships and the other with aeroplanes, as the principle on which each works is quite different. Balloons and airships rise and move because the air or gas within them is lighter than ordinary air; aeroplanes, on the other hand, find support through forces which produce relative motion. In many ways they are superior to airships, but they have one disadvantage; they cannot be stationary. Both use the internal combustion engine driven by petrol. The airship, being much larger than the aeroplane, can carry much greater loads.

The practice of aeronautics, which is sometimes called aviation, may be divided according to the use to which the machines are put. The most important branch is *commercial flying*, and there are now air routes over which passengers, and, to a limited extent, goods, are carried to all parts of the world. Letters are also sent by air and a regular system of air mails is in operation.

In 1932 there were in use 136,000 miles of air lines, and during the previous year 600,000 passengers and 13,000 tons of goods were carried over them. In these services about 2000 machines are employed. The chief company in Great Britain is Imperial Airways, Ltd., which has daily services to Paris and other cities and regular services to India and still farther afield.

Associated with commercial flying is the use of aircraft for photography and surveying. The exploration of the Arctic and Antarctic areas has been much helped in this way.

The second branch is *military aeronautics*. This was developed to an enormous extent during the Great War, when thousands of machines were built for active service, and to-day each of the great countries, unless forbidden to do so by treaty, maintains an air force. In Great Britain the force was at one time divided into a military and a naval section, but later both were united as the Royal Air Force (*q.v.*). The navy, however, has its flying boats and seaplanes, as well as aircraft carriers.

The third branch is *flying as a sport*. This has a direct bearing on the scientific side of the subject, as by it engines are tested and better types evolved. To encourage this branch various prizes are offered, such as the King's Cup and the Schneider Trophy. One of its developments is the establishment of aeroplane clubs, another is the introduction of flying pageants.

The workers employed in aeronautics may be divided into several classes. First come the engineers and scientists who experiment with engines and designs. Some of these are in the works, others at the National Physical Laboratory, while a few are professors and students at universities and colleges. Next come the builders of the machines. These may be employed by the Government in the royal aircraft factory, or by private firms, several of which are concentrated at Cowes, or in the making of engines for aircraft at Derby, Acton, or elsewhere. Another class consists of the men who actually fly the machines, pilots and observers. They must pass certain tests and obtain a certificate of competency from the Air Ministry. Some of these are members of the air force, others are private individuals either employed by an air line, or persons flying for pleasure. Finally, there are the men employed at the aerodromes and landing grounds in looking after the machines and their accessories. Many of these are trained mechanics.

The possibility of flying was long present in the human mind, even before Leonardo da Vinci experimented with it in the 15th century. The first successes were with balloons and the first successful experimenters were two Frenchmen named Montgolfier. In 1783 ascents were made both in France and the United States, with passengers. These early balloons were round and were filled with hot air, or hydrogen.

The next important step was to make a balloon, elongated or cigar-shaped, instead of round. One of these was built in England in 1834, and a more successful one in France in 1852, and after various experiments a method of directing them was evolved. Power was furnished by steam, later by gas and electricity and finally by petrol, and they did good service in the Franco-German war.

In 1897 a machine of sheet aluminium over a metal framework was built, and this may be regarded as the first airship, as distinct from the balloon. It was of the rigid type, and during the next few years both it and the non-rigid type were greatly improved, the latter owing a good deal to the genius and perseverance of Santos-Dumont. The next great development of the rigid airship was the building of the first Zeppelin in 1899. These and other mammoth airships were used during the Great War and afterwards for commercial purposes, but the results have been rather disappointing. Disasters, the most notable being the loss of R101 in 1930, have been frequent.

In 1843 an Englishman named Henson flew in an aeroplane driven by a small steam engine, a successor to one built by Sir G. Cayley in 1810. Other experimenters were Otto Lilienthal, Clement Ader, Sir H. Maxim, the American Langley, and then came the brothers Wright.

In Dec. 1903, the brothers Wilbur and Orville Wright rose 852 ft. in a machine driven by a petrol engine. The possibility having been proved, progress was rapid. In 1909 Bleriot flew across the English Channel, and Henry Farman flew 118 miles in three hours. The Great War led to fresh developments, and when it ended machines capable of great speeds were in existence. In 1931 a British officer travelled in a seaplane at 408.8 m. per hour in a demonstration flight, and in 1933 Warrant Officer Agello, of the Italian Air Force, made the record air speed of 423.76 m.p.h.

The distances flown tell the same story of progress. In 1919 Sir J. Alcock and Sir A. Whitten-Brown made the first aeroplane flight across the Atlantic. They took 16 hrs. 12 min. In June, 1930, Kingsford Smith crossed the Atlantic, the other and more difficult way (east to west), in 32 hrs. 12 min. Other notable non-stop flights were Captain Lindbergh's New York to Paris (solo), 3639 m. in 33½ hrs., Miss Earhart's solo flight from Newfoundland to the Irish Coast in 13 hrs. 15 min., and the 4984 m. from New York to Constantinople in 49 hrs. by Boardman and Polando. The greatest height to which a machine has reached is 47,349 ft. (1933). Of the flights by stages the most remarkable have included Sir Alan Cobham's 28,000 m. from England to Australia and back in 230 flying hours, and the feat of Amy Johnson (Mrs. J. A. Mollison), who did 9960 m. to Australia in 19 days. In 1933 Charles Ulm, the Australian airman, flew from Britain to Australia in the record time of 6 days 17½ hours, beating Kingsford Smith's record (made nine days previously) by 10 hours 54 minutes. In 1934 this record was smashed by Scott and Campbell Black (Gt. Britain), who flew from England to Australia in 2 days 22 hours 58 minutes.

Other notable flights were the Mount Everest flight in 1933, and (also in 1933) Wiley Post's solo flight round the world in 7 days, 18 hours, 49½ minutes.

Developments were made in the types and sizes of machines. Airships attained immense proportions; sumptuous aeroplanes to carry 38 passengers were built, while for special purposes the flying boat and the seaplane, both developments of the aeroplane, were perfected.

In Great Britain the chief society is the Royal Aeronautical Society at 7 Albemarle Street, London, W. There is an Institute of Aeronautical Engineers at 60 Chancery Lane, London, W.C., and a paper, *The Aeroplane*, is published in the interests of the science. International flying is controlled by the *Federation Internationale Aeronautique*. *See* AEROPLANE; AIRSHIP; FLYING BOAT; SEAPLANE, etc.

Aeroplane Popular type of flying machine. It works on the following principles. A certain thrust is necessary before it can overcome the air resistance and the minimum speed at which this is possible is the starting speed. When this speed is reached the pressure of the air underneath the wing and the suction of the air enable the plane to rise. When it is flying level the total lift of the air must be equal to the total weight of the machine and it will rise or fall according as the weight is smaller or greater than the total lift. The resistance made by the weight of the machine depends on the horse-power developed by the engine.

Aeroplanes have two, four or six planes or wings, and are therefore known as monoplanes, biplanes and triplanes. Triplanes are not much used. Each of the other types has its particular advantage. The monoplane offers less resistance to the air and therefore needs less horse-power. The biplane is more stable and will carry the greater load. The seaplane and the flying boat are developments of the aeroplane.

The wings or planes, cambered or curved like the wings of a bird, are the lifting spaces of the machine. Some are fitted with slots, a device invented by F. Handley Page to secure greater safety. A rudder, like that of a ship, and other controls are provided for the pilot for controlling the machine. The rudder controls direction. Longitudinal control is secured by elevators placed at the pilot's rear, and lateral control by ailerons, or flaps, fixed to the main planes. Other essentials are the engine, some with many cylinders, the supply of oil, the screw or propeller, called the tractor or the pusher according to its position, and the gyroscope, and other devices for keeping the machine on an even keel. The body of the aeroplane, called the fuselage, contains the compartment for the pilot and observer, and accommodation for passengers and goods.

Aeroplanes are usually made of wood which is covered with fabric and then painted with dope or varnish. Metal machines, however, are being built of duralumin.

The largest aeroplanes carry 39 passengers and a considerable load, and fly at as much as 170 m. an hour, but improvements are continually being made. In 1932 a fighting biplane was built which can ascend to over 20,000 ft. and travel at over 200 m. an hour. A new high-speed monoplane was built in Manchester in 1933—so far the largest passenger air liner ever built. Flying boats and seaplanes carry heavier loads and seaplanes have developed much greater speeds.

Aerostatics Science of the equilibrium and pressure of the atmosphere. It is thus of the highest importance in aeronautics. A balloon, or airship, can be kept in the air if it is filled with a gas that is lighter than air, provided the weight of the whole vessel is lighter than the volume of air it displaces at ground level. This means that the envelope must be light. Air weighs 16 lb. per 200 cubic feet, coal gas only weighs 8 lb. and hydrogen only 1 lb. Helium is slightly heavier than hydrogen. An airship filled with coal gas, hydrogen, or helium, however, will rise until it reaches a point where the air without is light enough to prevent its farther ascent.

Aerschot Town of Belgium. It is on the little River Demer, 22 m. from Brussels. In Aug. 1914, it was entered by the Germans who did a good deal of damage before they were driven out. On Sept. 9 they captured it again and it was in their hands until Nov. 1918. Pop. 8000.

Aeschines Greek orator. Born about 389 B.C., he lived at Athens, where he was contemporary with Demosthenes. His greatest speech was the one in which he opposed the suggestion to give a golden crown to Demosthenes, who replied in the famous oration *De Corona*. He died in 314 B.C.

Aeschylus Greek dramatist. He was born in 525 B.C., at Eulisis and fought in the Greek army at Marathon. He died at Gela in the island of Sicily in 456 B.C. Before Marathon, Aeschylus had competed for the prizes offered at Athens for a drama and in 484 he was successful. For these prizes and on other occasions he wrote 70 tragedies, but only seven are extant. These rank with the greatest literature in the world. The seven plays are *Agamemnon*; *Choephori* and *Eumenides*, *Prometheus Vinctus* (Bound), *The Suppliants*, *The Persians* and *The Seven against Thebes*.

Aesculapius Greek god of medicine, also called Asclepios. He showed his power by raising the dead and so aroused the anger of Zeus, who killed him with a thunderbolt. He was placed among the stars. Aesculapius, who is mentioned by Homer, may have been an actual personage.

His symbol was a staff with a serpent twisted round it.

Aesir Name for the gods and goddesses in Scandinavian mythology. They lived together in Asgard and carried on a struggle against the powers of evil. The chief of them were Thor, Balder, Frey and Loki.

Aesop Greek fabulist. He was born in Phrygia and was for a time a slave in Samos. Later he went to Lydia, where he was employed by Crœsus. He was killed when on a visit to Delphi because his remarks had angered the priests. Aesop was renowned as a wit. The extent of his share in the collection of fables called after him is unknown. Most of them were in existence before his time, but he may have collected and added to them.

Aesthetics Theory or philosophy of taste, or of the perception of the beautiful in nature or art. Its object is to examine the ideas of beauty which have prevailed in all ages and to find out, if possible, the fundamental principles on which such ideas rest. Its first great exponents were the Greeks, especially Plato and Aristotle. Its study was revived by German thinkers in the 18th century, Lessing and Schiller among them. Since then a great deal has been written about aesthetics, the chief modern writer being Benedetto Croce.

Most authorities agree with Plato that, behind the changes due to the progress of time and the differences of race, there is in the mind of man an idea of beauty that is absolute, and exists quite apart from all considerations of time and space. One of its essentials is harmony; another is truth, fidelity to an ideal; and one of its tests is the giving of pleasure.

Aestivation Term used for the summer sleep of animals, the opposite of winter sleep, or hibernation. It seems to be confined to animals and fishes that cannot live in the dry conditions of summer. They therefore escape by finding a refuge in the ground and there sleeping. Certain fish and some kinds of tortoise do this.

Affidavit Written statement which the witness swears is true. It is much used in legal proceedings and the person who makes one must sign it and take an oath before a lawyer or magistrate that it is true. He is called the deponent. If it is not true, he can be prosecuted for perjury.

Affiliation Proceeding to fix the paternity of an illegitimate child. The father of an illegitimate child can be made to contribute towards its keep by means of an affiliation order. The mother must take out a summons against the man and show that he was the father. If the magistrates are satisfied they will make an order compelling him to pay the expenses of the confinement and a sum not exceeding 20/- a week.

Affirmation Statement used legally as a substitute for an oath. In Great Britain a person who, for religious or other reasons, does not wish to take an oath when he is giving evidence in a court of law or taking up a public position can affirm. In this case, instead of kissing the Bible after repeating the oath, he simply states that he will speak the truth, or serve the king loyally. In 1853 Quakers, who objected to oaths on religious grounds, were first allowed to affirm and in 1898 the same privilege was given to others, provided they declared that they had no religious belief, or that the taking of oaths was contrary to their religious belief. To give false witness after making an affirmation is perjury.

Afforestation Planting bare ground with trees. It should be distinguished from forestry, which is the care of the trees. Afforestation may be undertaken to replace trees cut down, or to provide a supply of timber, or to improve the climatic or æsthetic conditions of a district.

Until recently afforestation in Britain was left to private individuals. To-day it is supervised by the Forestry Commission. This body has planted 205,000 acres in Great Britain, including a considerable area called Breckland on the borders of Norfolk and Suffolk, and large tracts in the Highlands of Scotland. The trees chiefly planted are spruce, larch fir, and other coniferous trees, which grow much more quickly than do oaks and elms. *See* FORESTRY.

Afghanistan Kingdom of Asia. It lies between Indian territories ruled by Soviet Russia and Persia and covers 245,000 sq. m., but some of its boundaries are not very clearly defined. Kabul is the capital; other places of importance are Mazar-i-Sharif, Kandahar and Herat. It is under a king who is assisted in the government by a cabinet and national council. The people belong to a number of tribes, Afghans, Durani and Uzbegs among them, and in religion are Mohammedans. They speak Pushtoo, Persian or Turkish. A system of free education has been introduced.

Afghanistan is a mountainous country, especially in the north-east where are the peaks of the Hindu Kush, some being over 24,000 ft. high. The main routes to India are passes through the mountains, the chief being the Khyber from Kabul and the Bolan from Kandahar. The chief rivers are the Amu Daria, Murghab, Hari Rud, Helmund and Kabul.

In the valleys the soil is fertile and wheat, barley, rice, millet and other crops are grown, also a good deal of fruit. Many sheep are kept and wool and skins are the chief exports. There are some minerals and a few native manufactures. The country has no railways, its trade being done by canals, but in 1932 a line was begun from the Russian to the Indian border. The army, which has been reorganised, numbers about 72,000 men, recruited by a kind of conscription, and a small air force. The population is about 12,000,000.

Before the Christian era Afghanistan was divided into several states. Later it was conquered by the Persians and invaded by Alexander the Great. It was conquered by Turks about 980 and was afterwards part of the Mogul Empire. In 1747 Ahmed Khan took Kandahar and founded a dynasty.

In the 19th century the country came within the sphere of British interests and in 1838, to protect these, a British force entered it. Kabul was occupied and a massacre there led to a further invasion, the war lasting until 1842. In 1878 there was a second war, and another massacre, but in the end the British prevailed and by treaty secured control of the country's foreign policy. From 1881 to 1901 Abdur Rahman was ameer and relations with Britain were on the whole good. In 1907, however, they concluded a treaty which relieved the tension. During the Great War the Afghans were again restless and in 1919 there was a short war with Britain. In 1921 Britain recognised the independence of Afghanistan and questions about trade and boundaries were settled. In 1929

the Amanullah Khan created a good deal of discontent by his fondness for western ideas and a civil war broke out. The ameer was deposed and a soldier, Nadir Khan, secured the throne and took the title of king.

Africa One of the world's continents. It is surrounded by the sea except where the Isthmus of Suez joins it with Asia. On the west is the Atlantic Ocean and on the east the Indian Ocean. The Mediterranean Sea is on the north and the Red Sea on the north-east. It is about 5000 m. from north to south and about 4000 from east to west and covers some 11,500,000 sq. m. The largest island off the coast is Madagascar.

Features of the continent are its unbroken coastline, its vast deserts and its great rivers and lakes. Of the deserts the greatest is the Sahara that divides the countries of the Mediterranean region from the rest of the continent. The largest lakes are Victoria, Chad, Tanganyika, and Nyasa, but there are many others, Edward and Albert among them. The principal rivers are the Nile, Congo, Niger and Zambesi, but here again there are many others of considerable size, as the continent except for its desert areas, is well watered. Africa is not mountainous, though there are high mountains and extensive mountain ranges therein. In the north are the Atlas Mts. and in the south are the tablelands that reach their highest point (10,000 ft.) in the Drakensberg Mts. The highest peaks are the extinct volcanoes near the east coast; Kilimanjaro reaches 20,000 ft.

The majority of the inhabitants are negroes. Others belong to the Bushmen and Hottentot races. There are Arabs in the north and Dutch and British have settled in the south. They are divided into four language groups, Bantu, Semitic, Hamitic and Sudanic. The continent contains many wild animals, including the lion, rhinoceros and elephant, as well as antelopes and smaller beasts.

Africa is rich in mineral wealth, but much of it is untouched. Notable are the rich gold fields of the Transvaal and the copper deposits in Rhodesia. Railways and roads have been built on a considerable scale, but a link is still wanting in the line from Cairo to the Cape. The rivers and lakes are used for navigation and there are air routes across the continent.

Long an unknown continent, most of Africa is now ruled by one or other of the European powers. France has the largest share, this including Algeria, Tunis, part of Morocco, Madagascar and a vast area, chiefly desert, in central and eastern Africa. In the British Empire are the Union of South Africa and the adjacent areas, Rhodesia, northern and southern, Basutoland, Swaziland and the protectorate of Bechuanaland. Elsewhere in the continent the British possessions are the five large protectorates of Uganda, Nigeria, Nyasaland, Kenya and Somaliland, Zanzibar, Gambia, Sierra Leone, Mauritius, the Gold Coast, the Sudan and several groups of islands. Tanganyika, South-West Africa, part of Togoland and part of Cameroon are governed under mandate.

Altogether Great Britain is responsible for 4,650,000 sq. m. of Africa and France for rather more. The remaining area includes two independent kingdoms, Abyssinia and Egypt. Of the rest, Italy has Eritrea, Tripolitania and Cyrenaica, Portugal has Angola and Mozambique, Spain has part of Morocco, Rio de Oro and Spanish Guinea and Belgium has the Belgian Congo.

Northern Africa has shared in the civilisation of Europe and Phœnicians, Greeks and Romans made settlements therein. The rest of the continent was unknown until Portuguese navigators began to sail along the coast in the 15th century. British and other seamen followed their example and in time trading posts were established at Capetown and elsewhere. In the 18th century the Dutch made settlements in South Africa and in the 19th the interior of the country was explored. As a result claims were staked out over most of the continent by the various European powers, among them Germany, but one consequence of the Great War was to deprive her of her African colonies and to give these to other nations to rule under mandate from the League of Nations. The German Territories so treated were Kenya, formerly German East Africa, South-West Africa, Cameroon and Togoland.

Afridi Asiatic Turks living on the frontiers of India and Afghanistan. They are Pathans in race, Mahommedans in religion and speak Pushtoo. They have frequently by their raids caused trouble on the Indian frontier.

Afrikander Bond Association formed in Cape Colony by Reverend S. J. du Toit, with the object of making South Africa a self-governing republic, and securing the predominance of the Dutch in Cape politics. Its aims were partially achieved, but its hostile attitude to Britain was modified by Rhodes.

Agadir Seaport of Morocco which came into prominence in 1911. In July the German government sent the gunboat, *Panther*, to Agadir to promise the chiefs in the district support against France. The relations between France and Germany were consequently very strained for a time, but in the end an agreement was made between them.

Agag Biblical character. He was a king of the Amalekites. Saul made him prisoner, but against the divine command spared his life. Therefore he was cut in pieces by Samuel at Gilgal (1 Sam. xv).

Aga Khan Name given to the hereditary chief of the Ismailite sect of the Mahommedans. His real name was Hasan Ali Shah and he was born in 1800. He became governor general of a province in Persia, but later settled in Bombay and helped the British in their wars against the Sikhs and the Afghans. He died in 1881.

His grandson, **Aga Khan III.**, rendered great service to Britain during the Great War and took a prominent part in the discussions about the affairs of India in 1929-31. In 1930 he won the Derby with Blenheim, and in 1935 with Bahram. Bahram also won the Two Thousand Guineas and the St. Leger in the same year.

Agamemnon Greek hero and King of Mycenæ, a son of Atreus and brother of Menelaus, the husband of Helen. He led the Greeks to Troy and while there had his famous quarrel with Achilles as to who should have the captive girl Briseis. On his return home he was murdered by his false wife Clytæmnestra.

Agape Love feast held by the Christian church in early times. It was held before or after the Eucharist, and one of its objects was to assist the poorer members of the church. It is referred to by S. Paul (1 Cor. xi) and in St. Jude. Later the feasts became scenes of greed and gluttony, so they

were condemned by the church councils and after a time they ceased to be held.

In 1859 Henry James Prince formed a community at Spaxton in Somerset which he called the **agapemone.** It consisted of both men and women who had all things in common. T. H. Smyth Piggott succeeded Prince as head in 1899.

Agar Agar Malayan name for a seaweed, also called Ceylon moss. It is used for making jellies and soups and also as a varnish for papers. A modern use is its adoption by scientists for the preparation of bacteriological media.

Agate Variety of stone. It is a silica and as it is very hard is much used in the making of scientific instruments. Coloured varieties are used for ornamental stones, under the names of cornelian, onyx and others. The bands which mark the stone are due to pauses in its growth.

Agatha Christian saint and martyr. She was born in Sicily and was put to death in 251. She was canonised, her day being Feb. 5.

Agave Large flowering plant. A native of Mexico, it has large, thick leaves, some as much as five feet long. The stem which bears an enormous group of yellow-green flowers is sometimes 40 ft. high. The agave will grow in Great Britain. The chief kinds are *Americana, Applanata* and *Ferox.* The plant does not bloom until it is 20 or more years old. To this fact it owes its name of the century plant, as it was believed to take a century before it flowered. It is also called the *American Aloe,* as it resembles the true aloe.

Agent In English law one who acts for another called the principal. The relations between the two are defined by the law of agency. The agent differs from a contractor and from a servant, for although, like a servant, he must obey orders, he does not act under supervision. He has power to bind his principal to the extent of his authority, but this is revoked by the principal's death or bankruptcy. The agent must be reimbursed for his expenses, and is entitled to the agreed remuneration, but he must not make any other profit out of the transaction. An agent who takes a bribe can be prosecuted for a criminal offence.

Agesilaus King of Sparta. He became king in 398 B.C. when the kingdom was at the height of its power, made war on the Persians, invaded their country and won a number of battles over them. The news that some other Greek cities were attacking Sparta forced him to return to Europe and he defeated the alliance at Coronea in 394. In 371 when the Spartans were defeated by the Thebans at Leuctra, the efforts of Agesilaus saved the independence of the country. In 361 he went to Egypt to renew the war against the Persians, but his plans failed. He was drowned in 360. Xenophon and Plutarch wrote biographies of Agesilaus.

Agincourt Village of France. It is about 20 m. from the coast and rather more from Boulogne. Here on Oct. 25, 1415, the English under Henry V. defeated the French. The battle lasted about three hours and the French lost heavily.

Agistment Word meaning "the practice of hiring grazing for cattle." In English law the person who allows the cattle to graze on his land in return for payment must take reasonable care of them or he will be liable for damages.

Agni The god of fire in Hindu mythology. He is represented with two faces, three legs and seven arms and is usually attended by a ram.

Agnosticism Condition of not knowing. It comes from the Greek and was first used in 1869 by T. H. Huxley to denote his attitude towards certain religious questions. It expresses the ideas of a large number of people who feel that upon such great matters as the existence of a personal God and the future life all we can say is that we do not know.

Agony Column Part of a newspaper devoted to advertisements of a personal kind. It refers chiefly to those on the front page of *The Times,* because at first many of them were appeals from persons who had lost friends. At present it is used for personal advertisements.

Agoraphobia Nervous disease which takes the form of a fear of large spaces. In the presence of such the sufferer's heart palpitates and he or she trembles and turns cold. It is a kind of anxiety neurosis and treatment is by means of psychological investigation or psycho-analysis. The word means "fear of the market place," as the *agora* was the meeting place, or market place, of a Greek city, corresponding to the Roman *forum.*

Agouti Name of a rodent found in South America and the West Indies. It belongs to the genus *Dasyprocta.* It is rather like a rabbit, except that it lacks the long ears, and it has three toes on each of the hind limbs. The animal lives in the woods and does much damage to the sugar plantations.

Agra City of India. It stands on the Jumna, 120 m. from Delhi. The city is now a great commercial centre. It has a trade in grain, cotton and sugar and also a number of manufactures.

Agra is historically a place of considerable interest. It was founded by Akbar the Great in 1566 and for nearly a century was the capital of the Mogul Empire. The fortress built by Akbar still stands; round it is a wall 1¼ miles long and 70 ft. high. Inside is the palace of the Shah Jáhán. The city has two magnificent mosques and other native buildings, as well as Government House and the colleges connected with the university of Agra founded in 1927. Agra is the chief town of a district in the United Provinces of Agra and Oudh. Pop. (1931), 229,764.

Agrapha Term used for those sayings of Jesus Christ that are not found in the Gospels. Such are the sayings found at Oxyrhynchus in 1897 and 1904, while others are in documents that have long been known. The term is also used by some for those sayings of Christ which, although found in the Gospels, are believed to have been inserted at a later date.

Agreement In English law, a written undertaking to do a certain thing. At least two persons must be parties to an agreement, which, though not a contract, is governed by the law of contract. There are numerous kinds of agreements, *e.g.,* between master and servant, publisher and author, landlord and tenant. An agreement must be stamped, usually with a sixpenny stamp; otherwise it cannot be used as evidence in a court of law.

Agricola Gnaeus Julius. Roman soldier. He was born in A.D. 37, and in 59-60 was in Britain as an officer in the Roman army. From 74-76 he was governor of Aquitania and in 77 he was consul. From 78 to 86 he was governor of Britain. He led an army into Scotland and defeated the Scots in battle. He died in 93.

Agriculture Science, art and practice of the cultivation of the soil. It is sometimes called farming, although this word suggests this industry on a somewhat smaller scale. It is usually regarded as including the production of foodstuffs of all kinds.

Agriculture is the oldest of the world's industries and still the largest and most important, whether regarded from the standpoint of giving work, or producing wealth. It is also the most widespread. Although certain principles are common to all agriculture, its practice differs very widely according to climatic, economic and other conditions.

Taking the widest possible survey, agriculture may be divided into three great branches, although alternative classifications are legion. The three are :—(1). The production of cereals, rice, sugar, tea, coffee and other foodstuffs. (2). The rearing of live stock, including cattle for milk, and poultry. (3). The growing of fruit and vegetables (market gardening). In addition there are branches less easily classified, such as the growing of tobacco, the cultivation of hops, soya beans, etc., as well as the keeping of goats and bees. Modern developments include the establishment of farms where rabbits and foxes are bred for their fur.

From the earliest times, from the Iron Age to the 19th century, there was little change in agricultural methods. Men worked one generation after another, very much as their fathers had done. Very much the same implements were used. The plough and the sickle changed very little through the centuries. In England in the 17th century Jethro Tull did something to secure a more thorough tilling of the soil and Robert Bakewell was equally prominent in improving the breed of livestock. The growing of root crops made it possible to keep the cattle alive through the winter and another important change was an improved rotation of crops.

In the 19th century vast and unparalleled changes took place in agriculture, chiefly, but not entirely, the results of scientific developments. The introduction of steam made it possible to sow and reap on an enormous scale. Later, use was made of electricity and petrol, the former, not only as a source of power for the machines, but as a means of treating the soil. Other improvements were the discovery and use of artificial manures and artificial feeding stuffs. Great improvements were made in the breeding of animals and in the selection and preparation of seeds. Immense irrigation schemes made vast additions to the area of land that is capable of growing crops. Intensive farming, dry farming and other methods were introduced. Governments founded and conducted experimental farms, where new ideas were continually being tried out.

The economic side of agriculture is of enormous importance, though here again each country has its own problems. The provision and remuneration of the labour, long performed by women and slaves, is one aspect. In Great Britain the experiment of appointing district boards to fix the wages of agricultural labourers is being tried after a short experience in fixing them by law. Another aspect is the ownership of land. Is it better to have state ownership, as in Soviet Russia, or ownership by the peasants as in France and Ireland, or, as in Great Britain (although to a declining extent) ownership by a class of landlord who provides buildings and lets out the land thus equipped to the farmer ?

On the economic side the changes of the 19th century were sufficiently important to merit notice, although in their results they cannot compare with those brought about by science and invention. National credit was used on a large scale to assist men to acquire land for farming, and societies formed to give credit and so facilitate the sale of agricultural produce. In 1923 a national scheme for granting credits to farmers in Great Britain was introduced. Insurance schemes, both for livestock and crops, have been devised. In some countries the co-operative movement has done much to help agriculture. Combinations of producers take the produce of the farm, milk for instance, and sell the butter and cheese. Denmark is a country in which co-operation in producing bacon has been greatly developed.

Another help given by many governments to the agricultural interest in the 19th century was the imposition of tariffs on imported foodstuffs—a form of assistance definitely abandoned by Great Britain in 1846. In 1931, however, there was another change of policy. Certain agricultural imports were subjected to a heavy tax and in 1932 others shared in the duty of 10 per cent. placed for revenue purposes on imports. The policy adopted to help agriculture included the regulation of the import of wheat by means of the quota system and preferences given to the produce of the Empire.

The result of all this energy, scientific and otherwise, became obvious in the 20th century.

The crops of wheat, cotton, coffee and other products attained such proportions that vast stocks were left unconsumed. The result was a commercial crisis represented by a fall in the prices of nearly all primary products, and the consequent impoverishment and bankruptcy of thousands of producers.

Other aids, in advanced communities at least, have been provided by the institution of agricultural societies, shows and clubs. Of the many societies the chief British one is the Royal Agricultural Society at Bedford Square, London, W.C. Of the shows, the chief are the one held each year in London by the Smithfield Club and the one held in the country by the Agricultural Society. Great attention is paid to pedigree stock and records are very carefully kept. The Agricultural Organisation Society and other societies of that kind do valuable work in other directions. *See* BARLEY, BUTTER, CHEESE, MAIZE, OATS, POULTRY, WHEAT, etc.

AGRICULTURE AS A CAREER. The prospects for a farmer in this country are none too promising, but in the Dominions the opportunities for an energetic and enterprising man are boundless.

The best training in agriculture is to be had by practical service on a working farm for a period of three years, and the annual premium is about £100. In addition to practical training, there are many schools of agriculture in the country where sound theoretical and practical knowledge may be had, notably at Oxford, Cambridge, Leeds, Manchester, Newcastle-on-

Tyne, Edinburgh, Glasgow, Aberdeen, and Wales, where there are agricultural departments attached to the universities, and at the independent schools of agriculture at Cirencester, Wye, Reading, Newport, Newton Abbot, Sutton Bonnington, and in Scotland at Glasgow, Edinburgh, Aberdeen, and Kilmarnock. Fees at Agricultural Schools vary from £80 to £150 per annum.

Agriculture does not, as a rule, offer much scope to women, though the Agricultural Colleges receive women students for the degree of B.Sc. in Agriculture, for which a three years' course is necessary.

In **Dairy Work**, however, there are considerable openings for women, whether with dairy farms of their own, as dairymaids on large estates, in the colonies, or as lecturers and instructresses on the subject. To obtain work as a lecturer, instructress, or a director of work, a diploma is necessary—given at the end of a two years' course at one of the Dairy Schools throughout the country. But for ordinary dairy work, either at home or abroad, a considerably shorter course is all that should be necessary for any one with aptitude for the work, especially if experience has already been obtained in a dairy or on a farm.

The principal training centres, where both short and diploma courses may be taken, are the Dairy Schools of Sutton Bonnington, of Reading, of Chelmsford, and of Kilmarnock in Scotland, but there are various other less well-known schools.

AGRICULTURE AND FISHERIES, MINISTRY OF. Department of state. It looks after the interests of agriculture and fisheries for England and Wales, but not for the Irish Free State or Northern Ireland, which have their own boards, or for Scotland, which also has its own Board of Agriculture. It is also responsible for the Ordnance Survey and Kew Gardens. The ministry collects statistics and administers the law concerning diseases of animals and fixing of agricultural wages, and has departments for encouraging education and research. The Board of Agriculture was set up in 1889, and in 1903 took over the duties of the Fishery Dept. of the Board of Trade. In 1909 it was made a ministry. Its head offices are in Whitehall, London, S.W.

Agrigentum Greek city in Sicily. It occupied the site where Girgenti now stands and was one of the largest cities in the island. It was founded about 582 B.C. by some Greeks and soon became rich. In 405 it was destroyed by the Carthaginians, but was soon rebuilt, and flourished for several centuries. The city is famous for the ruins of its temple, one of the finest and most perfect examples of Greek architecture extant. It was dedicated to Jupiter. Other Greek remains have been found, some having been brought to light in 1932.

Agrimony Perennial of herbaceous growth. A wayside and meadow plant blooming in England in June and July, it bears terminal spikes of small yellow flowers about 2 ft. in height, and the stem leaves are interruptedly pennate. The root possesses astringent and tonic qualities, and also yields a yellow dye.

Agrippa Name of two rulers of Judæa. **Agrippa I**, a grandson of Herod the Great, is mentioned in *The Acts of the Apostles* and by Josephus. He was responsible for the death of S. James and the imprisonment of S. Peter, and met a loathsome end. **Agrippa II.** was the ruler before whom S. Paul appeared (Acts xxv-xxvi). After the apostle's speech he said "almost thou persuadest me to be a Christian." He was governor of Judæa when Jerusalem was destroyed, after which he returned to Rome. He died in A.D. 100.

Agrippa Marcus Vipsanius. Roman soldier. Born 63 B.C., he came to the front during the civil war that followed the death of Julius Cæsar. He rendered great services to the cause of Cæsar's nephew, Octavian, at first in Gaul and later in command of the fleet that won the battle of Actium, and after Octavian became emperor led the Roman armies in Europe and Asia, winning many successes. He was famed also as a builder and a patron of letters.

Agrippina Name of two Roman ladies. **Agrippina the Elder** was a daughter of Marcus Vipsanius Agrippa and a granddaughter of the Emperor Augustus. She married the Emperor Germanicus and was the mother of Caligula and Agrippina the Younger. She died A.D. 33, when she was in exile, by starving herself slowly to death.

Agrippina the Younger married first Gnæus Domitius Ahenobarbus, and their child was the future Emperor Nero. She married as her second husband the Emperor Claudius, and by his influence secured the throne for Nero. She is believed to have poisoned Claudius, as she did others who displeased her, and in A.D. 59 she herself was put to death by Nero.

Ahab King of Israel. A son of Omri, he succeeded his father and reigned over Israel for 22 years (875-53 B.C.). He married Jezebel, daughter of the King of Tyre, and through her influence began to worship Baal. His story is told in 2 Kings.

Ahasuerus Name of several kings of Persia mentioned in the Old Testament. One of them, the husband of Esther, is usually identified with Xerxes. Ahasuerus is also the name of the chief character in the legend of the Wandering Jew.

Ahaz King of Judah. A son of Jotham, he succeeded his father as king and reigned for about 20 years (735-15 B.C.). He paid tribute to Tiglath-Pileser, King of Assyria, who had helped him against the kings of Israel and Syria (2 Kings, xvi; 2 Chron. xxviii).

Ahimelech High Priest of the Jews. The only recorded incident in his life is that he gave the shewbread to David when he was hungry, and also Goliath's sword. For this he and his family were put to death by Saul (1 Sam. xxi-xxii). Another **Ahimelech** was one of David's associates (1 Sam. xxvi).

Ahithophel Friend of David. After acting as confidential adviser to the king he joined Absalom in his rebellion (2 Sam. xv, 17). Foreseeing failure he hanged himself. In Dryden's satire, *Absalom and Acitophel*, Ahithophel is the name given to the Earl of Shaftesbury.

Ahmadabad City of India. The chief town of Ahmadabad district, it is on the River Sabarmati, 310 m. from Bombay. The older part is still surrounded by its walls. Of the buildings, the chief are the great mosque, famous for its minarets, the ivory mosque and a Jain temple. The city has some flourishing industries, including the manufacture of cotton, thread, paper and pottery. Ahmadabad was a great city in the time of the Mogul emperors, and was the capital

of the kingdom of Gujarat. In 1818 it became a British possession. Pop. (1931), 313,789.

Ahriman Name of the spirit of evil in the Zoroastrian religion. He is opposed to Ormuzd (*q.v.*) the spirit of good, the two being regarded as equal, but in the end he will be beaten. He is at the head of a band of spirits and corresponds to the Satan of the Old Testament.

Ahura Mazda. *See* ORMUZD.

Ai City of Canaan. It lay to the east of Bethel and is mentioned in Genesis. It was a great Canaanite centre when the Israelites invaded their land. The Israelites were defeated here, but later the city was destroyed by Joshua (Joshua vii.-viii.).

Aid In feudal times a payment made by landowners to the king. English kings first took aids from their tenants as often as they wanted, but in the 12th century it was recognised that there were only three occasions on which an aid would be taken by the king: (1) when his eldest son was knighted; (2) when his eldest daughter was married; (3) when he himself needed ransom. These aids continued until the reign of Charles II., when they were abolished.

Aidan British saint. He became a monk at Iona, but his chief work was done in Northumbria in the 7th century. He settled on the Island of Lindisfarne, and in 635 became its first bishop. He did a good deal to convert the people to Christianity. Aidan died at Bamborough, Aug. 31, 651.

Aide-de-camp In the fighting services an officer who attends on an officer of high rank. Every admiral and general when on active service had one or more aides-de-camp who carry out his orders and look after his comfort. Distinguished officers are appointed Aide-de-camp to the King. The usual abbreviation is A.D.C.

Aigues Mortes Seaport of France. It is 24 m. from Nîmes and 3 from the Mediterranean. A canal runs from the town to the sea, but the place has lost the importance it had in the Middle Ages. It is famous, however, because its walls and towers, built about 1280, are still almost complete, making it one of the most perfect medieval towns in existence. Pop. 4300.

Ailsa **Marquess of.** Scottish title held by the family of Kennedy. In 1482 Gilbert Kennedy was made a lord, and in 1509 his descendant was made Earl of Cassilis. He was killed at Flodden, and the 3rd earl was poisoned in France. In 1831 the 12th earl was made a marquess. The family seat is Culzean Castle, Ayrshire, and the eldest son is called Earl of Cassilis. The title is taken from Ailsa Craig, an island rock at the mouth of the Firth of Clyde.

Ainley **Henry Hinchcliffe.** English actor. Born at Morley, near Leeds, Aug. 21, 1879, he became a bank clerk at Sheffield. He soon left this to become an actor and, after touring with F. R. Benson, made his first appearance in London in 1900. Ainley has made successful appearances in many Shakespearean parts, also in *Trilby*, *Peter Pan*, *The Little Minister* and *The Great Adventure*. Since 1919 his pieces have included *Hassan*, *The Dover Road*, *Oliver Cromwell*, *The First Mrs. Fraser* and *Tobias and the Angel* (1932). He has also played in the United States and Australia.

Ainsworth **William Harrison.** English novelist. He was born in Manchester, Feb. 4, 1805, and was educated at the grammar school there. He studied law, but soon gave it up for writing. In 1834, then living in London, he published *Rookwood*, This was his first success and for nearly 50 years he was writing novels. His most popular books are *The Tower of London*, *Old St. Paul's*, *Jack Sheppard* and *Windsor Castle*. He edited *Bentley's Miscellany*, and for eleven years had his own paper, *Ainsworth's Magazine*. He died Jan. 3, 1882.

Aintree District outside Liverpool on the L.M.S. Rly. It is famous because here is the racecourse where the Grand National Steeplechase is run.

Air Gas breathed by men and other animals in order to maintain life. It consists of nitrogen, 78 per cent., and oxygen, 21 per cent., the remaining 1 per cent. being argon, carbon dioxide, helium and other gases in very small amounts. The air extends around the earth to a distance of over 200 m., but as it becomes higher it becomes rarer, or less charged with oxygen. Consequently breathing becomes more difficult, until, as the climbers of Mt. Everest found, it is impossible to proceed higher and live.

The deleterious gas in the air is carbon dioxide. This is given out by human beings as they breathe and consequently the air around becomes more charged with it, unless it is counteracted by the action of trees and plants which absorb it. On this account great attention is paid by builders, medical men and others to the ventilation of houses and other buildings. In modern factories and workshops a certain amount of air, measured in cubic feet, is allowed to each worker.

Air can be heated, liquefied, or compressed, and is used in these ways as a source of power. An air engine obtains its power by the alternate heating and cooling of air, which causes it to expand and contract.

Air is compressed for use in engineering and manufacturing operations. In this way enormous force is given to it, and it is utilised in drilling, riveting, etc. Tools worked by compressed air are used for breaking hard surfaces and other purposes. The air lock, for raising water or oil, is worked by the same force, as is the air gun.

Since the invention of aircraft the air has had a new significance. There is now a law of the air, just as there is a law of the sea, each country being responsible for the air above its territory. *See* AIRCRAFT, VENTILATION.

Airbrush Device for spraying paint, lacquers, etc., upon a surface by means of compressed air, the instrument consisting essentially of a paint reservoir, air pump and holder with nozzles. At first used chiefly by artists, various types of airbrush are now used extensively in applying cellulose paints and enamels in the furniture, motor and other industries.

Air Council Department of the British Government. It is responsible for the control of the Royal Air Force, and of flying generally. Its president is the Secretary of State for Air, and it consists of five other members and a secretary. The offices are at Gwydyr House, Whitehall, London, S.W.1.

Aircraft Name of any airship, aeroplane or other flying machine. In Great Britain as in other countries all aircraft

must be registered, and in 1933 there were 1055 machines on the civil register which is kept by the Air Ministry. The machines are registered after having been passed by the Ministry or the British Corporation as airworthy. Of the machines 408 were privately owned and 80 belonged to clubs.

The system of marking aircraft is similar to that of marking motor vehicles. A letter is given to each country, and the machines marked with that letter followed by letters from AAA to ZZZ. Thus Great Britain has the letters G and M, so her machines are marked G.AAA or M.AAA, and so on.

The letters assigned to other countries are as follows :

Belgium, ON.	Italy, I.	Sweden, SA
France, F	Netherlands, P H	Switzerland, HB
Germany, D	Norway, LA	United States, K
Spain, E A	Irish Free State, E I	

Aircraft Carrier Warship fitted for carrying seaplanes. In the British navy the first was the *Ark Royal*, launched in 1914. Others were added, these being cruisers converted to this use. Some were retained after the conclusion of the war, and in 1932 there were three carriers in commission, *Furious*, *Glorious*, and *Courageous*. The tonnage of these ships must not exceed 27,000 tons according to the agreement made at Washington in 1924.

Airdrie Burgh and market town of Lanarkshire, 11 m. from Glasgow on the L.M.S. Rly. The industries include engineering works, cotton and paper mills, while around are coal mines. Pop. (1931) 25,954.

Aire River of Yorkshire. It rises in the Pennine Hills in Lancashire, but soon passes through the Aire Gap into Yorkshire, crosses the county and joins the Ouse near Howden. Its length is 70 m. The valley through which the Aire flows is called Airedale. This is a beautiful district stretching from Malham Cove to Leeds. The **Aire and Calder Navigation** is a system of rivers and canals that serves the large Yorkshire cities and towns. The chief branches are from Goole to Leeds and from Castleford to Wakefield.

The **Airedale terrier** is a breed of terrier first bred in Airedale. A good sporting dog, he may be either rough or smooth-haired.

Air Force Royal. Name of the air service of Great Britain. It was created in 1918 when the Royal Naval Air Service and the Royal Flying Corps were amalgamated. The men wear a uniform of light blue and the motto is *per ardua ad astra*. It is controlled by the Air Council and is divided into commands, some at home and others abroad. It has a college for cadets at Cranwell and one for staff training at Andover. It has its own medical and nursing services.

The commissioned officers rank as follows : marshal of the air, air chief marshal, air marshal, air vice-marshal, air commodore, group captain, wing commander, squadron leader, flight lieutenant, flying officer, or observer, and pilot officer. The non-commissioned officers are flight sergeant, sergeant and corporal. The rank and file are aircraftsmen, who enter the service as apprentices. Officers enter after competitive examination, and a course at Cranwell. Air forces are organised in groups, wings and squadrons. In May, 1935, a new air programme (to be completed in March, 1937) was designed to raise the home strength to 1500 first-line machines and 55,500 men.

The distinctions given to airmen are the Air Force Cross and the Air Force Medal. The former is given to officers and warrant officers and the latter to non-commissioned officers and men.

Within recent years all the great powers—Gt. Britain, Germany, Russia, France, U.S.A., Italy, Japan—have increased their air strength enormously.

THE AIR FORCE AS A CAREER. The Air Force offers a permanent career which is in general no less advantageous than either the Navy or the Army, and the inclusive cost, including the provision of uniform, at Cranwell, is at a maximum £250 for the two-year course. The curriculum comprises a wide variety of subjects, and a satisfactory standard of educational attainments coupled with a high degree of physical fitness are essential.

Boys enter the R.A.F. College as Flight Cadets at the age of 17½-19½, the necessary qualifications being success in the examination for admission thereto which is open to boys possessing the Schools Certificate or equivalent education qualifications, or who are nominated to take the entrance examination by the Headmaster of an approved school. Permanent Commissions may also be obtained through a recognised university by graduates between 20 and 25 years of age, and a limited number of exceptionally able men are promoted from Short Service Commissions or from the ranks.

In the ranks of the Air Force, which embrace many skilled trades, facilities are always offered for further education and for training to enter a civil career.

Airport Base where aircraft arrive and depart. They are usually known as aerodromes, but the term airport is coming into use, doubtless in consideration of their increasing size. In 1931 eight airports, *i.e.*, places which have custom houses so that goods and passengers can land from abroad, were recognised. They are Croydon, Dover, Lympne, Heston, Woolston (Southampton), Barton (Manchester), Liverpool and Cardington.

Airship Form of aircraft that depends for its support upon gas that is lighter than air, and is contained in a balloon or other kind of envelope. The first airships were balloons from which one or more cars for engines, fuel and crew were suspended. These were known as non-rigid, and the earliest were built for naval and military purposes. The British Government built several, one being the *Nulli Secundus* and another the *Mayfly*, which met with disaster.

The first rigid airships were the Zeppelins which were built in Germany and were very prominent during the Great War, although they did not fulfil the expectations of their creators. After the war several nations took up the building of airships. The British Government constructed R33 and R34, and later R100 and R101, but the disaster to R101 in 1930 put a stop to further developments in this direction.

A rigid airship of the latest type consists of a framework of girders of a light metal or alloy, aluminium or duralumin. This is divided into compartments for holding the gas which may be either hydrogen or helium. Outside is a fabric envelope with a space between it and the metal framework. The accommodation for passengers, engines, fuel, etc., is within the framework, but cars for controlling the vessel are suspended from it. The ship is driven by air screws which obtain their power from petrol engines. She is kept stable by fins on the tail

and other accessories for directing her are the rudders and the elevator. To enable a ship to come to rest, mooring masts are necessary.

The largest airships are over 700 ft. long. The R101 was 800 ft. long, and the *Graf Zeppelin*, which in 1929 made a trip round the world, was 776 ft. The American Zeppelin (Z.RS 4) called the *Akron*, which was caught in a thunderstorm and crashed into the sea off the New Jersey coast in 1933, was capable of a speed of 47 m. per hour, and was 785 ft. long. Her gas capacity was 6,500,000 cubic feet and she could lift 180 tons.

Airwheel Name given the form of motor car tyre introduced in 1932. An aeroplane tyre on the same principle was introduced in 1930. The car airwheel is so called because it does away with the ordinary road wheel and acts as an air cushion against the inequalities of the road. The big low pressure tyre is mounted directly on the hub, without spokes or rim, and can be run on pressures as low as 10 lb. to the square inch. Owing to its size and low pressure it can surmount obstacles such as kerbs with but little shock. It also offers from 2 to 2½ times more surface to the road, and this, apart from possibly increased tractive effort, should materially reduce the risk of skidding and consequent side-slip.

Aisle Part of a church. The aisles are at the sides, being usually separated by pillars from the nave, or centre. The word comes from the Latin *ala*, a wing, and the idea was copied from the Roman basilicas. Also used to denote the passage-way between the seats in a church or theatre.

Aisne River of France. It rises in the west of the country and falls into the Oise near Compiègne. It is 175 m. long. A department of France with Laon as its capital is named after it.

During the Great War there was almost constant fighting along the Aisne. In Sept., 1914, the French and British, having turned back the German advance at the battle of the Marne, followed them to the Aisne. The Germans crossed the river and made trenches on the hills above from which they controlled the passage of the river for about 100 miles. The battle ended on Sept. 20, after which a long period of trench warfare began.

Another battle was fought in April and May, 1917. The French crossed the river and made an attack on the German forces. Some successes were gained, but the losses were high, and the enterprise was abandoned.

A year later the Germans attacked. They crossed the river and, driving the French before them, reached the Marne, recovering a great deal of ground they had won and lost in 1914. This took place in May, and a little later the final advance of the Allies began.

Aix-la-Chapelle City of Germany, also called Aachen. In the north-west of the country, it is an industrial centre, an inland watering place and a town of much historic interest. It is well served by railways, stands on an important coalfield and has manufactures of woollen goods, chemicals, etc. The mineral springs, known to the Romans, bring many visitors, for whom there are indoor and outdoor attractions.

Historically Aix is known for its association with Charlemagne. He built here a palace and made the place his capital. He also built the cathedral in which he was buried, although much of the present building is of later date. In it are relics of the emperor. In the town hall, a fine building of the 14th century, is the coronation hall in which, until 1562, the German emperors were crowned. There is a Grashaus, used for the city archives. The Kurhaus, the Kursaal and many hotels may be mentioned, as may be Kurpark. Since 1897 the city has included Burtscheid. Pop. 156,000.

In 1748 the war of the Austrian Succession was ended by a treaty signed at Aix-la-Chapelle. A European conference was held here in 1818.

Aix-les-Bains Town and watering place of France. It is in Savoy, 8 m. from Chambery, on the main line from Paris to Turin. It is famous for its warm mineral waters, which are taken by persons suffering from rheumatism, gout and the like. The town has a casino and other attractions for visitors, while around is much beautiful scenery. Lake Bourget is only a mile away. The Romans used the waters, and there are remains of their temples and baths.

Ajaccio Capital of Corsica. It stands on the west coast of the island, on a bay called after it. The chief buildings are the cathedral and other churches, the museums and the library. The house (Casa Bonaparte) in which the great Napoleon was born, still stands. The city has a good harbour and from here steamers go regularly to Marseilles. Pop. 22,600.

Ajax Name of two legendary Greek heroes. One was the son of Telamon. With other heroes he went to the Trojan War and, after the death of Achilles, was one of the claimants for that hero's armour. When it was given to Odysseus he killed himself.

The lesser Ajax was a son of Oileus. He, too, fought against the Trojans. Having profaned the temple of Athena, he was shipwrecked on the return home. He found refuge on a rock, but this was shattered by Poseidon, and the hero was drowned.

Ajmer City of India. It is in Rajputana, 220 m. from Delhi, and is the chief town of the province of Ajmer-Merwara. Founded by Akbar the Great, it has some old buildings, including a Jain temple converted into a mosque. The tomb of Kwaja, a saint of the 13th century, is a place of pilgrimage for Mohammedans. It is a railway centre and has some modern industries. Pop. 119,305.

Ajowan Fruit grown in Bengal, India. It is very like the caraway, and is produced on an umbelliferous plant. The fruits are dried and used in cooking, and also in medicine for relief of colic, flatulence, etc.

Akbar Mogul emperor known as the Great. He was born in Oct. 1542. In 1556 his father died and he became emperor. He continued the policy of conquest, and in a short time his empire covered a great part of India. Over this he ruled in a most enlightened way. Although a Mohammedan he allowed toleration to all creeds and employed Hindus in his service equally with his co-religionists. He forbade slavery and dealing in slaves, abolished iniquitous taxes and brought in other reforms that belong to a later age. He died at Agra, Oct. 15, 1605. Akbar's real name was Jelah-ed-din Mahommed.

Akhenaton (or Ikhenaton, Amenhotep 4th.) Pharaoh of Egypt about 1375 B.C. He is renowned for the amazing religious revival he instituted when he upset the old worship of Amon Ra, and

introduced the new cult of Aton, the sun, represented as the Divine Origin of All Life.

Akka Race of pigmies. They are found in central Africa where they were discovered in some forests near the Congo in 1869. They have large heads, woolly hair and long arms. They average between 4 and 5 ft. in height and are of negroid race.

Akkad Ancient city of Assyria. It was apparently the capital of Sargon, King of Assyria, and was situated on the Tigris. In Genesis x it is referred to as Accad. The site has been excavated and many proofs of its magnificence have come to light.

Akron City of Ohio. It is 36 m. from Cleveland and is a great industrial centre, well served by railways and on the Ohio Canal. The great American airship *Akron* was named after the place. Pop. (1930) 255,040. *See* AIRSHIP.

Alabama River and State of the United States. **The Alabama River** is over 300 m. long and flows through the State until it joins the Tombigbee and becomes the Mobile. It is formed by a union of the Coosa and the Tallapoosa.

The State of Alabama is in the south-east of the country, and, except for a short coastline on the Gulf of Mexico, is wholly inland. Its area is 51,998 sq. m. Montgomery is the capital, but Birmingham and Mobile, its chief seaport, are larger. The rivers are the Alabama and the Tennessee. The area is level except in the north-east, and maize, cotton, rice and other crops are extensively grown. There are large pine forests. Pop. (1930) 2,646,248, of whom 35·7 per cent. are negroes.

The Alabama Question was a dispute which nearly led to war between Great Britain and the United States. The ship *Alabama* left Birkenhead in July, 1862, when the Civil War was in progress. She was commanded by a southerner and did great damage to the shipping of the northerners, who blamed Great Britain for allowing her to leave, the more so as her real aim was known to those concerned. After a long dispute the matter was referred to arbitration, and in 1872 it was agreed that Great Britain should pay £3,230,000 for damages done by the *Alabama*.

Alabaster Ornamental stone. It is really gypsum, which is a hydrated substance of lime. It is found in Great Britain, and when polished is suitable for domestic fittings, statuettes and other forms of ornamentation. The alabaster of the ancients was a harder mineral, also used for ornamental purposes, a box of it being mentioned in Matthew xxvi. It was a carbonate of lime and was found at Alabastron in Egypt.

Alaric King of the Visigoths. He became chief of the Visigoths in 376, and in 395 led them in their revolt against the Romans. He conquered Greece, was declared King of the Goths, and then invaded Italy. He led his men through Italy to Rome, which he sacked in 410. He then marched south, but died suddenly in Sicily in 410.

Alaric II. became king in 485. He is known as the leader of the great host that was defeated by Clovis at Tours in 507. He was killed when escaping from the fight.

Ala Shan District in Asia. It is in Mongolia and is part of the great Gobi desert. On its eastern border is the great mountain range called also Ala Shan. This is 150 m. long, and its highest point is over 11,000 ft. high.

Alaska Territory of the United States. In the north-west of North America, it covers 586,400 sq. m. and includes many islands along the coast of British Columbia including the Aleutian group. It is a cold and mountainous region, the highest point being Mt. McKinley, over 20,000 ft. high. The chief river is the Yukon. Juneau is the capital. The chief industries are salmon fishing and canning and the keeping and hunting of animals for their fur. Gold, coal and other minerals are worked, and some land is under crops. Another industry is the breeding of reindeer. Large areas are covered with trees. The land has a railway system. Alaska is governed by a governor and a legislative assembly. In 1867 it was bought by the United States from Russia for 7,200,000 dollars, and in 1912 was made a territory.

After a long dispute the boundary between Alaska and Canada was fixed by arbitration in 1903. This gave the fringe of islands south of Alaska to that country. Pop. 58,760.

Alassio Watering place of Italy. It is 56 m. to the south-west of Genoa and is much visited in the winter on account of its equable climate. The bathing is good and around is some beautiful scenery. Fishing is an industry. Pop. 6450.

Alb Garment worn by priests in the Roman Catholic Church. Of white linen, it reaches to the foot and is gathered round the waist with a girdle. Sometimes it is trimmed with pieces of embroidery called apparels. The clergy always wear it when celebrating Mass, and sometimes acolytes wear it too.

Alban British saint and first British martyr. He was born at Verulamium and may have been a soldier. All that is known for certain about him is that he became a Christian, was martyred about 304 and gave his name to S. Albans, where the martyrdom probably took place. His feast day is June 17, in the Church of England, and June 22 in the Roman Catholic Church.

Albani **Dame Marie.** Canadian singer. Her real name was Marie Louise Emma Cécile Lajeunesse, and she was born in Quebec in 1851. She lived in Albany, whence she took her professional name, and then studied singing in Paris and Milan. In 1870 she made her first public appearance. In 1872 she appeared in London and for the next 40 years she was one of the leading sopranos of the world. She retired in 1911, when she published *Forty Years of Song*. In 1878 she married Ernest Gye, and in 1925 she was made a D.B.E. She died April 3, 1930. In her honour Gounod composed *Mors et Vita*.

Albania An independent republic of Europe. In the Balkan area, it is bounded by Yugoslavia and Greece, with the Adriatic on its western side. It covers 10,629 sq. m. Tirana is the capital. Other towns are Durazzo, Scutari and Valona. The district is mountainous with little fertile land, and the chief occupation is the tending of cattle, sheep, and goats. A few crops are grown, and there are extensive forests.

Albania was for long part of Turkey. In 1913, after the first Balkan War, it was made an independent state, and in 1914 Prince William of Wied became its first ruler. When the Great War began his government came to an end, and in 1917 Italy took possession of

Albania. This was not very acceptable, and in 1920 the Albanians set up a government of their own. A republic was constituted, and in 1928 the president, Ahmed Bey Zogu, became king as Zogu I. The country is governed by a council of ministers and a parliament of two houses. Pop. (1930) 1,003,068.

Albany Old name for the part of Scotland north of the Forth and Clyde. Later it was used for a smaller district which for a short time had kings of its own.

Albany City of the U.S.A., the capital of New York State. It is on the Hudson, 145 m. from New York city, on the main railway line to Chicago and Montreal. Here are the State capitol, the city hall, two cathedrals and many public buildings. There are several manufactures and goods can be sent by the Erie and Champlain canals, as well as along the Hudson, or by rail, to all parts.

Founded by the Dutch, Albany was named after James II., the Duke of York and Albany, soon after it became British in 1664. In 1754 a convention, to arrange for a closer union among the American colonies, was held here and in 1797 it became the State capital. Pop. (1930) 127,412.

Albany Town and pleasure resort in Western Australia, Albany is on the south coast, on Princess Royal Harbour, King George Sound. It is 350 m. from Perth, with which it is connected by railway, and mail boats call here. Pop. 4000.

Albany is also the name of a river in Ontario and a province in S. Africa. The former is about 600 m. long. It rises in Lake S. Joseph and falls into James Bay where Fort Albany has been built. The province is in the south-east of the Cape Province. Here, in 1820, the first large body of British settlers made their homes. Grahamstown is the capital.

Albany **Count of.** Title assumed by the Young Pretender, Charles Edward, during the later part of his life. His wife, Louisa, the daughter of a German prince, was styled Countess of Albany. She was born at Mons, Sept. 20, 1752, and married the Prince in 1772. In 1784 they separated and the Countess joined the poet, Alfieri, with whom she lived for a time. Her later days were passed in Florence where she died, Jan. 29, 1824.

Albany **Duke of.** Scottish title. In 1398, and again in 1480, it was given to a son of the king. Later Lord Darnley was made Duke of Albany and this title passed to his son, James I. and then to other Kings of Great Britain. In the time of the Georges there were three Dukes of Albany, all of whom died without children.

In 1881 **Leopold**, the youngest son of Queen Victoria, was created Duke of Albany. He was born at Buckingham Palace, April 7, 1853, went to Oxford, and afterwards, owing to his delicate health, lived very quietly. On March 28, 1884, he died at Cannes. In 1882 he had married Helena, a German princess, and they had two children. The daughter, Alice, married Prince Alexander of Teck, afterwards Earl of Athlone. The son, Leopold, became Duke of Albany and then Duke of Saxe-Coburg in succession to his uncle. As a German prince he fought in the World War, and in 1919 his British title was taken from him. His mother, the widowed Duchess, lived in England until her death, Sept. 1, 1922.

Albatross Large sea bird. It is found in the southern hemisphere where it follows ships for great distances. Its immense wings, often measuring 12 or 14 ft. from tip to tip, give it a great power of flight. The bird is only found on land in the breeding season, when it resorts to the islands and rocks of the southern part of the Pacific Ocean.

Albemarle **Duke of.** English soldier. George Monk was born at Great Potheridge in Devonshire, Dec. 6, 1608. He became a soldier, and for nine years fought in the Dutch army. In 1642 he served Charles I. in Ireland, was made a prisoner in 1644, and on his release in 1646 joined the parliamentarian side. He helped to win the Battle of Dunbar.

In 1653 Monk was appointed a general at sea and won a victory over the Dutch. In 1654 he was made governor of Scotland and he was there when Cromwell died in 1658. After some delay he led his 6000 men across the border and entered London. He brought back the expelled members of the Long Parliament and declared for the restoration of Charles II., his services being rewarded with the dukedom of Albemarle.

In 1665 he was made Governor of London and in 1666 he went to sea again. He was defeated by the Dutch in one battle, but was more successful in a second one. He died Jan. 3, 1670, and his dukedom became extinct when his son Christopher died in 1688.

Albemarle **Earl of.** English title held by the family of Keppel. It is taken from the French town Aumale, and in early days there were several Earls of Aumale, or Albemarle. In 1697 William III. gave the title to his friend, Arnold Joust van Keppel, who had come over with him from Holland, and his descendants still hold it. The family seat is Quidenham Hall, Norfolk, and the Earl's eldest son is Viscount Bury.

Alberoni **Giulio.** Spanish statesman. Born of humble parentage near Piacenza in Italy, May 21, 1664, he became a priest and acted as secretary to a French nobleman. In 1713 he was sent to Madrid as agent for the Duke of Parma and in 1714 the King (Philip V.), attracted by his abilities, made him his chief minister. He filled the position for six years, during which he improved the condition of Spain, both in a commercial and a military direction. His foreign policy, however, was somewhat aggressive and he made many enemies abroad; the result was that in 1720 he was banished. He died, June 16, 1752.

Albert Town of France. It was formerly known as Ancre, on which river it stands. It lies about 18 miles from Amiens. The chief building is the church of Notre Dame. On this was a figure of the Virgin and Child, which was damaged early in the Great War and until March, 1918, when it fell, remained in a hanging position, an object of great interest. The town has some manufactures.

There was constant fighting around Albert during the Great War. The Germans often shelled it, but did not capture it until March 27, 1918. It was recovered in the following August. A battle fought between the French and the Germans, Sept. 20-30, 1914, just after the end of the battle of the Aisne, is called the battle of Albert.

Albert King of the Belgians. Born in Brussels, April 8, 1875, he was the second son of Philip, Count of Flanders, and a nephew of King Leopold II. He became king in Dec. 1909. In 1914 his country became involved in war with Germany and was soon

overrun. The king moved the seat of government to Le Havre and after four years of warfare had the satisfaction of recovering his land and re-entering his capital in Nov. 1918. In 1900 Albert married Elizabeth, a Princess of Bavaria. In 1934 he died as a result of a mountaineering accident, and was succeeded by his elder son as Leopold III.

Albert Prince Consort and husband of Queen Victoria. He was born August 26, 1819, the younger son of Ernest, Duke of Saxe-Coburg-Gotha, his full name being Francis Charles Augustus Albert Emanuel. He was well educated and had cultured tastes. He married Queen Victoria February 10, 1840, and was given the title of Prince Consort in 1857. Typhoid fever caused his death, December 14, 1861, at Windsor Castle.

The Prince had a wide knowledge of European politics and was the Queen's most valued adviser. His position was a very difficult one, but in spite of a somewhat narrow outlook, he made no conspicuous mistakes, while exercising his influence in the direction of peace and moderation. His Life was written by Sir Theodore Martin and in 1932 a new *Life* by Hector Bolitho appeared.

The Albert Memorial was erected in Kensington Gardens, London, in memory of the Prince Consort. In the Gothic style, it was designed by Sir Gilbert Scott, and includes in its embellishment many sculptures and statuettes by eminent artists. It was unveiled on March 9, 1876.

Opposite the memorial is the **Albert Hall**, one of the largest halls in London. It was finished in 1871 and holds 10,000 people. It is used for public meetings, concerts, boxing matches, etc., and has a magnificent organ.

Alberta Province of the Dominion of Canada. It stretches from the North-West Territories to the United States frontier with British Columbia on the west and Saskatchewan on the east. It is mainly flat, except in the south-west where are the Rocky Mts., and is one of the prairie provinces. Its area is 255,285 sq. m., of which 2360 consist of water, and it is 760 miles from N. to S.

Edmonton is the capital. The six other cities are Calgary, Lethbridge, Wetaskiwin, Red Deer, Medicine Hat and Drumheller. The province produces great quantities of wheat and livestock. There are large supplies of coal and natural gas and immense areas of forest.

Alberta was made a province in 1905. It is governed by an elected legislature of one house and a council, or cabinet, responsible to it. The lieutenant-governor represents the King. It sends six senators and 16 representatives to the Parliament of the Dominion. Its forests and other natural resources were the property of the Dominion until handed over to Alberta in 1930. The province has a university founded in 1908 and situated at Edmonton. Pop. (1931) 727,497. *See* CANADA.

Albert Medal British decoration. Instituted in 1866, it consists of an oval badge, hanging from a crimson and white ribbon. It was originally a reward for bravery in saving life at sea, but since 1877 has been conferred for similar deeds on land. There is also an Albert Medal, awarded by the Society of Arts, for notable achievements in science and invention.

Albert or Albert Nyanza Lake of Africa. It is partly in Uganda and partly in the Belgian Congo and covers 1650 sq. m. Its length is 100 m., and it is 80 m. north-east of the Victoria Nyanza. The Nile flows through the lake, which was discovered in 1862.

Albertus Magnus Medieval philosopher. He was born in Swabia in 1206 and studied at Padua. He joined the Dominican Order and in 1254 was made head of the order in Germany and in 1260 Bishop of Regensburg. In 1262 he settled in Cologne and there he lived until his death in 1280.

Called the Universal Doctor, Albert was one of the greatest scholars of the Middle Ages. He was a follower of Aristotle and the extent of his learning won for him the reputation of a magician. 21 volumes of his works have been published. Among his pupils was Thomas Aquinas. In 1622 he was beatified and his festival is Nov. 15.

Albertville Town of the Belgian Congo. It stands on the western side of Lake Tanganyika and has a railway station. It is an important point on some of the African trade routes.

Albigenses Religious sect. It first appeared in France about 1180 and took its name from Albi, a little town 44 m. from Toulouse. The members had a mystical and ascetic creed which was brought to France from the east of Europe. They believed that matter was wholly evil and that only by rigorous self-denial could men reach a good life. They denied that Jesus Christ had ever had a material existence, and strongly opposed the whole teaching of the Church of Rome.

The Albigenses increased rapidly in number in Aquitaine and soon attracted the notice of the ecclesiastical authorities. In 1209 Pope Innocent III. decided on stern measures. A crusade was preached and Simon de Montfort was sent to carry it out. For some 30 years the crusade, which had a political side, was vigorously pursued. Help was given by the Inquisition and the sect was gradually reduced in strength. In 1245 its headquarters, Mont Ségur, was captured.

Albino Term applied to human beings and animals lacking the natural pigment of the skin, hair and eyes. Originally used by the Portuguese to describe white negroes found in Africa, it is now applied generally. In human beings albinism is evidenced by whitish hair, transparency of skin, and pinkish appearance of the eyes. Albinos can generally see best in semi-darkness. Definite albinism is sometimes found in birds, and some breed of rabbits have this peculiarity. Many creatures show a partial albinism in winter as a natural device to produce protective colouring.

Albion Old name for Britain. The usual explanation is that the Romans used it for the island when they saw the white cliffs of Dover, *albus* being the Latin for white.

Albion Metal Combination of tin and lead. It can be employed with great facility in the workshop, and is consequently a valuable material for the production of small ornamental articles, toys and fancy goods, and the cheaper forms of jewellery. The two basic metals are com-

bined under great mechanical pressure, and the product is distinct from the alloy formed by the fusion of tin and lead, which is known as pewter.

Albite Mineral named from the Latin word *albus*, white. It is a soda felspar and consists of soda, alumina and silica, which form transparent crystals. It is found in rocks nearly all over the world.

Albuera Village of Spain. It is 13 m. south-east of Badajoz and gave its name to a great battle of the Peninsular War. A French army under Soult was advancing to relieve Badajoz. The British under Beresford abandoned the siege for the time being and met the French at Albuera on May 16, 1811. After a hard fight and heavy losses on both sides, the British gained the day. The battle is described very vividly by Napier in his *History of the Peninsular War* and in it the Middlesex Regiment gained the nickname of Die-Hards.

Albumin Carbon compound essential to animal and plant life. It is a nitrogenous substance, soluble in water and coagulating with heat and is found only in living bodies. To-day it is classed as a protein. It was long believed that albumin could not be made synthetically, but in 1932 a German chemist claimed to have produced it from coal and coke. The allied word *albumen* is used for the white of the egg.

Substances resembling albumins are known as **albuminoids. Albuminuria,** or the presence of albumin in the urine, is a sign of kidney, heart and blood diseases.

Albuquerque **Affonso D'.** Portuguese administrator. He was born near Lisbon in 1453. Little is known of him until 1503 when he sailed to the Indies. Made viceroy of the Portuguese possessions there, he conquered Goa and other places and showed himself a wise and equitable ruler. In 1515 he was deprived of his office and he died on the journey to Europe, Dec. 16, 1515. Albuquerque's *Commentaries* have been translated into English.

Albury Village of Surrey, 30¾ m. from London, can be reached from Chilworth, on the Southern Rly. There is an old church and one built by the banker Henry Drummond for the Catholic Apostolic faith. The former is used as a mortuary chapel. Drummond lived at Albury Park, now a seat of the Duke of Northumberland. Near is the Silent Pool (Sherbourn Pond).

Albury Town of New South Wales. It is 390 m. by railway from Sydney and stands on the Murray River, which is navigable to this point. It is the centre of a district in which sheep are reared and wheat and tobacco are grown. Near is a large dam used for irrigating the land. Pop. (1931) 9770.

Alcantara Town of Spain, on the River Tagus. The chief object of interest is a bridge, which dates from Roman times. It is over 600 ft. long and was restored in 1860. The town gives its name to a Spanish order of knighthood founded in 1156 to fight the Moors. It was abolished more than once, but was always revived, the last occasion being in 1874.

Alcester Market town of Warwickshire, 15 m. from Warwick and 97 from London, on the G.W.Rly. The church is worth a visit and there is an old town hall. Here the little rivers Alne and Arrow unite. The town has a golf course and near is a Roman camp. Pop. 2100.

The title of **Baron Alcester** was taken by Sir Frederick Beauchamp Paget Seymour when, in 1882, he was made a peer. He was commander of the fleet that bombarded Alexandria in that year. He died March 30, 1895, leaving no heir.

Alcestis Greek heroine. She was the wife of Admetus who was promised immortality if he could get someone to die in his stead. His parents refused to do this, but Alcestis offered herself. Euripides wrote a play *Alcestis*.

Alchemy Early form of chemistry, associated with magic. It originated most probably with the Egyptians and was concerned chiefly with the transmutation of metals. The belief that the baser metals could be transmuted into gold or silver arose quite early and was held, among others, by the Egyptian alchemist Hermes Trismegistus, who wrote on the matter. The transmutation was effected, so it was believed, by the philosopher's stone, called by Hermes an egg.

The Chaldeans associated the metals with the planets, there being seven of each, and believed that each planet exercised an influence on its particular metal. The Greeks studied alchemy, especially in connection with their theories of the elements, but the art owes more perhaps to the Arabs, who learned a good deal about it when they conquered Egypt and invaded the treasured learning of Alexandria.

The Arab alchemists carried their knowledge into Europe where the subject was much studied during the Middle Ages both by them and by the English, French, Dutch and other nations.

Among the medieval alchemists were Roger Bacon, Albertus Magnus and Thomas Aquinas, but there were many others and quite a literature grew up on the subject. The more credulous occupied themselves with seeking to create living beings, while a number, Paracelsus among them, asserted that they had discovered the elixir of life, which was the philosopher's stone dissolved in alcohol.

In the 16th and 17th centuries the alchemists became more akin to the chemists of to-day. The alchemists of this time included Edward Kelley, Christopher Baldwin, Sir Kenelm Digby and John R. Glauber. In the 18th century, James Price, called the last of the alchemists, professed to have discovered the philosopher's stone, but he committed suicide rather than repeat his experiment. Before his death, however, in 1783, Robert Boyle had founded the science of chemistry and the age of alchemy was over.

Alcibiades Athenian statesman. He was born about 450, educated by his kinsman Pericles and became a friend of Socrates. His abilities soon made him prominent in Athens and about 422 he became leader of the party that favoured war with Sparta.

His expedition against Syracuse had just sailed when he was accused of mutilating some statues. Recalled to Athens for trial, he escaped to Sparta, but was sentenced to death in his absence. In Sparta, Alcibiades became an implacable enemy of Athens. In several directions his energy increased the circle of the city's foes, but soon the Spartans began to distrust him and he found a refuge in Persia. Through the influence of his friend Tissaphernes, he brought to Athens the support of Persia and so was able to return to Greece.

As leader of the Athenian army he won several battles over the Spartans and was for a short time the chief figure in the city. The failure of a further expedition, however, led to his downfall and once again he was exiled (406). He went towards Persia, but on his way, at Phrygia, he was killed by some Spartans. His *Life* was written by Plutarch.

Alcinous Greek hero. He appears in Homer's Odyssey where he was a king in Scheria, probably Corfu. On this island Odysseus and his companions were shipwrecked and were entertained very hospitably by its king.

Alcohol Name used for the liquid, ethyl alcohol ($C_2H_5.OH$). It is obtained by distilling a saccharine liquid, but it can be obtained synthetically from its elements, carbon, hydrogen and oxygen. It is the active principle of all intoxicating liquors.

Absolute alcohol is a colourless liquid with specific gravity .79 and a boiling point of 78°C. It is the essential part of all spirits, while beer and wines also contain it, although in smaller proportions. The amount may be as low as 2 per cent. in very light beer, or as high as 70 per cent. in a powerful liqueur. Proof spirit contains 43 per cent. alcohol. The system of testing the strength of alcohol in a liquor is called **alcoholometry.**

Alcohol is used in the manufacture of chloroform, ether, essences, perfumes, lotions and the like and as a solvent for oils, fats, resins and gums. It is also used as a source of power, in the form of methylated spirit. It can be made from potatoes, wheat, malt, rice, beetroot, molasses, honey, apples and many other sugar containing foods. A variety called methyl alcohol is distilled from wood and is much used commercially.

The drinking of alcohol to excess brings about a condition known as **alcoholism.** It produces stupor or excitement, followed after a time by injury to the liver and other organs. In extreme cases insanity results, while the impairment of will power and brain activity is a usual symptom.

Alcott **Louisa May.** American writer. She was born at Germantown, Pennsylvania, Nov. 29, 1832. She was for a time a teacher, but soon began to write. During the Civil War she served as a nurse, and wrote about her work in *Hospital Sketches.* Her other books, especially *Little Women, Little Men, Good Wives* and *Jo's Boys* are still very popular with children. She died at Boston, March 6, 1888.

Alcyone In Greek legend the daughter of Aeolus, god of the winds. She and her husband were changed by Zeus into seabirds. Legend says that for seven days in winter Alcyone hovered over the sea. During these days her father prevented the wind from blowing, and so they were called halcyon, or peaceful days.

Aldeburgh Borough and watering place on the coast of Suffolk, sometimes called Aldburgh. It is 25 m. from Ipswich and 99 from London, on the L. & N.E. Rly. The sea is encroaching. In the Middle Ages Aldeburgh was an important place. The poet Crabbe was born here. Pop. (1931) 2480.

Aldehydes Term derived from *alcohol dehydrogenatum,* applied to a group of substances resulting from the oxidation of the primary alcohols with the separation of two hydrogen atoms, and intermediate between alcohols and acids. By further oxidation the aldehydes are converted readily into acids, thus **acetaldehyde,** a colourless liquid formed from ethyl alcohol, may be oxidised into acetic acid, and the well-known **formaldehyde,** a gas soluble in water and derived from methyl alcohol, yields **formic** acid.

Aldenham Village of Hertfordshire. It is 3 m. from Elstree, on the L.M.S. Rly. The place is best known for its public school. This was founded in 1597 and has about 250 boys.

In 1896 Henry Hucks Gibbs, a London merchant, was created **Baron Aldenham.** He died in 1907, when his son, a former M.P. for the city of London, became the 2nd baron.

Alder Small tree that grows freely in damp places in Great Britain and elsewhere in Europe, as well as in Asia and America. It is found chiefly by the sides of streams and brooks. The tree is usually 30 or 40 ft. high. It bears rough oval leaves and two kinds of catkins, in which are the male and female flowers. The bark is serviceable for tanning and the young shoots for dyeing.

The alder belongs to the genus *alnus.* The tree seen in Great Britain is *alnus glutinosa,* the black, or common, alder. Others are *alnus incana,* which grows very freely on the continent of Europe; *alnus cordifolia* and the green alder (*alnus viridis*) found in Central America.

Alderley Edge Urban district of Cheshire, 14 m. from Manchester, on the L.M.S. Rly. It is chiefly a residential district. The edge is a ridge of hills about 650 ft. high. Pop. (1931) 3141.

Alderman Member of a town or county council in England and Ireland. The word is also used in Canada and the United States. Town and county councils consist of aldermen and councillors, the aldermen being chosen by the councillors for six years. The aldermen of the City of London are elected for life and from them the lord mayor is chosen. In Scotland the bailies take the place of aldermen. Aldermen, or caldormen, are first heard of in Anglo-Saxon times, when they looked after a part of the kingdom. The present system was introduced in 1835.

Alderney One of the Channel Islands. It is only 8 m. from Cape La Hague, being divided from it by the channel called the Race of Alderney. It is 4 m. long and covers 3 sq. m. St. Anne is the capital and the only town. The island is famous for its breed of small cattle.

Aldershot Borough of Hampshire, 34 m. from London on the Southern Railway. The town is the centre of the chief military camp in England. The buildings and the industries are all connected with the military and its wants. The former include barracks, hospitals, schools, workshops etc. The camp is divided into three sections called the Wellington, Marlborough and Stanhope lines; there is accommodation for infantry, cavalry and artillery, while the training grounds cover 70 sq. miles. The town has a racecourse and other facilities for sport. A military tattoo is held here in June. Pop. (1931) 34,281.

Aldwick Village of Sussex. It is on the coast about a mile to the west of Bognor. Here is Craigweil House, where King George V. went to recuperate after his illness of 1928-29.

Aldwych Street in London. This name is taken from that of a Danish settlement. It is a curve meeting the Strand at both ends, with Kingsway running from it to Holborn. It was opened in 1905. The **Aldwych Club,** at 18 Exeter Street, London W.C. is for advertising and business men generally. It was founded in 1911.

Alekhine Alexander. Russian chess champion. He was born in Moscow, Nov. 1, 1892, educated at Leningrad, took his degree in law and entered the foreign office. As a chess player he became known in 1909, while still a youth, and his reputation grew until in 1927, by beating Capablanca, he became the world champion. He held the title until 1935, when he was defeated by Dr. Max Enwe.

Alembert Jean le Rond d'. French philosopher. He was born Nov. 16, 1717, and received a good education, later showing himself a brilliant mathematician and writing several mathematical books of high value. He is better known perhaps for his association with Diderot in the preparation of the *Encyclopedie.* He also wrote on literature, music, philosophy and other subjects. He received many honours and was on friendly terms with Frederick the Great and Voltaire. In 1772 he was made secretary of the French Academy and he died Oct. 29, 1783.

Alençon Town of France. It stands on the river Sarthe, 67 m. from Caen. The town gives its name to a kind of lace. The Counts of Alençon were prominent among the nobles of France in the Middle Ages and the title of Duke of Alençon was borne by several members of the royal family. Pop. 17,400.

Aleppo City of Syria, called by the Arabs Haleb. It is situated in a valley through which the river Kuwaik flows and is a station on the railway line from Adana to Damascus. In the Middle Ages it was an important trading centre, being on the main trade route between Europe and Asia. To-day it has a considerable trade in silk, tobacco, etc., which goes mainly through its port Alexandretta, 70 m. away. There are large Greek and Armenian elements in the population. Aleppo was occupied by the British in Oct. 1918. Pop. 177,313.

Aleutian Islands Group of islands off Alaska belonging to the United States. They are very bare and rocky and there are many volcanoes. Unimak is the largest island. The men are engaged chiefly in fishing. The island of Unalaska, with a good harbour, is the centre of the American seal fisheries.

In 1928 an expedition found on one of the islands some bodies in a perfect state of preservation. They are thought to belong to the stone age. Pop. 2000.

Alexander Name of eight popes, of whom the most important was **Alexander VI. Alexander I.** was pope, or bishop, of Rome 107 to 116. **Alexander II.,** one of Hildebrand's nominees, was pope 1061 to 1073. **Alexander III.** was pope 1159 to 1181. He was the pope who made Henry II. do penance for the murder of Becket in 1170 and received at Venice in 1177 the homage of the great Emperor, Frederick I. **Alexander IV.** was pope 1254 to 1261 and **Alexander V.** 1409-10. **Alexander VII.** was pope 1655-67 and **Alexander VIII.** 1689 to 1691.

ALEXANDER VI. Pope from 1492 to 1503. Rodrigo Borgia was born near Valencia in Spain, Jan. 1, 1431. He became a priest and when his uncle, Alphonse de Borgia, was made pope in 1455, his rise was rapid. Chosen Archbishop of Valencia and soon made a cardinal, he passed his time in luxury and intrigue, chiefly in Rome, until elected pope in 1492. The eleven years of his rule were devoted to the amassing of wealth and power. He scored a victory over Charles VIII. of France and helped to bring Savonarola to his martyred end. The pope died Aug. 18, 1503. *See* BORGIA.

Alexander King of Macedon, called the Great. A son of King Philip II. and his wife Olympias, he was born at Pella in 356 B.C., and in 336 succeeded the murdered Philip as king. His first work, quickly accomplished, was to deal with rebellions among the Greeks and others under his rule, after which he started out on a career of conquest that has few if any parallels in the world's history.

Taking up a project entertained by his father, Alexander decided to attack the huge Persian Empire, marched in 334 into Asia Minor and quickly mastered the cities in that country. He then conquered with comparative ease Phoenicia and Syria, although he met with serious resistance at Tyre. This, however, by the aid of a fleet, he overcame and the city was destroyed.

Alexander went next to Egypt which submitted to him without a struggle. Having founded the city of Alexandria, he set out upon a further career of victory. He passed through Syria into Persia and marched up the valley of the Tigris, through the country known as Mesopotamia. He captured Susa, Persepolis, Ecbatana and other Persian cities with their treasures and advanced to the Caspian Sea. The barbarian tribes dwelling on the coast of this sea were brought in a sense under his rule. The new empire was organised into provinces, each keeping its own traditions and institutions. About this time he crushed a rising led by Bessus, the successor of Darius.

He next entered India. In 326 he crossed the Indus near Attock and gained a great victory. After some further conquest he returned through Baluchistan to Persepolis, then set himself to organise the great empire he had conquered. In the midst of this work and while planning an expedition into Arabia, on June 29, 323, he died.

Alexander was a great administrator as well as a great soldier, and spread the influence of Greece throughout the empire he had won; but his time was too brief to weld it together, and on his death it fell rapidly to pieces.

Alexander Name of three Tsars of Russia. **Alexander I.** was born Dec. 23, 1777, a son of Paul I. He became tsar in 1801 and reigned until 1825. The earlier part of his reign was occupied with wars against France, interrupted by the peace he made with Napoleon in 1807. He took a leading part in the peace negotiations of 1814-15, and was prominent as the author of the Holy Alliance, an association of rulers pledged to govern on Christian principles. In his own country Alexander put his liberal ideas into operation, one result being the

grant of a constitution to Poland. He died Dec. 1, 1825.,

Alexander II. Son of Nicholas I., he was born April 29, 1818. In 1855 he succeeded to the throne. Like his uncle, Alexander I., he had liberal ideas, but circumstances made it difficult for him to give them expression, and his reign did not differ much from the repressive rule of his father. It was marked by the end of the Crimean War, the war with Turkey, and the Treaty of Berlin, the activities of the Nihilists and the advance of Russia into Asia. The Tsar was murdered, March 13, 1881.

Alexander III. A son of Alexander II., he was born March 10, 1845, became tsar on his father's murder in 1881, and ruled for 13 years. He made no serious change in the methods of government, which remained harsh. He died Nov. 1, 1894. The tsar married a daughter of Christian IX. of Denmark, and was therefore a brother-in-law of Queen Alexandra.

Alexander King of Greece. The second son of King Constantine, he was born Aug. 1, 1893, his mother being a sister of the Kaiser. When his father abdicated in 1917 the Powers refused to allow his eldest son, George, to become king so the crown was given to Alexander. He reigned until his death, due to the bite of a pet monkey, Oct. 25, 1920.

Alexander Three kings of Scotland. **Alexander I.**, king from 1107 to his death, April 27, 1124, was almost an Englishman. His father was King Malcolm Canmore, but his mother was an English princess, and he married an English lady, a natural daughter of Henry II. **Alexander II.**, a son of William the Lion, was king from 1214 to July 8, 1249, when he died. He married a daughter of King John, and was as much an English baron and landholder as a Scottish king. **Alexander III.** was a son of Alexander II. He became king in 1249 when only eight years old. In 1251 he married Margaret, daughter of Henry III. On March 12, 1286, when riding along the cliffs near Kinghorn, Fifeshire, he and his horse fell over the cliff and were killed.

Alexander King of Serbia. He was born in 1876, a son of King Milan, and became king when his father abdicated in 1889. In 1893 he began to rule in person. In 1903 he married Draga Mashin, a lady of the court, and made himself a dictator. The result was a revolution, and on June 11, 1903, the king and his wife were killed.

Alexander King of Yugo-Slavia. Born Dec. 17, 1888, he was a son of King Peter of Serbia. In 1909, his elder brother, George, having renounced his claim, he became heir apparent. He served with the army in 1912-13 against the Turks and also in the Great War. In Aug., 1921, he became king of the new state of Yugo-Slavia, an enlargement of Serbia, and in 1922 he married a princess of Rumania. A son, Peter, was born in 1923. In 1928 Alexander made himself dictator, but constitutional government was restored in 1931. He was assassinated on Oct. 9, 1934.

Alexander Prince of Bulgaria. He belonged to the family that ruled over Hesse and was born April 5, 1857. He served in the Russian Army against the Turks in 1877 and in 1879 Russian influence secured for him the position of first Prince of Bulgaria. He enlarged the area of the country and was successful in a war with the Serbians, but offended his Russian supporters. In 1886 he abdicated, and as Count Hartenau lived in retirement until his death, Nov. 17, 1893.

Alexander **Albert Victor.** British politician. Born at Weston-super-Mare, May 1, 1885, he became associated with the Co-operative movement. He served with the forces during the World War and in 1920 was appointed secretary to the parliamentary committee of the Co-operative Congress. In 1922 he was elected M.P. for the Hillsborough Division of Sheffield; in 1924 he became parliamentary secretary to the Board of Trade, and in 1929 First Lord of the Admiralty. He resigned in August, 1931, and lost his seat in Parliament in the following October, but was again returned at the General Election of 1935.

Alexander **Sir George.** English actor. He was born at Reading, June 19, 1858. In 1880 he joined Irving, in whose companies he played for the next eight years. He then took his own theatre in London, the Avenue, but in 1891 he moved to the S. James's, where he remained until his death, March 16, 1918. In 1911 he was made a knight.

Sir George was most successful in comedies of modern society, in which he took the part of a suave man of the world. This was seen when he played in such pieces as *Lady Windermere's Fan*; *His House in Order* and *The Second Mrs. Tanqueray*.

Alexander Nevski Russian saint. He was born in 1220 and became a famous soldier. In 1240 he defeated the Swedes on the banks of the Neva, and was afterwards known as Nevski. He won his reputation as a saint by his charities. He died, Nov. 14, 1263.

Alexander Severus Roman emperor. He was born in 205 and was adopted by a cousin, the Emperor Heliogabalus. In 222 he became emperor and conducted successfully a war against Persia, but was murdered in 235.

Alexandra Queen of Edward VII. She was born at Copenhagen, Dec. 1, 1844, a daughter of the prince who, in 1863, became Christian IX, King of Denmark. Brought up very simply, as her parents were very poor for their station, the princess was betrothed in Sept. 1862, to the Prince of Wales, whom she first met in 1861. On March 10, 1863, they were married in S. George's Chapel, Windsor. The beauty and charm of the princess made a great impression on the people of England.

For 38 years Alexandra was Princess of Wales; for nine years she was Queen, and for the remaining 15 years of her life she was Queen Mother. In each station she carried out her high duties to perfection. She had six children, four of whom survived; King George V. and his three sisters, the Princess Royal, Princess Victoria and the Queen of Norway. Queen Alexandra's last days were mainly passed in retirement at her London residence, Marlborough House, and there she died, Nov. 20, 1925.

Since 1912, June 26 has been kept as Alexandra Day to commemorate the day on which she landed in England in 1862. On this day roses are sold for the benefit of the hospitals.

In 1932 the national memorial to the queen was unveiled in the garden of Marlborough

House. It consists of the figures Faith, Hope and Charity, by Sir Alfred Gilbert, R.A. Altogether £230,000 was raised, most of it being devoted to a pension fund for nurses.

Alexandretta Seaport of Syria, called also Iskanderun and Skanderoon. It stands on the gulf of Alexandretta, an opening of the Mediterranean Sea, 70 m. from Aleppo, with which it is connected by railway. It has a harbour and is the port for Aleppo. Alexandretta was founded by Alexander the Great. It was occupied by the British in Nov., 1918. Pop. 13,997. *See* ALEPPO.

Alexandria City and seaport of Egypt. It is situated between the sea and Lake Mareotis, and is connected by railway with Cairo and by canal with the Nile. It was founded by Alexander the Great, and the native name for it is Iskanderia. There are two harbours, an old one and a modern one. The city is divided into three parts, the Mohammedan, the European and the Arab. Pompey's Pillar, dating from 302, is a landmark. The port has a large trade in cotton.

Alexandria was at one time the most famous city in the world. It was noted especially as a centre of learning and possessed the finest library in existence. In it the great mathematicians, astronomers, theologians, philosophers and others settled and founded schools which exercised extraordinary influence. The period of its glory lasted for nearly a thousand years, from 332 B.C. to 641. Near Alexandria was the Pharos lighthouse, and in the city were the two obelisks called Cleopatra's Needles, one now being in London and the other in New York. The ancient city was also a great centre of trade and, after its conquest by the Romans, became their most important seaport. In 641 the city began to decline, a process hastened after 1517, when it was taken by the Turks. Its population, once estimated at 750,000, fell to 6000. In the 19th century, however, it revived until it became again a great seaport. It was taken by Napoleon in 1798 and by the British in 1802, after Sir Ralph Abercromby had defeated the French in a battle here. In 1882, when Arabi Pasha rebelled, it was bombarded by a British fleet. Pop. 573,000.

Alexandria Town of Dumbartonshire. It stands on the Leven, 3 m. from Dumbarton, on the L.M.S. and L.N.E. Rlys. The town is a centre for the printing, bleaching and dyeing of textiles. Pop. 7804.

Alexandrite Name of a semi-precious stone, a variety of chrysoberyl. It is dark green in colour, but gleams red in artificial light. It is found in the Ural Mountains.

Alexius Name of five Byzantine, or East Roman emperors. **Alexius I.**, a member of the Comnenus family, was born in 1048 and became emperor in 1081, owing his elevation to a rising of the soldiers. He reigned for 37 years, a period which covered the time of the first Crusade. He died in 1118. The four other emperors of this name are unimportant.

Alfalfa Species of medick (*medicago sativa*). It is a leguminous plant of the pea family grown for green fodder, and also found wild in fields and hedgerows. It has clover-like leaves, hollow branching stems, and bears racemes of purple, or sometimes yellow flowers. It is cultivated largely in America and parts of Europe as a forage crop. *See* LUCERNE.

Alfieri **Vittorio.** Italian poet. Born at Asti, Jan. 17, 1749, about 1772 he settled down to study at Turin. Already he had written a drama, and during the rest of his life he produced a good deal of poetry which has a deserved place in the literature of Italy. Alfieri is also known as the lover of the Countess of Albany, the wife of Charles Edward, the Young Pretender. The two lived together from 1780, or thereabouts, until the poet's death at Florence, Oct. 8, 1803.

Alfred King of England, called the Great. He was born at Wantage in 849, being a son of Ethelwulf, King of England. He helped his brother, King Ethelred, to fight the Danes, winning fame at Ashdown in 871. In the same year Ethelred died and Alfred was chosen king. At first he was King of Wessex only, but afterwards the whole of England acknowledged him as its overlord.

The struggle with the Danes had intervals of peace which he used to organise the army and create something like a navy. In 878 there was a serious Danish attack. Alfred was forced to take refuge in Somerset, but he soon collected an army and won a battle at Edington. The result was a treaty with the Danish leader, Guthrum, which divided the country between them; Alfred received the south and west and was acknowledged by Guthrum as his lord. In 884 and 892 new hordes of the invaders arrived, but Alfred held his own. He died Oct. 26 or 28, 901, and was buried at Winchester.

The **Alfred Jewel**, now in the Ashmolean Museum at Oxford, bears a portrait of the king and the words, "Alfred had me wrought." It was found at Athelney in 1693.

Alfreton Urban district of Derbyshire. It is 14 m. from Derby and is reached by the L.M.S.Rly. The chief industry is coal mining, but there are hosiery factories here. Pop. (1931) 21,232.

Alfriston Village of Sussex. It is 10 m. from Eastbourne. One of the most picturesque places in England, it possesses a large church called the Cathedral of the Downs, a clergy house owned by the National Trust, and the Star Inn dating from about 1500. Pop. (1931), 590.

Algae In botany a term used for the class of plants popularly known as seaweeds. These have no vessels, no tissues and no organs other than those formed by the reproductive cells. As they have no roots they absorb nutriment from the water or the air. The Algae are divided, according to the colouring matter they contain, into green, brown, red and blue-green algae.

Algebra Method used in mathematical calculations, in which quantities are represented by letters and their relations by signs, an algebraic formula for some rule being more convenient and more easily remembered than the rule expressed in more extended form. To take a simple case, the area of a parallelogram is equal to the length of the base multiplied by the perpendicular height. In algebraic form it may be represented as, *a=base, b=height, and the area=c, then* $a \times b = c$, or shortened to $ab=c$. The ordinary processes of addition, subtraction, etc., can be performed by algebra, also the more complex mathematical problems are expressed and solved best in algebraic form.

Algeciras Seaport of Spain. It is on the bay of Algeciras, 6 m. from Gibraltar. There is a harbour, fishing, and a little trade.

In 1906 a conference of European Powers was held at Algeciras to discuss the affairs of Morocco, and on April 7, a Convention was signed giving France a free hand to carry out certain reforms and restore law and order.

Algeria Country of Africa, a dependency of France. It covers 847,500 sq. m., and has a coastline on the Mediterranean Sea. The Atlas Mts., running parallel to the coast, divide the country into a fertile coastal region and a belt of desert. Algiers is the capital; other towns are Oran, Constantine, Bona, Sidi-bel-Abbes, Philippeville, Mascara, Tlemçen and Setif.

The chief industry is the growing of fruit, vegetables, wheat, barley, etc. Wine is made and there is a good deal of mining, especially of iron ore. The fisheries are valuable. The country has a railway system and many excellent roads.

Algeria is governed by a governor-general. A large army, including the Foreign Legion, is maintained in Algeria. The population is 6,553,451 (1931), of whom nearly 1,000,000 are Europeans. The natives are chiefly Arabs and Berbers.

Algiers Seaport and chief town of Algeria. It consists of an old town where the arabs live and a modern one built by the French. There are two harbours and an extensive trade is done with France and elsewhere. The buildings include the Roman Catholic cathedral and several mosques, including the Grand Mosque. It has a university. The city is fortified and is a station of the French Navy. Algiers was long a centre of piracy, and on this account it was bombarded by a British Fleet in 1816. In 1830 it was taken by the French. Pop. (1931) 257,122.

Algin Substance found on certain seaweeds. It resembles gelatin and dissolves in water; from it **alginic acid** is obtained. It is prepared during the process of making iodine, is used as a thickening for soups and as a size to prepare walls for paint.

Algoma District of Canada, now part of the Province of Ontario. It is about 70,000 sq. m. in area, and lies to the north of Lakes Superior and Huron. Sudbury is the chief town. Silver, nickel, and copper are mined and there are vast forests.

Algonkin Name given to a group of American Indian tribes. It included the Blackfeet, Mohicans, Shawnees and others who lived in Canada and the northern parts of the United States. In both countries there are some thousands of them to-day. The word means, "at the fish spearing place."

The term **Algonkian** is applied to certain rocks found in North America. They are of sedimentary origin, such as sandstone and limestone, and are seen in the neighbourhood of Lake Superior, where they are rich in coal and copper. *See* AMERICAN INDIANS.

Alhambra Palace in Spain. It stands on the hills overlooking Granada, and was built by the Moors in the 13th and 14th centuries. It was a fortress and also a palace, and is the most striking example of Moorish architecture in the world. It is entered by the Gate of Justice and its two greatest courts are the Court of the Lions and the Court of the Fishpond. Its rooms are decorated with sculptures, columns, carvings, etc., of the most exquisite kind.

Alias Word meaning an assumed or false name. It is quite legitimate to take another name, as writers sometimes do, but it is often done by criminals and others to hide their identity. Such when charged are described as A alias B.

Alibi Term used in English law. It describes a plea put forward by an accused person that he or she was somewhere else when the offence took place. This form of defence, however, is easily abused and is therefore regarded with suspicion.

Alicante City, seaport and watering place of Spain. It is situated on the Mediterranean. There is a good harbour and a trade in wine and fruit. The place is visited in winter on account of its pleasing climate. Pop. (1931) 73,987.

Alice Springs Town of Australia, since 1927 the capital of the territory of Central Australia. It is 1120 m. from Adelaide on the railway line to Darwin.

Alien Anyone not a subject of the country in which he lives. Each country has its own laws on this subject and in all it is possible for an alien to become naturalised, and therefore no longer an alien. In English law a person born outside the Empire is an alien unless he or she is the child of British subjects, or the grandchild of such on the father's side. Since 1870 it has been lawful for an alien to own property in Great Britain, but he cannot vote at elections, nor can he hold a public position.

The entry of aliens is regulated by law in almost all countries, in the United States the quota system each year is in force. Other countries apply an educational, or a means test, while in some cases immigration, especially of coloured men and women, is forbidden.

Into England until 1905 aliens were freely admitted, but in 1905 a law placed certain checks on their entrance. The authorities can now refuse admission to diseased, criminal, lunatic and pauper aliens. Aliens convicted of crime can be sent back to their own countries. Aliens refused admission can appeal against the decision, and are entitled to entry if they can prove that they are escaping from religious or political persecution. During the Great War the position of alien enemies, *e.g.*, Germans and Austrians, created considerable difficulties. Many of the males were interned, and after the war were sent abroad.

The admission of aliens into Great Britain to-day is regulated by the Alien Order of 1920. Resident aliens must be registered. The controlling authority is a branch of the Home Office which has inspectors at the ports.

Alienism Medical term denoting the study and treatment of mental diseases. Alienation is a general term for the various forms of insanity and mental derangement. An alienist is the name for a physician who specialises in their treatment.

Alimony Legal terms for the allowance paid by a husband to a wife, or vice versa, in cases of separation. It comes from the Latin *alere* to nourish. After a separation has been ordered the court usually fixes the amount to be paid to a wife at such a sum as will make up her income to one-third

of the joint income, but it has a wide discretion in the matter. In Scots law alimony is called *aliment*.

Alington Cyril Argentine. Dean of Durham. The son of a clergyman, he was born in 1872 and educated at Marlborough and Trinity College, Oxford, where he won a fellowship at All Soul's College. He became a schoolmaster and was ordained. Having been a master at Marlborough and Eton, he was head of Shrewsbury from 1908 to 1916. In 1916 he was chosen headmaster of Eton, and in 1933 became Dean of Durham. He has written a detective story, *Mr. Evans*, as well as *Eton Fables*, 1921; *Doubts and Difficulties*, 1929, and other books.

Aliwal Name of two places in South Africa. **Aliwal North** is in the Orange River in the Cape Province. It is on the railway from East London, 280 miles away. There is a park and a racecourse and near are sulphur springs. Pop. 5500.

Aliwal South is the old name of Mossel Bay. There is also a village of this name in the Punjab district of India.

Alkali Name given to a group of compounds, oxides or carbonates, which are soluble in water and neutralise acids forming salts. They have a caustic taste and turn red litmus blue. The common alkalis, ammonia, caustic soda, caustic potash, solium and potassium carbonates are of great commercial importance and are manufactured on a very large scale. The term caustic alkali is applied to caustic potash and caustic soda, and mild or fixed alkali to the carbonates of soda and potash.

Natural alkali deposits occur in many parts of the world, such as trona and natron (carbonates of soda) in California, British Columbia and Lake Magadi in East Africa.

Alkaloid Group of very complex basic nitrogenous substances forming the active principles of plants. They are extracted by percolation with alcohol, and are obtained in a crystalline form although a few occur as liquids. Alkaloids act as bases, like ammonia, forming salts with acids. Some of them are extremely poisonous though of great medicinal value in proper doses. Typical alkaloids used in medicine are atropine, caffeine, cocaine, morphine, quinine and strychnine. They are regarded as derivatives of pyridine bases which are present in coal-tar and bone-oil, and in recent years great progress has been made in the synthetic production of alkaloids.

Allah Name used by Mohammedans for the Supreme Being. It was first used in this sense by Mahomet in the expression of his creed, "There is only one God and Mahomet is his prophet."

Allahabad City of India, the capital of the United Provinces of Agra and Oudh. It stands where the Jumna falls into the Ganges, 565 m. from Calcutta. It is an important trading centre. The objects of interest include the fort with an underground temple, the pillar of Asoka and the mausoleum of Khusru. The university, founded in 1887, has its headquarters here. To the Mohammedans Allahabad is a sacred city and a religious festival is held every year, when the pilgrims bathe where the rivers unite. The Hindu name for it is Prazag. There were serious riots in the city in April, 1932. Pop. (1931), 183,914.

Allan Sir Hugh. Scottish shipowner. He was born at Saltcoats, Sept. 29, 1810, and went to Canada. About 1852 he formed the Montreal Ocean Steamship Co., later called the Allan Line. In 1871 he was knighted, and died Dec. 9, 1882.

The Allan Line is now owned by the Canadian Pacific Ocean Services, Ltd.

Allegation In English law a statement which has not been proved in a court of law, but which its authors think is true. By using the word alleged newspapers can avoid actions for libel when mentioning crimes.

Alleghany River and mountain range of the United States. The river rises in Pennsylvania and flows through the state of New York before it returns into Pennsylvania and passes Pittsburg. Later it unites with the Monongahela to form the Ohio. It is 300 m. long. Alleghany is also the name of a suburb of Pittsburg. The Alleghany Mts. are a part of the Appalachian range (*q.v.*).

Allen Bog and lake in Ireland. In the counties of Leix, Ossory, Kildare and Westmeath the bog covers about 400 sq. m. with patches of fertile land here and there. The surface is peat which has a depth on the average of about 25 ft.

Lough Allen is one of the lakes formed by the Shannon. It is 5 m. long and covers about 15 sq. m. in the counties of Roscommon and Leitrim.

Allen Grant. English novelist. Charles Grant Blairfindie Allen, the son of a clergyman, was born at Kingston, Ontario, Feb. 24, 1848, and educated at King Edward's School, Birmingham, and at Oxford, Merton College. For four years he was head of a college in Jamaica, but he spent the rest of his life in England. He died Oct. 24, 1899. Grant Allen wrote readable books on scientific matters; in these he popularised Darwin's ideas. His novels include *The Woman Who Did: An African Millionaire*.

Allen William. English cardinal. He was born at Rossall in 1532, and educated at Oriel College, Oxford. He was made head of S. Mary Hall, Oxford, but after Elizabeth became queen he went to France. There he helped to establish the college at Douai, and began the translation that is called the Douai Bible. The main work of his life was to help Philip of Spain, the Pope, Mary, Queen of Scots, and others in their schemes against England. In 1587 he was made a cardinal and he died Oct. 16, 1594.

Allenby Viscount. British soldier. Edmund Henry Hynman Allenby was born April 23, 1861, was educated at Haileybury and Sandhurst, and entered the army as a cavalry officer in 1879. He saw service in South Africa, 1884-85 and 1888, and also in the war against the Boers. In 1902 he became colonel of a cavalry regiment, and having had charge of a brigade was in 1910 made Inspector of Cavalry. In 1914 he went to France at the head of the Cavalry Division and in 1915 took command of an army corps. He was promoted to lead the Third Army in 1917 and was then sent to Egypt. There he organised the force that drove the Turks from Palestine and won one of the most conspicuous successes of the war. From 1919 to 1925 he was High Commissioner for Egypt, and Captain of Deal Castle, 1925 and 1926. In 1915 Allenby was knighted and he received many other honours. In 1919 he was

he was made a field-marshal and a viscount, receiving also £50,000. He took the title of Allenby of Megiddo and Felixstowe. His only son was killed in 1917.

Allendale Village of Northumberland. It is 10 m. from the market town of Hexham and is a centre for tourists visiting the district.

The title of **Viscount Allendale** is held by the family of Beaumont.

Alleyn **Edward.** English actor. He was born in London, Sept. 1, 1566, and became a prominent figure on the London stage. He was also concerned in building a theatre, his partner being Philip Henslowe. In 1604 the two were made Joint Masters of the King's Bears, Bulls and Mastiffs. He died, Nov. 25, 1626, and was buried at Dulwich.

Alleyn is known as the founder of Dulwich College. Old boys of the college are known as Old Alleynians.

All Hallows Seaside resort of Kent. It is on the estuary of the Thames, 33 m. from London, opposite Southend. There is a station on the Southern Rly., which opened the place in 1932 as a pleasure resort.

Alliance Word used for a league or alliance between countries, sometimes used for an industrial league. Notable alliances were those formed against Louis XIV. and against Napoleon; the Triple Alliance between Germany, Austria and Italy that came to an end in 1915, the Anglo-Japanese Alliance and the Holy Alliance. The greatest alliance in history is that formed in 1914 to carry on the war against Germany. Russia, France, Belgium, Great Britain, Serbia, Japan, Portugal, Italy, Rumania and other powers joined it. The United States never formally joined the alliance, and so the Peace Treaty speaks of the Allied and associated Powers.

Alligator Amphibious animal of the crocodile family. The name is a Spanish word for "lizard." It differs from the crocodile in having a shorter and broader head, without a fringing membrane, and toes incompletely webbed. The teeth and jaws are also different.

Alligators are chiefly found in the warmer parts of the world. They live in the Mississippi and other rivers and lay their eggs in the grass on the banks, where they are hatched by the heat of the sun. The alligator is about 16 ft. long, but a smaller variety is found in China. The skin makes excellent leather.

Allington Village of Kent. It stands on the Medway and is famous for its castle, which, now restored, is one of the finest examples of a medieval castle in the land.

Alliteration In poetry, and to some extent in prose, the use of words beginning with the same letter. Instances are the humorous lines beginning "*A*n *A*ustrian *A*rmy *A*wfully *A*rrayed," and Swinburne's, "O *s*leepless heart and *s*ombre *s*oul unsleeping."

Alloa Burgh and seaport of Clackmannanshire, Scotland, also the county town. It stands on the Firth of Forth, 6½ m. from Stirling, on the L.M.S. and L.N.E. Rlys. **Alloa House,** a modern building, is the seat of the Earl of Mar and Kellie. **Alloa Tower,** dating from the 13th century, is an old stronghold nearly 100 ft. high. The industries include the making of hosiery and yarn and the distilling of whisky. A ferry crosses the river to South Alloa where there are large timber yards. Pop. (1931) 13,322.

Allopathy Medical term, the exact opposite of homœopathy. Meaning in Greek "other feeling;" allopathy is a way of treating disease by using remedies which produce results quite opposite to those produced by the disease itself.

Allotment Small piece of land used for growing crops, chiefly vegetables. By English law an allotment is defined as a piece of land not exceeding 1210 sq. yards in extent.

To provide allotments in Great Britain several acts of parliament have been passed. County and district councils have power to acquire land and let it out in allotments and security of tenure is assured to the occupiers. During the Great War much land was cultivated in this way. In May, 1930, there were 965,000 allotments in England and Wales.

Allotropy In chemistry the ability to exist in two or more distinct forms. It is possessed by certain of the chemical elements and in a slight degree by the majority of them. Carbon, which exists in the form of coal, diamond and graphite, is an example.

Alloway Village of Ayrshire. It is on the River Doon, about 2 m. from Ayr, and is famed for its associations with Robert Burns. The cottage in which he was born is now a museum, and a monument has been erected near the old kirk mentioned in his poem *Tam o' Shanter.*

Alloy Compound formed by the mixing of two metals. They may be divided into three classes. 1. Mechanical mixtures which may be regarded as solidified solutions of one or more components in each other; 2. Definite chemical compounds; 3. Mixtures of these two classes.

Some alloys are found in nature, but most of them are prepared artificially. Their purpose is to increase hardness, flexibility or toughness, or to alter the colour, or to give a definite electric resistance. Iron is hardened by manganese; copper is toughened by arsenic and made more tenacious by aluminium. Gold is hardened for currency purposes by the addition of a baser metal.

Some of the most useful alloys are brass, formed of copper and zinc, bronze of copper and tin; gun metal of copper and tin; German silver of copper, nickel and zinc; Britannia metal of tin, antimony and copper; and pewter of tin and lead. Others are type metal, bell metal and bearing metal. Another kind of alloy is known as solder, this being composed of tin and lead. Some metals, such as iron and manganese, will unite in all proportions, but others only in certain definite ones. Steel is really an alloy, although its other ingredient is not a metal but carbon. Steel which contains chromium is becoming of increasing industrial importance. *See* STEEL.

All Saints' Day Church festival kept on Nov. 1. Formerly known as All Hallows, its Eve (Oct. 31) is still called Hallowe'en, especially in Scotland. It is observed in the Church of England and by Roman Catholics.

Allsopp English family. The founder of this family of brewers was Samuel Allsopp, who started a brewery business at Burton-on-Trent. His son, Henry, developed

it, and was made a peer in 1886, taking the title of Baron Hindlip. He died April 3, 1887.

Allspice Spice, also called Jamaica pepper. It is very fragrant, combining the aromas of cinnamon, nutmeg and cloves. It is made from the berries of a tree growing in the West Indies, Mexico and parts of South America, and is used for flavouring and in medicine.

Alluvion Word used for land added by the action of the sea, or a river. It is usually due to the action of the sea which recedes in one place and encroaches in another, or to the action of a river in changing its course. There are many instances of alluvion in England, one being the estuary of the Ribble.

Alluvion is sometimes confused with **alluvium** which is the deposit brought down by a river. It is usually the debris of rocks.

Alma River of the Crimea. On its banks on Sept. 20, 1854, a battle was fought between the British and French on one side and the Russians on the other. The fight was a stubborn one with local reverses on either side. In the end, however, the allies gained possession of the heights above the river and the Russians withdrew, with heavy losses.

Almack's London club. It was a gaming club founded in 1764 and kept by William Almack, really MacAll, at one time valet to the 7th Duke of Hamilton. It was afterwards called Goosetree's and then Brooke's. Some assembly rooms in King Street, St. James's, were also called Almack's. These were opened in 1765 and remained a social centre until about 1863. Afterwards they were called Willis's Rooms. The present Almack's Club was founded in 1908. It is a social club, a resort of bridge players, and its house is 1 Hyde Park Place, London, W.2.

Alma Mater Latin phrase meaning "kind mother." It is used as a synonym for the university or college at which a person was educated.

Almanac Originally a book or other document giving particulars of the days of the year, with astronomical and other information, together with prophecies about the happenings therein. Almanacs of this kind appeared soon after the invention of printing and are still issued. Old Moore's and Zadkiel's are examples. Modern almanacs are year books, giving a mass of general information. The best known in Great Britain is Whittaker's.

The **Almanach de Gotha**, first published in 1763, is an international work of reference, in which a large section is devoted to the great European families.

Almandine Gum stone, a variety of garnet. Its old name is carbuncle. The stone rather resembles the ruby, but is less hard. It shows the same colour whatever the light. The stones are found in North and South America, especially Brazil, and in Ceylon.

Alma-Tadema **Sir Lawrence** English painter. He was born in Friesland, Jan. 8, 1836, and studied painting at Antwerp. His paintings became known in England where he settled in 1870, and where he lived until his death, June 25, 1912. In 1879 he was elected an R.A.; he was knighted in 1899 and given the Order of Merit in 1905. He became an English subject and married an Englishwoman, Laura Theresa Epps, who was also a painter. Tadema's pictures are mainly scenes from Greek and Roman mythology.

Almeh In Egypt the name of a class of women who are professional musicians, dancers, singers and players on instruments.

Almond Tree that grows in the southern part of Europe and to some extent in England. It bears white, pink or red flowers and blooms in the spring. It may be 10 ft. high and is very ornamental, but the fruit will not usually ripen in Great Britain.

The fruit contains seeds which are dried and sold as a delicacy for the table. There are sweet and bitter varieties and they are imported into England chiefly from Italy, Spain, Greece, Morocco and California. The oil can be made from coal tar.

Almoner One who is responsible for giving alms. In monasteries one of the members was appointed to look after the giving of alms and there were almoners in the household of kings, princes and other high officials. To-day in the Royal household there is an almonry with offices in Queen Anne's Gate, London, S.W. It consists of the Hereditary Grand Almoner, the High Almoner, and others. Most large hospitals call one of their chief officials the Lady Almoner and the chaplain of certain institutions is called the Almoner.

Almshouse Homes provided for the poor. They are usually built by private individuals and consist of a number of small residences in a single building. Some are for men and others for women, while there are a few for married couples. In many cases the inmates receive a monetary allowance.

In the Middle Ages many of these almshouses, or hospitals, as they were called, were founded in England, and some of them are very picturesque buildings. Notable almshouses are the hospital of S. Cross at Winchester and the Leycester Hospital at Warwick and the Charterhouse in London. To a later date belongs Morden College at Blackheath. Almshouses are maintained by some of the London livery companies.

The administration of the funds left for almshouses is now supervised by the Charity Commission.

Alnwick Urban district and market town of Northumberland, also the county town. It stands on the Aln, 33¾ m. from Newcastle, on the L.N.E. Rly. There is a trade in agricultural produce. Owing to its position Alnwick was often attacked by the Scots. In 1093 King Malcolm was killed here, and in 1172 William the Lion was made prisoner. Pop. (1931) 6882.

Alnwick Castle, the residence of the Duke of Northumberland, stands on a hill outside the town. There are slight remains of the old castle, but the present one is mainly modern, although built in the baronial style.

Aloe Evergreen plant. It has thick fleshy leaves and bears many tubular flowers. It grows in South Africa and other hot countries, and will thrive in the greenhouse in Great Britain.

There are many species of aloe and from them a drug is obtained, called **bitter aloes**, and used in medicine as a purgative. A coarse variety is used as a purgative for animals. It is obtained from the dried juice of the leaves. In colour it is yellowish brown and its principle is called aloin.

Aloes wood, called **eagle wood**, **paradise wood**

and calamba, is obtained from a tree that grows in Asia. It gives out a resinous substance, used as a perfume and in medicine. An oil is distilled from the wood.

Aloysius Italian saint. He was born March 9, 1568, the son of an Italian nobleman, and his name was Luigi Gonzaga. In 1585 he joined the Society of Jesus, but six years later he died of the plague caught while tending the sick in Rome (June 21, 1591). Aloysius, this being the name he took, is associated with the education of boys and many schools are named after him. He was canonised in 1726.

Alpaca Animal found in South America. It is really a domesticated form of the guanaco, a small kind of llama. It is bred in Peru and Bolivia for the sake of its wool.

The hair is fine, silky and long, its colour being black, brown or grey. It is used for making the cloth called alpaca. Its manufacture in England was begun in 1836 by Sir Titus Salt, who erected mills at Saltaire, near Bradford.

Alpha First letter of the Greek alphabet.

Alphabet Collection of symbols, called letters, used to represent the various sounds made in human speech. The word comes from the first two letters of the Greek alphabet, alpha and beta. Each language has its own alphabet, with a varying number of letters, which is divided in most of them into consonants and vowels. The vowels give the breathing to the consonants which cannot be pronounced without them.

The earliest representations of human voice sounds were pictographs, the figure of an animal or bird being used to convey a certain sound. These were succeeded by hieroglyphs and then by cuneiform, and other similar systems of writing in which a wedge or combination of wedges represented a sound. The Egyptians used the hieroglyphic system, which exercised some influence upon the formation of the alphabet.

The origin of the modern alphabet is usually attributed to the Phœnicians, but it probably goes back further than their time. Soon after 2000 B.C. there was a Semitic alphabet in use in Syria and discoveries made in 1932 proved this. It consisted of 22 letters, all consonants, and is regarded as the parent of the modern alphabet. It was used by the Jews and other Semitic peoples, but it was the Phœnicians who handed it on to the Greeks, and so to the modern world.

The Greek alphabet, when it took its final form in the classical age, consisted of 24 letters, now little used except in classical literature and as the foundation of the modern Russian and Greek alphabets. It was taken over with alterations by the Romans who evolved an alphabet of 23 letters, five being vowels, and introduced the symbols for them which, with slight modifications, are in use in most of the countries of the western world to-day. It had no w and lacked also j and v; i and u were used both as vowels and consonants.

The Romans carried their alphabet into England, and the Anglo-Saxon alphabet came into existence. In it three letters were added to the 23 of the Romans; two of these represented the sounds th and ph. The English alphabet dropped these letters, but introduced three others, J, U and W. Since then it has been unchanged, although it lacks perfection as certain letters are redundant, Q and X, for instance, and there is no symbol for the sound ch.

The French alphabet is very like the English, save that it lacks the letter W. The Germans employ Gothic not Roman symbols, but there is an increasing tendency to use the latter. Their alphabet has 26 letters, but they do not exactly correspond to the 26 English ones. The Eastern languages contain far more letters than do the Western ones. The Japanese has 73, and the Sanskrit 49. For shorthand and similar purposes phonetic alphabets have been prepared; the universal languages such as Esperanto have also their own alphabets.

Alpha Particle Name given to the positively charged particles of the alpha rays emitted from radio-active substances. These particles travel at a velocity of several thousand feet per second and have the property of causing scintillations of light when they strike a phosphorescent substance. Their mass is four times that of a hydrogen nucleus and their charge twice that of an electron.

Alphonso XIII. Former King of Spain. He was born May 17, 1886, and was king from the day of birth, as his father, King Alphonso XII., was then dead. He was declared of age in 1906; before then his mother, Maria Christina, a member of the Hapsburg family, had been regent. On May 31, 1906, he married Victoria (Ena), daughter of Princess Henry of Battenberg and cousin of King George V. Their family consists of four sons and two daughters. In Spain the king made himself popular, although there were several attempts on his life—one on his wedding day—and he had to face grave political troubles. In 1930, there was serious disorder, which forced the king and his family to leave Spain. A republic was proclaimed, but the king refused to abdicate. With the queen and their children he took up his residence in France. Alphonso has shown a great liking for England, and was a frequent visitor to this country. In 1932 his property in Spain was confiscated by the state.

Alpine Club London club. It was founded in 1857 for men interested in mountaineering, especially in the Alps. It is now the headquarters of that interest and since 1864 has issued the *Alpine Journal*. Its house is at 23 Savile Row, London.

Alps Mountain range in Europe. It extends from the Rhône in France into Hungary and covers something like 80,000 sq. m., with a length of 600 m. and a breadth, north to south, varying from 50 to 150 m. The range enters the countries of France, Switzerland, Italy, Bavaria, Austria and Hungary. The various sections of the Alps bear distinguishing names, such as the Rhætian, Pennine, Gratian and Cottian Alps, the Bernese Oberland and the Dolomites.

The usual division of the Alps is into three parts, western, central and eastern. The western extends from the Mediterranean Sea to Mt. Blanc; the central from Mt. Blanc to the Brenner Pass, and the eastern from the Brenner Pass into Hungary. The general elevation of the range is between 5000 and 7000 ft. Above this are some hundreds of peaks, the highest being in the west. There are Mt. Blanc and Monte Rosa, the only two that exceed 15,000 ft. The most famous of the Alpine peaks, apart from Mt. Blanc, are in Switzerland. They include the Jungfrau, the Matterhorn, the Finsteraarhorn, the Schreckhorn and the Wetterhorn, all over 12,000 ft.

high. Further east the peaks are less lofty, though there are many over 10,000 ft. high, among them the Gross Glockner and the Wildspitze. Many rivers, including the Rhône, the Rhine and the Danube, rise in the Alps, and most of them flow into the Danube.

Between the mountains lie beautiful valleys and lakes. Of the lakes the most famous are those in Switzerland and Italy, Lucerne, Geneva, Constance, Thun, Garda, Como and Maggiore. The passes of the Alps are notable, especially those leading into Italy, which have a long history. Five of them are now cut by railway lines: the Mount Cenis, the S. Gotthard, the Simplon, the Brenner and the Arlberg. The two S. Bernard passes are famous. There are many glaciers in the range, especially in Switzerland. The Alps, especially the region in Switzerland, Italy and Bavaria, are a favourite holiday centre, and have been called the playground of Europe.

The Alps are also a paradise for climbers. One after another the peaks were scaled until all have now been ascended. Guides and rest houses are provided.

Alsace District of France. It lies between the Rhine and the Vosges Mts., to the north of Switzerland. With Lorraine it forms the district of Alsace-Lorraine. The chief town is Strasbourg; other places are Colmar and Mulhouse. In the west is a mountainous region, but much of the land is fertile, and agriculture, including vine growing, is the chief occupation of the people. The Ill is the principal river. The area is 3200 sq. m.

Alsace was part of Germany in the Middle Ages and later, but in 1684 it was seized by France. Germany recovered it in 1871, but in 1919 it was returned to France.

ALSACE-LORRAINE. District of France. It consists of Alsace and much of Lorraine and is the region taken from France and added to Germany in 1871. From then until 1919 it was governed by officials appointed by the German Emperor with a council elected by the people. In 1879 it was allowed to send 15 members to the Reichstag and in 1911 its local council was made into a legislature of two houses. In 1919, when Alsace-Lorraine was returned to France, it was divided, as it had been before 1871, into the departments of Haut-Rhin, Bas-Rhin and Moselle. Its area is 5600 sq. m.

Alsatian Large dog. This is a wolfhound originally used to protect the sheep in Alsace. Early in the 20th century it became popular in Great Britain, and it is now bred as a companion and a watch dog. The animal is rather untrustworthy. The colour varies, but white is not favoured. The ears should be stiffly erect, and other points are a deep chest and strong feet.

Altai Mountain range in Asia. It covers an area of over 50,000 sq. m. in Siberia and Mongolia, and is divided into two main divisions. The highest point is Mt. Bieluka, which is about 15,000 ft. high. The district is rich in minerals, and the soil in the valleys is very fertile.

Altamira Village of Spain. It is in the province of Santander and is famous for its caves. There in 1879 some paintings on the cave walls were discovered. They represent bisons, deer and other animals and are said to be about 6000 years old.

Altar Originally a place of sacrifice. The altars of the Jews, Greeks and other peoples were raised structures on which offerings were sacrificed to God, or to the gods. There are frequent references to these altars in the Bible.

The word is generally used in the Roman Catholic and other churches for the table, or stone, on which the sacred elements are placed at the eucharist, or communion. It stands at the eastern end of the church, and in the Roman Church must be a consecrated slab of stone. Legally there are no altars in the Church of England; they are, as described in the Prayer Book, holy tables, or communion tables, and they must be movable and of wood.

Some altars, especially in S. Peter's and other great Roman Catholic cathedrals, are magnificent works of art, often adorned with priceless paintings as altar pieces. In most cathedrals there is a principal, or high altar, and several secondary ones. The back of the altar is called the reredos.

Altazimuth Instrument used by astronomers to fix the exact position of a star at any time. It consists of a telescope which is connected with a graduated vertical circle. The whole mechanism rotates about a vertical axis, and the angle of rotation is shown by a graduated horizontal circle. There is a fine example in Greenwich Observatory.

Altcar Village of Lancashire. It is 11 m. from Liverpool, on the L.M.S. Rly. On the flats here the Waterloo Cup is competed for every February.

Alternator Form of dynamo that generates electric current. *See* DYNAMO.

Alton Urban district of Hampshire. It is 46 m. from London, on the S. Rly. Its chief industries are dealing in agricultural produce, brewing beer and making paper. Here is an hospital for cripples founded by Sir W. Treloar. Other buildings are the chapel of S. Lawrence, and the Assembly Hall built to celebrate the peace of 1918. Pop. (1931) 6172.

Altona City and seaport of Germany. It stands on the Elbe, just to the west of Hamburg. It has three harbours and is perhaps the chief fishing port in Germany. Other industries are the making of tobacco, perfumery and margarine, and there is a good deal of shipping. Pop. (1930) 227,433.

Alton Towers Pleasure resort in Staffordshire. Once a seat of the Earl of Shrewsbury, it is about 4 m. from Cheadle, on the L.M.S. Rly. It is famous for its gardens, which are decorated with temples, grottoes, fountains and statues, which stretch down to the little River Churnet.

Altrincham Market town and urban district of Cheshire, 8 m. from Manchester, on the Bridgewater Canal. Its market gardens supply Manchester with fruit, flowers, and vegetables. Pop. (1931) 21,356.

Alum Mineral substance. White and transparent, it is the crystallised double sulphate of aluminium and potassium. The name also describes a similar substance obtained from ammonia, silver, sodium or thallium as well as double sulphates, in which no aluminium is present, obtained from iron, chrome and manganese.

Alum made from alunite, or alum stone, has been produced for many years, but in the 19th century a somewhat different variety was made from ammonia and other substances. Later alum was produced from bauxite. Alum made from alunite is mixed with fuel in a furnace, roasted and exposed to the air. After



[*Camera Portrait by Hugh Cecil*

THE KING EMPEROR

hot water has been added to it the liquid is drawn off and left to crystallise.

The rocks in which alumina (the only aluminium oxide) is present in large quantities are called alum shales. These are found in both England and Scotland.

The chief uses of alum are in dyeing and in making paper and other commercial materials. It is also used in fire resisting processes and for softening water. In medicine it is a caustic and an astringent.

Aluminium Metallic element, the base of the mineral alumina. Its symbol is Al and its atomic weight 27.4. It is not found native, but there is an enormous amount of it in the rocks of the earth's surface, as it is found in clays, shales, slates and granites. It is white with a bluish tinge. Its commercial value consists chiefly in its lightness and tensile strength. It also resists rust well.

Aluminium was not isolated until 1827, although the possibility of treating the ore in order to obtain it had been recognised since 1722. The chief supplies come from bauxite.

Aluminium has many uses. It is employed in the building of airships and aeroplanes and for parts of engines, etc., of ships and motor cars. It is very popular for household utensils. It enters into several alloys one being duralumin and another aluminium bronze, an alloy of aluminium and copper, which is much used for parts of machinery that require great strength, or must stand much salt water. It is also used for cheap jewellery. It combines easily with most metals, lead being an exception.

The world output of aluminium is about 175,000 tons, the United States being the largest producer. The price is regulated by an international cartel.

Alva Burgh of Clackmannanshire, Scotland. It is 7 m. from Stirling on the L.N.E. Rly. The chief industry is the manufacture of woollen goods. Pop. (1931) 3820.

Alva **Duke of.** Spanish soldier. Fernando Alvarez de Toledo was born in 1508. He became a soldier and won a reputation in Italy, Hungary and North Africa, when serving in the army of Charles V. In 1538 he was made commander-in-chief, and his successes against France won for him the title of duke. He helped Charles against the German rebels and gained other successes, including several in Italy. In 1557, Charles having abdicated, Philip sent Alva to the Netherlands as governor-general. For six years he tried to destroy the religious and political liberties of the people, but only succeeded in ruining the country and stiffening the resistance of the inhabitants. In 1573, admitting his failure, he retired to Spain. In 1580 he led a successful expedition into Portugal. He died Jan. 12, 1582.

Alverstone **Viscount.** English lawyer. Richard Everard Webster, the son of a barrister, was born Dec. 22, 1842, and educated at Charterhouse and Trinity College, Cambridge, where he showed himself a fine athlete. In 1868 he became a barrister and entered upon a successful career. In 1885 he was elected Conservative M.P. for Launceston and was made Attorney-General, a post he filled also from 1886 to 1892, and from 1895 to 1900. In 1900 he was made Master of the Rolls and a baron, and in the same year became Lord Chief Justice. When he retired, in 1913, he was made a viscount. He died Dec. 15, 1915, when his title became extinct. Webster, who was M.P. for the Isle of Wight 1895-1900, prosecuted C. S. Parnell before the Royal Commission and represented Great Britain on the Alaska Boundaries Commission.

Alyssum Flowering garden plant. There are both annual and perennial varieties. The common sweet alyssum is an annual bearing white fragrant flowers in summer. A dwarf alyssum is a pleasing and popular edging to flower beds.

Of the perennials the best is the yellow alyssum. This reaches a height of 9 inches and bears masses of golden blooms. It thrives best in a light soil. A variety called citrenium bears beautiful yellow flowers, and another called alyssum spinosum, which bears white flowers, is very suitable for the rock garden.

Alyth Burgh of Perthshire, Scotland. It is 23 m. from Dundee, on the L.M.S. Rly. Linen is manufactured, and near is the forest of Alyth. Pop (1931) 1860.

Amadeus Salt lake of Australia. It is in Northern Territory and is about 200 m. long.

Amalekites Tribe mentioned in the Bible. They were nomads and lived in the desert to the south of Canaan. Their descent is traced (Genesis xxxvi) to Amalek, the grandson of Esau.

Amalgam Mixture of one or more metals with mercury. It thus differs from an alloy which is a mixture of one metal with another. It is made by placing the metal and the mercury in dilute acid. The most useful amalgams are tin, silver, zinc, gold and copper. They are used for silvering and gilding ornamental and other articles, such as mirrors, and also in electric apparatus. Amalgams are also used by dentists. They may be either liquid or solid, liquid amalgams containing a high proportion of mercury.

Amalthea Heroine of Greek legend. She was a daughter of the King of Crete. She is known as the nurse of Zeus whom she fed on goat's milk. Her reward was the horn of the goat, which supplied all her wants, and was called the horn of plenty (*cornu copiae*).

Amana Town of Iowa. It is the seat of a religious community called the Community of True Inspiration. This was established in Württemberg in 1714 and its members emigrated to America, settling at Iowa in 1855. It was dissolved in 1932.

Amara Town of Iraq. It stands on the Tigris, 130 m. from Basra on the way to Bagdad. On May 31, 1915, the British attacked the Turks near here and drove them out of their positions. They entered the town on June 4. Pop. 8000.

Amazon River of South America. There is some doubt as to where it rises, and consequently different estimates of its length are put forward. Its sources are the headwaters of the Maranon, and its course from there to the ocean is between 3500 and 4000 miles. It has hundreds of tributaries coming from Peru, Bolivia, Ecuador and Venezuela, as well as from Brazil, and drains some 2,700,000 sq. m. Its tributaries include the Negro, Purus, Madeira, Tocantins, Yapura, Morona and Xingu.

The Amazon is navigable by large steamers as far as Iquitos, 2500 miles from its mouth. With its navigable tributaries it supplies some 30,000 miles of waterway. Its course is almost

due east. It flows from Peru right across Brazil until it enters the Atlantic Ocean near Para. At its mouth it is 50 miles wide. It is subject to floods and in it are many rapids. The river was first navigated by a European in 1541. Several expeditions, one in 1914, have explored the vast and largely unknown region around the river.

Amazon Name for a female warrior. It appears in Greek legend where the Amazons are represented as having a kingdom near the Black Sea. In art they are represented as armed and mounted on horses which they rode in triumph over their fallen foes. They visited other tribes in order to propagate their race, but the boys born to them were killed. One of the labours of Hercules was to obtain the girdle of the Amazon queen, Hippolytē.

Ambassador One who represents his country in a foreign land. Ambassadors form the highest rank in the diplomatic service and only those who represent a great power in the capital of another great power are called by this name. They are either ordinary or extraordinary, the latter being sent on special missions of high importance. As the representative of the sovereign, an ambassador has many privileges, including precedence at state ceremonies and direct access to the ruler. In great Britain they are usually selected from the diplomatic service.

The duties of an ambassador are to keep his own government informed of the state of affairs in the country to which he is sent, and to convey to that country the opinions and wishes of his own government on matters of mutual concern. At present (1933) there are 14 ambassadors in London, and Great Britain sends ambassadors to 14 countries—Argentina, Belgium, Brazil, Chile, France, Germany, Italy, Japan, Poland, Portugal, Russia, Spain, Turkey and the United States. The representatives to other countries are of lower rank.

Amber Fossil resin. It is used for ornamental purposes as it polishes very easily. In colour it is of a golden hue, sometimes with bluish tints; sometimes, but not always, it is transparent. Flies and other insects are often found in it and its source is coniferous trees that have been rotting in the ground. When rubbed amber produces negative electricity, a quality known to the Greeks, who, like other early peoples, used amber as an ornament. Green and blue amber exists, but is rare.

Amber is found in great quantities in the southern, or Prussian shores of the Baltic Sea. It is also found occasionally on the east coast of England. It is mined in East Prussia, Greenland, Sicily, China, Siam and other countries.

Amber is used for beads, tobacco pipes, cigarette holders, umbrella handles, etc. The powder obtained from the amber can be distilled to give oil of amber which is used as a liniment and in making scent. Amber is also made by artificial means. This is compounded of copal, camphor and turpentine and, unlike the real article, will melt in cold ether.

Ambergris Fatty substance that comes from the intestines of the sperm whale. It is grey in colour and is found floating on the water, or washed up on the shore in hot latitudes. It is much used in making scent on account of its agreeable smell.

Amble Urban district, market town and seaport of Northumberland. It stands near the mouth of the Coquet. The chief industry is fishing. Pop. (1931) 4208.

Ambleside Market town and urban district of Westmorland. It stands at the head of Lake Windermere in the Lake District. The River Rothay runs through it, and there is some fishing. Sheep fairs are held twice a year and a rush-bearing festival is celebrated in July. The roads around are excellent. Pop. (1931) 2343.

Ambo Reading desk with steps leading up to it, very like the modern pulpit. They were used in churches in early times and may sometimes be seen to-day.

Amboyna Island in the East Indies belonging to the Netherlands. It covers 386 sq. m. It is mountainous but fertile, and here rice, sago, cloves, sugar, coffee and other tropical products are grown. The town of Amboyna is the capital and the chief seaport. It has a good harbour and a wireless station. Amboyna wood, a very popular wood for cabinet making, is grown. The Bay of Amboyna cuts the island almost into two peninsulas.

Ambrine Remedy for burns and scalds. It is made of resin of amber and melted paraffin, and was invented in 1904. It was used to relieve rheumatism, but later proved most efficacious in the treatment of burns.

Ambrose Saint and bishop. He was born about 340 at Trèves, although other cities claim the honour. His father was a high official of the Roman Empire and the son, having been educated in Rome, was given an important post in Italy. In 374, although not yet ordained priest, he was made a bishop of Milan, and he remained there until his death.

He had much trouble with the Arians, to whom he showed himself very hostile, and is known for his action in compelling the emperor, Theodosius, to do penance for a massacre. He won respect too, by his charities to the poor. He is remembered as the author of several hymns and for the Ambrosian chant. The valuable Ambrosian Library at Milan is named after the saint, who died April 4, 397. He is the city's patron saint and its magnificent cathedral is dedicated to him.

Ambrosia In Greek and Roman mythology, the food of the gods. It was therefore supposed to make those who ate it immortal.

Ambry Cupboard, especially a church cupboard. In medieval times the host and the sacred vessels were kept in a cupboard, or niche, near the altar and this was the ambry. In some churches the word has survived. In Scotland an ambry is a pantry or cupboard.

Ambulance Vehicle, or other conveyance, used for removing sick and injured persons. In London and other cities and towns ambulances are provided by local authorities, and can be quickly summoned in case of accident. A nurse is in attendance, and the vehicle contains material for emergency treatment. The London County Council maintain a very large service, which, in 1929, answered over 43,000 calls. Ambulances are also provided to carry persons suffering from infectious diseases to hospitals.

Field Ambulances are much used in time of war for the removal of the wounded. They were introduced in the time of Napoleon, and first used in the French army. Great Britain lacked

an efficient service until after the Crimean War, but to-day her organisation is equal to the best. The service is in the hands of the Royal Army Medical Corps, but great assistance is given by the S. John Ambulance Association and the S. John Ambulance Brigade which has over 35,000 members, who receive instruction in first-aid methods. In 1864 it was agreed that ambulances should be respected by the combatants, and to show their nature they are now marked with a red cross. *See* FIRST AID.

Amen Hebrew word meaning so let it be. It is much used in religious worship, in the sense of agreement or emphasis. Prayers end with it, and in the Church of England and many other churches it is said or sung at the end of the psalms and the creeds. Mohammedans also use the word.

Amendment Word chiefly used in Parliament and at public meetings when laws are being made or decisions taken. It means an alteration in a bill or resolution. The custom is that any one desiring an alteration shall propose an amendment. This is voted on before the resolution to which it refers; if it is lost the way is clear for the resolution; if it is carried it becomes part of the resolution, which is then voted upon as amended. In Parliament wrecking amendments are sometimes proposed. An example is an amendment to insert the word "not." In law an amendment is the correction of an error in a legal document.

Amen-Ra Egyptian god also called Ammon. He was originally worshipped at Thebes, but gradually his cult spread to other parts of the land. He came in time to be the principal god of the Egyptians and the attributes of the god Ra, the sun god, and other gods were given to him. He was regarded as the creator of the universe. Amen-Ra is represented in art either with the head of a ram, or as a human being with two lofty feathers on his head.

Amenti Name given in the Egyptian religion to the lower regions. Through it souls passed to their homes in the land of happiness. Osiris was lord of this underworld, and in his presence the souls of the dead were weighed.

America Name of the great continent that forms the land area of the western hemisphere, and is known sometimes as the New World. It is named after Amerigo Vespucci, an Italian who stated that he was the first white man to land on the mainland. His statement, however, is not accepted by historians, but his name, rather than that of Columbus, has remained attached to the continent. America occupies something like 17,000,000 sq. m., stretching from the Arctic circle to Cape Horn, a distance of some 7000 m. It is usually divided into two continents, North America and South America, with Central America linking them together. It includes the islands known as the West Indies.

The inhabitants of the continent in 1492 were called Indians, and have since been known as American Indians. The bulk of the people to-day are of European race. In South America they are chiefly Spaniards and Portuguese; in North America British (English, Scots, Irish, Welsh) and French predominate, but there are many Germans, Poles, Swedes and others.

The word America is used in a narrower and looser sense for the great country called the United States of America. The inhabitants of this country call themselves Americans, and are thus distinguished from Canadians, Mexicans, Brazilians, Peruvians and other people on the continent. *See* CENTRAL AMERICA, NORTH AMERICA, SOUTH AMERICA, UNITED STATES.

America's Cup International yacht race. It originated in 1851 when a cup, the Queen's Cup, was offered by the Royal Yacht Squadron. An American yacht, the America, won it and since then it has been known as the America's Cup, and the race has been sailed in American waters. It has never been won by an English yacht, although the Earl of Dunraven and later Sir Thomas Lipton built several boats that competed for it. Sir Thomas Lipton built five *Shamrocks*, as they were called, and *Shamrock V.* competed in 1930. In 1934 Mr. T. Sopwith's *Endeavour* (British) was beaten by the American *Rainbow*.

American Civil War. *See* UNITED STATES.

American Indians Name given to the early inhabitants of the American Continent. The word "Indians" was used by Columbus, about 1493 (because he thought he had reached India), and has since been generally employed.

Known also as the red man, or red skin, the race is distinguished by its straight black hair, copper coloured skin, aquiline nose, prominent jaw and pointed skull. The Indians are tall and strong, with extraordinary powers of enduring hardship and resisting fatigue.

In all it is said there are 1500 tribes of Indians, who at one time lived in the vast area between Hudson Bay and Cape Horn. It is possible to make certain generalisations about this people as they were in the time of Columbus. They had their own religion, a pantheistic one. They worshipped spirits, who, they believed, watched over the tribe and its possessions. They had their own language, a feature of which is that every sentence forms a single verbal unit. They knew something of the arts of weaving and spinning, and made baskets and rough pottery. They were very fond of music and dancing, and their songs have been collected. They could paint and used paint to adorn their bodies. Their food was obtained chiefly by hunting. They knew something of agriculture, as they grew maize, but the men never settled down willingly to occupations of this kind. Fighting occupied much of their time, and the feuds between one tribe and another were carried on with terrible and prolonged rancour, coupled with the infliction of the most fiendish cruelties. The fighting men, trained and organised in the most efficient manner, were led by chiefs of proved experience in war.

The arrival of the Spaniards in America, and later the advent in North America of the French and British, was followed by wars between the white men and the red men, which led to a great decrease in the numbers of the latter. Though in the 18th and 19th centuries many Indians were occupied in collecting furs for sale to the white man, in North America especially the land over which they roamed was gradually occupied by the whites and the area left to them was steadily reduced.

To-day the remnants of the race, in the United States and Canada, live in reservations which have been set aside for them. In Mexico, Central America and South America, they roam about much as of old, although on a more restricted area.

The racial purity of the Red Indian race has been impaired by associations with the white

man, but they still form a class apart. In the United States their reservations cover 108,000 sq. m., and the population thereon is 332,397. It is notable that from 1900 it increased from 270,500. In Canada there are over 100,000, in Mexico 4,620,880. The number elsewhere is conjecture. There are probably 2,000,000 in Central America, and 6,500,000 in South America.

AMERICAN REVOLUTION (or **War of Independence**). *See* UNITED STATES.

Amerongen Village in the Netherlands. It is 20 m. from Utrecht and is noted because, in Nov., 1918, the German Emperor found a home in the castle here, the residence of his friend Count Bentinck.

Amersham Market town of Buckinghamshire. It is 24 m. from London, on the Metropolitan and L.N.E. Rlys. The chief industries are brewing and chair-making. Pop. 4221.

Amery **Leopold Charles Maurice Stennett,** English politician. Born in India, Nov. 22, 1873, he was educated at Harrow and Balliol College, Oxford. He became a fellow of All Souls' College, and in 1899 went to South Africa to represent *The Times*. He edited *The Times History of the War* and then turned his attention to politics. As a strong tariff reformer, he stood for Parliament more than once, and in 1911 was elected for a division of Birmingham. He served at the front during the Great War, and later did confidential work in London and Paris. In 1919 Amery was made Under-Secretary for the Colonies, and in 1921 Parliamentary Secretary to the Admiralty. In 1922-24 he was First Lord of the Admiralty, and in the Unionist ministry of 1924-29 he was Secretary for the Colonies and Dominions.

Amesbury Town of Wiltshire. It stands on the edge of Salisbury Plain, 7 m. from Salisbury, and from it Stonehenge can easily be visited.

Amethyst Popular gem stone. In colour it is purple, violet or blue, and it is found in veins of iron and manganese. It is mined in India, Ceylon and some parts of South America.

Amherst Seaport of Nova Scotia. It is on Chignecto Bay, 135 m. from Halifax and 700 from Montreal, on the C.N. Rlys. The industries include shipping. Pop. (1931) 7450.

Amherst **Earl.** English title held by the family of Amherst. The soldier, Sir Jeffrey Amherst, made a baron in 1776, had a nephew, William Pitt Amherst, who inherited his title. William went on a mission to Pekin in 1816 and was Governor-General of India from 1823 to 1828. In 1826 he was created an earl. The family seat is Montreal, near Sevenoaks, and the earl's eldest son is called Viscount Holmesdale.

The title of **Baron Amherst** of Hackney, which dates from 1892, is quite distinct from the earldom. **Jeffrey Amherst,** the 1st baron, was born at Riverhead, Kent, Jan. 29, 1717, and became an ensign in the Guards in 1731. In 1753 William Pitt appointed him to lead an expedition against the French in Canada, where he took Louisburg and marched to Montreal. He was made Governor-General, and was in Canada until 1763. In 1772 he was made Commander-in-Chief, and in 1776 a baron. He died Aug. 3, 1797.

Amides Group of organic compounds. They are obtained from ammonia by replacing a portion of the hydrogen by an acid radical, or a metal. Amides are made by the action of ammonia on acid chloride, or on ethers, or by heating ammonium salts. **Amide powder** is an explosive made from ammonium nitrate, charcoal and saltpetre.

Amiens City of France. It stands on the Somme, 81 m. from Paris, and is an important railway junction. The cathedral, considered the finest in France, was erected in the 13th century and has been restored.

The capital of the department of the Somme, Amiens is an important trading centre. Its manufactures include various classes of textiles, machinery, chemicals, etc. There is some shipping along the river, and it is a centre of market gardening. Pop. (1931) 90,211.

Amiens was an important place in the Middle Ages as the capital of Picardy. There Louis IX. arbitrated between Henry III. and his barons in 1264 in favour of the English king.

Amiens was important during the Great War. The battle of Aug. 1918, in which the Allies opened their final and victorious offensive, is called the **Battle of Amiens.** Nearly 40,000 prisoners were taken.

The **Treaty of Amiens** was signed here between Great Britain and France, March 25-27, 1802.

Amines A group of substances formed by replacing one or more of the hydrogen atoms of ammonia by alcohol or other radicals. The amines resemble ammonia in having a strong smell, basic and other properties. Methylamine, dimethylamine, and trimethylamine give the peculiar fishy odour to herring brine. Some amines are gases, others liquids or solids.

Amirantes Group of islands in the Indian Ocean. They belong to Great Britain and are a dependency of the Seychelles Islands. They are of coral formation, and from them turtles and coconuts are obtained.

Amlwch Market town, seaport and urban district of Anglesea. It is on the north coast of the island, 21 m. from Bangor, on the L.M.S. Rly. There is a harbour. Marble is exported, but the trade is much less than formerly. Pop. (1931) 2561.

Amman Capital of Transjordania. It is 30 m. from Jericho, on the Hejaz Rly, and occupies the site of Rabbath-Ammon mentioned in the Bible. It was captured by the British in Sept. 1918, and when the new State of Transjordania was created became its capital.

Ammanford Market town and urban district of Carmarthenshire, 12 m. from Swansea and 198¼ from London, on the G.W. Rly. The chief industries are tinplate works and coal mines. Pop. (1931) 7160.

Ammeter Instrument for measuring the strength of an electric current in ampères. In the ordinary type the passage of current through a coil of low resistance gives the coil magnetic properties and so affects a permanent magnet that is placed on pivots within the magnetic field. The intensity of the coil magnetism varies with the strength of its current. A light pointer fastened to the magnet shows the current strength in ampères on a graduated scale.

Ammonia Colourless gas composed of nitrogen and hydrogen (NH_3), having a pungent suffocating odour

and basic qualities. It is very soluble in water, the saturated solution forming the well-known *liquor ammoniae*. Like other alkaline bases it turns red litmus blue and combines with all acids to form salts, many of which are of great commercial importance. Ammonia is produced commercially as a by-product in the manufacture of coal gas, and synthetically by combining nitrogen and hydrogen under great pressure. It is used in the preparation of dyes and in the dyeing industry, also in medicine, alkali manufacture and in liquefied form for refrigerating purposes.

Ammonite High explosive used in coal mines for blasting. It is a compound of nitrogen and is certified as a safety explosive. Another ammonite is a fertiliser. It is made from the offal of rendering establishments and contains a high proportion of nitrogen.

A marine mollusc now extinct is called the ammonite. It resembles the nautilus.

Ammonites Canaanitish tribe. They claimed descent from Lot (Gen. xiv. 38).

Ammunition Material used for charging guns. With the development of means of attack, there has come about a great increase in the variety of ammunition. It now includes the great projectiles used by the 15 in. guns on battleships, smaller ones for guns of lesser calibre, the high explosive shells used by the artillery, bombs for trench warfare, shells emitting gas and smoke, bombs used by and against aircraft, as well as cartridges and other necessities for rifles, revolvers and small arms generally.

It is made in government factories at Woolwich and elsewhere and by a certain number of private firms. It is carefully inspected and is then handed over to the Royal Army Ordnance Corps. *See* ARTILLERY, MUNITIONS.

Amnesia Greek word meaning forgetfulness. It is used by doctors to describe loss of memory, but shock or injury to, or disease of the brain may cause it. Rest, or, in some cases, an operation to the brain, may effect a cure.

Amnesty Word meaning "a general pardon." Of Greek origin, it means forgetting an offence and it is practically equal to an indemnity (*q.v.*).

Amoeba Word meaning "change," or "alteration," and used for the lowest class of animal life. It consists of shapeless, microscopic pieces of jelly, lives on the floors and sides of ponds and can move itself by means of pseudopodia, or false feet, which are merely a succession of pulsations. The food, which is vegetable matter, can be taken into any part of the body. When it reaches maturity the amoeba splits in two and so reproduces itself.

Amok Word used for an outbreak of madness. It consists of running wild and injuring any one who may be met. It originated among the Malays who sometimes act in this way, rushing about and using their knives indiscriminately. It may be due to a sudden fit of madness, or to the use of drugs.

Amontillado Spanish wine, sweet and light in colour, being very similar to sherry. The name comes from Montilla, near Cordova, where the vines are grown.

Amor The Roman god of love. He was the son of Venus and the equivalent of the Greek Eros (*q.v.*).

Amorites Semitic race mentioned in the Old Testament. They lived in Canaan when the Israelites invaded the land and are sometimes called Canaanites. The word means either "highlanders," or "people of great stature."

Amos Prophet of the Old Testament. He was a shepherd and a forester about the time of Uzziah, King of Israel, and Jeroboam II., King of Judah. Amos wrote one of the prophetic books of the Old Testament.

Amoy Town and seaport of China. It stands on an island at the mouth of the Lung-kiang and is a treaty port. There is a foreign settlement and a trade in cotton, tea and other commodities. Pop. 300,000.

Ampère The practical unit of electrical current, equal to one-tenth absolute electro-magnetic units. An ampère-hour is a current of one ampère flowing for an hour. The name is taken from the physicist **André Marie Ampère.** He was born at Lyons, Jan. 22, 1775. His father was beheaded in the Revolution and the son became a teacher. Later he was professor at the College de France, and he died at Marseilles, Jan. 10, 1836. His chief work was to advance the study of electrodynamics.

Amphibia Class of vertebrate animals that can live both on land and in water. They are placed between the reptiles and the fishes and include frogs, toads, and newts. The salamander and the axoloti also belong to this class.

Amphibia pass through several life stages. The eggs are usually laid in fresh water and are hatched by the heat of the sun. They next pass through a larval stage in which they possess gills and live in the water. Later, limbs and lungs are provided and the adult stage, in which they live on land, is reached. Amphibia do not drink, but take in moisture through the skin. Hence they always inhabit damp places. All are carnivorous. These remarks apply to most of the amphibia, but there are exceptions. In some the young are born fully developed by viviparition. *See* FROG, NEWT.

Amphion To the Greeks a son of Zeus, his mother being Antiope. He and his twin, Zethus, were brought up by shepherds and took a terrible vengeance on Dirce, the woman who had supplanted their mother. She was tied to the horns of a bull and gored to death. The incident is the subject of the "Farnese Bull," a magnificent piece of statuary in Naples. Amphion was also famous for his skill on the lyre, which Hermes taught him. It is said that when the brothers built walls around their city of Thebes, the stones moved to their places as Amphion played. *Amphion* was the name of a British light cruiser sunk by a mine on Aug. 5, 1914.

Amphitheatre Roman building used for public entertainments. Open to the sky, it consisted of an arena, in which beasts and gladiators fought, and tiers of seats for the spectators, the two parts being divided by a wall. Perhaps the greatest of the amphitheatres was the Colosseum at Rome which held 50,000 spectators. Those at Verona and Arles are in a more perfect state of preservation. In England there was one at Dorchester, the lines of which may still be traced, and in 1932 the remains of one at Chester were excavated.

Amphitryon In Greek legend a prince of Thebes. His wife

Alcmene was visited by Jupiter, who assumed the form of her husband for this purpose, and in consequence she gave birth to Hercules. Molière wrote a play on Amphitryon whom he represents as a host. Other plays on the subject are by Plautus and Dryden.

Amphora Vessel used by the Greeks and Romans. Made of earthenware, it had two handles and was used for holding wine and oil. It was also a measure of capacity, the Greek amphora holding nine gallons and the Roman amphora six. It tapered to a point in order that it could be placed in the ground. Later amphorae were used as cinerary urns.

Amplifier In wireless installation an apparatus used to increase the strength of electric oscillations so that the sounds can be heard more clearly on the telephone or the loud speaker. They are of two main kinds. If amplification takes place before the high frequency oscillations are rectified by the detector, the amplifier is a high, or radio, frequency one. If it takes place after the oscillations are rectified it is a low, or audio, frequency amplifier.

The degree of amplification depends upon the magnifying power of the thermionic valve used, or the ratio of its grid voltage change to its plate voltage change. This may be from 2 to 20. Several valves may be connected together so that the incoming impulses are increased in strength step by step.

Ampthill Urban district and market town of Bedfordshire. It is 8 m. from Bedford, on the L.M.S. Rly. Ampthill House is the seat of Lord Ampthill. Pop. (1931) 2167.

The title of **Baron Ampthill** was taken in 1881 by Odo William Leopold Russell, a son of Lord George Russell and a grandson of the Duke of Bedford. Born Feb. 20, 1829, he entered the diplomatic service and from 1871 to his death, April 25, 1884, he was ambassador in Berlin, his term of office covering the important years 1878-79. His son, the 2nd baron, was Governor of Madras, 1899-1906, and a prominent oarsman. He died in 1935

Amritsar City of India. It is in the Punjab, 33 m. from Lahore, and is reached by railway. The chief building is the Golden Temple with the Pool of Immortality, the centre of the Sikh religion. There are manufactures of textile goods and a considerable trade. Amritsar is the chief town of a district and a division. Pop. (1931), 264,840.

In April 1919 there was a serious riot at Amritsar. A mob of 5000 or 10,000 persons assembled and set fire to some buildings as a protest against the deportation of two agitators. Thinking the position dangerous, General Dyer ordered the troops to fire and some 400 were killed and 1500 wounded. A public inquiry was held and the action of Dyer was censured.

Amsterdam City and seaport of the Netherlands. It stands on the River Amstel, just where that little river falls into the Ij or Y. The national museum contains the finest collection of Dutch art in existence.

The city has a large modern harbour connected with the North Sea by a ship canal 15 miles long, opened in 1876. Through the port a good deal of the colonial trade of the country passes, timber and tobacco being prominent. Other industries are diamond cutting, sugar refining and printing. The city is also a great banking and financial centre. Pop. (1930) 752,000.

Amu-Daria River of Asia. Known in ancient times as the Oxus, it rises in two streams in the Pamirs on the frontier of India and Afghanistan. These unite and flow into the sea of Aral. It is 1400 miles long and for part of its course is navigable.

Amundsen Roald. Norwegian explorer. He was born in 1872 and was educated at Oslo. He studied medicine, but forsook that career to become a seaman. In 1901 he went to the Arctic and later made other voyages in that area, one being the navigation of the North-West Passage. In 1910 in the *Fram* he sailed to the Antarctic and on Dec. 16, 1911, he reached the South Pole. He joined the air service of Norway, but his attempts to reach the North Pole by air failed until in 1926 he crossed it in an airship and landed in Alaska. In 1928 he set out in a seaplane to rescue the Italian explorer, Nobile, and met his death on the expedition. Amundsen wrote several books including *My Life as an Explorer*.

Amur River of Asia. It is formed by the Shilka and the Argun in Siberia and flows in a north-easterly and then a south-easterly direction. Its length is 1700 miles and it is navigable in the warm weather. It enters the ocean at the sea of Okhotsk, having received the waters of the Sungari, Ussuri and other tributaries. Another name for it is the Heilung Kiang.

Anabaptists Protestant sect prominent in the 16th century. It originated at Zwickau in Saxony and its leader was Thomas Munzer. The members did not believe in infant baptism, but they became prominent because of their positive revolutionary ideas. They wished to overthrow the existing order and had a share in the revolt of the peasants in 1525, after which Munzer was put to death. In 1533, under John of Leyden, they captured Munster where for about two years they put their ideas, which included polygamy, into practice. In 1535 the town was taken from them and many of them were killed.

Anaconda Name of a large water snake. It is found in Brazil and other parts of South America where it lives on the river banks and feeds upon birds and animals. In colour it is brown with black spots and its average length is 25-30 feet.

Anacreon Greek poet. Born in 563 B.C., lived at Samos, Athens and elsewhere and died in 478. Anacreon wrote a number of lyrics in the Ionic dialect on wine, love and other subjects of everyday life. Of these only fragments exist. The so-called Anacreon odes were written, in imitation of his work, at a later date. These were translated into English by Thomas Moore.

Anaemia The term anaemia includes several conditions brought about by deficiency in certain of the elements of the blood, and characterised by headache, constipation, mental irritability, and general lowering of the vitality. Healthy conditions continued over a long period form the essence of treatment; diet should be simple and nutritious; fresh air and sunshine are vital; constipation must be relieved—with saline laxatives if necessary; sufficient rest is imperative; and iron tonics are necessary.

In cases of **Pernicious Anaemia**, a very serious form occurring in the middle-aged and characterised by severe pallor of the lips and gums and yellowness of the skin, the "liver cure" is now usually administered. Half a pound of raw or very lightly cooked liver, or its equivalent in some special pharmaceutical preparation, is given daily. An unhealthy condition of the intestines, throat, or teeth is an aggravating cause of this disease and must be remedied.

Anaesthetic Drug or other substance that produces unconsciousness and insensibility to pain. They may be divided into two classes, general and local. General anaesthetics produce complete insensibility; local produce only insensibility to pain in a certain part of the body. The former are used for most major operations; the latter are used much by dentists and also for operations on the eye. The condition produced by an anaesthetic is called **anaesthesia**.

The idea of relieving the pain attendant on surgical operations has existed for centuries and opium and other drugs were used in a rough and ready way on occasions. In 1800 Sir Humphry Davy suggested the use of nitrous oxide, called on account of the effects it produced, laughing gas, but it was some years before anything practical was done. In 1842 ether vapour was used as an anaesthetic in the United States with satisfactory results and in 1846 it was used in London. In 1847 chloroform vapour was used in Edinburgh by Sir J. Y. Simpson, while other experimenters tried nitrous oxide, known popularly as gas. The use of gas, however, was hindered because the methods of administering it were not satisfactory, but in 1867 this handicap was overcome and it is now one of the most general of anaesthetics.

The chief general anaesthetics in use today are the three mentioned, nitrous oxide, ether and chloroform together with two others, ethyl chloride and a mixture of chloroform and ether. Local anaesthetics are cocaine, eucaine and stovaine and others, which are usually sprayed around the part it is desired to treat.

Anagram Word or sentence made from the letters of another word or sentence. Thus "repots" is an anagram of "poster" and "webs ran hard" of "Bernard Shaw." Anagrams were popular among the Greeks and Romans and in modern times are much used in crosswords.

Analyst Name given to a chemist or other scientist whose business is to analyse food, drink and other substances. Public analysts are employed by town and county councils and other authorities to examine specimens of food and drink that may be adulterated. Most of them are trained chemists and belong to the Society of Public and Other Analysts, at 85 Eccleston Square, London, S.W.1. *See* ADULTERATION; CHEMIST.

Anarchy Greek word meaning "no government." It indicates the condition of a country without a government, or with a government that is powerless to maintain order. Men who aim at overturning the government of a country by violence are called anarchists.

Some persons, however, regard anarchy as a form of government, in which there is no compulsion in the shape of laws, but only desire on the part of the people to act together for their mutual benefit.

Anatolia Name used for Asia Minor. It is a Greek word meaning "the east" and is used by the Turks. The Anatolian Rly, runs from Constantinople to Angora, with branches in other directions.

Anatomy Scientific study of the body of man and the lower animals, sometimes called dissection. It is part of the course of study of all medical students, who work in the dissecting room before passing to deal with the living patients.

Anatomy observes the form of the various organs and tissues and the materials of which they are composed and is thus distinguished from physiology which deals with the functions of these parts. One branch is descriptive anatomy, another microscopic anatomy and another morbid anatomy, the study of diseased or abnormal structures.

Anatomy was studied by the Greeks, but after their time little progress was made until modern times. John Hunter was the greatest English anatomist and in France Cuvier added much to our knowledge. Great advances were made in the 19th and 20th centuries, one of the most potent influences being the use of radiography.

Anaxagoras Greek philosopher. Born about 500 B.C. in Asia Minor, he made his home in Athens and taught there, but after a time his teaching was condemned as impious and he returned to Asia Minor. He died in 428 B.C. at Lampsacus. Anaxagoras believed that matter was composed of atoms of varying nature, brought together into an ordered universe by an infinite Intelligence. This was opposed to the accepted teaching of the philosophers that all matter was one element.

Ancestor Worship Form of primitive religion, which is found in many different ages and countries. To-day it figures prominently in the native religions of China and Japan, while the "totem" pillar of the American Indians, and the "ancestor-tablet" of the Maoris are also signs of this cult. It probably began with the offering of posthumous honour, and then of worship to great heroes and wise men, the custom being assisted by the natural strength of the family bond.

Anchovy Small fish. It belongs to the herring family and is found in the Mediterranean and other European waters, and is caught chiefly for use in making sauce and relishes.

Anchovy Pear Fruit that grows in Jamaica and other islands of the West Indies. It grows on a tall tree, with bare stem, which often reaches a height of 50 feet and has leaves 3 ft. long. The fruit is edible and tastes rather like the mango.

Anchusa Perennial flowering plant, known also as alkanet. It bears blue flowers and is suitable for garden borders. It reaches a height of 4 ft. or more and blooms in June.

Ancient Lights Term used in English law. An ancient light is a window that has let in the light for 20 years or more. It is illegal for anyone to build so as to cut off this light.

Ancona Seaport and city of Italy. It is on the Adriatic Sea, 130 m. from Rome. The principal industry is shipping, and there are some manufactures. It is also a naval station. It has Roman remains including a triumphal arch erected by Trajan and

columns of a temple of Venus. Pop. (1930) 84,437.

The **Ancona Fowl** is a species of Leghorn. It does well in Great Britain, being noted for the early age at which it begins to lay eggs.

Ancre River of France. It rises near Bapaume and flows into the Somme near Albert. It is about 25 m. long. The river came into prominence during the Great War. The continuation of the Battle of the Somme in the winter of 1916-17 is called the **Battle of the Ancre** because it was fought mainly along the river's course.

Andalusia District of Southern Spain. It has a coastline on the Atlantic Ocean and the Mediterranean Sea. The Guadalquiver flows through it and it is full of remains of the Moorish occupation as it includes the district of Granada. Its area is about 34,000 sq. m. and in it are Cadiz, Seville and Gibraltar.

A breed of poultry, introduced into England from Spain, is called the **Andalusian.**

Andaman Group of islands in the Bay of Bengal. They belong to India and cover about 2260 sq. m. being 120 m. from the nearest mainland. There are five large islands, called North, Middle, South, Rutland and Baratary and about 200 small ones. Port Blair is the capital and has a good harbour. There are extensive forests. Rubber is grown and cattle are kept. Pop. 17,800.

Andersen **Hans Christian.** Danish author. Born at Odense, April 2, 1805, his father was a cobbler. He himself took up no settled calling, but soon began to write. In 1830 he published a volume of poems, and he spent some time in travel, which gave him material for other books. He made his name, however, by his fairy tales which have been translated into English and many other languages, and read by millions of children all over the world. Andersen died in Copenhagen, Aug. 4, 1875.

Anderson **Elizabeth Garrett.** English doctor. Born in 1836, she was a daughter of Newson Garrett of Aldeburgh, Suffolk. She studied medicine, and in 1865, although she had been unable to enter a medical school, was given a licence to practice. In 1870 she secured a medical degree in Paris. In 1866 Miss Garrett opened a dispensary in London and this became the New Hospital for Women. She worked there for many years and was lecturer at the London School of Medicine for Women, where she was also dean. In 1871 she married J. G. S. Anderson, a shipowner. Of their children Sir Alan Garrett Anderson was prominent in shipping circles and Louisa Garrett Anderson followed her mother's profession. Mrs. Anderson died at Aldeburgh, Dec. 17, 1917.

The first woman to become a doctor in England, she was also the first to become a mayor, filling that office at Aldeburgh in 1908-09. She had a good deal to do with the movement that resulted in women being allowed to receive the degrees of the British Medical Association.

Anderson **Mary Antoinette.** American actress. Born July 28, 1859, at Sacramento, California. In 1875 she made a first appearance on the stage, and soon became one of the leading actresses of the day. In 1883 she came to London where for some years she had an extraordinary popularity. She appeared in *A Winter's Tale, Romeo and Juliet* and other Shakespearean plays as well as in *The Lady of Lyons.* In 1889 she retired and in 1890 married a Spanish gentleman, Antonio de Navarro (died 1932). In 1896 she published *A Few Memories.*

Andes Mountain system of South America, the largest in the world. It stretches down the west coast of the continent from the Isthmus of Panama to Cape Horn, passing through Colombia, Bolivia, Brazil, Argentina, Peru, and Chile. Its total length is 4400 miles; its breadth varies. The system is divided into two parallel ranges and it is known in the different parts by various names, Cordillera de la Costa and others.

The average height of the system is stated to be 13,000 ft. The highest point is Aconcagua (23,000 ft.). Other peaks over 20,000 ft. in height are Chimborazo in Ecuador, Sorata, Iliampu and Ilimane in Bolivia, and Huascaran in Peru. Many of the peaks are active volcanoes, the highest of these being Cotopaxi. The Amazon and other great rivers of the continent rise in the Andes, which are very rich in gold, silver and other minerals.

In April, 1932, eight volcanoes, in the range between Chili and Argentina, long regarded as dormant, suddenly became active. An immense amount of damage was done, especially in the Argentine province of Mendoza, and 3000 tons of volcanic dust fell on Buenos Aires. Santiago and Monte Video, the latter, 800 miles away, were also affected by the discharge.

Andirons Iron supports placed on the hearth to hold logs. At first they stood in the centre of the room and were in general use before coal fires became popular. They were made in two parts, the logs being on the lower part, while cooking was done on the upper. To-day they are used for ornaments or for supporting fireirons.

Andorra Republic in the Pyrenees. It lies between France and Spain and covers 191 sq. m. The people live mainly by agriculture, growing vines, barley, etc., and keeping cattle. The land is rich in minerals. The republic is under the protection of France and the Bishop of Urgel. Andorra la Vieja is the capital. There was trouble in the state in 1933; the outbreak was quelled by French troops. Pop. 5230.

Andover Borough and market town of Hampshire. It stands on the little River Anton, 66 m. from London, on the Southern Rly. The industries are brewing and milling. Pop. (1931) 14,290.

Andrea del Sarto Italian painter. He was born in Florence, July 17, 1486, the son of a tailor, hence his name Sarto. He studied art and soon became famous. He died Jan. 22, 1571. Andrea painted some famous frescoes now in Florence, where are also some of his greatest pictures, including several Madonnas. In the National Gallery, London, is a self portrait and a Holy Family. Read Browning's poem, "Andrea del Sarto."

Andrew Christian apostle and saint. He was a fisherman at Bethsaida and a brother of Simon Peter. He followed John the Baptist, but later joined Jesus Christ, he and his brother being the first of the disciples. After the crucifixion he is said to have preached in Asia and Europe and to have been put to death at Patrae in A.D. 70. He was bound to a cross in the shape of the letter X, which has since been known as S.

Andrew's cross. Andrew is the patron saint of Scotland; his day is Nov. 30.

Andrewes Lancelot. English divine. Born in Barking in 1555, he was educated at Cambridge. He was ordained and in 1589 was made master of Pembroke Hall and vicar of a London church. In 1601 he was appointed Dean of Westminster and in 1605 Bishop of Chichester. In 1609 he was elected Bishop of Ely and in 1619 of Winchester. He died Sept. 26, 1626. Andrewes helped to prepare the authorised version of the Bible and wrote *The Manual of Private Devotion* and other works.

Androcles Roman slave. In the first century A.D., he was sentenced to death as a Christian. He entered the arena, but instead of mauling him the lion showed a friendly feeling towards him. The reason was that, when hiding in a cave in Africa, Androcles had pulled a thorn out of the paw of this very lion.

Andromache Trojan heroine, the wife of Hector. After the capture of Troy, Neoptolemus took her to Greece, and afterwards she is said to have married Hector's brother Helenus. By Hector she had a son, Astyanax, and the parting between the three just before Hector went to his death is one of the finest passages in the *Iliad* (Book VI.).

Andromeda Greek heroine. She was a daughter of the King of Ethiopia. The Nereids, incensed by the report of her great beauty, persuaded Poseidon to send a monster into her country. To rid the land of this incubus Andromeda must be sacrificed, so she was chained to a rock, but was rescued by Perseus (*q.v.*), who turned the monster into stone by exhibiting the head of Medusa. A constellation of stars in the northern hemisphere is called Andromeda.

Anemometer Instrument for measuring the velocity of the wind. There are several kinds. In one four metal hemispherical cups are fixed on four arms at right angles so that their concave surfaces are in the same direction of rotation. The arms are revolved by the wind striking the concave surfaces. Cog wheels are thus turned and an indicator moves on a dial on which a scale is printed. This gives the velocity of the wind in miles per hour.

Anemone Genus of perennial flowering plants of the genus *ranunculaceae*, also called windflowers. They are found in the temperate regions of Europe and bear handsome flowers. There are many varieties. The wood anemone is a wild flower which grows freely in England, bearing white flowers. The poppy anemone bears flowers of many colours, crimson, scarlet, purple, etc.

Aneroid *See* BAROMETER.

Aneurism In human beings a dilation of an artery. It is filled with blood and if it ruptures death may ensue. Aneurisms are much more common in men than in women. They are due to syphilis and to excesses of one kind or another, including excessive physical work. The best treatment is rest and abstention from excess.

Angary In International law the seizure or destruction in time of war, of vessels belonging to a neutral, which are in the ports of the seizer. A country has the right to use the ships for its own purposes, but compensation must be paid. In early times angary meant the provision of horses and messengers for the public service.

Angel Spiritual being. They are regarded in the Bible and in other sacred literature as the messengers of God. The traditional Christian belief is that they were created by God to serve him in heaven and to visit and help his people on earth. Led by Satan, some of them rebelled and lost their places in the heavenly presence. *See* ARCHANGEL.

Angelica Perennial herb. It bears fine leaves and large umbels of white, or purple, flowers. There are several species, all of which grow in the temperate zones. One species (*angelica sylvestris*) grows in the woods of Great Britain. It reaches a height of 5 ft.

At one time Angelica was regarded as an antidote for poison and a cure for infection. To-day the stalks are made into a sweetmeat. Formerly it was blanched and eaten like celery.

The **Angelica Tree** is a shrub found in North America. It bears berries which, infused in spirits, are sold as a cure for rheumatism and colic.

Angelico Fra. Italian painter. Born in 1387, he was baptised Guido, but took the name of Giovanni when he entered a Dominican monastery at Fiesole in 1407. On account of his lovable disposition he was called Angelico and as brother, Fra (frater). He passed his days at Fiesole, Florence and Rome, and died in Rome, March 18, 1455.

Extant works include the frescoes in the monastery of San Marco at Florence and many pictures in the galleries of Florence, Rome, London and Paris. All his paintings deal with religious subjects. One of the most notable of his pictures is "The Last Judgment," in Florence.

Angell Sir Norman. English author. Born Dec. 26, 1874, Ralph Norman Angell Lane was educated in France and passed some years in the United States, where he became a journalist. In 1899 he settled in Paris and in 1910 made a reputation with his book *The Great Illusion*, an analysis of the ruinous effects of war on all parties. His other books include *The Fruits of Victory*, 1921; *The Story of Money*, 1930; and *The Great Assassins*, 1932. From 1929 to 1931 he was Labour M.P. for Bradford North, and in 1931 he was knighted. He is editor of the periodical *Foreign Affairs*.

Angelus Service in the Roman Catholic Church. It is said three times a day, at 6 a.m., noon, and 6 p.m. It is in honour of the annunciation of the Virgin Mary and the name is that of the first word of the service.

Angina Pectoris Sudden pain accompanied by a feeling of intense oppression around the heart. It is a symptom of heart disease and usually attacks persons in middle life as a result of undue exertion. The attack, which is marked by impeded breathing, perspiration and great pain, may pass away as quickly as it came, but not infrequently it is fatal. Persons liable to this complaint should exercise great care in their movements. The inhaling of nitrate of amyl will give relief, but there is no real cure.

Angiosperm Botanical term. Seed bearing plants are divided by botanists into two classes, those in which the seeds are covered and those in which they are naked. The former are the angiosperms, or

plants having their seeds in vessels. Examples are the chestnut and the beech.

Angkor Ruined city of Cambodia. Near is the ruined temple of **Angkor Vat**, one of the architectural wonders of the world. It dates from the 12th century and was used for the worship of Brahma and then of Buddha. The word is a corruption of Nagara Thom.

Angle In geometry the difference in direction of any two lines, whether straight or curved. Angles are measured in degrees, or in grades, or in circular measure. The circumference of a circle is divided into 360 degrees, one-quarter of which, or 90 degrees, forms a right angle. A smaller one is acute and a larger obtuse. When three or more planes meet at a point a solid angle is formed. The complement of an angle is 90° less the angle. The supplement is 180° less the angle.

Angles are of importance in aeronautics. The **gliding angle** is the angle of decent which the aeroplane makes when gliding to the ground in still air with the engines out of action. The **angle of incidence** is the angle formed by the chord of the wings with the line of flight of the machine.

Angler Fish sometimes called the sea devil, monkfish, frog fish, goose fish and gab. It belongs to the class called *Teleostei*, or bony fishes, and is from three to five feet in length with a huge head and mouth. It is found around the coasts of Great Britain and elsewhere in Europe, as well as in America, and lives in the seaweed near the shore. Its pair of fins enable it to walk. It lives on small fish for which it angles, hence its name.

Angles Teutonic tribe living in Angleland, the modern Schleswig-Holstein. Some of them came over to England in 449 and later and settled there, giving their name to East Anglia and afterwards to all England. Bede says they founded the kingdoms of Mercia, Bernicia and Deira.

Anglesea or Anglesey

County and island of Wales. It lies off the coast of Caernarvonshire, from which it is separated by the Menai Strait. Its area is 275 sq. m. The county town is Beaumaris; other places are Amlwch and Llangefni. Holyhead stands on the Holy Island, which is part of the county. The L.M.S. Rlv. crosses the county. Flat and fertile, Anglesea is an agricultural area, although copper, lead and other minerals are mined and there are marble quarries. Anglesea, known as Mona, was a stronghold of the Druids before it was conquered by the Romans in A.D. 78. Pop. (1931) 49,025.

The title of **Marquess of Anglesey** has been held by the family of Paget since 1815. The first earl was Henry William Paget, (1768-1854) who commanded the cavalry at Waterloo, where he lost a leg. The eldest son of the marquess is called the Earl of Uxbridge and his chief seat is Beaudesert in Staffordshire.

Anglicanism Term used for the teaching and practice of the Church of England. This has spread from England into the various British Dominions and colonies. Although the archbishops of the Church of England have no actual authority over these branches, yet all agree in looking to them for leadership and direction. Meetings of the bishops are held periodically at Lambeth and these help to keep the churches united in the common faith and practice which is for convenience called Anglicanism. Each church has its own form of worship, its own prayer book and its own organisation, but all accept episcopacy and other fundamental beliefs of the Church of England (*q.v.*).

Angling Practice of catching fish with rod, line and bait. It is usually practised as a sport or pastime, in counter distinction to fishing which is done for a livelihood. It is carried on in rivers and lakes, and to a certain extent in deep water, either from the bank or from a boat.

In England the favourite fish for the angler is the trout, as, owing to its cunning and agility, it affords excellent sport. Angling for salmon, chiefly done in Scotland, Norway and British Columbia, requires also considerable skill, and at times a good deal of strength, as the salmon is a powerful fish. The fish chiefly caught in English inland waters are the roach, dace, gudgeon, perch, carp, pike, eel, chub, tench, bream and rudd. Some of these, the carp and the tench, are usually found in lakes and ponds. There is a close season for these and other fish.

The interests of anglers are looked after by the Anglers' Association.

There is a vast literature on angling and some of the works thereon go back to the time when printing was invented. The most famous of all is *The Compleat Angler* of Izaak Walton.

Anglo-Catholic Term used for the high church party in the Church of England. Their view is that the Church of England is a branch of the Catholic Church, and that, therefore, its fundamental beliefs are the same as those of the Catholic Church, which includes the Church of Rome and the Greek Church.

Anglo-Saxon Word used to-day to describe the people who are descended from the Angles and Saxons who invaded England. It thus includes the people of England, the English people in Canada, Australia and elsewhere and many of the inhabitants of the United States; but it does not include the Celtic peoples of Scotland, Ireland and Wales. It is, however, sometimes loosely used to describe all who speak the English language.

The Anglo-Saxons were dominant in England for 600 years. The chief relic of their literature is the *Anglo-Saxon Chronicle*, a history of the country which extends beyond their period. Begun about 900 it is especially valuable for the 8th, 9th and 10th centuries.

Their language has, with accretions, become the tongue of the English people. They had an elaborate system of law with payments for offences and much use of the oath and the ordeal.

Angmering Seaside resort of Sussex. It is 15 m. from Brighton, on the Southern Rly. A modern place, it is known for its tennis tournaments, while there are other attractions for visitors. It has an interesting church.

Angola Colony of Portugal. Situated in West Africa, to the south of the Congo, it has a coastline of over 1000 miles on the Atlantic Ocean. Its landward boundaries are the French Congo, the Belgian Congo, Rhodesia and South-West Africa. Its area is 486,079 sq. miles. The chief towns are Sao Paulode Luanda—called Luanda—the old capital, Cabinda, Benguella and Nova Redondo, which are also seaports. In 1928 Huambo, now called New Lisbon, was made the capital.

The chief products are maize, coffee, sugar, rubber and coconuts. There are large supplies

of coal, copper, iron and petroleum. Pop. (1931) 4,141,730.

Angora Now Ankara. Capital of the Turkish Republic. It is on the Angora river, in Asia Minor, 220 m. by railway from Istanbul. There are a number of industries and a considerable transit trade. Pop. 75,000.

The goat bred in the district is called the **Angora.** It is valued for its long hair from which mohair is made.

Angostura Bark of a tree that grows in Venezuela. Called also cusparia, it produces an aromatic drug, which has a medicinal value. It is used as a carminative and also as a tonic. From it angostura bitters, drunk as an appetiser, is made.

Angus County of Scotland formerly called Forfarshire. It has a coastline on the North Sea, with the Firth of Tay to the south, and covers 873 sq. m. In it are some of the Grampian Hills, the Sidlaw Hills and the valley called Strathmore. Forfar is the county town, but Dundee is the largest place. Other towns are Brechin and Kirriemuir, inland, and Arbroath and Montrose on the coast. Pop. (1931) 270,190.

Anhalt State of the German republic. It lies on both sides of the Elbe, and has an area of 890 sq. m. Dessau is the capital, Bernburg, Kothen and Zerbst are next in importance. Cattle are reared and wheat and other crops grown, while there are extensive forests and large deposits of potash. It is governed by a ministry of state and a land-tag and sends representatives to the Reichstag in Berlin. Pop. (1930) 351,000.

Anhydrite Mineral consisting of calcium sulphate. It is found in salt deposits and contains a little salt. It is white, grey, blue or red in colour. It absorbs water and is thus converted into gypsum (*q.v.*).

Ani Name of an Egyptian scribe. The papyrus of Ani, named after him, depicts the rites at an Egyptian funeral. It was fashioned about 1500 B.C. and is 78 ft. long. It forms part of the *Book of the Dead,* and is now in the British Museum.

Aniline Colourless liquid used in the manufacture of aniline dyes. It was first prepared by the dry distillation of indigo, the Portuguese name for which is *anil.* It is manufactured to-day by distilling nitrobenzene, scrapings of iron and a little hydrochloric acid. Lime is added when the reduction is complete and the aniline is distilled with steam. It can be made, too, by the electroreduction of benzene. It was first produced in this way in 1856.

Aniline ($C_6H_5NH_2$) boils at 183° and has a specific gravity of 1.024 at 16°. It is only slightly soluble in water, but will dissolve easily in alcohol or benzene. It is very poisonous if taken internally and the inhaling of its vapours is injurious. Aniline is much used in making dyes and in preparing benzene derivatives. *See* DYEING.

Animal Term used in relation to living organisms apart from plant life. The distinction between these two forms of living creatures becomes one of great difficulty, as among the lowest types many of the characters usually associated with animal life are shared by plant organisms. The fundamental basis of all living organisms is protoplasm in which are inherent the vital activities of locomotion, respiration, food absorption, secretion and excretion, response to external stimuli, and reproduction. In the multicellular organisms some degree of specialisation of tissues for the carrying out of these functions occurs, giving rise to organs.

In the animal locomotion is general, respiration consists of the absorption of oxygen and the removal of carbon dioxide, the response to stimuli is performed by some form of nervous system, digestion is characterised by absorption of organic and inorganic food materials, with associated secretory and excretory organs, and reproduction occurs by simple or complex processes and organs. Some degree of consciousness is present, shown as instinct and intelligence in the higher types.

Animism Attribution of a living soul to inanimate objects and natural phenomena. The first use of the word was for what is now called vitalism, a belief that all the phenomena peculiar to the animal world are produced by a spirit (*animus*). The present and generally accepted use of the term is due to E. B. Tylor in his book, *Primitive Culture.* Animism is seen in the belief, highly developed among the Greeks, that spirits are attached to trees and fountains, and in the wider idea that they form part of the human entity but are distinct from the actual body.

The existence of spirits was probably first suggested to primitive man when he contemplated sleep or death. From the belief in spirits a number of ideas were evolved. The spirits might do good or harm to the living man or to his possessions: if harm they could perhaps be propitiated by gifts or kept away by magical rites. In some races the belief in the transmigration of spirits or souls arose, and most adopted some kind of belief in a life beyond death.

Aniseed Fruit of a perennial herb. An umbelliferous plant, the anise grows in the southern parts of Europe and bears small white flowers. Another variety, which grows in China and Japan, belongs to the magnolia family. The anise is chiefly grown for its seeds which produce a fragrant essential oil. This aniseed is used in confectionery as a flavouring and as a remedy for indigestion.

Anjou One of the provinces of France before the Revolution. It was the district around Angers, its capital, and its chief river was the Maine. It is now covered by the departments of Maine-et-Loire, Indre-et-Loire, Mayenne and Sarthe.

The duchy was lost by King John in 1203, and its later counts were members of the royal family of France. In 1360 the count was made a duke and the dukes ruled it until 1584 when it became a province of France.

Ankle Joint that unites the leg with the foot. It is a hinge joint with three ligaments, anterior, internal and external. It articulates between the two bones of the leg, the tibia and the fibula.

Bearing, as it must at times, the whole weight of the body, the ankle is very strong but nevertheless sprains and dislocations (*q.v.*) are frequent.

Ankylostomiasis Disease due to the presence of a hookworm in the human intestine. It is chiefly found in tropical countries, but also in Great Britain and parts of Europe. It attacks chiefly brickmakers, miners and others who work with their hands. Its effects are progressive anaemia accompanied by sickness and pain. The parasite can be expelled by purgatives, or killed by the use of thymol.

Anna Indian coin. It is divided into four pice, or 12 pie, and 16 of them go to the rupee. It is worth rather more than a penny.

Annam District of Indo-China. It is a French possession covering 39,758 sq. m., and has a long coastline on the China Sea. It is ruled by a king, under the protection of France. The capital is Hué, but Binh-Dinh is equally large. Tourane and other ports are open to European trade. Rice, cotton, maize and other crops are grown as well as sugar, tobacco, and various other tropical products. Irrigation works have been put in hand. There are mines of coal and iron ore; also salt works. Pop. 5,300,000.

Annan River of Dumfriesshire, Scotland. It flows for about 50 m. south to the Solway Firth. The district through which it passes is called Annandale.

Annandale is also the name of a suburb of Sydney.

Annan Burgh and seaport of Dumfriesshire. It stands near where the River Annan falls into the Solway, 17 miles from Carlisle, and is served by the L.M.S. Rly. The burgh has associations with Carlyle and Edward Irving. Pop. (1931) 3959.

Annapolis Town of Nova Scotia. The French founded it in 1604, and it is said to be the oldest town in North America. They called it Port Royal, and it was renamed Annapolis in honour of Queen Anne, after the English obtained it in 1713. It stands on Annapolis Bay. Pop. 739.

Annates Payment of money for ecclesiastical purposes. At one time every holder of any ecclesiastical office was supposed to pay the first year's revenue to the Pope. In England, in 1524, Henry VIII. took these annates for himself, and this lasted until 1703, when they became part of the fund called Queen Anne's Bounty (*q.v.*).

Annatto Colouring matter. It is obtained from the seeds of a plant that grows in South America and is called *bixa orellana*. In colour it is red and it is soluble in alcohol, or in alkaline solutions. Known as bixon, it is mixed with potash and used for dyeing textile fabrics. It is employed more, however, to colour cheese and butter and to mix with varnishes and lacquers, as well as oil.

Anne Christian saint. Tradition says she was born at Nazareth and married Joachim, becoming the mother of the Virgin Mary. Her feast is on July 25, and she is regarded as the patron saint of married women.

Anne Name of several queens consort. Two were wives of Henry VIII. **The first, Anne Boleyn,** was a daughter of Sir Thomas Boleyn, Earl of Wiltshire. Henry VIII. made love to her, and was secretly married to her. In Sept., 1533, Anne's only child, Elizabeth, was born. Soon the king tired of his queen, and Anne was tried for adultery. Found guilty, she was beheaded on Tower Green, London, May 19, 1536.

The other, Anne of Cleves, was Henry's fourth wife. She was born Sept. 22, 1515, the daughter of the Duke of Cleves, a Protestant, and was married to Henry, Jan. 6, 1540. The king disliked her from the first, as, before the marriage, he had only seen her portrait, and the union was dissolved in July. Anne died at Chelsea, July 16, 1557.

Anne of Denmark, the queen of James I., was the daughter of the King of Denmark and Norway. She was born Dec. 12, 1574, and was married at Oslo in 1589. She had five children, and died March 2, 1619, six years before James. The house at Greenwich, built for her by James, is now a naval museum.

Anne Queen of Great Britain. The younger daughter of James II. and his wife Anne Hyde, daughter of the Earl of Clarendon, she was born in London, Feb. 6, 1665. In July, 1683, she was married to George, Prince of Denmark. When her brother-in-law, William of Orange, landed in England, Anne deserted her father, but was soon concerned in intrigues for his restoration. As arranged, Anne became Queen on William's death in March, 1702, and reigned for twelve years. Her reign was an important one, made glorious by the victories of Marlborough and the writings of Addison and others, but she herself was commonplace and much under the influence of her favourites, the Duchess of Marlborough, and later Mrs. Masham. She died Aug. 1, 1714.

Anne Name of two rulers of Russia. The first, a daughter of Ivan V., was born in 1693 and married the Duke of Courland in 1710. He died the next year and she ruled Courland until 1730 when she was chosen Empress of Russia. She ruled the country, aided by her favourite, Biren, under a system of terrorism, until her death in 1740.

The second Anne, born in 1718, was a German princess. She was adopted by the Empress Anne, and in 1739 married the Duke of Brunswick-Wolfenbüttel. They had a son, who, as Ivan VI., became Tsar in 1740. His mother ruled for him until 1741 when she was deprived of her position. She died in 1746.

Annealing Process by which glass and metals are made tough and durable. It consists of heating and then gradually cooling the substance, being thus the opposite of tempering (*q.v.*). It is applied to steel bars and other materials that are subject to strain.

Annealing results in a certain rearrangement of the crystals or fibres of the material. Internal stresses, which might otherwise be present in the metal, are avoided. It is carried out in special furnaces. The object, having been heated to the proper temperature, is covered with ashes. Gas is used for heating the furnaces. The rate of cooling depends to some extent upon the metal, but copper can be cooled quickly or slowly.

Annelid Group of segmented worms. They include earth worms, blood worms, lob worms and leeches. In all the body is divided into a number of rings or segments. Many of them live in the water, but some on land, where they burrow in the soil or the sand. Some form round themselves a dwelling made of exudations from their bodies.

Annuity Perodical payment of money for a limited time. It is an investment on which the owner receives, not only interest on his money, but a return of his capital over a period of years, usually the duration of life. Annuities can be bought through the Post Office Savings Bank, or from insurance companies. Their price is worked out by actuaries. Every £100 will purchase a certain annual income which varies according to the age and sex of the annuitant. The older a person is the more he or she will get per year.

Annuity is sometimes used for a pension, or an allowance.

Annunciation Announcement of a forthcoming event. The word is chiefly used for the announcement made by the angel Gabriel to the Virgin Mary that she should be the mother of Jesus Christ (Luke i). In the Church of England and the Roman Catholic Church the Feast of the Annunciation has always been kept on March 25, which is therefore called Lady Day.

The **Order of the Annunziata** was founded in 1362 by a Count of Savoy. It is now the chief Italian Order, and its badge is a representation of the annunciation.

Annunzio **Gabriele D'.** Italian poet and novelist. He was born at Pescara in 1864 and was educated in Rome. When a boy he began to write poetry, and in a few years he had made himself known as a writer, both in prose and verse. He has written some exquisite sonnets and a number of novels, some of which have been translated into English. These include *The Child of Pleasure*, *The Virgin of the Rocks*, *The Dead City* and *The Pleasures of Life*. He has also written tragedies. In 1915 Annunzio joined the air force and served against the Austrians. In 1919 he organised and led an expedition that took Fiume on behalf of Italy. He also took Zara, but after a time the difficulties were composed and he withdrew. In 1924 he was made a prince.

Anode In electrolysis the electrode through which the current enters the electrolyte. The direction of the current is from the anode, through the liquid, to the kathode. In the thermionic valve the anode is usually a metal cylinder towards which the electrons move.

Anodyne Drug used to ease pain. Opium is an example.

Anointing Religious and ceremonial use of oil, or ointment. It is mentioned in the Bible and was practised by the early Christians, who used it at baptisms, confirmations, ordinations and in times of illness. The Roman Catholic Church still practises anointing, which is part of the sacrament of extreme unction. It is used to some slight extent in the Church of England and elsewhere. The king and queen are anointed at their coronation.

Anselm English saint and prelate. He was born at Aosta in 1033 and, after an unsettled life, entered the famous monastery at Bec in Normandy in 1060. In 1063 he was made its prior and in 1078 its abbot. In 1093 he was appointed Archbishop of Canterbury, but was soon at variance with the king, William II., and in consequence left the country and was abroad when William died. His refusal to do homage to the new king, Henry I., for his lands, led to a second exile. In 1105 a compromise was made between the claims of the church and the state. Anselm then returned to England and remained at Canterbury until his death, April 21, 1109. He was canonised in 1494.

Anson **Lord.** English sailor. George Anson was born April 23, 1697, at Shugborough, Staffordshire. In 1712 he entered the navy, and in 1740 he was put in command of a squadron, England being then at war with Spain. All his ships save one were lost, but in this he returned home with treasure worth £500,000. In 1747 he defeated the French fleet off Cape Finisterre and was made a baron. As First Lord of the Admiralty from 1751 to 1762 he organised the marines. He died at Moor Park, Hertfordshire, June 6, 1762. The head of the Anson family is the Earl of Lichfield.

Anstey, F. Name taken by the novelist, Thomas Anstey Guthrie. He was born Aug. 8, 1856, and was educated at King's College, London, and Trinity Hall, Cambridge. He contributed to *Punch* and made his name with the humorous story called *Vice Versa* in 1882. A number of other books in the same vein followed, including *The Tinted Venus*, *The Brass Bottle*, *The Talking Horse* and *Baboo Jabberjee, B.A.* His other writings include plays, especially *The Man from Blankley's*, and the volumes called *Voces Populi* and *Salted Almonds*.

Anstruther Market town of Fifeshire. It stands on the Firth of Forth, 9 m. from S. Andrews, on the L.N.E. Rly. The chief industry is fishing, for which there is a good harbour. The town consists of three old burghs, Anstruther Easter, Anstruther Wester and Kilrenny.

Ant Class of insects allied to the bees and the wasps, and sometimes called the emmet. They belong to the order *hymenoptera*. There are about 2000 species. The white ant, or termite, is not related to the ordinary ant.

There are male, female and neuter ants with a queen, who is larger, at their head. The females are larger than the males. The neuters are sterile females who do the work. The males and females have wings, but the neuters have not. They mate while flying; soon afterwards the males die and the females, having shed their wings, lay their eggs which are tended by the neuters. In a few days the eggs become pupae and in a few more perfect insects. Ants are specially fond of sugary substances. They have stings and eject a poison called formic acid.

The homes of the ants are passages in the ground, or in the trunks of trees, but they are often found in garden soil, or boneath stones. They communicate with each other by means of their antennae.

Antaeus In Greek legend a son of Poseidon and Ge. A giant, he was a noted wrestler, being always victorious, as whenever he touched the earth, of which his mother was goddess, his strength came back to him. He was killed by Hercules, who held him above the ground and squeezed him to death.

Antananarivo Capital of Madagascar. It stands on the hills about 100 m. from the east coast and is connected by railway with its port, Tamatave. Pop. (1931) 92,475.

Antarctica Name for the south polar continent. Except the outlying South Georgia and the South Sandwich groups it lies within 60° S. latitude, which roughly demarcates the floating icebelt. It is conventionally divided into the Enderby, Victoria, Ross and Weddell quadrants, or more usefully into the African, Australian and American sectors. Its land area exceeds 5,000,000 sq. m.

In 1928, "by virtue of discovery," the British Government stated that the following were regarded as part of the Empire:

(1) The outlying part of Coats Land—namely, the portion not comprised within the Falkland Islands dependencies; (2) Enderby Land; (3) Kemp Land; (4) Queen Mary Land; (5) the area which lies to the west

of Adelie Land and which, on its discovery by the Australian Antarctic Expedition in 1912, was denominated Wilkes Land; (6) King George the Fifth Land; and (7) Oates Land.

Antarctic Exploration

The first man knowingly to cross the Antarctic circle was James Cook in 1773. Between 1819 and 1822 the South Shetland, South Orkney and other islands were discovered by sealers In 1821 Bellingshausen first discovered land within the circle at Peter I. Island, and other expeditions, led by Weddell, Biscoe, Balleny, Ross and other explorers followed. Ross, in 1839, in the *Erebus*, made extensive discoveries including the volcanoes Erebus and Terror.

Work on modern lines began with the *Challenger*, the first steamship to cross the circle (1874), but it was not crossed again until 1893. In 1898, explorers wintered for the first time in these regions. In 1901 the *Discovery*, under R. F. Scott, set out and made some extensive and valuable discoveries during the next three years. The party found and named King Edward VII. Land, and explored Victoria Land, while about the same time good work was being done by expeditions under Nordenskiold, Drygalski, a German, and Charcot, a Frenchman. Another, led by W. S. Bruce, discovered Coats Land. Together they made certain the existence of a vast antarctic continent.

In 1908, E. H. Shackleton led an expedition that had valuable results. Its members got to within 100 m. of the pole, and on Jan. 16, 1909, determined its position; this represented an advance of over 400 m. to the south over any previous expedition. The honour of being the first to reach the pole, however, fell to Roald Amundsen, who, with a party on skis, arrived there on Dec. 16, 1911. A month later, using sledges, Scott, with four companions, reached it, but met his death on the return journey.

Since the discovery of the pole, exploration work has been continued with renewed vigour, great assistance having been given by aircraft. In 1911-14 some valuable discoveries were made by an expedition under Sir D. Mawson. In 1914 Shackleton set out in the *Endurance* and made some adventurous journeys, as he did in 1922, when he died on the way home. In 1929 Sir Hubert Wilkins led another expedition, and about the same time an American expedition set out under Richard Byrd. Both these explorers flew over the pole. Under Sir D. Mawson an expedition went out in 1929, mainly to seek information that would help to preserve the whale from extinction. In 1933 Rear-Admiral Byrd led an American expedition to the South Pole. In 1935 the American airman explorer Dr. Lincoln Ellsworth, with Mr. Holliok-Kenyon, set out on a 2000-mile flight across the Antarctic. Missing from 24th Nov., they were sighted by the Royal research ship *Discovery II*, and rescued at the Bay of Whales on 16th January, 1936.

As part of a memorial to Capt. R. F. Scott, a Polar Research Institute was founded at Cambridge, and a building for it was begun in 1932.

Anteater Mammal feeding on termites and ants. The name chiefly indicates three quadrupeds inhabiting Central and South America. The great anteater (*myrmecophagus*), with a tubular muzzle and long viscid tongue, is a ground dweller measuring 7 ft., including a very long tail. The lesser (*tamandua*) and the pigmy (*cycloturus*) are arboreal. Australia possesses the banded anteater, one of the few pouchless marsupials, and two spiny anteaters (*echidna*).

Antelope Generalised name for hollow-horned ruminants. They are distinguished from goats by being beardless, and from cattle and sheep by their more solid horns. Asia possesses the Indian antelope (sasin), the Indian nilgai and four-horned chousingha, the Tartary saiga, the Tibetan chiru, and many gazelles. Most of the 150 species are confined to Africa, Arabia and Syria. Besides gazelles they include the eland, kudu, bushbuck, oryx, addax, springbuck, duiker, hartebeest and gnu. The size ranges from the eland, about 6 ft. high, to the royal antelope, about the size of a hare. Chamois, goral, serow and takin form a goat-antelope sub-family. The so-called American antelope, or pronghorn, forms another sub-family.

Antennae Feelers or jointed appendages appearing before the mouth in single pairs in crustaceans, myriapods and insects. Crustaceans have also a smaller supplementary pair called antennules. Crustacean feelers may serve as oars, claspers, stilts or for burrowing in the sand. In some myriapods and insects they are the organs of sense, being used for feeling and smelling. The antennae may greatly exceed the length of the animal's body. Butterflies are distinguishable from moths by their clubbed horns.

Anthology Collection of poems, epigrams or prose pieces by various authors. The first Greek anthology was compiled by Meleager about 60 B.C., and Constantine Cephalas, about A.D. 920, extended it to 300 authors. Mediæval and modern Latin anthologies are also known. Outstanding English anthologies include Palgrave's *Golden Treasury*, *The Oxford Book of English Verse*, and Robert Bridges' *Spirit of Man*. The word comes from the Greek word for a flower.

Anthony Christian saint. He was born in Egypt about 251, his parents being Christians, and became a hermit. He lived in the desert for some 15 years, and won a great reputation for piety. In 305 he founded a monastery, or hermitage, for his followers near Memphis, and is claimed to be the originator of monasteries. He died in 356 and his festival is Jan. 17.

Anthony Christian saint. He was born in Lisbon in 1195 and became a monk. About 1220 he joined the Franciscan Order and became noted as a preacher. He died at Vercelli, June 13, 1231. In 1232 he was canonised and his festival is June 13. He is known as S. Anthony of Padua.

Anthracite Non-bituminous coal. It is hard and dense and of brilliant lustre, and rarely soils the fingers. Its carbon content ranges from 90 per cent. to 95 per cent. It burns with intense heat and a nearly non-luminous flame, and is smokeless.

Anthrax Virulent infectious disease which attacks sheep, cattle and pigs and also human beings. It is caused by the bacillus found in contaminated food and water, and attacks are sudden and often fatal. In Great Britain cases of anthrax must be reported at once to the Ministry of Agriculture, and steps taken to isolate the infected animals.

Among human beings anthrax chiefly attacks those who tend animals or handle their hair, leather dressers and wool sorters, for instance.

It may come on suddenly and be fatal within 24 hours. Cases must be notified to the medical officer of health. To prevent an outbreak from spreading drastic cleansing by fire and disinfection should be employed. Persons with cuts or wounds should be specially careful when in contact with possible sources of infection.

Anthropoid Variety of ape. They are the most like men of all the lower animals. There are four classes: orangs, gibbons, gorillas and chimpanzees. They live in Asia and Africa. They resemble men in having no tail, in the number and arrangement of the teeth, and in the position of the thumb. They live largely on fruit and make their homes in trees.

Anthropology Science of man. The study of mankind has a physical and a cultural side. Physical anthropology treats of the natural history of man, and incidentally of his precursors. It seeks aid from palaeontology, which studies the fossil bones of early man and his organic contemporaries, while his present constitution is the concern of biometry and physiology.

Cultural anthropology, called by Herbert Spencer sociology, unfolds the story of civilisation. For studying racial origins and human distribution the aid of ethnology is invoked. To understand the course of human migrations importance attaches to anthropogeography. When first brain and hand began that mutual reaction which raised man above the brute man the toolmaker was born; thus the story of culture demands also close application to technology, which from the very outset expounds the growing complexity of the food quest. The primary inventions, developed out of the arts of life, include fire making, personal ornament, clothing, shelter, weaving, pottery, animal and plant domestication and metal working. Articulate speech led to momentous developments, culminating in the art of writing.

Anthropology is a subject of study at many universities, and professors of the subject exist at Oxford, Cambridge, London, Liverpool and elsewhere. The study is aided by collections in the museums; in London in the British Museum and the Natural History Museum, for instance. In England the headquarters of the study is the Royal Anthropological Institute at 52 Upper Bedford Place, London, W.C.1.

Anthropometry Art of measuring man. The British Association schedules about 36 measurements, half for the living body and limbs and half for the head, besides 24 measurements for the skull and skeleton when dead. For studying ethnological factors the minimum requirements are skin colour, eye colour, hair type, and measurements determining the cephalic, facial and nasal indices, dimensions of thigh bone, shoulder blade and pelvis, and total height.

Anthropomorphism Ascription to the deity of human attributes. It represents a stage of early religion when supernatural powers were made intelligible to man by being endowed with human qualities and affections. The assembly of gods on Olympus described by Homer is frankly anthropomorphic. The anthropomorphic language of the Old Testament, which speaks of the eye and hand of God, is a necessity of human thought, as man cannot apprehend beings above himself except in his own likeness.

Anthropophagi Tribe of cannibals. They are mentioned by Pliny and other writers as living near the Caspian Sea. They ate the flesh of their parents, possibly as a religious rite.

Antibes Seaport and winter resort on the French Riviera. It is 12¼ m. south-west of Nice and has a good harbour. The industries are fishing, the making of perfumes and catering for visitors. Pop. 12,000.

Antichrist Person or power antagonistic to Jesus Christ. In the New Testament the term occurs only in the Epistles of S. John, but S. Paul's "man of sin" (2 Thess. ii) may embody the same idea. Some leaders of the Reformation identified the Papacy with Antichrist.

Anticline In geology an arched fold in sedimentary rocks caused by crustal pressure. The summit of the ridge, which may be symmetrical or irregular, forms the axis. If the beds dip in all directions from a centre the result is a dome; an anticline may therefore be regarded as an elongated dome. *See* SYNCLINE.

Anticosti Island of Quebec. It is in the gulf of the S. Lawrence and is 122 m. long, covering 2600 sq. m. It is a preserve for certain wild animals and is a centre for the fisheries in the river.

Anticyclone Atmospheric phenomenon. In it an area of high barometric pressure is caused by descending air and the pressure decreases towards the edges of the area. When mapped by means of isobars it is seen that the form is often that of a circle or oval. The descending air becomes dry and warm and so transmits radiation freely. The centre of the system is calm, but from it winds blow out, in the northern hemisphere in one direction and in the southern in the other. Anticyclonic weather is marked by clear air and frost in winter, and blue sky and heat with heavy dews in summer. *See* CYCLONE.

Antigone In Greek legend a daughter of Oedipus by his mother, Jocasta. After he resigned the Theban throne, Antigone guided the blinded Oedipus in his wanderings until his death at Colonus. Her brothers, Polyneces and Eteocles, slew each other in single combat at Thebes, whither she returned. For burying the body of Polyneces against King Creon's edict she was imprisoned in a cave, where she hanged herself.

Antigua Island of the British W. Indies. It is 28 m. long, with an area of 108 sq. m. The chief place is S. John, which is the capital of the Leeward Islands. The island produces sugar, tobacco, cotton. Pop. (1931), 31,235.

Antilles Name collectively applied to the West Indian Islands south of the Bahamas. There are two groups, both within the tropics. The Greater Antilles comprise Cuba, Jamaica, Haiti and Porto Rico and some smaller islands. The Lesser Antilles include the Leeward and Windward groups, and also the British islands of Barbuda, Antigua, S. Christopher, Montserrat, Dominica, S. Lucia, S. Vincent, Barbados, Grenada, Tobago and Trinidad, and the French islands of Guadeloupe and Martinique.

Antimony Metallic element. Its symbol is Sb, and its atomic weight 120. It is crystalline, brittle, lustrous, bluish-white, and melts at 432° C.

It appears sporadically in nature, but the unrefined commercial metal called regulus is mainly derived from its sulphide stibnite, which is mined in China, Australia, Borneo, France and Mexico. As antimony expands when solidifying it is a constituent of alloys for sharp castings such as type metal, and also of anti-friction metals. Its tin alloy furnishes Britannia metal and sometimes pewter.

Antimony is used in medicine as an emetic. In large doses it is an irritant poison.

Antinomianism Term denoting the doctrine that Christians are freed by the Gospel from the obligation to observe the Mosaic law. It perverts the doctrine of justification by faith propounded by S. Paul (Romans). It emerged into prominence in the 16th century in Germany, where Johannes Agricola taught views which Luther stigmatised as antinomian.

Antioch Ancient city in Asia Minor. Its site is 200 m. from Smyrna, and it was a flourishing city in Roman times.

Antioch Town of Syria. It stands on the Orontes, 60 m. from Aleppo. There are some industries, but its interest is mainly historical. It was founded about 300 B.C. and, named after Antiochus, King of Syria, was later one of the greatest cities in the Roman Empire. Here the followers of Christ were first called Christians. It was destroyed by the Persians in 540, but, although rebuilt by the Romans, never recovered its former greatness. Under Turkish rule the place then gradually decayed. Pop. 30,000.

Antipodes Term denoting places diametrically opposite to each other on the earth's surface. A line joining them passes through the earth's centre. New Zealand is approximately the antipodes of Great Britain. A cluster of uninhabited rocks, 13 sq. m. in area, nearly 500 m. south-east of Dunedin, is called the **Antipodes Islands.**

Antipope Pontiff not rightfully elected. Some 31 persons have been elected in opposition to a reigning pope, and are therefore called antipopes.

Antirrhinum Genus of many-coloured flowering plants sometimes called snapdragon. There are about 25 species, natives of Europe and Asia, and some have been developed as garden plants. They occur as annuals, biennials and perennials.

Anti-Semitism Opposition to the Jewish race. In its modern form the movement became conspicuous in Europe during the last quarter of the 19th century, and in 1882 was the cause of many brutal outrages in Russia and Hungary. During the same period an Anti-Semitic League was at work in Germany to restrict the liberty of the Jews, and from 1933 an organised anti-Semite campaign on a large scale was carried out in Germany under the leadership of Herr Adolf Hitler, the Chancellor. The Dreyfus case is an illustration of Anti-Semitism in France. The movement appears to be based on economic rather than religious or political causes.

Antiseptic Substance which destroys or arrests the development of micro-organisms, thereby preventing putrefaction or fermentation. **Antiseptic surgery,** originated by Lord Lister, who introduced the swabbing of wounds with carbolic acid solutions, has since utilised such substances as corrosive sublimate, boracic acid, iodine, zinc chloride, salicylic acid and cresol. Aseptic treatment includes cleansing the surgeon's hands, sterilising the instruments and dressings, and preventing access to the wounds of pathogenic organisms.

Modern chemotherapy injects into the blood stream microbe-destroying substances such as salvarsan, sodium hypochlorite and acriflavine Research is continually searching for drugs capable of destroying specific infections internally without injuring the tissues.

Antitoxin Substance which neutralises a bacterial toxin. The microbes causing specific infections usually operate, not directly, but through chemical poisons produced by them. Persons become immune to such toxins after the appropriate antitoxin has been introduced into the blood serum. Each antitoxin neutralises only the toxin against which it was produced. It is drawn from the blood serum of a living animal which has been immunised against a bacterial toxin by repeated inoculations. The most efficient are the diphtheria and tetanus antitoxins.

Antler In deer the outgrowth of the frontal bone. Except in reindeer antlers are confined to the male and grow in pairs from pedicles on the skull above the eyes. During their rapid growth they are protected by a furry skin called velvet, which withers and leaves the bone hard and insensitive. Antlers are used for offence and defence during the rutting season, after which they fall away. A branched antler comprises the beam and one or more branches or tines.

Ant Lion Larva of a neuropterous insect. It is found in Europe, but not in Great Britain. It forms in the sand a small pit into which ants and other wingless insects fall, only to be seized by the ant lion lying at the bottom, sand being thrown about to disable the prey. The victim is then sucked dry and its skin thrown away. When the larval stage is over the ant lion appears as an insect with four wings.

Antofagasta Seaport of Chile, about 750 m. north of Valparaiso, and connected by railway with La Paz in Bolivia. There is no harbour, so ships discharge their cargoes by lighters. The town is quite modern. The chief industry is the smelting of silver from the neighbouring mines. Pop. (1930) 53,591.

Antonines **Age of the.** Period of Roman history between the accession of Titus Antoninus (Pius) A.D. 138, and the death of his adopted son, Marcus Aurelius, A.D. 180. It was a period of great prosperity within the Roman Empire, both emperors being men of moderation and high ideals.

Antoninus Pius Roman emperor. Antoninius Titus Aurelius Flavius was born in A.D. 86 of good family, and in 120 was made consul. Later he was proconsul in Asia Minor and was adopted by the Emperor Hadrian as his successor. He became emperor in 138 and reigned for 23 years, a period of peace. A wall built between the Forth and the Clyde bears his name. He died March 7, 161.

Antonio **Antonello D'.** Italian painter. Born about 1414, he studied painting in oils in Bruges and is said to have taken the new medium to Italy. He passed the rest of his life at Venice and died in 1493.

In the National Gallery, London, are paintings by him—"S. Jerome in his Study," "Salvator Mundi," and "The Crucifixion"; he is represented in Paris, Dresden and Rome.

Antrim County of Northern Ireland. It is in the N.E. of the country and has a long coastline on the N. and E. A good deal of it is hills or bogland, but there is much fertile soil whereon flax, potatoes, etc., are grown. Lough Neagh is partly in the county, which includes Rathlin Island and the Skerries. The chief rivers are the Lagan and the Bann. The area is 1176 sq. m., and it is the most populous county in Ireland as Belfast is herein. Antrim is the county town. Other places are Carrickfergus, Lisburn, Ballycastle, Ballymena, Larne and Ballymoney. Portrush is one of several watering places. The county sends two members to the British parliament. Pop. (1926) 191,618 (excluding Belfast).

Antrim Market town and county town of Co. Antrim, Northern Ireland, connected by railway with Belfast, 22 m. away. The castle stands in fine grounds. The round tower, 95 ft. high, is regarded as the finest in Ireland. Linen and woollen goods are made. Pop. 2000.

The title of **Earl of Antrim** has been held by the family of M'Donnell since 1620.

Antung Seaport of Manchuria. It is on the Yalu River, 7 m. from its mouth, and is connected by railway with Mukden and other places in the interior. It is a treaty port. Pop. 72,500.

Antwerp City and seaport of Belgium, called Anvers by the French. It stands on the right bank of the Schelde, 27 m. from Brussels and about 50 from the open sea. It is connected by railway and canal with the great industrial regions of France and Belgium. A canal linking it with Liége was begun in 1932.

The finest of many buildings is the cathedral of Notre Dame, remarkable not only for its size, its six aisles and its lofty tower, but also for its beautiful design, its stained glass and its pictures by Rubens. The church of S. Jacques is closely associated with the Rubens family and there are many others.

The town hall dates from the 16th century, and the exchange was rebuilt in the 19th on the model of the earlier one.

Antwerp, with its extensive docks, quays, warehouses, etc., is one of the great trading ports of Europe. The industries include shipbuilding and repairing, oil and sugar refining, and the manufacture of cloth, linen, silk and other textiles.

HISTORY. In the 15th century Antwerp replaced Bruges as the chief port of the Netherlands, and in the 16th it was probably the greatest port in Europe. Its decline was aided by the destruction done by the Spanish soldiery in 1576 and its capture by the Duke of Parma in 1585, and in 1648 the Schelde was closed by the Treaty of Westphalia. Antwerp, therefore, remained quite unimportant until early in the 19th century when it was for a short time in the hands of the French. The Schelde was again opened to commerce and new harbour works were begun. The result was that, after 1830, when Belgium became independent, it became once more a scene of great trading activity. It has been enlarged by taking in several adjacent places such as Berchem. Pop. (1931) 284,811.

On Sept. 27, 1914, the Germans attacked the city and its forts, a detached group around the city, were silenced one by one. A naval division was sent from Britain to aid in defending the city, but this could not avert its fate. On Oct. 9, it surrendered and it remained in the hands of the Germans until the end of the struggle.

Anu Babylonian god of heaven. At first worshipped as a local sky deity in Erech, he came to be regarded as supreme in a triad which included Bel of Nippur and Ea of Eridu, who were deemed to rule heaven, earth and sea respectively.

Anubis Egyptian god of the dead. He developed from a canine divinity who guarded the cemetery to the servant and messenger of the gods. As such he came to preside at embalmings, and watched the balance while Thoth recorded the result at the soul weighing of the dead before Osiris. Often represented in pictorial and sculptural art, when he has the head of a jackal, he was identified with the Greek Hermes. Osiris and Nephthys were his reputed parents.

Anzac Term colloquially denoting the Australian and New Zealand troops who served in the European war of 1914-18. Derived from the initial letters of the Australian and New Zealand army corps, it was adopted as a distinctive name for a cove on the coast of the Gallipoli Peninsula near Gaba Tepe. Here the Australian and New Zealand troops landed on April 25, 1915. The Anzac cemeteries in Gallipoli were subsequently protected by treaty. *See* GALLIPOLI.

Aomori Seaport of Japan. It stands on the north shore of Hondo Island on Aomori Bay and is a railway terminus. There is a good harbour, improved in the 20th century. The port was opened to foreign trade in 1906. Pop. 58,800.

Aorta Main artery of the body. It starts from the left ventricle of the heart, and in the human adult is about 18 inches long. First ascending it arches to the left and, in descending, divides into the thoracic aorta and then, passing through the diaphragm, the abdominal aorta. Branches from these serve the whole arterial system except the pulmonary arteries. The backflow of blood to the heart is prevented by the aortic valve. *See* ARTERY.

Apache Group of North American Indian tribes. They formerly ranged from Texas and Arizona southward to the Mexican state of Durango. They were at constant feud with the whites until rounded up in 1886. They now live in reservations in New Mexico, Arizona and Oklahoma, and number 6500.

The name was applied to hooligans of French or alien origin in the underworld of Paris who, early in the 20th century, began to practise murder and outrage.

Apatite Mineral in which anhydrous calcium phosphate is associated with a variable proportion of the chloride or fluoride of the same metal. It appears as minute lustrous needles scattered through igneous rocks or as hexagonal prisms, up to a foot long, embedded in limestones, gabbros and gneisses. In this crystallised form it is mined in Canada and Norway. Still more important supplies of mineral phosphate for artificial fertilisers are derived from varieties of apatite called phosphorite.

Ape Word used for certain kinds of monkeys. At one time it described any kind of monkey, but to-day it is confined

to the anthropoids, *e.g.* the gorilla and to the tailless or short tailed ones. *See* ANTHROPOID; MONKEY.

Apelles Greek painter. Born in the 4th century B.C., he proceeded to the Macedonian court, where Alexander the Great made him his painter. He portrayed his patron wielding a thunderbolt, for the Temple of Diana at Ephesus. His picture of Aphrodite rising from the sea was afterwards transferred to Rome by Augustus. All have perished.

Apennines Mountain range of Italy. It stretches right down the country for about 800 miles and reappears in Sicily. The average height is 4000 ft., and the highest peak is Monte Corno, 9560 ft., in the Gran Sasso d'Italia. Geographers distinguish three divisions (1) northern; (2) central; (3) southern; there are local names for various parts. The range is cut by several passes through which are roads and railways.

Aphasia Loss of the power of speech. It is due to brain lesions and the causes operate as in apoplexy. Sensory aphasia, or the loss of the power of perceiving spoken or written words, comprises word deafness and word blindness. Motor aphasia is the loss of the power of producing spoken words.

Aphis Genus of insects known to gardeners as plant lice or green fly. They are very common in Great Britain. They feed on plants and leave thereon an excretion called honeydew which is eagerly eaten by ants, but is injurious to vegetation. They reproduce sexually once a year and in the spring the eggs hatch out into females, who give birth by division to others in a few days. The others repeat the process, and so the insects increase in number enormously. The males are only born in the autumn.

The pests include the rose aphis and those that live on the apple, bean, cabbage, hop, cherry and other plants and trees. There is also a vine aphis, the phylloxera. Birds and other insects keep down the pest, but the best treatment is to spray or fumigate the plants.

Aphonia Loss of voice due to disease of the vocal chords in the larynx or to nervous disorders. Hysterical conditions produced by worry, overwork or shock, notwithstanding the desire and capacity for speech, may paralyse the vocal apparatus. This results, if complete, in dumbness, and, if incomplete, in reducing speech to a whisper.

Aphorism Concise sentence embodying an important truth. Differing from an axiom, which is self-evident, an aphorism seeks to systematise human experience. The word was first used of a collection of medical propositions made by Hippocrates which began with the words "Life is short, art is long." The best-known collection of aphorisms is contained in the Book of Proverbs.

Aphrodite To the Greeks the Goddess of Love. One legend made her the daughter of Zeus and Dione; in another she rose from the foam of the sea, this being the meaning of her name. She became the wife of Hephæstus (Vulcan), and had as her lovers Hermes, Ares, Poseidon and other gods, as well as Anchises, a mortal. By Ares she was the mother of Eros (*q.v.*).

Aphrodite was regarded as the Goddess of Fruitfulness and the ideal of female beauty. Her worship, marked by excesses, was very widespread in the Greek cities, and her girdle was said to be able to arouse the passion of love. The name **aphrodisiac** is given to drugs that excite the passions.

Apia Seaport of the Samoan Islands. It is on the north coast of Upolu, and has a trade in copra and other tropical products which are exported, although there is no harbour. Near is Vailima where R. L. Stevenson lived and died. *See* SAMOA.

Apis Sacred bull of Memphis. He was selected for his black hide with a white forehead and was reverently tended, being regarded during life as the second life of the god Ptah. As each animal died the remains were enshrined in a sarcophagus.

Apocalypse Greek title of the Book of Revelation. The word means "unveiling," and apocalyptic thought which purports to reveal the future, grew out of Hebrew prophecy, and emerged incidentally, even in the prophetic age, in Ezekiel and Isaiah. Its classical Old Testament example is the Book of Daniel. It was a favourite literary form with Jewish and Christian writers from the 2nd century B.C. to the 4th A.D. Among uncanonical books *The Book of Enoch, The Testaments of the XII Patriarchs, The Apocalypse of Baruch* and *The Psalms of Solomon* may be described as apocalyptic. *See* REVELATION.

Apocrypha Religious writings of Jewish or Christian origin that are not found in the Hebrew canon of the Old Testament. They are found in the Greek Septuagint and the Latin Vulgate, but not in the ordinary English translations; although at one time they were bound up with the authorised version. In the 39 articles they are declared to be suitable for example and instruction. There are 14 of these apocryphal books: 1 *Esdras*, 2 *Esdras*, *Tobit*, *Judith*, *The Additions to Esther*, *The Wisdom of Solomon*, *Ecclesiasticus*, *Baruch*, *The Song of the Three Holy Children*, *The History of Susanna*, *Bel and the Dragon*, *The Prayer of Manasses*, 1 *Maccabees*, 2 *Maccabees*.

There is also a New Testament apocrypha. This includes *The Epistle of Barnabas*, *The Gospel of Peter* and *The Shepherd of Hermas*.

Apogee Point in the moon's orbit farthest from the earth. When the earth was regarded as the world's centre, the sun and planets were each assigned an apogee. Copernican astronomy, making the sun central, assigns to the earth and the planets an aphelion. The sun, therefore, is in apogee when the earth is in aphelion.

Apollinaris Alkaline spring near Neuenahr in the Rhineland. The water contains per gallon 179 grains of solids, principally sodium salts; there are also 251 grains of gaseous carbonic acid. It is bottled for use as a table water and is beneficial to the digestion. The spring was discovered in 1851.

Apollo Greek god. He was reputed to be the son of Zeus and Leto, and Artemis was his twin sister. At first a sender of plagues, he was regarded later as the god of healing and the father of Aesculapius. He was supposed to have the gift of prophecy and to him the famous temple, with its oracle, at Delphi was dedicated. He was also the god of song and music, and his emblems included the lyre and the bow.

There were many representations of Apollo in classical art. The finest existing example

is the statue of the Apollo Belvedere now in the Vatican at Rome.

Apollos Early Christian convert associated with S. Paul. He was an Alexandrian Jew, traditionally one of the 70 disciples, and his great ability and expository power led to disputes in the Christian community at Corinth, and S. Paul's first Epistle to the Corinthians opens with a dignified effort to heal the schism. Luther's view that Apollos wrote *The Epistle to the Hebrews* is widely held.

Apollyon Destroyer. The word appears in the New Testament (Rev. ix. 11) as the Greek form of the Hebrew Abaddon, personified as "the angel of the bottomless pit." It is immortalised in Bunyan's *Pilgrim's Progress*.

Apologetics Branch of theology which concerns itself with the grounds and defence of the Christian faith. It animated the work of Justin Martyr, Origen, Augustine, Anselm, Aquinas and Abélard, and was systematised in the 18th century by Butler and Paley. From the argument from design, miracle and Biblical authority, on which stress was formerly laid, modern apologetics has developed a constructive attitude which emphasises the moral ideal, and vindicates Christianity as the perfect faith for mankind at large.

Apologue Moral fable. Its characters are drawn from the animal, vegetable or mineral kingdom, never from mankind, except when parts of the human body are personalised, as in *The Belly and its Members* recorded by Livy. Jotham's story of *The Trees Choosing a King* (Judges ix) is a scriptural example. The classical collections are those of Aesop and Phaedrus, the medieval ones are typified by *Reynard the Fox*, and agreeable examples come from La Fontaine and Gay.

Apology Expression of regret for something wrongfully said, or done. By the law of England an apology must be as public as the original statement. Actions for libel are avoided by the offender publishing an apology at his own expense, and paying costs. This applies also to infringements of patents, trade marks and trade names. *See* LIBEL.

Another kind of apology is a writing in the nature of a defence, *e.g.*, Plato's *Apology for Socrates*, Sir P. Sydney's *Apologie for Poetrie*, and J. H. Newman's *Apologia pro Vita Sua*.

Apoplexy Stroke or apoplexy is a loss of consciousness caused by a sudden interruption of the normal circulation in the brain (such as occurs with the bursting or blocking of a blood vessel). It usually occurs in stout, elderly men after a heavy meal or strenuous exertion.

Symptoms.—The face is red, the breathing laboured, and there may be partial or complete unconsciousness, while a further sign is that the pupils of the eyes have become insensible to light and may be contracted unequally. One half of the body is usually paralysed.

Treatment.—Loosen the clothing, apply cold water bandages to the head and keep the patient absolutely still. To prevent a recurrence of the attack, the patient should avoid alcohol, rich, heavy food, and habits of overeating. Violent exertion, mental excitement or exposure to great heat are also dangerous. A stroke may leave paralysis of one side of the body, impaired speech, or some mental or emotional defect.

Apophthegm Pithy utterance embodying a philosophic truth. Plutarch compiled a collection of such apophthegms which he dedicated to Trajan. It should be shorter than an aphorism, and dwell more vividly in the memory. **Example:** Knowledge is power. *See* APHORISM.

Apostasy Term denoting defection, but now generally employed to designate reproachfully the abandonment of a faith. In Roman Catholic ecclesiastical law it covers the renunciation of monastic vows, or of the clerical profession. At times religious persecution has induced much apostasy, genuine or pretended, among Jews, Christians and Moslems. The Roman Emperor Julian, who, on his accession, publicly reverted to paganism, was surnamed the Apostate

Apostle Term, denoting messenger, adopted by Jesus Christ to designate the twelve men sent forth to preach the gospel (Luke vi). The names of the twelve are: Simon Peter, Andrew, James, John, Philip, Bartholomew, Thomas, Matthew, James the Less, Thaddaeus, Simon the Canaanite and Judas Iscariot. The 70 disciples sent forth subsequently (Luke x) are also, in the Eastern Church, entitled apostles. After the betrayal of Judas Iscariot his place was allocated to Matthias. The title was extended to Barnabas, traditionally one of the 70, and was claimed by S. Paul.

In imitation of S. Paul, the apostle to the Gentiles, later Christian missionaries have acquired by general consent similar titles, such as S. Augustine, apostle of England, S. Patrick of Ireland, S. Boniface of Germany, S. Francis Xavier of the Indies and others.

Apostles' Creed Confession of the Christian faith. It was used at baptisms quite early in the Church's history and took its present form in, or before, the 7th century.

Apothecary Person who mixes drugs. In England there is a society of apothecaries dating from 1617. It holds examinations and its degree of L.S.A. enables the holder to practise medicine. The society, which is one of the London livery companies, has a hall in Water Lane, Blackfriars, in which are some valuable portraits and books. In Dublin, at 95 Merrion Square, there is an Apothecaries' Hall of Ireland founded in 1791.

Apothecaries weight used in weighing drugs is as follows:

20 grains	1 scruple
3 scruples	1 drachm
8 drachms	1 ounce

The weight of a scruple is 1.296 grammes

Apotheosis Attribution of divine honours to distinguished persons, living or dead. A development of ancestor worship, it was practised under the ancient empires and was given to Lycurgus, Alexander, the Ptolemies, Romulus, Julius Caesar, Augustus and his successors. The worship accorded to the Roman emperors, especially in the provinces, continued in some cases long after their death.

Appalachian Mountain system of North America. It extends for over 1500 m. in the E. from Maine to Alabama, sometimes quite near the coast. It is divided into several groups, of which the most important is the Alleghany. Others are the Green, Blue, White and Black Mts. and the Adirondacks.

Appeal, Court of Court of law in which the decisions of the lower courts can be reviewed, and, if necessary, reversed. Every legal system has its courts of appeal. In England appeals from the lower courts, held by magistrates and recorders, go to the High Court of Justice. From this court, with its three divisions, appeals go to the Court of Appeal, which consists of the Master of the Rolls and five lords justice. Appeals from this court go to the House of Lords, which is the supreme court of appeal, except for ecclesiastical cases, which go to the judicial committee of the Privy Council. The judicial committee is also the supreme court for appeals from the courts of India, the Dominions and Colonies, although the Irish Free State contests this right. Its members include judges from India and the Dominions.

In Scotland the inner house of the Court of Session hears appeals from the outer house. Northern Ireland has a court of appeal on the English model, and from both countries appeals can be taken to the House of Lords. Canada, Australia, South Africa and New Zealand have also their courts of appeal and a final appeal to the Privy Council in London. Foreign countries have courts of appeal on similar lines. In the German Republic the court sits at Leipzig. These courts deal only with civil cases. For criminal cases there is a court of criminal appeal in England, established 1907, and in Scotland, established 1926.

Appendicitis Inflammatory disease of the vermiform appendix. The illness may be a consequence of tuberculosis, but it is more usually due to bacterial infection associated with constipation. It is caused sometimes by the presence of a foreign body, such as a grape seed, in the appendix. It attacks persons of all ages, but more frequently the young.

Symptoms.—Sudden and severe pain low in the abdomen near the right thigh, with sickness, faintness, feverishness, etc.

Treatment.—External heat will help to relieve the pain. No aperient or enema should be administered, and only water should be given by the mouth until medical advice is obtained. An operation is usually necessary, and neglect may have very serious consequences.

Appendix In the human body the small blind gut projecting from the caecum. Its full name is the vermiform appendix. Its length varies, but the average is about 4½ in. The organ has no known function, so it is surmised that it represents one that has ceased to be used.

Apperley **Charles James.** English writer known as "Nimrod." Born in Denbighshire about 1778 and educated at Rugby, he began to write on sporting matters, of which he had a wide knowledge, and soon made a reputation. His books include *The Life of John Mytton*, *The Life of a Sportsman* and *Nimrod's Hunting Tours*. He died in London, May 19, 1843.

Appian Way Road in Italy, made in 4 B.C. Leaving Rome by the Appian Gate, it was an important highway to Brindisi (Brundusium).

Appin Coastal district of Argyllshire, including Glencoe. The Appin murder, celebrated by R. L. Stevenson in *Kidnapped* and *Catriona*, was a famous case. On May 14, 1752, Colin Campbell was murdered and Alan Breck Stewart was charged with the crime He fled to France, but James Stewart, an accomplice, was arrested, sentenced to death and hanged. The real murderer is unknown.

Apple Tree or bush bearing a popular fruit. The botanical name is *pyrus malus*, and it is very widely grown in Great Britain. It flourishes also in various parts of Europe and in Canada, California and Australia, and is the most popular fruit in the western world. It is eaten raw and used in making pies, tarts, etc., and to a certain extent in jam.

Some of the best-known varieties are the Blenheim Orange, Cox's Orange Pippin, Bramley's Seedling and Newton Wonder. Apples of a different kind are grown for making cider.

The usual form of the apple tree is the standard grown in orchards, about 70 per acre. The pyramid and the bush are suitable for restricted space as the branches are trained accordingly. Apples can also be grown on cordons or espaliers trained against a trellis or a wire fence. Pyramids should be 10 ft. apart and bushes 5 ft., but espaliers, in which the branches are trained out, need 20 ft. and cordons only 2 ft. The trees can be grown in pots in a cold greenhouse.

Enormous quantities of apples are grown in California, Canada, Australia, especially Tasmania, New Zealand and elsewhere for the British, European and American markets. Carefully graded and packed, they are available practically all the year round. A system of grading and marketing English apples was introduced in 1928, and a packing station opened at Cottenham in Cambridgeshire and another later in Kent. In 1932 the British import of apples was 7,775,000 cwts.

Appleby Borough, market and county town of Westmorland. It stands on the Eden in delightful country, 30 m. from Carlisle, and is reached by both the L.M.S. and L.N.E. Rlys. The chief buildings are the castle, of which the keep is Norman, the parish church, the town hall, the shire hall, and the grammar school. There is an agricultural trade. Until 1832 the borough sent two members to Parliament. Pop. (1931) 1918.

Appointment In English law a limited power of disposing of money. A person often leaves his money in trust for someone, giving to that person the power of saying to whom it shall go. Thus, a man may leave his money to his wife, and give her the power of appointing how it shall be divided among their children.

Appraiser In English law a man licensed to value or appraise property of all kinds. He is usually also an auctioneer. Goods taken by distraint must be valued by two appraisers before they can be sold. The licence for an appraiser costs £2 a year. *See* AUCTION.

Apprentice Person bound for a term of years to a master who undertakes to instruct him in his trade. The system originated in England in the 14th century and at first applied to all occupations, manual and professional. It was part of the guild system and to become a member of a guild, and therefore a recognised trader, a man must have served his apprenticeship. This was enforced by custom and later by law.

Apprenticeship became less general as the 19th century advanced. The parents of the apprentice paid a premium and signed with

the employer a contract called articles, which was stamped, and laid down the conditions of service. The master had a good deal of power over the apprentice who was often an inmate of his household. The conditions of the 20th century were all against service of this kind and, though after the Great War efforts were made to revive it, the system has steadily declined.

Apricot Fruit tree of the natural order *rosaceae*. A native of Asia it was introduced into England in the 17th century. It is cultivated in France and California, whence fresh and tinned apricots are sent to Great Britain.

Apse In church architecture a space at the end of the nave. It is semicircular in shape and found only in cathedrals. It was introduced into the basilicas of Rome and was copied by many of the early Christian churches. S. Paul's has a magnificent apse and there is one at Peterborough.

Apteryx Genus of birds peculiar to New Zealand. It has a long beak with the nostrils at its tip, a unique feature, and is about the size of the domestic fowl. The tail and wings are small and useless for flight. It lives on insects and lays a single egg, which is incubated by the male bird. The native name is Kiwi.

Aquarium Receptacle made in which to keep fish or plants alive in water, either fresh or salt. It has usually four sides, one at least being of glass in order to permit observation. Slate or zinc are used for the bottom.

The word is also used for a building in which fish are displayed. There is a famous one at the Battery, New York, and another at Brighton. Zoological gardens often include an aquarium among their buildings, as in the Zoological Gardens at Regent's Park and the Scottish Zoological Gardens at Corstorphine, Edinburgh.

Aqueduct Artificial channel used to convey water above the ground. The Romans were great builders of aqueducts and there are remains of their work in Italy, at Nîmes in France, Mainz in Germany and Segovia in Spain.

These aqueducts were built usually of stone, the water being carried in chambers lined with cement and covered over. Hills were avoided and the water carried by the force of gravity.

To-day water is conveyed usually by pipes laid underground, but overland structures are sometimes necessary. In England an aqueduct carries the Bridgwater Canal over the Manchester Ship Canal. In the United States there are large aqueducts such as the Catskill, 126 m. long, that supplies New York with water. Much longer aqueducts carry water to Los Angeles and San Francisco.

Aquila New Testament character. A Jew, born at Pontus, he was converted to Christianity. With his wife, Priscilla, he entertained S. Paul at Corinth and saved his life at Ephesus.

Aquila is also the name of a constellation in the northern hemisphere. Altair is its chief star.

Aquilegia Genus of flowering plants. They belong to the order *ranunculaceae* and the best known is the columbine (*q.v.*).

Aquinas Thomas.' Italian saint and theologian. He was born of a noble family at Aquino, near Naples, in 1226, sent to the Benedictine monastery of Monte Casino, and then studied at the University of Naples. He joined the Dominican order, but his brothers fetched him home against his will; two years later he escaped and went to Cologne where he was influenced by Albertus Magnus. He studied in Paris for two years, after which he began to teach.

Thomas soon won a reputation as the greatest scholar in his order and perhaps in Christendom. He taught in Rome, Pisa, Bologna and Naples, but refused to accept any high office in the church. He died March 7, 1274. His body was given to Toulouse, and in 1323 he was canonised. His day is March 7.

Aquitaine District of France. It lies between the Garonne and the Pyrenees. It is divided into Guienne to the N. and Gascony. The name Aquitania was given to it by the Romans; then it reached N. to the Loire. Eleanor, the daughter of one of the ruling dukes, married Henry II. of England. In this way Aquitaine came under English rule and parts of it remained so until 1453.

Arab Semitic race, including all the Semites except the Jews and found in many parts of Asia and Africa. They were settled in Arabia at the time of Mahomet, but his teaching induced them to spread their new faith. They invaded Africa and later Spain, founded an empire in India and settled in various parts of Asia. To-day they number nearly 10,000,000, practically all Mohammedans.

Among their numerous dialects the language of the Koran is regarded as the standard of purity. Mathematics and philosophy are prominent in their literature, and the Arabic schools of learning at Bagdad and elsewhere have contributed to the sum of human knowledge. *See* ARABIA.

Arabesque Form of design used by the Arabs in architecture and painting. Griffins, dragons and other fabulous animals are introduced into it, and it usually takes the form of an ornamental frieze or border. The Moors brought it to Europe, although something of the kind was known to the Romans.

Arabia Country of Asia. It is a peninsula in the S.W. of the continent, surrounded by the Persian Gulf, the Indian Ocean and the Red Sea, in area about 1,000,000 sq. m., and about 1800 m. long. Much of the land is desert, but there are fertile strips along the coast and in the oases. In the S., on both sides of the great plateau, are mountains rising to 10,000 ft. The climate is hot and dry. Pop. (approx.) 10,000,000.

HISTORY. Arabia was divided by Ptolemy into three parts, Arabia Deserta, Arabia Felix and Arabia Petraea, or the stony, in the N.W. Its inhabitants consist of the wandering Bedouins of the interior and the Arabs who have settled near the coast. The former keep the famous camels and horses, and rear sheep and goats. Since the Great War Bertram Thomas and H. S. John Philby among others have, by their journeys, added greatly to our knowledge of the country.

In the 7th century Arabia became the headquarters of Mohammedanism. In the 16th century the Turks began to conquer the country and it was more or less under their rule when the Great War began.

In 1916 the Sherif of Mecca threw off the authority of the Turks, and help was given to him by Great Britain and his army organised

by Col. T. E. Lawrence. One of the problems before the Peace Conference in 1919 was to make a settlement that would meet the new situation in Arabia, from which the Turks had been expelled.

It took six years of warfare before a static political condition was reached. The kingdom of Saudi Arabia, in which are the cities of Mecca and Medina, includes the principalities of Asir, formerly independent, and dominates the E. coast of the Red Sea. Below is the Yemen, part of which forms the Aden protectorate and part is under two native rulers at Sana and Sabia. The adjoining district called the Hadramaut is a British protectorate. On the other side of the country are the state of Kuweit under British protection, and the independent state of Oman.

Arabi Pasha Egyptian leader. Ahmed Arabi, born about 1839 of humble parents, entered the army and made himself prominent by leading an agitation against Turkish and other interference in Egypt. In 1882 he became Minister for War and aroused the suspicions of the European powers. The British took action and after the bombardment of Alexandria an army was landed and Arabi's troops were beaten at Tel-el-Kebir. Arabi was sentenced to death, but this was not carried out and he was exiled to Ceylon. In 1901 he was allowed to return to Egypt and there he died, Sept. 21, 1911.

Arabis Genus of flowering plants also called rock cress. It bears white or purple flowers and is a favourite plant for borders. The chief varieties, the double white and single flowering arabis, thrive in a light soil and can be planted at any time from pots in spring or autumn.

Arable Land which can be ploughed or cultivated, as opposed to that which is only suited for pasture. The amount of arable land in Great Britain has shown a steady decline since the middle of the 19th century. In 1901-10 the average amount was 15,106,928 acres; in 1932 it was 12,193,000 acres.

Arachnida Class of arthropods. It is derived from the Greek word for spider and includes spiders, scorpions and mites. They are chiefly carnivorous and have usually six pairs of limbs, four for walking and the others for seizing food. They have no antennae, simple eyes varying from 2 to 12, and the head and thorax are fused together. *See* SPIDER.

Aragon Kingdom of Spain. It lay to the south of the Pyrenees and had a coastline on the Mediterranean. Its capital was Saragossa and its chief river the Ebro. The kingdom arose in the 11th century under Ramiro. Later kings extended its area; one of them took the Balearic Islands from the Moors, while others secured Naples, Sicily and Sardinia. In 1469, John, who ruled all these lands, save Naples, married his son, Ferdinand, to Isabella of Castile, making one kingdom called Spain. Aragon had its cortes, or national assembly, in the 12th century or earlier, and in this the towns were represented.

Aral, Sea of Lake of Asia, situated in the territory of Soviet Russia, about 80 m. to the E. of the Caspian Sea. Over 250 m. long and covering 26,000 sq. m., it is full of fish, and seals are caught. The rivers Amu-Daria and Syr-Daria flow into it, but none flow out. It is very shallow, and evaporation is steadily reducing its size.

Aram Semitic name for Mesopotamia, Syria and other countries in that area. Its language, **Aramaic**, of considerable importance, is divided into two branches, western or Syriac and eastern, wrongly called Chaldee. There were several Aramaic dialects, one having been spoken in Palestine in the time of Jesus Christ. He and His disciples spoke a Galilean dialect. The Targums were written in Aramaic and it was used in parts of the Old Testament and the Talmud. It was superseded by Arabic, but is still spoken by small communities in Persia and Mesopotamia.

Aram **Eugene.** English criminal. Born at Ramsgill, in Nidderdale, Yorkshire, in 1704, his father was a gardener. He became a schoolmaster at Knaresborough, but left the town in 1745, suspected of fraud. He was associated with a certain Daniel Clark whose body was found some years later in a cave. Aram was arrested at King's Lynn in 1759, was found guilty and executed on Aug. 6. Before the end he confessed to a share in the crime, which, he alleged, was actually committed by another.

Aran Group of islands off the coast of Galway. The three largest are Aranmore, or Inishmore, Inishmann and Inisheer, and they cover 18 sq. m. There are ruins of an abbey, and the islands were once a centre of religion and learning. Fishing is the main industry.

Ararat District of Armenia, named from its chief river Aras, or Araxes. On Mount Ararat the Ark is said to have rested (Genesis viii). It is an extinct volcano with two peaks, 17,000 ft. high. The Armenians call it the Massis, and the Persians the Mountain of Noah.

Ararat Town of Victoria. It is a railway junction, in a farming district. Mining is carried on, and there are some small industries. It is 130 m. from Melbourne by railway. Pop. (1931) 5350.

Arbitration Method of deciding disputes without resort to law, strikes, lock-outs or war. There are three kinds of arbitration: legal, industrial or international.

The arbitrator, who is a lawyer, is appointed by the parties concerned, or by the court. Sometimes the court orders an arbitration. The price of land taken for public purposes is often settled by arbitration.

Industrial arbitration is employed to settle disputes between employer and employed. In Great Britain there is an industrial court in the Ministry of Labour.

Compulsory arbitration, tried during the Great War in Britain, has been introduced into Australia and New Zealand, with only qualified success.

International arbitration has been used many times, notably in the Bering Sea fisheries dispute between Canada and U.S.A. in 1893. An industrial court was established at the Hague in 1899 and many nations, including Great Britain, France and U.S.A., have signed treaties undertaking to submit their disputes to arbitration. These treaties have been deposited with the League of Nations.

Arbor Vitae Evergreen coniferous tree. There are two main kinds, the American and the Chinese. Both give out a strong aromatic scent. The tiny leaves are pressed against the twigs and branches.

Arbroath Burgh, market town and seaport of Angus (Forfar), in full

Aberbrothock. It stands near the mouth of the River Brothock, 17 m. from Dundee. There is a good harbour and shipping is the chief industry. The abbot of the now ruined abbey is immortalised in Southey's poem *The Abbot of Aberbrothock*. Pop. (1931) 17,637.

Arbutus Evergreen shrub. It bears white or reddish flowers in clustered sprays and flourishes in a warm, sunny, sheltered position in moist soil. It should be grown in pots until ready for planting out. Seeds can be sown in a frame or cuttings of young shoots may be taken in July and struck in a frame. The long straggling shoots should be trimmed back in April and the dead wood cut out.

Arc Portion of a curved line, so called because it represents a drawn bow (Latin, *arcus*). The straight line that joins its extremities is called the chord. The length of the arc of a circle can be determined if the angle subtending the arc at the centre, and the radius, or circumference, are known. If a is the radius the circumference equals $2\pi r$ Thus, if a is the angle subtending the arc, the length of the arc is $\frac{a}{360}$ of the circumference.

ARC LAMP. Special type of electric lamp for lighting purposes. It consists of a pair of carbon rods through which a high voltage current is passed, producing a luminous glow or arc between the poles of the carbons. As the carbons are burnt away during the process, a mechanism is attached to regulate the distance between the poles. In one type of lamp the carbons are exposed to the air, and in another they are enclosed in a glass globe.

Arcade Range of arches supported by piers, or columns. In some there is a gallery behind the arches, but in others they are part of the wall. They form a feature of Gothic architecture and perhaps the finest in the world are those of the doge's palace at Venice. To-day the term is used for a covered way which is lined with shops.

Arcadia District of Greece. It was a mountainous region in the S., and its inhabitants were regarded as living a simple, rural life. Consequently Arcadia became used for a land of peace, plenty and contentment.

Arcadius Roman emperor. A son of Theodosius the Great, he was born in Spain in 377. In 395, when his father died, the empire was divided between his two sons, Honorius and Arcadius, and the latter, making Byzantium his capital, became the first of the East Roman emperors. He showed no ability and his vast realm was ruled by the prefect Rufinus and his wife, Eudoxia.

Arch Architectural term. It describes a structure spanning vertically an opening or recess, and serving as a support. There are two main kinds, round and pointed, or Roman and Gothic, and several varieties of each.

The arch was used by the Egyptians and other early peoples, though not to any extent by the Greeks. The modern round form originated with the Romans and is seen in existing Saxon and Norman buildings. The pointed, Gothic arch developed later and was first used by the Mohammedans, and, like them, the Christians adopted it as a symbol of their faith, in the great cathedrals of the Middle Ages, in which the arch determined the structure of the building in the Decorated and Perpendicular periods.

The Tudor arch is confined to the secular buildings of that period.

The **triumphal arch** was erected by the Romans to celebrate a victory. Three still stand in Rome—the arch of Constantine, of Septimius Severus and of Titus. There are fine examples in other cities, notably at Orange. Napoleon copied the idea when he erected the **Arc de Triomphe** in Paris. The **Marble Arch** in London is another Roman model.

Arch **Joseph.** English politician. Born at Barford, Warwickshire, Nov. 10, 1826, the son of an agricultural labourer. He became a local preacher and soon took the lead in trying to improve the condition of his fellow labourers. In 1872 he formed the National Union of Agricultural Labourers. In 1885-86 and again 1892-1900 he was Liberal M.P. for N.W. Norfolk. He wrote an *Autobiography* and died Feb. 12, 1919.

Archaeology Study of the ruined buildings and other material remains of ancient civilisations. One of the earliest workers was Sir Henry Layard who examined the ruins of Nineveh and Babylon in the years around 1850. Since then an enormous amount of work has been done in the Mediterranean region, the cradle of human civilisation, also in America and the farther parts of Asia.

Wonderful results were achieved by the German, T. Schliemann, when excavating the ruins of Troy. Sir Wm. Flinders Petrie's equally valuable work enabled us to build up the early history of Egypt. Sir Arthur Evans has excavated in Crete, Sir W. Ramsay in Asia Minor, Sir Aurel Stein in Central Asia, and Howard Carter in Egypt.

In the 20th century interest was directed largely to finds of the highest value at Ur in Mesopotamia, where the Sumerian and other civilisations have been revealed to us. The excavations of archaeologists in Rome and Athens are of supreme importance for early Greek and Roman history. Small scale work in London has given it an archaeological society of its own.

In Britain's limited field much work has been done, adding greatly to our knowledge of Celtic civilisation and Roman influences by unearthing the cities of Silchester and Uriconium, and by examining the remains at Bath, Chester, Colchester and elsewhere.

Archaeology is now a subject of study at nearly all universities. There are schools or institutes of archæology in Athens, Rome, Jerusalem, Egypt and elsewhere. Expeditions are sent out regularly by the British Museum or are organised by the universities, those of America being, perhaps, foremost. Others are financed by private individuals.

Headquarters in England are the Archaeological Institute of Great Britain and Ireland at Lancaster House, S. James's, London, S.W., and the British Archaeological Association at 22 Russell Square, London, W.C.1. There is also an Archaeological Society at 207 Bath Street, Glasgow. In 1932 arrangements were made for the establishment of a central Archaeological Institute in connection with the University of London. *The Archaeological Journal* is published in the interests of the study.

Archangel Superior order of angel. Four are recognised in Christian literature, Michael, Gabriel, Raphael and Uriel. Three others have been named, Chamuel, Jophiel and Zadkiel.

Archangel Seaport and city of Soviet Russia. It stands where the river Dvina falls into the Gulf of Archangel, an opening of the White Sea. It is 700 m. from Moscow, with a railway line. There is a good harbour, open only in summer. Pop. 128,800.

In Aug. 1918, in order to help those Russians who supported the cause of the Allies, an allied force, chiefly British, landed at Archangel after a little opposition. There was a good deal of fighting, but no definite results were achieved. It was then decided to withdraw, and Lord Rawlinson was sent to direct this operation which was completed on Sept. 27, 1919.

Archbishop High official in the Christian church. The title first appeared in the 6th century, and since then the archbishop has been the head of a group of bishops, the district under his control being known as a province.

In the Church of England there are two archbishops, Canterbury and York, each with his province. The former ranks immediately after the Princes of the blood royal and has the right of crowning the Sovereign. The latter ranks after the Lord Chancellor and has the right of crowning the Queen Consort.

There is an Archbishop of Wales, and Anglican archbishops in Ireland, Australia, Canada and other parts in and out of the Empire. In Ireland the archbishoprics are Armagh and Dublin. The Roman Catholic church has four archbishops in England and Wales, Westminster, Cardiff, Birmingham and Liverpool; two in Scotland, S. Andrews and Edinburgh and Glasgow, and four in Ireland, Armagh, Dublin, Cashel and Tuam, as well as many in other parts of the world.

Archdeacon Official in the Church of England. He existed in the early church as chief of the deacons attached to a cathedral. Later he appeared as the assistant of the bishop in diocesan affairs. In time the archdeacons became almost independent of the bishops, their duties being concerned with the financial and business side. In this connection they won an unenviable reputation for rapacity.

In the Church of England to-day every diocese is divided into several archdeaconries. They are appointed by the bishop and wear gaiters. They supervise church buildings and the admission of churchwardens, and hold courts.

Archer Small fish, found round the coasts of the East Indies and Australia. It is so called because it can squirt drops of water at the insects on which it lives.

Archer **Frederick James.** English jockey. He was born at Cheltenham, Jan. 11, 1857, rode his first winner at Chesterfield in 1870, and had a wonderful, although short, career, for he shot himself at Newmarket, when ill of typhoid fever, Nov. 8, 1886. From 1873 to 1885 Archer was at the top of the list of winning jockeys. Five times he rode a Derby winner; altogether he won 2748 races.

Archery The art of using the bow and arrow. It was formerly used in hunting and in warfare, but to-day it is solely a pastime. Archery began with the invention of the bow and was practised by the Egyptians. There are many references to archers in the Bible and the Persians were noted for their skill. We hear of Greeks and Romans, Arabs and Turks as noted archers.

Archery was the deciding factor in the battles of the Middle Ages, *e.g.* Hastings and Crecy. Despite the introduction of gunpowder archery flourished in England until the 16th century, though mainly used in hunting.

Late in the 18th century archery was revived in England as a sport. In 1781 the Royal Toxophilite Society was founded, and in 1785 the Woodmen of Arden formed their society at Meriden. The pastime is now controlled by the Grand National Archery Society, founded in 1861, with several meetings a year at which men and women shoot for championships. There is a considerable literature on archery, an early book being the *Toxophilus* of Roger Ascham.

The **Royal Company of Archers** is a body of Scottish noblemen and gentlemen founded in 1676. It is the sovereign's bodyguard for Scotland and membership is a coveted distinction.

Arches **Court of.** English court of law. It is the court of the Archbishop of Canterbury, and hears appeals from the lower courts in his province. It is presided over by a judge called the Dean of the Arches. Appeals from this court go to the Privy Council. It is so called because the sittings are held in the church of S. Mary-le-Bow, London.

Archil Violet dye sometimes called orchil. It is obtained from several species of lichen which grow in warm climates. It was discovered by a citizen of Florence, and was much used until superseded by aniline dyes.

Archimandrite Name used in the Greek church for the head of a monastery or group of monasteries.

Archimedes Greek mathematician. He was born at Syracuse about 287 B.C., and there passed practically the whole of his life. His discoveries and writings prove him to have been the greatest mathematician of antiquity. He made some engines to defend Syracuse against the Romans, but was killed in 212 B.C. when the city was taken.

Archimedes discovered the use of the lever and invented the Archimedean screw for raising water. He established the principle that a body plunged in a fluid loses as much of its weight as is equal to the weight of the displaced fluid. His theoretical work related chiefly to the relations of spherical and rectilineal surfaces and bodies. His works have been translated into English.

Archipelago Group of islands. The name was first given by the Greeks to the islands in the Aegean Sea, and was afterwards used for other groups. Archipelagoes are most common in the southern part of the Pacific Ocean.

Architect Person who plans buildings and supervises their erection. In olden times it meant a master builder.

In 1931 an Act, entitled "The Architects' Registration Act, 1931," was passed, whereby a person possessing the prescribed qualifications may, upon application to the Architects' Registration Council of the United Kingdom, be admitted to the Register of Registered Architects, and thereupon is entitled to use the title "Registered Architect." The Architects' Registration Council Offices are situated at 18, Abingdon Street, Westminster, London, S.W. 1. Training for the profession is provided in Great Britain in ten schools, one controlled by the Architectural Association in London and others associated with Oxford, London, Liverpool and other universities. Women are eligible for the profession on the same conditions as men.

In 1925 the Royal Institute absorbed the Incorporated Society of Architects. It gives every year a gold medal to a leading architect. Its membership is about 8500 and there are probably 4000 architects in Great Britain outside it. There is a Royal Corporation of Architects in Scotland and a Royal Institute of Architects in Ireland at 8 Merrion Square, Dublin.

Architecture Art of designing and constructing buildings. Civil architecture is concerned with the building of houses, bridges, and other structures of ordinary utility; ecclesiastical deals with churches, and naval and military with the construction of ships and fortifications respectively.

The beginnings of the art are seen in the primitive wattle huts of lake dwellings and other early communities, in the so-called cyclopean buildings of massive unwrought stone and in the sun-dried brick palaces of the Euphratean valley. The early flat roofs with horizontal beams (trabeated style) gave place to the use of the arch (arcuated style), which from a rounded form in time became the pointed arch of Gothic architecture. In Greece the art reached its almost perfect development, the buildings showing symmetry of form, unity of design and correctness of outline, characteristics which have served as standards for later times. The development of Christian architecture from the Byzantine and Romanesque to the Gothic and Renaissance style is a history in stone of the changing ideals and artistic conceptions in Europe.

ARCHITECTURE AS A CAREER. Architecture is a vocation which demands a keen appreciation of the beauty of structural form together with a strong creative ability.

Entry to the profession is gained by passing through the three examination stages of the Royal Institute of British Architects (*See* ARCHITECT):

(1) Preliminary—Registration as Probationer R.I.B.A.
(2) Intermediate Examination—Election as Student R.I.B.A.
(3) Final Examination—Election as Associate R.I.B.A.

Exemption from the R.I.B.A. examinations may be gained by taking a course at one of the Schools of Architecture recognised for exemption from the examinations. The fees at these schools vary from 15 guineas to 72 guineas a year.

The schools recognised for exemption from the R.I.B.A. examinations are divided into two classes—those recognised up to the Intermediate stage only, and those recognised for both the Intermediate and Final stages. The course at a school recognised for exemption from the Intermediate examination is generally of three years' duration, while that at a school recognised for exemption from both the Intermediate and Final examinations is generally of five years' duration.

A pamphlet giving full particulars to those desirous of entering the profession is issued by the R.I.B.A., 9 Conduit Street, London, W. 1.

The R.I.B.A. offers Prizes and Studentships to a total value of about £3000 annually.

The principal assistantships in the offices of practising architects carry attractive salaries, and many of the Government Departments employ architects and pay salaries ranging from £600 to £900 for senior posts, and £300 to £500 for lower appointments. Large municipalities also employ architects and pay the superintending architect as much as £1000 a year.

Architrave In architecture the stone beam carried by the capital of the columns and supporting the frieze above it. It is seen in classical architecture, but has no place in those forms in which the arch springs direct from the capital. The word is sometimes used for the frame over a window or door.

Archives Word used for a collection of official papers and documents, used also for the building in which they are kept. Each country has its archives. In Great Britain each department of state keeps its own, but there is a collection of the older ones in the Public Record Office in London.

Arcot City of India. It is 65 m. from Madras on the river Palar, and is reached by railway. North Arcot and South Arcot are two districts in the presidency of Madras.

In 1751 the fort of Arcot, then the capital of the Carnatic, was seized by Clive with a small force and besieged by the French, much more numerous than the defenders. Clive beat off a series of attacks and after seven weeks the siege was abandoned. It was taken by the French in 1758, but the British recovered it in 1760. After being in the hands of Hyder Ali it became British again in 1801.

Arctic Exploration This began when sailors, in the 15th century, started on the search for a N.E. and a N.W. passage to the Pacific, and the earliest discoveries of land in the Arctic were made by Frobisher, Hudson, Davis, Baffin, and others, whose names are recorded on the map. For 200 years after the last of these men died work in the W. area was confined to the discoveries in the Hudson Bay region made by Mackenzie and others, and in the E. to the discoveries of Russians and others intent on finding a way to the Pacific.

A new era began early in the 19th century when the British Government offered a prize for a further advance. Ross, Parry and others not only rediscovered the lands found by the earlier navigators, but discovered others, till then entirely unknown. In 1845 Sir John Franklin went out with the *Erebus* and the *Terror* on the voyage from which he never returned, and the expeditions which set out to find him resulted in valuable additions to the geography of the regions visited. The existence of the N.W. passage to the Pacific was proved and a little later, in 1878-79, Nordenskiold sailed through the N.E. passage. British, American, Russian and Scandinavian explorers vied with each other in their efforts to find further land, and by the end of the century the Arctic regions had been mapped out with considerable, though not absolute, accuracy, and much valuable information about their geology, climate, resources, etc., obtained. The most important in the 20th century corrected the prevailing idea about the size and shape of Greenland.

But in 1900 the pole had not been reached. One by one, in the 19th century, explorers had approached nearer their goal, *e.g.* the Americans, Greely and Lockwood, in 1881-84 when 83° 24′ was reached. In 1893 Nansen had left the *Fram* and made a dash for the pole, but this failed; in 1897 Andrée had tried to reach it by balloon, but lost his life and his traces were only discovered in 1930.

The pole was actually reached on April 6, 1909, by Robert E. Peary, who, for some years, had been exploring in the Arctic. In 1926 Roald Amundsen flew over the pole, as did the American, Richard E. Byrd, and two years later Sir G. H. Wilkins. Amundsen, who had the honour of being the first to traverse the N.W. passage, also voyaged through the N.E. one. Another disaster to add to the long record of Arctic exploration is the one that befell the Italian airship expedition under General Nobile in 1928; in a voyage to find his old comrade Amundsen lost his life. Further expeditions are (1936) in progress, *e.g.*, the Soviet Sadko Expedition, which made a world-record in navigation by reaching latitude 82 7°N.

Arctic Ocean One of the world's five oceans. It consists of the waters round the North Pole and includes the Barents, White, and Kara Seas. It is connected by Davis Strait and other openings with the Atlantic, and by Bering Strait with the Pacific. The ocean is sometimes regarded as the area within the arctic circle, *i.e.* the polar region enclosed by a line of latitude 23½ degrees from the North Pole, but it is generally assumed to be somewhat larger, its area being placed at something between 5,000,000 and 6,000,000 sq. m. The chief islands in the area are Greenland, Spitsbergen, Novaia Zemlya, Wrangell Island, Banks Land, Ellesmere Land, and others.

Ardee Market town of Co. Louth, Irish Free State, 48 m. from Dublin, on the G.N. of Ireland Rly. The chief building is the old castle now used for public purposes. Pop. 1700.

Arden District in N. Warwickshire, at one time a forest, covering a very large area. The name is borne by some of the villages, *e.g.*, Henley-in-Arden. Shakespeare describes the forest in *As You Like It*.

Ardennes Range of hills in Franco and Belgium, extending into Luxembourg. It is on either side of the Meuse and is part of an old forest famed for its wild boars.

Ardnamurchan Point, or headland of Argyllshire, the most westernly point of the Scottish mainland. It has a lighthouse, and names a large tract of country, mostly deer forest.

Ardrossan Seaport, burgh and watering place of Ayrshire, 30 m. from Glasgow, on the L.M.S. Rly. There is a good harbour and the chief industries are shipping and fishing. From here steamers go to Belfast, Arran, and elsewhere. Pop. (1931) 6888.

Ardsley Urban district of Yorkshire (W.R.), 4 m. from Wakefield, and consists of East and West Ardsley. The industries are coal mining and woollen manufactures. Pop. (1931) 9215.

Areca Genus of palm trees, grown in the tropical parts of Asia. Areca catechu is grown for its seeds which are known as betel nuts. *See* BETEL NUT.

Areopagus Hill at Athens, W. of the Acropolis; also the council of elders that met thereon, in the temple of Ares. The powers of this governing body were first curtailed by the law-giver, Solon. S. Paul addressed the men of Athens on the Areopagus or Mars Hill (Acts xvii).

Ares Greek god of war. He is represented both as a headless man and as a beardless youth. He was the son of Zeus and Hera and is identified with the Roman god Mars.

Arethusa In Greek legend a nymph. When she was bathing she was seen by the river god, Alpheus. As he followed her she begged Artemis to change her into a fountain.

A light cruiser called the *Arethusa* took part in the naval operations of the Great War until destroyed by a mine in the North Sea on Feb. 14, 1916. A training ship for seamen moored off Greenhithe in the Thames is called the *Arethusa*.

Argali Variety of wild sheep found on the steppes of Siberia and other parts of Asia. It is about the size of a donkey and has fine branching horns. In colour it is pale brown with a white face.

Argentina Republic of South America. On the E. it has a coastline on the Atlantic Ocean and on the W. the Andes separate it from Chile. Its other boundaries are Paraguay, Uruguay, Bolivia and Brazil. Stretching for 2800 m. N. to S. it consists of a vast area covering 1,079,965 sq. m. The S. part is known as Patagonia. Buenos Aires is the capital; lesser cities are Rosario, Cordoba and La Plata. In the N.E. are many fertile valleys and in the centre and S. are the plains called pampas. The country is mountainous and well watered; its chief rivers are the La Plata, Parana, Uruguay, Rio Negro and Chubut. The climate is temperate, save in the S., where it is very hot. Pop. (1932) 11,682,844.

Agriculture is the country's main industry. Cattle are reared in immense numbers and the beef and mutton are chilled for export. Wheat and maize are exported; also hides, wool and butter, and wine is produced. The minerals mined include gold, coal, tin and copper. There is much oil, the wells having become national property in 1933. There is a good railway system and good roads; air services have been established.

Argentina is a federation governed by a president and a cabinet. The legislature is the congress of two houses; the senate of 30 members and the chamber of deputies, who are elected for four years. The constitution, modelled on that of the United States, was drawn up in 1853 and has since been amended. Each of the four provinces has its own legislature. The official religion is Roman Catholicism. Education is compulsory and, in its elementary stages, free. The army is recruited by compulsory service, and there is a small air force. The republic has a state bank. The unit of currency is the peso, divided into 100 centavos, and worth about 4s. The metric system of weights and measures is compulsory.

HISTORY. The country was first visited by the Spaniards in 1516 and a little later they founded a settlement at Ascension. For nearly 300 years it remained a Spanish possession. In 1776 Buenos Aires was made the capital of the vast region that included Paraguay, Bolivia and Uruguay, and in 1806 it was besieged by the English. In 1810, when Joseph Bonaparte was King of Spain, Argentina took the first steps towards independence. A war followed in which the Spaniards were beaten and a dictator gained authority, but it was not until 1842 that Spain recognised the country's independence. These early years were marked

by continual civil wars and wars with neighbouring republics, and in 1838-42 with France.

Towards the close of the 18th century Argentina entered upon a more peaceful and prosperous period. Europe offered an immense market for its products and wealth rapidly increased. This continued almost until the Great War when Argentina was neutral. In the direction of affairs the leading figure was Hippolito Irigoyen, who became president in 1916. He carried out a number of reforms to improve the condition of the workers and refused to admit any kind of interference in South America on the part of the United States. He was re-elected in 1922-28, but in 1930 a revolution put an end to his term of office. Augustin Justo became president in 1932.

Argentite One of the commonest ores of silver, also called silver glance. It consists of silver sulphide and contains about 87 per cent. of the metal. It is a soft, blackish-grey fusible mineral which is soluble in nitric acid and usually occurs in massive form or as small cubes resembling galena or lead sulphide. Its sectile character serves to distinguish it from galena or similar minerals. Argentite is found in Cornwall, Norway, Mexico, Chile, Peru and other localities.

Argives Word used by Homer for the Greeks. Strictly it only refers to the inhabitants of the Greek city, Argos (*q.v.*).

Argol Crust of impure cream of tartar or acid tartrate of potassium. It is deposited in wine casks or vats during the fermentation of the grape juice. It is a fine crystalline powder, varying in colour from whitish to brown or red according to the kind of wine from which it is derived. From argol is prepared commercial cream of tartar, tartaric acid and Rochelle salts. It is exported from Portugal, Messina and Bologna.

Argon Colourless, inodorous gas characterised by its inertness or inability to combine with other elements. It is a constituent of the atmosphere to the extent of about 1 per cent., and was discovered by Lord Rayleigh in 1894. It was noticed that nitrogen obtained from the air was heavier than when prepared in other ways, and this discrepancy led to the discovery of argon. It is used instead of nitrogen for filling tungsten electric bulbs.

Argonaut Family of cephalopodic molluscs known also as cuttle fish. They are found in the warm seas of Asia and one species in the Mediterranean. The male is smaller than the female, which has a beautiful translucent shell in which the eggs are kept. *See* CUTTLE FISH.

Argonauts In Greek legend the men who sailed in the ship Argo to fetch the golden fleece. Their leader was Jason and the fleece was at Colchis on the Black Sea. They set out from Iolcus in Thessaly to which they eventually returned with the prize. *See* JASON.

Argonne Wooded region in France. It lies between Toul and Mézières and covers some 300 sq. m. in the departments of the Ardennes and Meuse.

There was a good deal of fighting in this region during the Great War owing to its nearness to Verdun. In the summer of 1918 the French began the task of clearing the Germans from the Argonne, and this was completed just before the armistice.

Argos City of Greece. In the S. it is a railway junction on the line to Corinth. Pop. 10,000.

The ancient city was one of the oldest and most famous in Greece, the capital of a kingdom, and carried on wars with Sparta and other neighbouring states. Its importance is proved by the fact that the Greeks were called **Argives.**

Argosy Any ship laden with goods or spoil. It is probably derived from Argo, the ship in which Jason and his companions carried the golden fleece.

Argus In Greek legend a male being with 100 eyes. Of these only two slept at the same time. Hera made him guardian of the heifer Io, but Hermes, having soothed him to sleep with his lyre, managed to steal the animal for Zeus. Hera then put his eyes on the tail of a peacock. The dog of Ulysses was also named Argus. He fell dead from joy when his master returned from his wanderings. On account of its associations with vigilance the word argus is sometimes used for a newspaper, *e.g.*, *The Melbourne Argus.*

Argyll Duke of. Scottish title borne by the family of Campbell. About 1400 Duncan Campbell of Lochow was made a lord of parliament and in 1457 his grandson, Colin, was made Earl of Argyll. He and later earls were prominent in the life of their time, one being Archibald, the 2nd earl, who was killed at Flodden.

Archibald, 8th Earl of Argyll, made a marquess in 1641, was prominent during the civil war. He was a leader of the covenanters but after the execution of Charles I. supported Charles II., whom he afterwards deserted. In May, 1661, he was executed for treason. His son, Archibald, the 9th earl, was executed for taking part in the rebellion of the Duke of Monmouth in 1685. The estates were recovered in 1689 by Archibald, the 10th earl, who, in 1701, was made a duke.

John, the 2nd duke, was made Duke of Greenwich, a title which died with him. John, the 5th duke, married the beauty, Elizabeth Gunning. More famous, however, was George Douglas, the 8th duke, born April 30, 1823, A Liberal politician he was Lord Privy Seal, 1853-55, and again, 1859-66, Postmaster General, 1855-58, and Secretary for India, 1868-74. In 1880-81 he was again Lord Privy Seal. He died April 24, 1900.

John Douglas Sutherland Campbell, who became the 9th duke, married Louise, daughter of Queen Victoria. He was an M.P., 1868-78 and 1895-1900. From 1878-83 he was Governor-General of Canada, being then known as the Marquess of Lorne. He died Nov. 2, 1914, when a nephew, Niall Diarmid, became the 10th duke. The duke has large estates in Argyllshire where is his seat, Inveraray Castle. His eldest son is called the Marquess of Lorne, and he holds several high, but now honorary, offices in Scotland.

Argyllshire County of Scotland. It is on the W. coast and includes a large number of islands. The coastline is very much indented, being altogether nearly 2300 m. long, and the interior mountainous. Ben Cruachan and several other peaks exceed 3000 ft. in height. The county contains Loch Awe and much beautiful scenery. The islands include Mull, Islay, Jura, Coll, Tiree, Colonsay, Staffa and Iona. There are in the county many sea lochs among them Linnhe, Fyne and Long, and the great peninsula of Kintyre which is cut by the

Crinan Canal. The Awe and the Orchy are the chief rivers. Inveraray is the county town; other places are Oban, Dunoon, Campbeltown and Lochgilphead. The industries include the rearing of sheep and cattle, but the soil is very unfertile and much of the land is occupied by deer forests. Slate and coal are mined to a small extent and there are salmon and other fisheries. The county has long been the home of the Campbells. It sends one member to Parliament. Its area is 3213 sq. m. Pop. (1931), 63,014.

The Argyll and Sutherland Highlanders, formerly the 91st and 93rd regiments of foot, are associated with the county. The former was raised in Argyllshire in 1794. The Episcopal Church of Scotland has a Bishop of Argyll and the Isles.

Ariadne In Greek legend the daughter of Minos, King of Crete. She showed Theseus how to escape from the labyrinth of the monster by the help of a thread. The two then went to Naxos. There Theseus deserted Ariadne, but she soon found a husband in Dionysius who placed her among the stars.

Arianism Belief that Jesus Christ is not the equal of God the Father It is thus opposed to the orthodox Christian belief in the Trinity of three equal personages. Arianism was first preached by Arius, a priest who lived at Alexandria in the 4th century. It was denounced at the Council of Nicaea in 325, and was explicitly condemned in the Athanasian creed. It took root, however, among the Goths and other converts to Christianity, but after a time disappeared. It reappeared later as Unitarianism.

Ariosto **Lodovico.** Italian poet. Born Sept. 8, 1474, at Reggio, the son of a rich man, he studied law at Bologna. In 1504 he entered the service of the Este family, wherein he remained for the rest of his life. He died June 6, 1533, and was buried at Ferrara.

Ariosto's great poem is *Orlando Furioso*, an epic of the age of romance and chivalry.

Aristides Greek statesman. He was born about 529 B.C. in Athens, and served in the army against the Persians. He became known as an opponent of Themistocles and, as a result, the people decided in 483, by vote, to expel or ostracise him. Nevertheless, he took part in the war against Persia when it was renewed, fought at Salamis and commanded the Athenians at Plataea. He organised the Delian League, and in 477 was responsible for the change by which any citizen of Athens could become an archon. Aristides, who was called the Just, died in 468 or 467.

Aristocracy Word meaning, in its Greek origin, government by the best men. It was one of the three forms of government described by Aristotle as good. To-day the word is loosely used for a superior class, superior by birth, or position.

Aristophanes Greek dramatist. He was born about 445 B.C. probably at Athens. Little is known of his life, except that he had three sons and died in 385. Aristophanes ranks as the world's greatest comic dramatist. He wrote 54 plays, but only 11 are extant. The best known are *The Knights*, *The Clouds*, *The Wasps*, *The Birds* and *The Frogs*. All have been translated into English.

Aristotle Greek philosopher. He was born in 384 B.C. at Stagira in Macedonia, and is sometimes called the Stagirite. His father, Nicomachus, was physician to the King of Macedon, and he himself studied that art. In 367 he went to Athens to complete his education, and there he remained for 20 years, much of his time being spent with Plato, whose greatest pupil he was. On Plato's death in 347 B.C., he left Athens and went to the court of a prince in Mysia where he married his patron's niece, Pythias.

About 343 Aristotle was invited to Macedon by King Philip to supervise the education of his son Alexander. He remained there until Alexander became king, and in 335 returned to Athens. There, following the example of Plato, he founded a school called the Peripatos (covered walk). In 323 B.C. he left the city for Chalcis in Euboea. There he died in 322.

Probably the greatest thinker who has ever lived, certainly possessing one of the world's supreme intellects and rightly called "the master of those who know," Aristotle has exercised a great influence on European thought.

Some of Aristotle's writings are contained in a volume called *Organon*, in which he discusses and expounds his ideas on logic, ethics, politics and philosophy. Aristotle does not accept the belief of Plato that ideas are everything. Instead he expounds a philosophy in which the real and the ideal are harmoniously blended. Of the other parts of the *Organon*, the *Politics* is the basis of nearly all modern political philosophy; the *Ethics* is a treatise on the Greek idea of virtue; the *Poetics* laid the foundation of modern aesthetics, and gave logic the form it has retained for 2000 years. There are many English translations of his works. Besides the *Organon* his extant works include *The History of Animals*, *On the Parts of Animals* and *On the Generation of Animals*. In 1891 another writing, *The Constitution of Athens* was published. *De Anima* (Concerning the Spirit), is a work of the highest value.

Arizona State of the United States. In the south-west of the country, it covers 113,956 sq. m. and is almost square. Its natural features are the Colorado River, with its famous canyons and extensive deserts. Much of the land is a plateau over 5000 ft. in height, and the highest point is nearly 13,000 ft. The soil is not fertile, although irrigation has improved its quality. Cattle and sheep are reared, but the chief products are minerals, chiefly copper and silver. Phœnix is the capital. Arizona is governed by a legislature of two houses and sends one representative and two senators to Congress. Pop. (1930) 435,573.

Ark Large vessel. Two arks are mentioned in the Bible. One was the vessel built by Noah (Gen. vi. 14). It was 300 cubits (400 ft.) long, smeared with pitch, and consisted of three storeys, with a flat bottom.

The other ark was the receptacle in which the Israelites in their wanderings kept their sacred treasures. It contained the two tables of the law and was placed in the Tabernacle. It was taken by the Philistines (1 Sam. iv. 7), but they returned it, and it was placed in Solomon's temple at Jerusalem.

Arkansas Southern state of the U.S.A. covering 53,335 sq. m. It is hilly in the N. and W., and the soil is fertile. The chief rivers are the Mississippi, Arkansas

and Red. Little Rock is the capital. The main products are cotton, wheat, maize and fruit. Much timber is cut and coal and other minerals are mined. It is governed by a legislature of two houses, and sends two senators and seven representatives to Congress. Arkansas became a state in 1836. Pop. (1930) 1,854,482.

Arklow Seaport of Wicklow, Irish Free State. It stands on the Avoca, 49 m. from Dublin, on the Gt. S. Rlys. It is a fishing port and has oyster beds, while from here copper and lead are shipped. There is a factory for the manufacture of explosives. Pop. 5042.

Arkwright **Sir Richard.** English inventor. Born at Preston, Dec. 23, 1732, he became a barber and opened a shop in Bolton. He also dealt in human hair and travelled about for the purpose of buying it. His attention was attracted by the primitive appliances used for spinning cotton, and with John Kay, he invented a spinning frame. He began to work this at Preston, but popular feeling was against him and he moved to Nottingham, where he opened a factory for spinning cotton. In 1771 he joined with Jedediah Strutt in opening a factory at Cromford where water power was used, and this became a prosperous business. He was involved in expensive law suits to protect his patents, while in 1779 his mill at Chorley was burned down, the cry being put about that the inventions reduced the demand for labour. Arkwright, however, continued his improvements and was one of the first to use steam power in the factory. In 1786 he was knighted. He died Aug. 3, 1792.

Arles Town of France. It stands on the Rhône, 53 m. from Marseilles. The industries include a little shipping, but its interest is chiefly historical. Its Roman remains are remarkably fine, especially those of the amphitheatre. Other remains are of the forum, palace, baths and aqueduct. Arles became the capital of a little Roman kingdom, its bishop was the primate of Gaul and several church councils were held there. Pop. 3000.

Arlington **Earl of.** English politician. Henry Bennet was born at Arlington, Middlesex, in 1618, and was educated at Westminster School and Christ Church, Oxford. He fought for the king during the civil war and later served the exiled Charles II. as agent in Madrid. In 1662 he was made Secretary of State and became a member of the group called the cabal. Carrying out the policy of Charles II. to dispense with Parliament, he retained that office until 1675 when he was impeached, but the case against him failed. He then became Lord Chamberlain, but his political career was over. In 1663 Bennet was made a baron, and in 1672 an earl. He died at Euston, Suffolk, July 28, 1685.

Arliss **George.** English actor. Born in London, April 16, 1868, he first appeared on the stage in London in 1887. In 1901 he went to the United States, where he made his reputation, and remained for the next 30 years. His successes include parts in *The Darling of the Gods* and *The Green Goddess*. Later he turned to the films and won great fame in the name-parts of *Disraeli*, *The Iron Duke*, *Richelieu*, etc.

Arm Name given to the two upper limbs in man, and by analogy to a branch of anything, as an arm of the sea or an arm of the law. The human arm is divided into the upper arm, in which the bone is the humerus which fits into the shoulder blade, and the lower arm, or forearm, in which the bones are the ulna and the radius. These two join with each other, with the humerus to form the elbow, and at the other end with the bones of the wrist. The deltoid is one of the muscles used to raise the arm.

Armada Spanish word for an armed force. It is specially used for the fleet that was sent by Philip II. of Spain to invade England in 1588. About 130 vessels left Cadiz on July 12, carrying, in addition to the sailors, about 20,000 soldiers.

To defend England a fleet under Lord Howard of Effingham put to sea from Plymouth on July 19. The Spanish plan was to reach the Netherlands via the English Channel and take on board an army there under the Duke of Parma. They were attacked by the English ships, most of them much smaller than the great Spanish ones which were damaged in the fight. The Spanish ships reached Calais Roads on July 27, when they were further damaged by fireships. To escape these they put to sea, but were followed by the English, who sank, or captured, a number in a fight off Gravelines. The Spaniards then decided to make for home by rounding Scotland, and on the journey a gale made further havoc among the battered vessels. Many were wrecked and only 53 reached Spain.

Armadale Burgh of West Lothian. It is 21 m. from Edinburgh, on the L.N.E. Rly. It is a centre for the mining of coal and ironstone and has chemical works. Pop. (1931) 4854.

Another Armadale is a village in Skye. A third Armadale is a village in Sutherlandshire, 24 m. from Thurso.

Armadillo Mammal found in South America. It belongs to the family dasypus, and is so named because its body is protected by bones and scales which form two shields not unlike armour. The head and limbs are also protected and the animal can curl itself up like a hedgehog. Its strong claws are used for burrowing in the ground and it feeds on snakes, snails, beetles and other insects, and sometimes on carrion. The giant armadillo measures as much as 3 ft., but the "fairy" only 6 in.

Armageddon Name used in the Book of Revelation (ch. xvi) for the last great battle between the forces of good and evil.

Armagh City and market town of Co. Armagh, Northern Ireland, also the county town. It is 89 m. from Dublin. It is chiefly known as an ecclesiastical centre, and from it the heads of the Anglican and Roman Catholic churches in Ireland take the title of archbishop. Armagh was the ecclesiastical metropolis of Ireland and a noted seat of learning early in the Middle Ages. The weaving of linen is the chief industry. Pop. 7350.

Armagh County of Northern Ireland. In the province of Ulster it covers 512 sq. m. In the south it is hilly, but the soil is fertile, and wheat, oats and potatoes are grown. The Bann, the Blackwater and the Newry are the chief rivers, and Lough Neagh is partly in the county. Armagh is the county town; other places are Lurgan, Portadown, and Bessbrook. Pop. (1926) 110,070.

Armaments Term used for all the armed forces of a country, naval, military and air. Since the Great War

there have been several attempts to limit, by mutual consent, the armaments of the countries of the world, and the attainment of this end is one of the objects of the League of Nations.

In 1922, at the Washington Conference, five Powers, the United States, Great Britain, France, Italy and Japan, agreed upon a scheme for a limitation on the size and number of their warships, and in 1930 the United States, Great Britain and Japan agreed upon a further limitation. In 1932 a Conference on disarmament was held at Geneva. In 1935 Commissions were appointed in Britain and U.S.A. to inquire into the manufacture of arms by private manufacturers.

Armature The part of a dynamo or electric motor that rotates in the magnetic field. It may rotate, or be stationary, according to the kind of alternator in which it is used. If it rotates the magnetic field is stationary, or vice versa. An armature is composed of a core of laminated iron around which coils of insulated copper wire are wound, the iron serving to concentrate the magnetic lines of force. When the armature rotates, current is induced in the copper conductors as they cut the lines of force and is transmitted to the external circuit.

Armenia Country of Asia. It is a Soviet republic, member of the U.S.S.R. It lies to the S. of the Black Sea and touches Turkish and Persian territory. It covers 11,945 sq. m. The country is a plateau, with mountains of considerable height. It has fertile valleys in which cotton, fruit and tobacco are grown, and there is considerable mineral wealth, but agriculture is the chief occupation of the people. Irrigation works have been carried out by the Soviet Government. Erivan is the capital; Lenmakhan is another large town. Pop. (1931) 1,032,700.

The older Armenia covered about 60,000 sq. m. In the 6th century, B.C., an independent country, later it became part of the Roman Empire. In the Middle Ages it was again independent under its own kings, but from about 1400 onwards it was divided between the Persians and the Turks. Early in the 19th century the Russians conquered much of the land, and until the Great War it was divided into Turkish, Russian and Persian Armenia.

Towards the end of the 19th century the Turks began to massacre the Armenians, and a good deal of sympathetic interest was aroused in Europe. In 1908 the Young Turks renewed the massacres and conducted them with even greater thoroughness than before. They were renewed in 1915, and it has been estimated that 800,000 Armenians perished.

In 1918 a republic was set up in Armenia. This was recognised by the Powers of Europe in 1920, but it had a short and chequered career. Bolshevist influence was strong in the region, and in 1921 a republic on the Soviet model was proclaimed. This only included the district around Erivan; the rest of the older Armenia remained Turkish or passed to one of the other Soviet states.

The Christian church in Armenia dates from the 3rd century. In government and ceremonial it resembles the Greek church, but it is quite independent under its own patriarch. It claims to be the oldest Christian church in the world.

Armentières Town of France. It stands on the River Lys, 20 m. from Lens. The chief industries are the making of linen and brewing. It was seriously damaged during the Great War, but the buildings have now been restored. It was held by the Allies until April, 1918. Pop. 19,500.

Armidale Town of New South Wales. It is 210 m. from Sydney, and is the centre of a large agricultural district. Pop. (1931) 6960.

Arminianism Religious creed taught by Jacobus Arminius. He was born in Holland in 1560 and became a minister of a Protestant church in Amsterdam. In 1603 he was made professor at the university of Leyden and he died Oct. 19, 1609.

Arminianism is the opposite of Calvinism. According to it man has free will and is not predestined by God either to salvation or eternal torment. The dispute between the two creeds was very bitter in the 17th century in the Netherlands, where, after the death of Arminius, his followers were led by Simon Episcopius. Efforts to bring about an agreement failed, and in 1618, at the Synod of Dort, the teaching of the Remonstrants, as the Arminians were called, was condemned, and many of those who professed it were imprisoned, or otherwise punished. The controversy spread to England where it persisted into the 19th century. John Wesley taught Arminianism, while Whitefield preached Calvinism.

Arminius German hero. He belonged to a Teutonic tribe and became an officer in the Roman army. He was the leader of the Cherusci against the Romans in A.D. 9, when Varus and his legions were destroyed in the Teutoburg Forest. In A.D. 16 he was murdered.

Armistice Agreement between combatants to cease fighting. It may be either temporary for the purpose of removing the wounded, or burying the dead, or it may be a preliminary to a general peace, as in Nov. 1918. The armistice between Germany and her victorious foes in the west was signed on Nov. 11, 1918, and that day has since been observed as Armistice Day Previously Bulgaria had concluded an armistice on Sept. 29, Turkey on Oct. 30 and Austria-Hungary on Nov. 3.

Armorica Roman name for Brittany. The word is used by geologists for formations found in that region, *e.g.*, the Armorican folding which extends into England and Wales, and the Armorican grits, a subdivision of the Ordovician rocks of France.

Armour Covering to protect the bodies of fighting men; also a protection for warships. The earliest armour was a jacket or covering of skin, or leather, but metal was soon introduced as an addition or substitute. Egyptian and other soldiers of early times wore armour, and there are references to it in the Bible. It was worn only by the higher ranks, or a picked corps; most of the troops were practically unprotected.

The use of bronze armour was probably introduced by the Greeks, and their heroes are represented as wearing helmet, cuirass and greaves for the legs. The soldiers of the Greek armies were divided into the heavy armed and the light armed, the latter being skirmishers. The Romans used iron instead of bronze, and reduced the weight of the armour.

Metal and leather armour was used in the 10th century, perhaps earlier; then steel was introduced. In the 14th century, when chain mail was used, and the craft of the armourer was one of the greatest in the land, the knight

was covered from head to foot, while other armour covered, at least in part, his horse. A complete suit for use in the tournament is said to have weighed about 100 lb. The introduction of firearms made armour more vulnerable, and gradually it disappeared from the field of battle. In the 17th century only the cuirass and the helmet remained, but by the 18th these had gone.

On a limited scale armour was worn in the Great War. Metal helmets as a defence against shrapnel were worn by most of the combatants, and to some extent breastplates of steel were employed as a protection against bullets.

Armour for battleships was introduced about 1850, in cast iron, but soon steel was used and the resistant strength gradually increased. Experiments are still being made and in 1932 a specially strong kind was perfected in England, said to resist any known projectile. Naval armour consists of belts of steel covering the sides of the ship. The belt varies in depth from 3 to 15 inches.

Arms Short term for the armorial bearings of noble and other families; also of cities, colleges, schools, livery companies and other corporations. Grants of arms are made in England by the College of Arms in Queen Victoria Street, London, and in Scotland by the Lord Lyon at the Register House, Edinburgh. The fee is £10 for the stamp and £1 1s. a year. If the arms are used on a vehicle £2 2s. a year is charged. Anyone can apply for a grant of arms. *See* HERALDRY.

Armstrong **Lord.** English inventor. William George Armstrong was born at Newcastle-on-Tyne, Nov. 26, 1810, and became a solicitor there. In 1847 he opened works at Elswick to make hydraulic machinery, chiefly according to his own patents, and these were enlarged when, during the Crimean War, he began to make guns and ammunition, both for naval and military purposes, and the firm became one of the largest in the world. Shipbuilding yards were acquired and in 1897 it was amalgamated with the Manchester firm of Joseph Whitworth & Co. In 1887 Armstrong, who had been a knight since 1859, was made a baron, but the title became extinct on his death, Dec. 27, 1900. In 1903 his great-nephew and heir, W. H. A. E. Watson-Armstrong was made a baron.

In the 20th century the firm of Armstrong Whitworth added locomotives, motor cars and aircraft to its products, and prospered greatly during the Great War. Later it suffered a serious decline in its fortunes.

ARMSTRONG COLLEGE at Newcastle is a branch of the university of Durham. It was founded in 1871 and has a fine range of buildings. It is specially strong in the departments of engineering and mining.

Army National organisation of men for fighting on land. Most modern armies are raised by some kind of conscription or compulsory service, all men between certain ages being liable to serve. Each army consists of a regular or standing army and reserves who are only called up for periods of training and in time of war. The usual division of an army is into three branches or arms, infantry, cavalry and artillery, but this does not correspond to the facts to-day. Infantry and artillery are most important, the cavalry has become much less important than formerly. Other branches are the engineers, the medical, the service, an organisation for supplying food and necessaries, and such new formations as the tank corps and the machine-gun corps.

The chief unit of the army is the division under a major-general. It is an army in miniature, with infantry, artillery and other services complete. Its strength varies, 10,000 to 20,000 men. Divisions are grouped into army corps and in the Great War army corps were grouped into armies. Each army has an army council or other organisation to direct it, a general staff for planning its operations and colleges for training officers.

Most armies originated in the regular soldiers kept to protect the king. The British regular army dates from the time of Charles II. and owes much to the training given by Cromwell. Gradually it grew in size and after the Napoleonic wars was a formidable force, consisting of infantry and cavalry regiments with the artillery and other units of quite secondary importance and the militia and yeomanry as its reserves.

In 1881 the whole system was reformed by Lord Cardwell and in 1907 the reserves were organised by Lord Haldane in a **Territorial Army.** In 1932 the strength of the regular army was 208,000 and of the Territorial army 183,000. During the Great War it rose to over 4,000,000. In addition there was a special reserve of 132,000 men who had served in the regular army and were fit for active service.

To manage the army there is a large organisation, the War Office, at the head of which is the Secretary of State for War. There is now no commander-in-chief; the chief military officials are the chief of the Imperial General Staff, the other military members of the Army Council and the officers commanding the various divisions and districts.

THE ARMY AS A CAREER. The Army offers more advantages and attractions to-day than it has ever done. It is better conditioned, better trained, and, on the whole, better paid.

Entry to the Army as a commissioned officer is gained mainly through the Royal Military Academy, Woolwich, and the Royal Military College, Sandhurst. The maximum fee payable at each institution is £100 a term together with £65 for Woolwich and £55 for Sandhurst on admission, and £15 at the commencement of the third term (for provision of uniform, etc.), but reduced rates are available for approved cases of pecuniary need and for the sons of ex- and serving regular officers and other ranks. A number of Prize Cadetships of the value of £25 a year each are also awarded.

Army Entrance Examinations for admission to the Cadet Colleges are held twice anually, in June and November. The age limits are 18 to 19 years, and the examination fee for the written examination is £4 in London and £5 at any other centre. The normal course lasts three terms (approximately eighteen months). Woolwich cadets are trained for the Royal Artillery, Royal Engineers and Royal Corps of Signals, and Sandhurst cadets for Cavalry, Infantry, Royal Tank Corps, and the Indian Army.

It is also possible to enter the Army by nomination from a university or through the Supplementary Reserve of Officers or Territorial Army.

The present emoluments, including the cash allowances granted when quarters, rations, etc., are not provided in kind, range from £272 (unmarried) for a Second Lieutenant to £1189 (married) and £1142 (unmarried) for a Lieutenant Colonel.

Army Corps Unit of a modern army. It consists of two or three divisions of infantry with the necessary auxiliaries of artillery, engineers, etc., and usually numbers 30,000 or 40,000 men. It is commanded by a lieutenant-general. In the Great War Britain had over 20 army corps in the field. In France and Germany, before 1918, the country was divided into districts, each of which had its own army corps.

Army Council Body responsible for the control of the British Army. The president is the Secretary of State for War and there are five other members. These are the Financial Secretary to the War Office and four soldiers; the chief of the Imperial General Staff, the Adjutant General, the Quartermaster General and the Master General of the Ordnance. The offices are in Whitehall, London, S.W.

Army Medical Corps Royal. Unit of the British Army. It is reponsible for the health of the troops and for the care of the sick and wounded in time of war. It sprang from the Army Hospital Corps founded at the time of the Crimean War and dates from 1873. It was reorganised after the South African War of 1899-1902. Its motto is *In arduis fidelis*, and its badge is a wreath surmounted by a crown with the rod of Aesculapius, with a serpent entwined within it. It is under the director of medical services and has hospitals at Aldershot, Woolwich and elsewhere. The Territorial Army has a branch of the service and there are allied corps in Canada, Australia, New Zealand and South Africa. There is also an Indian Medical Service.

The Corps has a college in Grosvenor Road, London, S.W.1. Men who have obtained a degree enabling them to practise medicine are admitted to it after a competitive examination. After a course there they pass to the training establishment at Aldershot. During this time they are commissioned officers on probation; on passing the final examination their commissions are confirmed. The uniform of the corps is blue.

Army Ordnance Corps Royal. Unit of the British Army. In its present form it was organised in 1881, but there was previously a board of ordnance, this having been established in 1450. It was responsible for supplying the forces with artillery and for the equipment of the engineers, but as time went on other duties were added. It is now responsible for supplying the troops, not only with munitions of war, but also with clothing and other necessaries. The headquarters of the corps are at Woolwich and there are depots at Aldershot and other camps. It is under the Master General of the Ordnance and there is a school of instruction at Cosham. The badge is a shield bearing three cannon balls in a row above three cannon one above the other. The motto is *sua tela tonitanti*; the uniform is blue. The corps is organised in companies and the Territorial Army has a branch.

Army Pay Corps Royal. Branch of the regular army responsible for paying the troops. Its headquarters are in Whitehall, London, and it has branches wherever the units of the army are stationed. Officers of the regular army and clerks form the personnel. Its motto is *fide et fiducia*.

Army Service Corps Royal. Department of the British Army. It is responsible for supplying the army with food, clothing and stores, but not munitions, and also for transporting them from place to place. It took its present form in 1888 and during the Great War the number in its ranks exceeded 300,000. There are still a few horse transport companies, but most of the work is done by mechanical transport. The headquarters are at Deptford, and there are supply companies at Aldershot, Woolwich and other military stations. The uniform is blue and the facings white. The duties include the driving and care of motor vehicles and there is a driving school at Feltham and a school for artificers at Aldershot. There are allied corps in Canada, Australia, New Zealand and South Africa.

Army Veterinary Corps Royal. Unit of the British Army. It dates from 1881 and looks after the horses of the army. The depot is at Woolwich and the school at Aldershot.

Arne Thomas Augustine. English musician. Born in London, March 12, 1710, and educated at Eton, he studied music and became a skilled violinist. His opera *Rosamund* was produced in 1733. *Tom Thumb* was a comic opera and he also wrote two oratorios *Abel* and *Judith*. Arne's high reputation rests rather upon the music he composed for Shakespeare's songs, for *Rule Britannia* and for Milton's *Comus*. He died in London, March 5, 1778.

Arnica Genus of plants found in Europe. They belong to the order *compositae*. Arnica montana, which grows in the Alps, contains an oil from which tincture of arnica is obtained.

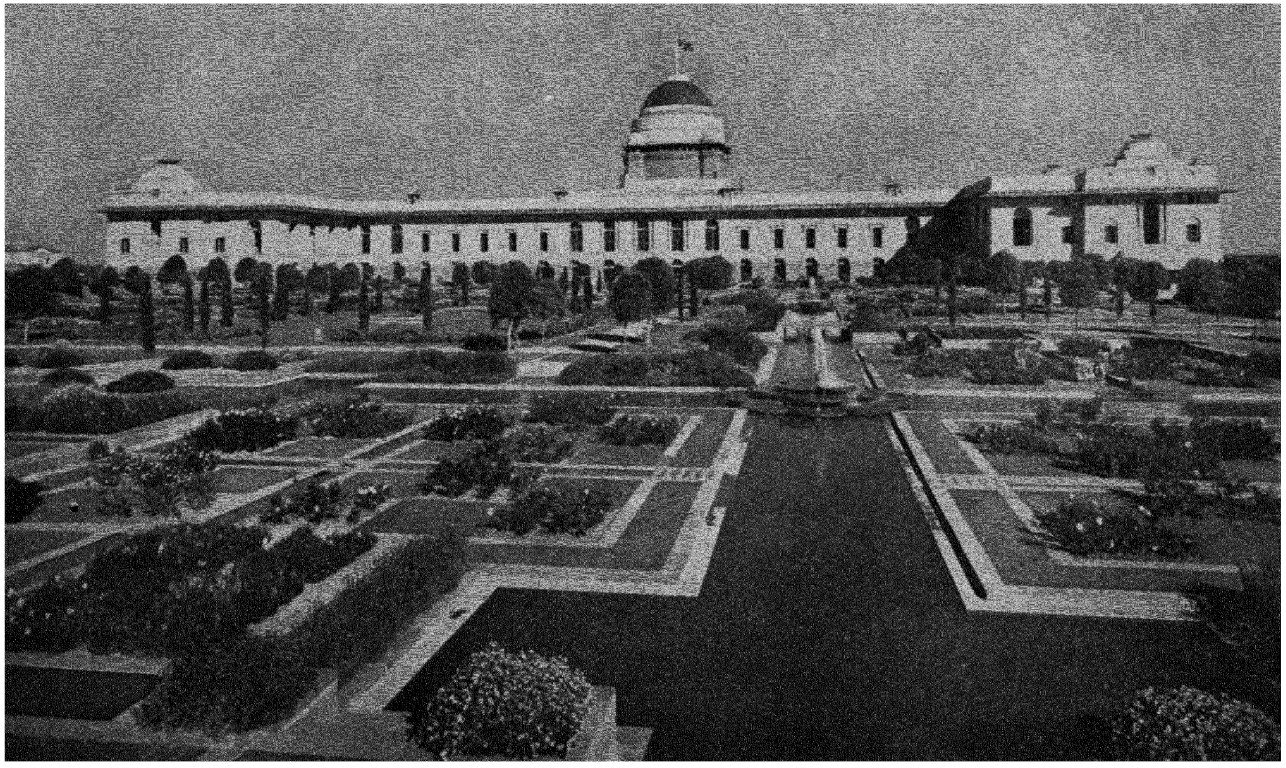
Arno River of Italy. It rises in the Apennines and flows across the country, S. and then W., until it falls into the sea near Pisa. It is 130 m. long and on it stands the city of Florence.

Arnold Urban district and market town of Nottinghamshire. It is 4 m. from Nottingham. The industries are the making of hosiery and lace. Pop. (1931) 14,470.

Arnold Matthew. English author. A son of Thomas Arnold (*q.v.*), he was born at Laleham, Dec. 24, 1822, and educated at Winchester, Rugby and Balliol College, Oxford. He won the Newdigate prize for a poem and was chosen fellow of Oriel College. He was an inspector of schools from 1851 until 1883. From 1857 to 1867 he was professor of poetry at Oxford. He died at Liverpool, April 15, 1888.

Arnold is best known as a poet and a critic. Influenced by Wordsworth he wrote a good deal of poetry, much of it of high value. Some of his most notable pieces are *Thyrsis*, *The Scholar Gipsy*, *Sohrab and Rustum*, *Rugby Chapel* and *Requiescat*. He was also a master of the sonnet. As a critic he showed considerable powers and won renown by his denunciation of the uncultured life he called Philistinism. His critical books include *On Translating Homer*, *Essays in Criticism*, *Culture and Anarchy* and *Literature and Dogma*.

Arnold Thomas. English headmaster. Born at Cowes, June 13, 1795, he was educated at Westminster, Winchester, and Corpus Christi College, Oxford, where he



THE VICEROY'S HOUSE AND GARDEN, NEW DELHI

fellow of Oriel College and was ordained, but soon left Oxford. In 1828, having had only a little experience of teaching by taking pupils into his house at Laleham, he was chosen headmaster of Rugby School. He reformed the school and left his mark on the public school system of England. In 1841 he was made Professor of Modern History at Oxford. He died at Rugby, June 12, 1842. He wrote *A History of Rome* and other books.

Arosa Pleasure resort of Switzerland. It is 19 m. from Coir, high amid the pine woods, which makes it suitable for consumptives.

Arquebus Early kind of firearm. It was invented in the 15th century when gunpowder made its use possible. It resembled a small cannon, and was carried by the troops, although a rest was used when it was fired. It discharged a small stone, or leaden ball, fired by matchcord or tinder, and was used by the infantry in the 16th century.

Arrack Spirituous liquor. It is made in India and adjacent regions from fermented rice, or molasses, flowers of the mahwa tree and other substances. It contains just over 50 per cent. of alcohol.

Arraignment In law the formal act of summoning a prisoner to the bar of the court to answer a charge. It is done by calling out his name, telling him the nature of the charge against him and asking if he is guilty or not guilty. The chief assistant of the clerk of assize is called the clerk of arraigns.

Arran Island of Scotland. It is in the Firth of Clyde and covers 165 sq. m. There are harbours at Brodick and Lamlash, which are reached by steamer from Glasgow and elsewhere. In the south the land is cultivated, but elsewhere the surface is mountainous and unfertile. The highest point is Goat Fell, 2860 ft. high. In the island there are some beautiful glens and it is a popular pleasure resort. Much of the land belongs to the Duchess of Montrose, the heiress of the Duke of Hamilton; her seat is Brodick Castle. The industries include sheep-rearing, fishing and catering for holiday makers.

The title of **Earl of Arran** is borne by the Duke of Hamilton. In 1503 it was given to Thomas Hamilton, whose son, the 2nd earl, was Regent of Scotland for Mary, Queen of Scots, 1542-54. A later earl was made Duke of Hamilton. There is an Irish title of Earl of Arran held since 1762 by the family of Gore.

Arras City of France. It stand on the Scarpe, 28 m. from Amiens and 120 from Paris. It was at one time the capital of Artois. Most of the buildings are new since the Great War. *e.g.*, the town hall, with its lofty belfry, a copy of the beautiful older one, the cathedral, the Abbey of S. Vaast, the prefecture, the museum and the church of S. Nicholas.

The industries include a trade in corn and other agricultural produce and some manufactures. In the 16th century the town was famous for the tapestry which was known as arras. Robespierre was born here. Pop. 29,000.

In Sept. 1914, Arras was entered by the Germans, who were soon forced to retire, but their lines remained quite close to the city. In April, 1917, the British made a great attack called the Battle of Arras, but it failed in its objective. The great German attack of March, 1918, was delivered in this area, but Arras remained untaken and in Sept. the advance of the allies drove the enemy from the neighbourhood. In 1932 a British war memorial was erected here.

Arrest Restraining the liberty of a person in order that he shall attend a court of justice to answer a charge against him. By English law a person is usually arrested on a warrant. This must give the name of the person, as general or unnamed warrants are illegal. A warrant must be signed by a magistrate or a judge of the high court and the arrest is carried out by the police.

A police constable can arrest a person without a warrant if there is reason to suspect him or her of committing a felony or causing a breach of the peace. The arrested person must, without undue delay, be charged with an offence and brought before a magistrate.

Arrow Missile shot from a bow. It is one of the oldest of weapons and was much used for hunting and fighting in very early times. The arrow used by the English archers was made of a straight piece of hard wood, pointed at the end often with a piece of iron. Flint was used in early times for this purpose. At the other end were feathers which gave steadiness to the flight. Savage tribes sometimes put poison into their arrows. With the crossbow a heavier and more powerful arrow was used.

Arrowroot Starchy substance obtained from various plants. The true arrowroot is obtained from a perennial herb grown in the West Indies called *maranta arundinacea*. Other arrowroot is obtained from a species of zamia and from various species of curcuma. English arrowroot is obtained from potatoes and Portland arrowroot from the corms of the cuckoo pint.

Arsenal Building used either for the storage or manufacture of arms and ammunition. The word means "a house of trade." These were called at first armouries and then arsenals, one being the Tower of London. Later, places where guns and ammunition were manufactured, were called arsenals, as they are to-day.

The chief British arsenal is at Woolwich, but there are others at Portsmouth, Plymouth and elsewhere. The arsenal at Venice is now a museum.

Arsenal English football club playing the association game. It was founded by employees of Woolwich Arsenal in 1886 and for some years had a ground there. Before the Great War it was moved to Highbury in N. London. In 1927 it reached the final of the Association Cup, which it won in 1930. In 1932 the Arsenal was defeated by Newcastle United in the final. In 1934 and 1935 Arsenal was at the top of the League.

Arsenic Strictly speaking a chemical element. Its atomic weight is 75 and the specific gravity of the vapour is 150. The word is also used for arsenious oxide, or white arsenic, (As_4O_6).

Arsenic proper has some of the qualities of a metal, but it does not form a base with oxygen. It is found free in Siberia, Germany and the United States, but more abundantly with ores of cobalt, nickel, tin, iron, etc., and other metals and minerals. It darkens on exposure to the air and when roasted gives up an odour like garlic. It is prepared by heating in earthenware tubes and is much used in the preparation of alloys.

White Arsenic is produced by roasting the

ore in a furnace. The vapours pass through long flues and then condense. The result is a white powder which is the arsenic in ordinary use. It is used in the preparation of aniline dyes, in the manufacture of pigments, as a weed-killer in the garden and for a sheep dip. Arsenical soap is used by taxidermists. Arsenic is also used in medicine, but only in small quantities and under medical direction. It acts as a tonic in nerve and other disorders. The best known preparation is Fowler's solution. It is sometimes used externally as a caustic.

Arsenic is a poison and its sale is strictly supervised. Particulars of every sale made must be entered in a book by the chemist. The compounds are also very poisonous and for its detection there are certain recognised chemical tests.

Persons who work in the preparation of arsenic are liable to poisoning. Powerful emetics and the stomach pump are the necessary remedies. Cases of persons being wilfully poisoned by doses of arsenic have been fairly frequent, owing to its being a common ingredient of weed-killers and insecticides. It is readily detected in the body after death.

Arson In English law setting fire to a building or church, or other public edifice, with malicious intent, not accidentally. It is a felony and the maximum punishment is penal servitude for life. In Scotland arson is called "fire raising."

Art Expression of the emotions and creative imagination in terms of line, form and colour, or in sound, gesture and rhythmic movement. Such a definition includes music, literature and drama, but art in a more restricted sense implies architecture, sculpture, drawing and painting.

Artistic expression in its primitive stages is seen in the famous cave paintings of Altamira. In Hellenic art sculpture at least reached its highest stage of perfection of technique, and decorative painting was at a high level. Still later, the part played by religion in moulding artistic style is seen in Byzantine art, followed by a revival of classical ideals and naturalism in the Italian Renaissance School, while portraiture and genre painting reached its height in the Dutch school.

The numerous art schools in London and elsewhere afford instruction in art subjects, and the Royal Academy and kindred societies hold exhibitions, while the National Gallery and other art collections afford opportunities for the study of representative works. In 1931, by the generosity of Mr. S. Courtauld, an Institute of Art was opened in connection with the University of London.

COMMERCIAL ART AS A CAREER. To be a successful artist an unusual creative ability is necessary, together with adaptability, great patience and an extensive experience.

Training at an art school costs anything from five guineas per session in the provincial schools up to thirty guineas at the very best London Art Schools, and thirty guineas at the Royal College of Art. Most schools have a special course in commercial or illustrative art, but it should be stressed that most of the knowledge that is of practical value when it comes to earning a living is gained only by experience.

Magazine illustrations, book-jackets, posters, advertising illustrations and industrial designs are in greater demand than they have ever been. All branches of the work offer abundant scope for everyone of creative ability, whilst those of special appeal, such as the illustration of children's books, are practically in the hands of women.

At the same time the standard of work has gone up and the competition between artists is keener than ever before. The best way to sell work is to take specimens round to likely buyers yourself. Advertising agents, consultants, and printers are pleased to see good work, and if a really good idea should present itself, try the advertisers personally.

There are opportunities for clever artists in the large commercial studios, but here the individuality of the artist is apt to be sunk in that of the studio, although this is where valuable experience may be gained. Advertising agents also employ artists with the right spirit, and a successful man may reach £800 or over a year.

Except to a few at the top, commercial art is not a profession that is well paid. What the artist earns he earns by hard work and painful effort, and severe application is needed to make the career a success.

For Art Teaching as a career, *see* under TEACHING.

Artemis Goddess of Greek legend. The daughter of Zeus and Leto, she was the twin of Apollo. She was a goddess of nature, but afterwards became the goddess of hunting, being represented with bow and arrows.

Artemisia Queen of Halicarnassus. She was the wife of Mausolus and after his death in 350 B.C. built a magnificent tomb called the mausoleum. An earlier queen of Halicarnassus, also Artemisia, fought on the side of the Persians at the battle of Salamis.

Arterio-Sclerosis Disease characterised by the thickening and hardening of the coats of the arteries. It may arise from excessive indulgence in alcohol, or from gout, while syphilis is also a cause. To some extent it comes on with advancing years. It may lead to death from heart disease, or apoplexy.

Artery (Gr. *airein*, to raise). Channel in the body which conveys blood from the heart to another part. The walls of the artery consist of three coats, an external, a middle and an internal. The main artery is the aorta which rises from the left ventricle of the heart and by means of its branches conveys the blood to all parts of the body. The pulmonary artery rises from the right ventricle of the heart and with its branches supplies impure blood to the lungs for purification. The arteries are subject to hardening, or arterio-sclerosis and also to aneurism.

Artesian Well *See* WELL.

Artevelde **Jacob Van.** Flemish politician. Born at Ghent about 1290, he was a brewer. He led the Flemings in a revolt against their count in 1337 and was soon practically ruler of Flanders. He kept his power for about eight years, but in July 24, 1345, he was killed during a tumult.

Artevelde's son, Philip van Artevelde, born about 1340, led the men of Ghent in a revolt against the count. Like his father he made himself ruler of the country, but in a short time he was defeated and killed in battle with the King of France, Charles VI. This took place at Roosebeke, Nov. 27, 1382.

Arthritis Inflammation of the joints. The variety known as rheumatoid arthritis, may be either acute or chronic. In

the acute form the symptoms resemble those of rheumatic fever. The chronic form, which is much commoner, begins with pain and swelling in one of the joints. This is followed by deformities of the joints, which become stiff and sometimes quite useless, and the muscles waste.

Established rheumatoid arthritis is regarded as incurable, but its progress can be arrested by careful dieting, suitable medicines and the use of mustard and other counter irritants. Massage is also useful in keeping the joints supple and the waters of some of the English and other spas are efficacious.

Arthropoda In Zoology a class of invertebrates. The word means jointed feet and the group includes insects, spiders and crustaceans, such as shrimps and crabs, as well as millipedes and centipedes. The body is formed of rings and like the limbs is covered with a horny skin. The appendages, such as the jaws and feet, are in pairs. *See* INSECT, SHRIMP, ETC.

Arthur King of the Britons. Very little is known about his life; in fact, he may be entirely a legendary figure. According to one account he lived in the 6th century and was killed in battle.

The Arthur of legend was a son of a king, Uther Pendragon. He became a great warrior, conquered the heathen tribes around him and founded an order of Knights of the Round Table. His capital was Camelot. He married Guinevere, but she proved false to him. The order was then broken up and the king mortally wounded in battle. He was carried to the isle of Avalon where he died. It was long believed, however, that he would return. His story is told by Geoffrey of Monmouth and other early chroniclers, but the chief source of the legends are in the writings of Sir Thomas Malory.

Arthur **Chester Alan.** American president. He was born Oct. 5, 1830, became a lawyer and held an administrative position during the Civil War. From 1871 to 1878 he was collector of customs at New York. As a republican he was elected vice-president in 1881 and very soon, the president, J. A. Garfield, having been murdered, he succeeded to the presidency. His term ended in 1885 and he died in New York, Nov. 18, 1886.

Arthur's Seat Hill near Edinburgh. It is about 820 ft. high and overlooks the city, the view from the summit being one of remarkable beauty.

Artichoke Edible vegetable. There are two distinct kinds, the globe artichoke and the Jerusalem artichoke. The Chinese artichoke is a variety of the Jerusalem. Both grow in English gardens, but the Jerusalem is perhaps the more popular. The edible part of the globe artichoke is the leaves, of the Jerusalem, the tubers.

Article Statement, or proposition, usually one of a series. In religious matters examples are the 39 articles embodying the creed of the Church of England and the statute of six articles passed in 1539. In secular matters there are the **articles of association** which by English law every limited liability company must have. These must be prepared before the company is registered and lay down the condition under which the company will work. All interested in the company are entitled to a copy of the articles. The law provides a model set of articles which a company can adopt.

Other articles state the conditions under which a person serves a solicitor in order to learn his business. Like other articles these must be stamped.

Articles of war are the code of discipline for the British Army. The first set dates from the 15th century; the present one from 1881.

Artificial Respiration A method of resuscitation of a person whose respiratory function is suspended, as in cases of drowning, narcotic poisoning, the effects of noxious fumes, collapse, or the asphyxia of new-born children. In Sylvester's method the patient is placed on his back on the floor and his arms raised above his head, pulled forward and downward to expand and contract the chest alternately, but Schafer's method is more generally adopted now as being more effective. The patient is laid face downwards with arms extended and the face turned to one side. The operator kneels across the body, with the hands flat over the lowest ribs. He then throws the weight of his body slowly and gradually on to his hands, then raises his body slowly, removing the pressure, but without removing his hands. This movement is repeated twelve times a minute without pause. In severe cases two hours' work may be necessary.

Artificial Silk Fibre resembling natural film but produced by machinery. Its correct name is rayon. The idea of making a fibre of this kind was put forward in the 18th century, but it was not until 1886 that it was successfully produced.

Rayon is made by treating cellulose in solution so as to draw it out into fine threads. This was first done at Besançon by Hilaire de Chardonnet in 1886 who discovered and used the nitro-cellulose process. In this cotton, the raw material, is made into gun cotton, or nitro-cellulose, which is dissolved in equal parts of ether and alcohol. The solution called collodion is forced through capillary tubes into water. The product is dried and denitrated by treatment with an alkaline hydro-sulphide.

Another kind of artificial silk is called viscose. In this the cellulose is obtained from wood pulp and is treated with caustic soda to make an alkali cellulose. This is then united with carbon bisulphide to form viscose. The viscose is then filtrated and coagulated by heat, the threads being drawn out by a machine.

Cellulose is the softest of all these silks and is least affected by water. It is therefore used for fishing lines and as an insulator in electricity, as well as, like the other substances, for articles of clothing and household use. The world's output of artificial silk is estimated at about 215,000 tons. There is a duty (1932-33) of 33⅓ per cent. on all imports of artificial silk into Great Britain.

Artificer Name given to a rank in the British Navy. They are engineers who enter the service after the age of 21 and serve in the engine room. They become chief petty officers and can rise to warrant and even commissioned rank. There are also artificers in the army and the air force.

Artillery Name used for the guns employed in land warfare. In England it dates from the 14th century and the Honourable Artillery Co. was founded in the 16th, a sign that attention was paid to artillery, though it was very different from the artillery of to-day. It was used in the wars of the 17th and 18th centuries, but it was only of secondary importance until the 19th, when the invention of stronger and larger guns,

more devastating missiles and more powerful propellants added vastly to its importance.

The artillery of the British Army is organised in a single regiment, the Royal Regiment of Artillery with headquarters at Woolwich. It dates from 1716. Its motto is *Ubique* (everywhere) and *Quo fas et gloria ducunt* (where right and glory lead). It was divided at one time into horse, field and garrison artillery, but the two latter have been amalgamated. It now consists of a few brigades of horse artillery, and a much larger number of mechanical ones divided into field brigades, light brigades, medium brigades and heavy brigades. A 20th century development is the formation of anti-aircraft brigades, and there are Indian mountain brigades. The brigades are divided into batteries.

The school of artillery is at Larkhall on Salisbury Plain and there is a school for coast artillery at Shoeburyness. The head of the regiment is called the master gunner. In the Great War the regiment was over 600,000 strong and its casualties over 135,000 of whom 35,000 were killed.

Artois District of France. It is the region around Arras and before the Revolution was one of the provinces. At one time it was ruled by the counts of Flanders and later was part of Burgundy. During the Great War there was a good deal of fighting in Artois, especially in May and June, 1915, when the French directed a great attack in this area.

Arts Term used in the universities and elsewhere for those branches of study which are not scientific. The medieval universities, taking the idea from the Greeks, called philosophy, logic and other subjects of study arts, and their degrees were called masters and bachelors of arts.

Arts, which includes the classical and other languages, is still the chief branch of learning at most universities, but many other subjects have been added and degrees are given in medicine, commerce, etc. The studies are divided into faculties, the oldest of which is the faculty of arts.

Arundel Borough of Sussex. It stands above the Arun, 58 m. from London and 10 from Chichester, on the S. Rly. Apart from the castle the chief buildings are the Roman Catholic Cathedral, and the old parish church of S. Nicholas. The town has an agricultural trade. Pop. (1931) 2489.

Arundel Castle, the seat of the Duke of Norfolk, occupies the site of one built in the 10th century. This was destroyed during the civil war, but was restored in the 18th century. It is a magnificent building in the baronial style, one of the finest in the land. The keep dates from the 10th century. Around is a park over 1100 acres in extent.

Arundel Earl of. English title, the oldest of its kind in the peerage. There were earls of Arundel in the 12th century and with the castle the title passed in the 13th century to the family of Fitzalan. The Fitzalans died out in 1580 and their lands were inherited by a grandson of the last earl, Philip Howard (1557-95). In 1627 the title was formally given to the Howards and since 1660 has been held by the dukes of Norfolk.

Aryan Name given to the race from which the inhabitants of India and Europe have sprung; also to their language group. The Aryans are believed to have lived originally on the borders of Europe and Asia, but scholars differ on the point and some think the cradle of the race was around the upper waters of the Amur, or Oxus. From there, perhaps 20,000 years ago, they migrated into Europe. The Aryan group of languages is divided into an eastern branch and a western branch. The former includes the Slavonic, Indian, Armenian and others. The latter includes the Teutonic and Celtic.

Asa King of Judah. A son of King Abijah, he is known for the vigorous measures he took against idolatry and for his wars. (1 Kings xv.; 2 Chron. xiv.-xvi).

Asbestos Mineral belonging to the hornblende group. It has a silky fibrous character, more or less incombustible, with low electrical and thermal conductivity. The term, however, is more widely applied to other minerals of different composition, but possessing similar characters. Most of the commercial asbestos is a form of chrysotile, a variety of serpentine, but cape blue asbestos is a hornblendic mineral, crocidolite.

Canada supplies most of the asbestos of commerce, with Rhodesia and South Africa following in order of importance. The longer flexible fibres are woven into fire-proof fabrics, ropes and millboard, while the shorter fibres and waste form insulating material and cements. Asbestos is also used in making paint and putty, and is an ingredient in the balls placed in gas fires. It is also used in textile factories as it resists corrosive gas.

Ascalon City of the Philistines. It stood on the Mediterranean Sea, 12 m. from Gaza and 14 from Jerusalem, and was one of the five chief cities of the Philistines. Here Herod the Great was born and in his time and later it was a flourishing city. There was fighting near here during the Crusades and in 1187 the city was captured by Saladin. Nearly a century later it was destroyed. The modern village on the site was entered by British troops Nov. 9, 1917.

Ascanius Son of Aeneas. His father took him, after the fall of Troy, to Italy. There he is said to have ruled over the Latins. He founded the city of Alba Longa and was named Julus.

Ascension Final disappearance of Jesus Christ from the earth. It took place 40 days after the Resurrection in the presence of the apostles who were assembled on Mt. Olivet. It is described in the gospels of Mark and Luke and in the Acts of the Apostles.

Ascension Island in the Atlantic Ocean. It belongs to Great Britain and is used as a coaling station. About 700 miles to the north-west of St. Helena, it covers 34 sq. m. The interior is mountainous. Georgetown, which has a harbour, is the chief place. The island was discovered by the Portuguese on Ascension Day, 1501, and became British in 1815.

Asceticism Practice of enduring hardship and refraining from pleasure. It is usually done for religious motives by those who believe that the material body is evil and wish to cultivate the spiritual side of human nature.

Asceticism has been practised in many religions and still persists among the Brahmins and other Hindus. It appeared early among the Christians and many of them carried it to extreme lengths. They underwent at their own requests tortures and floggings, while

one of its usual manifestations was abstinence from food. It was a recognised part of the discipline of monastic life.

With the growth of rationalism asceticism tended to decline and in the western world it has, in its extreme forms at least, disappeared. Vestiges still persist, however, in the observance of fast days in the Roman and other churches.

Ascham Roger. English scholar. Born in Yorkshire in 1515, he was educated at Cambridge. He became reader in Greek at S. John's College and in 1548 was appointed tutor to the Princess Elizabeth. He lived for a time at Augsburg, where he was secretary to a diplomat, and then, returning to England, became secretary to Queen Mary and, later Elizabeth. He died Dec. 30, 1568.

Ascham's fame rests on his writings, especially *The Scholemaster*, which give his ideas on education, *Toxophilus*, a book on archery, of which he was very fond, and *A Report of the Affairs and State of Germany*.

Asche Oscar. English actor. Born at Geelong Australia, Aug. 26, 1872, he was educated at Melbourne. Having studied acting at Oslo, he appeared on the stage in 1893 and played under F. R. Benson and H. B. Tree. He also toured in the United States, Australia and South Africa. In 1904 he became manager of the Adelphi theatre, London, and in 1907 of His Majesty's and then of the Globe. He is best known as the producer of *Chu Chin Chow*, in which he played the title rôle. He married the actress Lily Brayton.

Ascot Village of Berkshire. It is 29 m. from London and six from Windsor, on the Southern Rly. It is famous for the race meeting, which is held here each June and is a great social function. This originated in 1711. The chief event of the meeting is the race for the gold cup.

Asgard In Scandinavian mythology the home of the gods, or Aesir. It was approached by the bridge called Bifrost. In it the gods had a great hall with twelve seats and houses for themselves and the goddesses. It contained also Valhalla, or the home of the heroes.

Ash British tree (*fraxcinus excelsior*). It reaches a considerable size in meadows or open positions in woodlands. It is a graceful tree with widespreading branches, thickly leaved. It bears masses of minute flowers in early spring before the leaves appear. The flowers are succeeded by clusters of scales each containing a seed. The wood is tough and elastic and is used for making oars, tool handles and other articles. Varieties of ash include the weeping ash and the mountain ash, or rowan, which bears clusters of scarlet berries.

Ashanti District of West Africa belonging to Great Britain. It covers 24,379 sq. m., and is part of the Gold Coast Colony. The capital is Kumasi and the chief river the Volta. Togoland lies to the east and French possessions to the west. The country possesses dense forests in which there is valuable timber. Gold is mined and rubber and cocoa are grown; tobacco and bananas are other products. Pop. (1931), 578,702.

The inhabitants, the Ashanti, are negroes who lived under a native ruler until 1896, when the land became a British protectorate; it was annexed in 1901.

There have been several wars between the Ashantis and the British, the first in 1821-31, the second in 1874, when Kumasi was entered and burned. The Ashanti then agreed to withdraw from the land they had invaded. In 1896 a British force marched to Kumasi and made King Prempeh a prisoner.

Ashbourne Market town and urban district of Derbyshire. It is 13 m. from Derby, near the River Dove, on the L.M.S. Rly. Ashbourne Hall has historic associations. Around is some of the loveliest of the Derbyshire scenery. Pop. (1931) 4507.

Ashburton Lord. English title borne by the family of Baring. Alexander Baring was born in 1774, being a son of Sir Francis Baring. From 1816 to 1835 he sat in the House of Commons as a Tory. In 1834 he was President of the Board of Trade, and in 1842 he went to Washington where he arranged the treaty called after him. This settled the boundary between Canada and the United States, and dealt with other matters between the two countries. About 12,000 sq. m. were ceded to the States. Ashburton died May 13, 1848.

The Ashburton Shield is a prize for shooting, founded in 1861 by the 3rd Lord Ashburton. It is shot for each year at Bisley by teams from the public schools.

Ashburton Market town and urban district of Devonshire. It is 21 m. from Plymouth, on the Gt. Western Rly. Until 1885 Ashburton was a stannary town. Pop. (1931) 2505.

A town of New Zealand is called Ashburton. It is in South Island on the Ashburton River, and is a railway junction, 53 m. from Christchurch. Pop. 2850.

Ashby-de-la-Zouch Market town and urban district of Leicestershire. It stands on the Mease, 21 m. from Leicester and 118 from London, on the L.M.S. Rly. The chief object of interest is the ruined castle. This is associated with Ivanhoe and was later the seat of the Hastings family. The town has some mineral springs and baths, used by those suffering from rheumatism. Hosiery is manufactured, and around are coal mines. Pop (1931) 5093.

Ashdod City of the Philistines. The modern Esdud, it lay between Gaza and Joppa, being 22 m. from the latter town, on the road leading to Palestine and Egypt. Here, in the temple of Dagon, the Philistines placed the ark when they took it from the Israelites. Ashdod was destroyed by the Maccabees, but was rebuilt and became, as Azotus, a centre of Greek and then Roman culture. It is mentioned in the New Testament.

Ashdown Forest district in Sussex. It is a part of the old Andredsweald and stretches for almost 5 m. from Chelwood Gate to Crowborough. Its area is about 14,000 acres.

Ashdown Park, in Berkshire, is the seat of the Earl of Craven. It is 3 m. from Lambourne and is believed to be the Assandune where, in 871, King Ethelred and his brother Alfred defeated the Danes. Near is the cave of Wayland the Smith.

Ashes The. Term which originated in 1882, when a burlesque obituary notice in the *Sporting Times* announced that the Ashes of English cricket were being taken to Australia. This referred to Australia's first victory over England, 1882, marking the first serious challenge to England's cricket supremacy. The Ashes came to Britain in 1933.

Ashfield Baron. English business man. Born in Derby in 1875, Albert Henry Stanley was a son of Henry Stanley who emigrated to the United States. There young Stanley was educated and gained his experience of railway management. In 1910 he became managing director of the Underground Railway of London, and during the next 23 years he was the head of the great combine of tram and road services that was formed round it. In 1914 he was knighted, and in 1916 he joined the Ministry as President of the Board of Trade. He retained office until 1919 when he was made a peer as Baron Ashfield. From 1916-19 Stanley was M.P. for Ashton-under-Lyne.

Ashford Market town and urban district of Kent. It is 14 m. from Canterbury, on the Stour, and is an important junction on the S. Rly. The staple industries are railway shops, a cider factory, and an agricultural trade. Pop. (1931) 15,239.

Another Ashford is a village in Middlesex. It is 2 m. from Staines on the S. Rly.

Ashington Urban district of Northumberland. It is 4 m. from Morpeth, on the L.N.E. Rly. It is a coal mining centre. Pop. (1931) 29,418.

Ashmole Elias. English antiquary. Born May 23, 1617, at Lichfield, he studied law. He served the king during the civil war, during which he also found time to study at Brasenose College, Oxford. In 1660 he was appointed a herald to Charles II. He died May 18, 1692.

Ashmole wrote *A History of the Order of the Garter* and was interested in astrology. He is best remembered, however, because he presented in 1682 to the University of Oxford a collection of antiquities, out of which the **Ashmolean Museum** has developed. Many additions were made to the original gift, and these were long housed in a building between High Street and Broad Street. In 1893-94 a new building was erected in Beaumont Street, and in 1931 plans to enlarge this were put forward.

Ashridge Estate in Hertfordshire. It is near Berkhampstead. The grounds covered about 2200 acres, and the present mansion was built early in the 19th century. When in 1921 the estate was sold, some of it was bought for an outdoor zoological garden, while the house and gardens were acquired by Mr. U. H. Broughton and presented to the Unionist Party to serve as a training centre. This is called the Bonar Law College, and there persons are trained as workers in the Unionist cause. *See* WHIPSNADE.

Ashtaroth City of Palestine. The exact location is doubtful. In the Old Testament (Deut. i; Joshua ix. 12-13) it is mentioned as being the capital of Og, King of Bashan. Ashtaroth is also a name given to the goddess Astarte.

Ashtead Village of Surrey. It is 15 m. from London, on the S. Rly. The industries include the making of pottery. The village has a large common on which a Roman villa was unearthed in 1925.

Ashton-in-Makerfield Urban district and market town of Lancashire, 4 m. from Wigan, on the L.N.E. Rly. There are cotton mills, and manufactures of hardware and pottery. Pop. (1931) 20,541.

Ashton-under-Lyne Borough and market town of Lancashire, on the Tame, which here separates Lancashire from Cheshire. Its suburb of Dukinfield is in the latter county. It is 6 m. from Manchester, on the L.M.S. Rly. The industries include the making of cotton goods, silk fabrics and hats. There are collieries near by. Pop. (1931) 51,573.

Ash Wednesday First day of Lent. It has been observed in the Christian church since the 9th century, and owes its name to the use of ashes in the services of the day. They are still used in the Roman Catholic church. In the Church of England the commination service is read at the services on this day.

Ashwell Lena. English actress. She was born in 1872, the daughter of Commander Pocock, R.N. She studied music, but in 1891 made her first appearance on the stage. She soon made a reputation, her successes including parts in *Mrs. Dane's Defence*, and *The Darling of the Gods*, but she is perhaps better known as a manager. In 1907 she opened the Kingsway Theatre, London, which she controlled for over 20 years, and after the Great War she organised the Lena Ashwell Players who gave performances regularly in the London suburbs. During the War, she acted as Hon. Organiser of Concerts at the Front. She is the wife of Sir Henry Simson, the obstetric surgeon. In 1929 she published her memoirs under the title of *The Stage*.

Ashwell Village of Hertfordshire, 4 m. from Baldock, on the L.N.E. Rly. Another Ashwell is a village in Rutlandshire known as a hunting centre.

Asia Largest, most populous and richest in natural resources of the world's continents. It covers 17,300,000 sq. m. Its greatest length from E. to W. is 6700 m. and from N. to S. 5300. It is bounded by the Arctic Ocean on the N., the Pacific on the E., and Indian Ocean on the S. On the west the Urals and the Caucasus divide it from Europe. Other boundaries here are the Caspian, Red, and Mediterranean Seas. A narrow strip of land, the Isthmus of Suez, connects it with Africa in the N.E., the narrow Bering Strait separates it from America.

Asia is best described country by country, as in this work, but certain general features may be noted. It contains every variety of climate, from the cold of the Arctic to the burning heat of the Malay Peninsula or the Arabian deserts. In it are the loftiest mountains in the world, the Himalayan peaks, as well as the Altai, Karakoram and other great ranges. With immense tracts of fertile soil, it possesses vast deserts. The Gobi, or Shamo, is equal in size to the Sahara, and there are many deserts in Arabia and Persia.

The rivers are worthy of the Continent. In India are the Ganges, the Indus and the Brahmaputra; in China the Yang-tse-Kiang and the Hwang-ho; in Indo-China the Mekong and the Salween, and in Burma the Irrawady. The Obi, Yenisei and Lena are in Siberia, and in Iraq are the Tigris and the Euphrates. Others are the Amur, once famous as the Oxus, and the Amu Daria. There are no great lakes.

Asia is enormously rich in mineral wealth, and produces foodstuffs such as rice and maize on a vast scale. Tea, rubber and other tropical products are grown. Trees and plants of every

known kind abound. Lions, tigers, wolves, elephants and other wild animals still roam the forests.

The population of Asia is estimated at 850,000,000, chiefly Buddhists and Mohammedans. The three chief races are the Mongolians in the E., the Caucasians in the W., and the Malays. The most populous areas are India and China, which together contain more than half the population of the Continent.

Several European countries have territory in Asia. Great Britain governs India, in which Burma is included, Ceylon and the Malay States, and has interests in Palestine, Arabia and Iraq. France has possessions in Indo-China and interests in Syria. Soviet Russia rules the great area known as Siberia, as well as some adjacent areas covering altogether 6,000,000 sq. m., or over a third of the Continent. Unlike the British possessions, these lands are very thinly peopled. The independent countries include China, Japan, Persia, Afghanistan, and Siam. With these may be classed Tibet; Hejaz and Iraq, countries that sprang into existence as a result of the Great War; and Manchuria was declared independent in 1932.

Scholars consider Asia as the cradle of the human race. The earliest civilisations had their homes in the region around the Caspian Sea, and remains of others have been found in the central deserts. Mesopotamia contained at an early date rich and powerful empires where culture reached a very high level, and the civilisations of India and China are among the oldest in the world. To Asia, also, the world owes its great religions.

Asiago Town of Italy. It is a small place amid the mountains, 25 m. from Vicenza. In Nov. 1917, after their success at Caporetto, the Austrians gained some successes here, the battle lasting till the end of December. In 1918 the position was strengthened by the arrival of British and French troops, and when in June the Austrians made a further attack they were beaten back. The third battle of Asiago took place in October. The British took Asiago itself which had been lost in 1917, and with the other Allies drove back the Austrians.

Asia Minor Name given to a peninsula forming the W. end of the Continent of Asia. It has the Mediterranean on the W. and S. and the Black Sea to the N. On the E. it is linked to the mainland area. Most of it forms the Republic of Turkey. It is sometimes known as Anatolia. *See* TURKEY.

Asir District of Arabia. It consists of a strip of land along the coast of the Red Sea, 180 m. in breadth. Although nominally subject to Turkey, it was for a long time practically independent. In 1926 it was conquered by the Wahhabi, Ibn Saud, and in 1930 became part of the kingdom of the Hejaz. The soil is fertile. The capital is Sabia.

Askari African soldier. Derived from an Arabic word meaning "army," it is used for native soldiers who are trained and led by European officers.

Askern Village of West Riding of Yorkshire, 6 m. from Doncaster, on the L.N.E. Rly. It is a populous mining centre, and there are works for carbonising the coal. At one time the place was visited for its medicinal springs.

Askwith **Baron.** English publicist. Born Feb. 17, 1861, George Ranken Askwith was educated at Marlborough and Brasenose College, Oxford. He became a barrister and practised successfully until 1907 when he was appointed an assistant secretary to the Board of Trade. He was soon in charge of the department that dealt with labour disputes, and from 1911 until his retirement in 1919 he was Chief Industrial Commissioner. In 1911 he was knighted, and in 1919 made a peer. Lord Askwith has written much on the subject of trade disputes, of which he has an unrivalled experience.

Asoka Emperor of India from 264 to 228 B.C. He was the grandson of Chandragupta, who had torn the Indian possessions of Alexander the Great from Seleucus. A renowned Buddhist, he ruled over territory corresponding in size to British India, without Burma, and was greatly revered. He left behind many valuable inscriptions.

Asp Poisonous snake of the viper family. The word is also used for any poisonous snake, such as the horned snake that killed Cleopatra. The asp proper, about 12 in. long, is found in the countries around the Mediterranean.

Asparagus Genus of plants of the *liliaceae*. There are many species, one being widely cultivated as a table vegetable. The common asparagus grows wild in many parts of Europe on the seashore, or on river banks, and is occasionally seen in Britain. It contains a substance called **asparagine**, used by doctors as a diuretic and for its action on the urinary organs.

Much asparagus is grown in France, where a good deal is forced in hothouses for the English and other markets. Since 1931 this early crop must pay an import duty of 50 per cent. on entering Great Britain. Other varieties of asparagus are eaten in some countries, but the bitter asparagus, which resembles the common variety, is unfit for food.

Asparagus is usually served with sauce as a separate dish. It can be boiled for soup.

A beautiful ornamental fern called the **asparagus fern** is grown indoors and used for table decoration.

Aspasia Greek lady. She was born at Megara, or Miletus, the daughter of Axiochus. She settled in Athens where her intellectual gifts made her known. Pericles, having divorced his wife, married her in 445. After his death she became the mistress of Lysicles. There is a bust of Aspasia in the Vatican at Rome.

Another Aspasia was the wife of Cyrus the younger, and later the mistress of Artaxerxes.

Aspatria Market town and urban district of Cumberland, on the River Ellen, 7 m. from Maryport, on the L.N.E. Rly. Around it are coal mines. Pop. (1931) 3239.

Aspen Species of poplar (*populus tremula*). Owing to the long leaf-stalks the leaves flutter with the faintest breath of wind. In olden days the wood was used for making arrows. *See* POPLAR.

Asphalt Brown or black natural form of bitumen. It consists of a mixture of various hydrocarbons and occurs either in a pure state, or impregnating limestones as in the case of the Val de Travers rock in Switzerland. Asphalt is solid or viscous, with a conchoidal fracture and pitch-like odour. It is obtained chiefly from the famous Pitch Lake of Trinidad, also from similar deposits in Venezuela and Cuba. The Val de Travers rock is used for paving purposes,

and ordinary asphalt for waterproofing roofs, cisterns, iron pipes, etc., also for making a black or brown paint.

Asphodel Herbaceous perennial plant. It is native in the southern parts of Europe, but will grow in English gardens. It bears white or yellow flowers and will thrive in any soil provided it gets plenty of sun. The Greeks planted it on graves. Homer speaks of the meads of asphodel in the lower regions.

Asphyxia Condition which, by depriving the body of oxygen for breathing purposes, produces death, as in drowning, strangling and gas poisoning. The absence of oxygen leads to quick respiration, followed by convulsions. Insensibility and cessation of movement follow and death occurs within a few minutes.

Treatment.—The treatment is the same as for drowning (*q.v.*)—artificial respiration and the application of warmth. In gas-poisoning the victim must be removed to the open air. A doctor should always be sent for.

If scalding liquid or corrosive poisons are swallowed, the patient must be kept sitting before a fire, and an ice-bag or hot fomentations should be applied to the throat.

Aspidistra Evergreen plant of the family *liliaceae*. It grows in China and Japan, and was introduced about 1822 into Great Britain as an indoor decoration.

Aspirin Drug efficacious for giving relief to pain, especially from neuralgia, sciatica, and rheumatism, as well as for headaches and colds. It is a white crystalline substance, not easily soluble in water, and is called by chemists acetylsalicylic acid. It is usually taken in tablet form. The dose is from 5 to 15 grains. If taken for a cold, the patient should go at once to bed as the drug tends to cause sweating. If taken regularly aspirin loses some of its beneficial effects, and tends to depress the action of the heart.

Asquith Family name of the Earl of Oxford and Asquith. Herbert Henry Asquith, who, in 1925, was created Earl of Oxford and Asquith, left seven children, two being by his second wife, Margot, daughter of Sir Charles Tennant. The eldest son, **Raymond Asquith**, a barrister, was killed in action while serving with the Grenadier Guards, Sept. 15, 1916. His son, Julian, became Earl of Oxford on his grandfather's death in 1928, and his two daughters were given the rank of an earl's daughter. **Herbert Asquith**, the second son, wrote novels and verses, the novels including *Wind's End* and *Young Orland*. He married Lady Cynthia Charteris, daughter of the Earl of Wemyss, known as a writer of books for children. The third son, **Arthur Melland**, won the D.S.O. in the Great War, and afterwards became associated with some important trading companies in London. The fourth son, **Cyril**, is a barrister. The fifth, **Antony**, is a film producer. Lord Oxford's two daughters are **Lady Violet Bonham-Carter**, wife of Sir M. Bonham-Carter, and **Elizabeth** the wife of Prince Antoine Bibesco, Rumanian minister in Madrid.

Ass Animal belonging to one of the divisions of the genus horse (*equus*). It has a tufted tail and long ears, and is popularly known as the donkey. The ass is found wild in Asia and Africa. It was domesticated at an early date, and in the 16th century was introduced into England, where it has since been used as a draught animal. It is crossed with the horse for the breeding of mules.

Assab Port on the Red Sea. It is in Eritrea and belongs to Italy. An outlet for the produce of Abyssinia, it has a good harbour, but no railway.

Assam Province of India. It lies between Bengal and Burma, with Bhutan and Tibet to the north, and covers 53,000 sq. m. The surface is hilly and in the north, where are the Himalayas, it is mountainous. The Brahmaputra and the Surma are the chief rivers. The soil, especially in the valleys, is very fertile, and the province is famous for its tea. Another product is rice, while coal and oil are mined. There are extensive forests in which is much valuable timber. Shillong is the capital. The province is under a governor and a legislative council. Within its boundaries is the native state of Manipur.

Assam was taken by Great Britain from Burma in 1826 and in later years, from 1874 to 1905, it formed a separate province, but from 1905 to 1912 it was united with Bengal as it had been before 1874. In 1912 it was again made a separate province. Pop. 8,622,251.

Assassins **The.** Sect formed by Hasan-i-Sabbah towards the end of the 11th century. They flourished in Persia and Syria until they were crushed in the 13th century. Under their chiefs they acquired great power, their practice of "assassinating" their enemies causing them to be greatly feared.

Assault In English law an attack on a person without just cause, or the threat of an attack if in more than mere words, with at least an intention to hurt. The crime is punishable on summary conviction by fine or imprisonment. Assaults on females and young boys, which are more seriously punished, are known as aggravated assaults. A person assaulted can bring an action for damages.

Assaying Term applied to the methods followed in the estimation of a metal in an ore or alloy. This may be done by dry or wet assaying. In a dry assay the ore mixed with solid reagents is subjected to heat, thus isolating the metal which is weighed and the percentage calculated.

By the wet method solvents and other reagents are used, and by solution and precipitation, the metals present are separated and weighed. In some cases gaseous reagents are used, or the fused one may be subjected to an electric current. Volumetric assaying is a rapid method of estimation by determining the volume of a standard reagent necessary to effect a certain change in the solution.

Assegai Weapon used by some African tribes. It is a light spear made of a hard wood tipped with iron, and thrown at the advancing enemy. It was used by the Zulus in their wars with the British.

Assent Consent or agreement. In Great Britain and other countries of the British Empire a measure that has passed through both Houses of Parliament needs the royal assent before it becomes law. This is given in England by three commissioners, members of the House of Lords who sit in front of the throne. The title of each bill is read out and the clerk of the Parliaments replies to each, *le roy le veult*, "the king wishes

it." The royal assent has not been refused for over 200 years.

Assessment Process of valuing houses and land for the purpose of deciding what rates and taxes they shall pay. It is done by officials of the county or borough councils who put a yearly value on every factory, warehouse, shop, house or piece of land, and on this rates are charged. This is usually something less than the rent; in theory it is the rent less an allowance for repairs. Since 1925, when the rating system was altered, every county, borough or other rating authority, must have an assessment committee which is responsible for assessing all property within its area. *See* RATES.

The word is also used for fixing the amount of income on which a person must pay income tax and for the amount of damages awarded by a jury in a lawsuit.

Assessor In English law an expert who assists judges and arbitrators. Since 1873 it has been the custom to call upon assessors when difficult points are at issue, as in the Court of Admiralty and in cases about patents. When ecclesiastical cases come before the judicial committee of the Privy Council, one or more of the archbishops or bishops usually sit as assessors. Assessors are also recognised in Scotland where they assist the magistrates.

Assets Term used for the property of a person or company as distinguished from his or its liabilities. The assets of a limited company are its buildings, machinery, goodwill, etc., and appear on the right-hand side of the balance sheet. The assets of a bankrupt are the funds available to pay the expenses and a dividend to the creditors.

Asshur Assyrian god. He was the chief and creator of all the other gods. The city of Asshur stood on the Tigris, 55 m. from Mosul, and Assyria was named after it.

Assignment Formal transfer of property from one person to another. Thus a bankrupt assigns his property to a trustee for the benefit of his creditors. The corresponding word in Scots law is assignation.

Assiniboia District of Canada. It was at one time part of the North-West Territories. Nearly 90,000 sq. m. in area, it is now part of the provinces of Saskatchewan and Alberta. The name is that of a tribe of Indians, and is also borne by the River Assiniboine which flows into the Red River at Winnipeg. It is about 700 m. long.

Assisi City of Italy. It is 15 m. from Perugia and stands on a hill, over 1300 ft. high. The Franciscan monastery contains work of some of the early Italian artists; it has one church built over another. Near the city is the church of S. Maria degli Angeli, containing the cell in which S. Francis died, and the oratory of the original monastery. Pop. 18,500.

Assiut Town of Egypt. It stands near the Nile, 248 m. south of Cairo. It is a calling place for caravans, and is famous for its dam. Near are some famous rock tombs. At one time Assiut was famous for its pottery and other works of art. Pop. 57,000.

Assize Word meaning "an enquiry," and the results of such an enquiry. The results took the form of laws, and in the Middle Ages many of the laws were called assizes. Some were called after the place where the laws were issued, *e.g.*, Clarendon or Northampton, and others after the subject with which they dealt, *e.g.*, the assize of arms. The word was also used for a legal action, and this use of it continued until the 19th century.

Assizes In the older sense an enquiry. It is now used in England, Ireland and other countries for the visits of the judges to the cities and towns in the provinces which are called assize towns. The assizes are held three or four times a year for the trial of important cases, both criminal and civil. Judges of the King's Bench division of the High Court of Justice preside over the assizes. For this purpose the country outside the London area is divided into circuits, and a judge goes through each circuit. To assist him there is for each circuit a barrister called the clerk of assize.

Associate Word used for a member of a society, usually a learned society, who is not a full member. Thus the Royal Academy has associates, known as A.R.A., and from these the full members, R.A., are elected. Another kind of associate is an official in the law courts. He acts as an assistant to the judge, by recording the verdicts, and in other ways.

Association Society or organisation existing for a common purpose, such as looking after the interests of a trade or profession, or, in former times, protecting the life of a sovereign. The **association of ideas** in the human mind is a subject to which philosophers and psychologists have devoted much attention. Some explain all our mental processes by the theory of the association of ideas.

Association Cup Trophy awarded every year to a club playing football according to the rules of the Football Association. It was first given in 1871 and has increased steadily in popularity ever since then. There are preliminary rounds in which the weaker clubs are weeded out, and six rounds in the competition proper. From the first two of these the stronger clubs are excused, but they come into the third round in which there are 64 competitors. These are reduced by the sixth round to four, and the four play in the semi-finals, and the victorious two in the final. Since 1923 the final has been played at the Stadium at Wembley.

WINNERS OF THE ASSOCIATION CUP SINCE 1900.

1900—Bury.	1920—Aston Villa.
1901—Tottenham Hotspur.	1921—Tottenham Hotspur.
1902—Sheffield United.	1922—Huddersfield
1903—Bury	1923—Bolton Wanderers.
1904—Manchester City.	1924—Newcastle United.
1905—Aston Villa.	1925—Sheffield United
1906—Everton	1926—Bolton Wanderers.
1907—Sheffield Wednesday	1927—Cardiff City
1908—Wolverhampton Wand.	1928—Blackburn Rovers.
1909—Manchester United	1929—Bolton Wanderers.
1910—Newcastle United	1930—Arsenal
1911—Bradford City.	1931—West Bromwich Albion
1912—Barnsley.	1932—Newcastle United.
1913—Aston Villa.	1933—Everton.
1914—Burnley.	1934—Manchester City.
1915—Sheffield United	1935—Sheffield Wednesday.

Assuan Town of Egypt. It stands on the Nile and is famous for its dam. This was opened in 1902 and enlarged in 1912. Its reservoir has a capacity of 2,420,000,000 cubic metres.

Assuan has a long and interesting history under the Egyptians and the Romans. Near are the granite quarries from which the Egyptians obtained the stone for many of their temples. There are some slight ruins of the

ancient city, and the place is visited by tourists. Pop. 16,458.

Assumption Act of taking the souls of the dead into heaven. The chief use of the word is for the assumption of the Virgin Mary, this being a festival in the Roman Catholic Church. Held on Aug. 15, it is a day of obligation. Many great painters, including Titian and Rubens, have pictured the assumption.

Several orders of women in the Roman Catholic Church have been founded in honour of the assumption. These include the Little Sisters of the Assumption, a nursing order, and the Oblates of the Assumption, who teach and visit.

Assyria Empire of the ancient world. It was the district round Asshur, a city on the Tigris. Its people were Semites related to the Babylonians. They were ruled by kings who were also priests. Their religion, with its hierarchy of gods and goddesses, was very like that of Babylon. Sacrifices were an important part of its ritual.

Assyria existed as early as 2500 B.C., but as a dependency of Babylon. About 1400 it became independent and for a short time Babylon was a subject state. For the next 800 years its kings conducted almost incessant wars against the Hittites and other peoples on their borders, the result being that their dominion was greatly extended, although it never covered an area equal to that of Babylon. It was, however, in the time of King Tiglath-Pileser I., who reigned about 1100 B.C., the greatest power in the world.

After a period of decline the power of Assyria revived under Tiglath-Pileser IV., who lived about 700 B.C. and conquered a good deal of Asia Minor, including Palestine and Syria and also parts of Arabia. Later Esarhaddon included Egypt in his realm, which was divided into 22 nomes or provinces. Babylonia and the rest of Mesopotamia (Iraq) had previously been conquered. The end came soon after this period of glory. Instead of one ruler there were several, and unity was quickly lost. Egypt became independent, and a little later Babylon followed her example. Other parts of the realm threw off their allegiance to the king at Nineveh, and in 607 B.C. the Medes took that city, and the Assyrian Empire came to an end.

Excavations at Nineveh and elsewhere have revealed much of the culture of the Assyrians. They were skilled craftsmen, working in gold and silver, weaving cloth and making pottery. They were great traders and evidence has come to light that they had banks. They wrote on tablets of brick, and in this medium they had immense libraries, the books including grammars and treatises on science.

The Assyrians were perhaps greatest as builders, and the size and splendour of their buildings, as revealed by excavations, is one of the marvels of the world. Temples, palaces and tombs were decorated in a most gorgeous fashion. The ruins of Nineveh when explored proved that it was one of the greatest cities of the world. More recently excavations have shown the existence of buildings, perhaps equally magnificent, at Sargon's capital, the modern Khorsabad, where valuable finds were made in 1932.

Astarte Goddess of the Phoenicians, or Sidonians. She shared with Baal the position of chief of the gods. She was the goddess of fertility and was sometimes represented as a cow. The moon was her emblem. She had temples at Erech, Nineveh, Arbela and elsewhere, and was worshipped with licentious rites. This is referred to in the Bible (2 Kings xxiii).

Aster Genus of flowering plant, also called the Michaelmas daisy. They have undivided leaves and flowers not unlike the daisy. They are in many colours and are both annuals and perennials.

Asteroid Name used for the minor planets. They lie between Mars and Jupiter, and the first of them, Ceres, was discovered in 1801. Others were soon found, and after 1847 a number were discovered each year. In the 20th century this work was aided by photography, and in one year (1908) 117 new asteroids were found. Now over 1000 are known and one authority estimates that there are altogether something like 50,000.

All the asteroids are very small. Ceres, the largest, is only 480 m. in diameter; the next largest are Vesta, Pallas, and Juno. The smallest is only 3 m. in diameter. The total volume of all the asteroids together is vastly less than that of the earth. One of them, Eros, discovered in 1908, is very near the sun, and its movements are therefore of great value to astronomers.

Asthma Chronic disease of respiratory tract, characterised by acute attacks of bronchial catarrh and spasmodic difficulty of breathing (with a wheezing sound), for which change of climate is often beneficial.

Immediate relief in an attack is sometimes gained by propping up in bed, and by the use of drugs under medical supervision. Inhaling the fumes from burning a preparation such as stramonium or nitre paper will relieve the spasms and aid expectoration in severe attacks. No heavy meals should be taken at bedtime, and the diet should be carefully studied, as individual idiosyncrasies for certain foods are often present. Other exciting factors may be dust, pollen, feather beds, etc.

Astigmatism Defect in the refracting surfaces of the eye, resulting in clear vision of horizontal and vertical objects being attained at different distances. It is most usually found in the cornea, but sometimes in the lenses. It can be corrected by the use of cylindrical glasses.

Astley **Philip.** Circus proprietor. He was born at Newcastle-under-Lyme in 1742. He joined the army in 1759 and soon became very clever at managing and training horses. Leaving the army he gave performances of horsemanship. Next he opened circuses, in London and Dublin. In London, Astley's was on the south side of the Thames, opposite the Houses of Parliament. He died in 1814.

Aston Manor Until 1911 a borough of Warwickshire. In that year it was made part of Birmingham. **Aston Hall** is now a museum and art gallery, and its grounds a public park.

Aston Villa Association football club. It was founded in 1874 at Villa Cross, Handsworth, Birmingham. Its first members belonged to a Wesleyan Church. The club won several cups and was one of the first to engage professionals when, about 1880, association football was taken up by the masses. The Villa has a wonderful record, probably unequalled, at the game. It has won the Association Cup on six occasions, 1887, 1895,

1897, 1905, 1913 and 1920, and the championship of the League on six occasions. Its ground is at Aston, Birmingham.

Astor American family. John Jacob Astor was born at Waldorf, near Heidelberg, July 17, 1763. In 1783 he went to New York and soon acquired a fortune by trading in furs with the Indians. He founded Astoria in Oregon as a centre for his business, and bought land in New York which became very valuable. He died in 1848. His great-grandson, William Waldorf Astor (born March 31, 1848) was for a time American minister in Rome. In 1890 he settled in England, where he bought Hever Castle and Cliveden and acquired some weekly and other journals. In 1899 he was naturalised; in 1916 he was made a baron, and in 1917 a viscount. He died Oct. 18, 1919.

Astor left two sons. The elder, William Waldorf Astor, born May 19, 1879, was M.P. for Plymouth from 1911 to 1919. From 1918 to 1921 he was a member of the Coalition Government, taking a special interest in questions affecting agriculture, temperance and public health. In 1906 he married Nancy Y. Witcher, daughter of C. D. Langhorne of Virginia. In 1919 she was elected, in succession to her husband, Unionist M.P. for a division of Plymouth, being the first woman to sit in the House of Commons. She held her seat at subsequent elections and won a distinct place for herself in the House. The younger son of the first viscount, John Jacob Astor, was elected M.P. for Dover in 1922. In 1922 he became principal proprietor of *The Times*. He must not be confused with his kinsman, another John Jacob Astor, who was drowned in the *Titanic* in 1912.

Astrakhan Town and river port of Russia, on the Volga, and partly on an island in the river, about 50 m. from the Caspian Sea. The centre of the city is the citadel, or kremlin, wherein is the cathedral. Another part is called the White City. Astrakhan does a considerable trade both by land and water, and has a number of manufactures. Its market and bazaar have been famous for three centuries. Pop. 199,000.

The name astrakhan is used for a material employed for clothing. It is made from the skin of Persian lambs, but is also made artificially from wool. It resembles a fur and was at one time very popular.

Astrolabe Instrument used by the ancients and also in medieval times for taking altitudes and marking the positions of sun, moon and stars. As used by the early seamen, it consisted of a circle with two radical pointers, one fixed and the other movable, both being fitted with sights. It thus measured the angle between two stars, or between a star and the horizon. It was used until the 18th century when it was replaced by the quadrant. It was also used by surveyors, and in a more elaborate form by astronomers, but it has now been replaced by more modern instruments.

Astrology Science based upon the assumption that planetary influences affect human affairs, and formerly regarded as identical with astronomy. In early times astrology was in great repute, and its symbolism permeates the ancient religions and philosophies. Traces of astrological ideas occur in the use of the terms, ill-starred, jovial, saturnine, mercurial, lunatic, etc., in our language. The deductions were based upon the positions of, and the relations between, the Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, and in modern times, Uranus and Neptune. The signs of the zodiac also play an important part in astrology.

Natural astrology is concerned with the supposed effect of planetary influences upon changes in the weather, etc., while **judicial astrology** treats of the effects upon human affairs. In this latter branch of the science, the horoscope or chart of the heavens at the birth of an individual forms the basis for the predictions of the astrologer.

Astronomer One who studies the heavenly bodies. In England there is an Astronomer Royal who has charge of the observatory at Greenwich. John Flamsteed was the first holder of the office. There is also an Astronomer Royal for Scotland, and one for the Cape of Good Hope. Other astronomers are in charge of the various university and other observatories.

Astronomy Science which treats of the celestial bodies and their nature, position, motions, etc. It is one of the oldest of the sciences and was studied in China as far back as 2300 B.C., and from a much earlier period in Egypt and Babylonia, where a high technical skill was reached. The Greeks, deriving their knowledge chiefly from Babylonian sources, further developed the science under Thales, Hipparchus, Eudoxus, Ptolemy, and other astronomers, handing on their knowledge to the Arabs, whose translations of Greek writings and independent observations formed the basis of European astronomy.

Copernicus in the 15th century, Kepler and Galileo a century later, and Newton in the early 18th century, purged the science of its earlier errors and placed astronomy upon a more scientific basis. The discovery of the telescope gave a great impetus to the study of the heavens, and observational work became of increasing importance from the 18th century onward. In the latter part of the 17th century the Greenwich and Paris observatories were founded, and since that time similar centres have been established in many parts of the world. The invention of the spectroscope and the improvements in astronomical telescopes have brought the science to a very high level.

Modern astronomy is divided into observational or telescopic astronomy, astrophysics dealing with the spectroscopic study of the celestial bodies and photographic astronomy.

For encouraging the study of astronomy there are the Royal Astronomical Society and the British Astronomical Association, while photographic, spectroscopic and other investigations are carried out at the various observatories.

Astrophysics Subsidiary branch of astronomy dealing with the nature of light and heat from the stars and the physical constitution of the heavenly bodies in general. The study of astrophysics began in the later part of the 19th century with the use of the spectroscope and the application of photography to astronomy. By means of these and other appliances, such as the radio-micrometer and photo-electric cell, the study of the nature of nebulæ and star-clusters, also the classification of stars and their velocities have been made possible. Upon these observations various theories of stellar evolution have been founded.

Asturias District in the north of Spain, bordering the Bay of Biscay. The name is that of the Astures, an early tribe. At one time it was an independent kingdom, this being founded about 720 by some Christians who refused to accept the rule of the Moors. The Moors got the worst of several battles with these Christians, and the kingdom of Asturias grew larger and stronger. About 910 it became known as the kingdom of Leon, this city being its capital. Oviedo was the earlier capital. Until 1930 the heir to the Spanish throne was called the Prince of Asturias, which thus corresponded to our title of Prince of Wales.

Asuncion Capital and river port of Paraguay. It is on the Paraguay River, 650 m. from Buenos Aires. It has a university. The industries include shipping, shipbuilding and some manufactures. It is also a banking and general trading centre for the republic. The town was founded on Ascension Day, 1537. Pop. (1931) 91,156.

Asylum Place of refuge. In the first instance it was a place, a temple for instance, in which criminals and other offenders were safe. The Jews had asylums, or cities of refuge, and they existed in Greece and Rome. In England a sanctuary was an asylum of this kind. The right of asylum is the right possessed by one country of giving admission to fugitives from another country.

To-day an asylum is an institution in which the insane, *i.e.* those suffering from severe mental disease are treated. The term "Mental Hospital" has now replaced that of "Asylum." Such institutions are maintained by county and borough councils, and are supervised and inspected by a government department called "The Board of Control."

Atacama Desert in Chile. It extends over 70,000 sq. m. and stretches from the Pacific coast to the Andes. Much of it is mountainous. There is little vegetation, but it is rich in minerals and from it large quantities of nitrate, salt, borax, silver, copper etc. are obtained.

Atacamite Rare mineral. It is found in the desert of Atacama and also in Saxony and Sicily. It is usually green in colour and its specific gravity is 3.7. Its symbol is $Cu\,Cl_2.\ 3Cu\,(OH)_2$. It is worked as an ore of copper.

Atalanta In Greek story a maiden of Arcadia. Her father Iasus, desiring a son, left her to die, but she was nurtured by a wolf. Very fleet of foot she avoided marriage by challenging her suitors to a race, in which she was invariably successful. Her suitors, as the penalty of failure, were killed by her. At last a certain Milanion beat her by a ruse. As he ran he dropped some golden apples given to him by Aphrodite; Atalanta stopped to pick them up and lost the race. She therefore married Milanion.

Atavism (Lat. *atavus*, a male ancestor). Term used by biologists for a reversion to a characteristic of an ancestor. It is found not only in men, but also in animals and plants. The red hair or very blue eyes possessed by an ancestor might, after being absent during three generations, reappear in a member of the fourth.

Atbara River and town of the Sudan. The river rises in Abyssinia and joins the Nile near Berber. The town is a railway junction on the line to Khartoum. On April 8, 1898, a British and Egyptian army under Lord Kitchener defeated a force of dervishes on the banks of this river, and so prepared the way for the advance to Khartoum.

Até In Greek story a daughter of Zeus or of Eris (Strife). She was the goddess of mischief and appears much in Greek tragedy. Her rôle was to induce the guilty to perform further evil deeds and so bring about their own punishment. She was thus the personification of retribution.

Athabaska River and lake of Canada, also called the Elk and the Reindeer. The river rises in the Rocky Mts. and flows mainly east and north until it falls into Lake Athabaska. It is 550 m. long and is navigable for a good part of its course, although interrupted by the Grand Rapids. Navigation begins at Athabasca Landing about 100 m. north of Edmonton.

The lake, which covers 2842 sq. m. and is 190 m. long, is in Alberta and Saskatchewan. It was discovered in 1771.

Before 1905 a great district in Canada was called Athabasca. It covered 251,000 sq. m. and was situated in the North-West Territories. In 1905 parts of it were given to Saskatchewan and Alberta and in 1912 the rest became part of Manitoba.

Athaliah Biblical character. A daughter of Ahab, King of Israel and his wife Jezebel, she married Jehoram, King of Judah. She fostered the worship of Baal among her husband's subjects. Her son, Ahaziah, became king on his father's death, but he was soon killed. His children were thereupon murdered by Athaliah, save one Joash who escaped. Athaliah ruled the country for 6 years, but was killed when the high priest arranged for the coronation of Joash (2 Kings xi.; 2 Chron, xxii.-xxiii.).

Athanasius Christian saint. Born at Alexandria, about 297, he was ordained and became prominent at the Council of Nicaea. In 326 he was made bishop, or patriarch, of his native city. His career was occupied with disputes with the followers of Arius. In 335, for refusing to restore Arius to his position in the church, he was deposed, and in 336 banished by the Emperor Constantine. Thereafter he was several times in exile before he was finally restored in 363. He then remained at Alexandria until his death, May 2, 373.

Athanasius is famous in the history of the church as the champion of the belief in the Trinity, which was not fully accepted by the Arians. This is expressed in the creed named after him, although his exact share in its compilation is uncertain.

Atheism Disbelief in the existence of God. It may be disbelief in the existence of a personal god, or disbelief in the existence of a first cause of any kind. If the former, it is held by a large number of thinking men. It differs from materialism and agnosticism. Deism, such as was held by Voltaire, has sometimes, but wrongly, been called atheism, which is strictly the opposite of theism, or belief in God.

Athelney District of Somerset. A marshy region near the union of the rivers Tone and Parret, it is often called an island. Here Alfred the Great took refuge in 878, and there are slight remains of a monastery he is said to have founded. There is a memorial to Alfred here.

Athelstan King of England. Born about 895, he was a son of Edward the Elder and a grandson of Alfred the Great. In 928 he succeeded his father as king and he reigned for 15 years. The great event of his reign was his victory over a group of enemies at Brunanburh in 937. He died at Gloucester, Oct. 29, 940.

Athena Greek goddess. The daughter of Zeus, she is said to have sprung fully-armed from the head of her father. She was the goddess of wisdom, but also the goddess of war and of agriculture and other arts and crafts, as well as of literature and art, while Athens was under her protection. She was called sometimes Pallas, or Pallas Athene, and her Roman counterpart was Minerva. She is represented as wearing a helmet with a shield on which was the gorgon's head. Other symbols of the goddess were an owl, a serpent and an olive branch.

Athenaeum Temple built in honour of Athena. In time the word came to be used for a school, Athena being the goddess of wisdom, and there were athenæums in Athens, Corinth, Alexandria and later in Rome. The one in Rome was founded by the Emperor Hadrian in A.D. 135. They were the precursors of the university of a later date. The word is still occasionally used in this sense.

The **Athenaeum Club** is regarded as the most distinguished of the London clubs. Its members are men of distinction in all departments of public life. The fine building fronts Waterloo Place. The club was founded in 1824. The weekly journal named *The Athenaeum* was founded in 1828 by James S. Buckingham. It existed as a weekly journal until incorporated in 1921 with *The Nation*.

Athenry Market town of Co. Galway, Irish Free State. It is 12 m. from Galway on the Great Southern Rly. Pop. 900.

Athens City of Greece and the capital of the country. It is in the plain of Attica, surrounded by hills, four miles from the sea and from its port the Piraeus. Its interest is chiefly historical, as it is one of the two most famous cities of the ancient world and the ruined buildings on the hill called the Acropolis are the finest remains of their kind extant. Below is the modern city with wide, straight streets and buildings of modern type. After a great war a new water supply was provided. Athens is named after the goddess Athena and its reputed founder was Theseus. Pop. 453,000.

The buildings include the academy, the library and the university, all built of white marble in the classical style. The stadium was restored for the Olympic Games.

Around the Acropolis are remains of the wall that once enclosed it and on it are the Parthenon, the Erechtheum and the Theseum, all carefully preserved and giving in their ruined condition some idea of their original beauty. The Theseum has been the least damaged by time.

Athens began as a little state ruled by a king, but was soon the capital of Attica. The kings disappeared and tyrants, Peisistratus being the most famous, took their place about 1000 B.C. Later the city became a democracy. Its citizens took a leading part in defeating the Persians when they invaded Greece in 490 B.C. and 480 B.C.

The Persians did indeed reach and damage the city, but the loss was more than made good and Athens entered upon its great age. It became the most powerful of the Greek cities, and head of the Athenian Empire. Many cities were subject to it, while others, as members of the Delian League, were its obedient allies. Its army and navy were both in a high state of efficiency.

In the age of Pericles which began about 440 B.C., Athens was at the height of its power. Art flourished and there arose those noble buildings and that wonderful statuary that culminated in the Parthenon and the statue of Athena by Pheidias.

In 431 Athens became involved in a war with Sparta and this continued with intervals of peace until 403 B.C., when the city was entered by the Spartans and forced to give up her ships and her colonies. Her decline had been aided by the disastrous expedition to Syracuse. In the next century the Macedonians inflicted further humiliations upon the city which in A.D. 146 became part of the Roman Empire. Both its Macedonian and its Roman rulers, however, by erecting temples and other buildings, added much to its beauty.

Atherstone Market town of Warwickshire. It is 102 m. from London on the L.M.S. Rly. Near are the ruins of Merevale Abbey, a Cistercian house. The town gives its name to a hunt. Pop. 6000.

Atherton Market town and urban district of Lancashire. It is 5 m. from Bolton, on the L.M.S. Rly. The industries include cotton mills and coal mines. Pop. (1931) 19,985.

Athletics Any kind of physical game, contest, or exercise. It thus includes, not only running and jumping, but games such as football and cricket, and contests such as boxing and wrestling. In one form or other athletic sports have been practised by almost every people and in every age, but the Greeks with their organised games, were its greatest exponents and produced the finest athletes. The Romans were less interested in this form of activity, but they had their games.

Athletic games and sports were common during the Middle Ages and every fair was enlivened by physical contests of one kind or other. Games of this kind lost their popularity in the 17th and 18th centuries, but running and other contests came into favour.

Modern athletics date from the 19th century when athletic meetings were organised. One such was held in 1807. In 1850 one was held at Oxford and in 1864 the annual athletic meeting between Oxford and Cambridge was inaugurated. Other meetings were started in various places and the Amateur Athletic Association was founded to supervise them. This association holds a meeting each year in London. To-day almost every college and school has its athletic sports and there are army and other meetings. Athletic clubs are attached to churches, business houses and social organisations.

The movement is by no means confined to Great Britain. It has been taken up in the United States and the British Dominions and international competitions are held. For instance, athletes from Great Britain meet those from Italy, France and other countries, and Oxford and Cambridge regularly meet Harvard and Yale. In 1896 the modern

Olympic Games, a great international contest, were started and are held every four years. *See* OLYMPIC GAMES.

Athlone Market town, county town and urban district of Co. Westmeath, Irish Free State. It stands on both sides of the Shannon, 78 m. from Dublin, on the G.S. Rlys. There are some manufactures and an agricultural trade, while it is a fishing centre. Pop. 7472.

Athlone Earl of. British title. It was borne from 1692 to 1844 by the family of Van Reede. The first earl was a Dutch general who distinguished himself at the siege of Athlone and was made an earl in 1692. The title became extinct when the 9th earl died in 1844. In 1917 it was given to Alexander, Prince of Teck, a brother of Queen Mary. He married Alice, daughter of the Duke and Duchess of Albany, served in the army and from 1923-30 was Governor-General of South Africa. In 1932 he was elected Chancellor of the University of London.

Atholl Duke of. Scottish title borne by the family of Stewart-Murray. An earldom of Atholl was held by the family of Stewart until it became extinct in 1595. The estates passed then by marriage to William Murray, Earl of Tullibardine, and in 1629 his son became Earl of Atholl. The 2nd earl was made a marquess in 1676, and the 2nd marquess was made a duke in 1703.

The titles came in 1917 to John George Stewart-Murray as 8th duke. As Marquess of Tullibardine he was M.P. for West Perthshire, 1910-17. He married Katherine Marjory, daughter of Sir James H. Ramsay. She was elected to the House of Commons in 1923 and at subsequent elections, and was parliamentary secretary to the Board of Education, 1924-29.

The duke's seat is Blair Castle in Perthshire around which are his extensive estates. His eldest son is called the Marquess of Tullibardine and he himself sits in the House of Lords as Earl Strange.

Athos Mountain of Greece. It is about 80 m. from Salonika, near the Ægean Sea, and is over 6000 ft. high. The name is also given to the peninsula which is connected with the mainland of an isthmus and which is about 30 m. long. There are about 20 monasteries and 6000 monks in the region.

Athy Market town and urban district of Co. Kildare, Irish Free State, and 45 m. from Dublin. It has a trade in agricultural produce. The chief objects of interest are two castles and some monastic remains. Pop. 3535.

Atlanta City of Georgia, also the capital of the state. It is a great distributing centre, one of the greatest in the southern states, and is served by several lines of railway. It has also a number of manufactures, cotton and tobacco being among the materials treated. Pop. (1930) 270,366.

Atlantic City City and seaside resort of the United States. It is on an island off the coast of New Jersey, 60 m. from Philadelphia, and within easy reach also of New York and other popular centres. It has a magnificent bathing beach and indoor and outdoor attractions of every kind. The promenade is 8 m. long. Pop. 66,198.

Atlantic Ocean One of the world's great oceans. It lies between the old world and the new and extends for some 8500 m. from north to south. It covers 30,000,000 sq. m., being inferior in size only to the Pacific Ocean. In places it is over five miles in depth, but much of it is shallow and it contains the most valuable fishing grounds in the world. It is traversed by a long ridge, which is within two miles of the surface. The ocean includes such openings as the Mediterranean Sea, the Baltic Sea, the North Sea and the Gulf of Mexico. It is crossed by several cables. The ocean derives it name from the mythical island Atlantis (*q.v.*).

In May, 1919, after several attempts, the Atlantic Ocean was first crossed by an American seaplane. In June, 1919 J. Alcock and A. W. Brown crossed it for the first time in an aeroplane, and in May, 1927, it was crossed by C. Lindbergh, who flew without stopping from New York to Paris. These and other successful Atlantic flights were from America to Europe ; the more difficult crossing, Europe to America, was first made in April, 1928, by two German airmen. Others have crossed the ocean by air, one of the vessels to do so being the German airship Graf Zeppelin. On 21st May, 1932, Miss Amelia Earhart flew alone from Newfoundland to Londonderry, almost 2000 miles, in 16 hours.

Atlantis Imaginary island. The ancients believed that there was such a land and Plato mentions it as having been destroyed by the sea on account of the wickedness of its inhabitants. It was placed somewhere in the Atlantic Ocean. Bacon's *New Atlantis* describes an ideal state.

Atlas Range of mountains in the north of Africa. It curves from Cape Nun on the Atlantic Ocean through Morocco, Algeria and Tunis to the Mediterranean Sea at Cape Bon. Its length is 1500 m. The range is divided into three groups. The chief is the Great Atlas in Morocco ; this has many peaks over 10,000 ft. in height. The highest of all is Tagharat, nearly 15,000 ft. high. The other sections are the Lesser Atlas in the north and the Anti-Atlas on the south. In Algeria and Tunis are the Tell Atlas and the Sahara Atlas. The lower parts of the range are densely forested.

Atlas In Greek legend a giant; one of the Titans. For rebelling against Zeus he was sentenced to stand near the garden of the Hesperides and support the universe on his shoulders. For this reason a collection of maps is called an atlas.

Sculptured figures of men, made as supports to buildings in the classical style, are called **Atlantes**, this being the plural of Atlas. They serve as substitutes for columns.

Atmosphere Gaseous material surrounding the earth and other planets. The earth's atmosphere consists of 21 per cent. of oxygen, 78 per cent. of nitrogen and 1 per cent. of argon and other gases. It varies slightly in different localities. A moist atmosphere contains about 3 per cent. of water. At the earth's surface the temperature of the atmosphere varies with the latitude. It decreases with altitude by about 1° C. for every 600 ft. Thus the summit of Mont Blanc is 16° C. colder than the summit of Ben Nevis, which is two miles lower. The reason is that the warmth of the air is obtained, not from the passage of the sun's rays through it, but from direct contact with land or water surfaces. The height to which the atmosphere extends is

uncertain. It may be as much as 200 miles, but at such heights it is exceedingly rare. Indeed, at 3½ m. the pressure of the atmosphere is only half what it is at the sea level. *See* AIR.

Atmospherics Term used for irregular electro-magnetic disturbances, due to natural electrical phenomena such as thunderstorms, which produce noises difficult to eradicate in the telephone or loud-speaker of a wireless receiver.

Atoll Coral reef forming a circular piece of land around a lagoon. They are found in the Indian and Pacific Oceans and are usually grown over with coconut palms. There are several theories about their origin. The most generally accepted is that they are due to the upgrowth of coral reef over islands that have gradually subsided, the rising of the one and the falling of the other taking place at the same rate. *See* CORAL.

Atom According to Dalton's Theory a chemical atom is the smallest indivisible unit of an element. Now, however, experiments prove that the atom itself is made up of two kinds of smaller particles, "electrons" and "protons." The electrons are carriers of negative electricity, and they may be looked upon as the atoms of electricity. Owing to modern physical research an atom is regarded as an open grouping of electrons which revolve in orbits around a central comparatively heavy nucleus of positive electricity ("proton"). In the lighter atoms the electrons are few in number and farther from the nucleus than in the heavier atoms, in which the electrons are many and more closely aggregated around the nucleus.

By the grouping together of atoms compounds are formed, and these atomic groups are known as molecules, as for example, the molecule of common salt consists of one atom of chlorine and one atom of sodium. The relative weights of the atoms of the different elements and their distinctive properties seem to be determined by the number and arrangement of the electrons, and recent experiments designed to change this number have succeeded in "disintegrating" the atom into an atom of a different element.

For further study of the atom and its nature the reader is referred to the works of Sir Oliver Lodge, Sir William Bragg and Prof. Andrade.

Atonement In Christian theology, the cancelling of man's sin by the sacrifice of Jesus Christ, He being "the propitiation for our sins." The idea of propitiating the gods by sacrifice is very firmly rooted in primitive religions and has passed into the more advanced faiths. It was held firmly by the Jews and there are many references to it in the Old Testament.

From the Jews the idea came to Christian thought and it culminated in the belief that the consequences of sin could be expiated, or atoned for, by the one supreme sacrifice, the death of Jesus Christ. Christ himself referred more than once to his coming death as an offering of this kind, and the Christian belief in salvation was built up on it by S. Paul and others. In this view the human race can only be saved from the just wrath of God, which is a consequence of its sins, by a belief in the atoning power of Christ.

The Day of Atonement is the great fast day of the Jewish year. It is celebrated on the tenth day of the month Tishri, *i.e.*, in Sept. or Oct. Its observance is ordered in the Mosaic law, and it is probably an atonement for the worship of the golden calf.

Atrophy Decrease in the size of a tissue or organ due to degeneration of the cells. It occurs in plants as well as in animals. It may be either local or general. Local atrophy takes place at certain stages of life, as when in old age the jaw shrinks. General atrophy is due to disease, such as cancer or tuberculosis. It may also be due to lack of nutrition.

Attaché Junior official in the diplomatic service. Those who enter the service usually gain this early experience of serving as attaché at an embassy. There are also naval and military attachés. These are sailors and soldiers attached to an embassy to report on matters of naval, or military concern. Another class are commercial attachés who report on the commercial possibilities of the country to which they are sent.

Attachment In English law a writ by which a person is arrested, or attached. It is used in cases where a person has disobeyed an order of the court. In such cases the court may order him to be attached, but he can avoid this by obeying the order, which may be the payment of a debt.

Attainder Legal proceeding now abolished. A person was attainted, that is declared to possess tainted blood, if he was found guilty of treason or felony. The result was that his lands were forfeited and no one could inherit anything through him. The custom began in England in the 14th century and was much used during the Wars of the Roses. At this time bills of attainder were passed through Parliament and prominent persons were declared guilty of treason, or put to death. Thomas Cromwell and later, William Laud, were executed after the passing of bills of attainder. The last case of the kind was Lord Edward Fitzgerald in 1798. Attainder was abolished in 1870.

Attar of Roses *See* OTTO.

Attestation Act of witnessing, or testifying. It is usually done by affixing the signature, but it may be done by oath. In English law wills must be attested by two witnesses and deeds and other documents require one witness.

In 1915-16 a form of enlisting for active service was introduced, and was known as the Derby scheme. Under it men attested, or signed, an undertaking to come up for active service when required.

Attica District of Greece in ancient times. It formed a peninsula on the east coast, lying between two arms of the Aegean Sea and contained Athens. Its inhabitants had a very high standard of intelligence and culture which was attributed to the bracing air. This reputation persisted and the best qualities of the Greek, the best speech, the best oratory, were all known as Attic.

Attila King of the Huns. He was born about 406 and in 434 he and his brother succeeded their uncle as rulers of the race that by then had settled in the east of Europe. Having killed his brother, Attila brought many other barbarians under his rule and was soon at the head of a vast host. In 447 he led them across the Danube and their ravages made a terrible impression on the

Byzantine Empire. Attila's hordes now swept across Germany and entered France, reaching Orleans. Aëtius, the Roman, and Theodoric, the Vandal, collected a great force to resist them and the battle took place on the Catalaunian Fields, near Châlons, in June, 451, when the Huns were utterly defeated. They retired, but were soon on the march again, invading and devastating Italy. Attila died in 453, and the empire began to decay. He was called the scourge of God. In 1932 it was stated that his tomb had been discovered in a village near Buda-Pest.

Attleborough Market town of Norfolk, 16 m. from Norwich, on the L.N.E. Rly. Pop. 2450.

Attock Town of the Punjab, India. It is on the Indus, 45 m. from Peshawar. It is important because it is on the main route into India, the one taken by Alexander and other invaders. Here is a bridge across the Indus. Attock was founded as a fort in 1581 by the Emperor Akbar.

Attorney Person who acts for another in legal matters. A solicitor is therefore an attorney and before 1873 the official name for such was attorneys at law. The word is still used in this sense in the United States.

The **attorney general** is the chief law officer of the British government. He is a member of the House of Commons and sometimes of the Cabinet, and his duty is to advise on matters of law and to conduct cases on behalf of the crown. His salary is £2000 a year, but before 1931 it was £7000, and he also receives fees. He is knighted on appointment.

Power of Attorney is the authority given by one person to another to do business on his behalf. It is done when a man leaves the country for a considerable time. It enables the person who receives the power to deal with his dividends and other income and in general to act for him. It should be drawn up in proper form by a solicitor and must be stamped.

Attraction Term used in physics for the force which causes particles to be attracted or drawn together. This mutual attraction occurs whether the bodies are at rest or not. In chemistry the attractive force acting between atoms is termed chemical affinity, that between molecules of the same substance cohesion, and between molecules of different bodies adhesion. Capillarity is the attractive force by which liquids rise in tubes of very small bore. In all these forms of attraction the force acts through small distances, but when bodies tend to draw together through greater distances the term gravitation is used. Magnetism and electricity are forces which manifest by attraction and its opposite, repulsion.

Aubergine Plant of the natural order *solanaceae*. It is an annual and is usually grown in Great Britain in pots, although it will thrive out of doors in the summer if in a warm sheltered position. It may reach a height of 3 ft. and bears blue flowers. Its white or purple fruit is shaped like an egg and the plant is sometimes called the egg plant. It is edible.

Aubers Village of France. It is about 4 m. to the north of La Bassée. Near are some low hills about 100 ft. high, known as the Aubers Ridge. On May 9, 1915, the British made an attack on the ridge, but it failed with heavy losses.

Auburn Village of Co. Westmeath, Irish Free State, its real name being Lissoy. It is 7 m. from Athlone and owes its fame to the reference in Goldsmith's *Deserted Village*.

Auchinleck Town of Ayrshire. It is 4 m. from Mauchline and 15 from Ayr, on the L.M.S. Rly. The family of Boswell, to which James Boswell belonged, were lairds of Auchinleck and lived at Auchinleck House. Here, in 1715 Sir Alexander Boswell set up a printing press. The manuscripts from the house are now in the National Library in Edinburgh. The chief industry is coal mining. Pop. 3500.

Auckland City of New Zealand. It stands on a fine harbour on the coast of North Island and is connected by railway with Wellington and other places. The buildings include the Anglican and Roman Catholic cathedrals, many other churches, the town hall, government house and law courts. A fine museum has been erected as a war memorial. There is a university college and a grammar school and the city is well provided with parks. The industries include shipping, for which there are large modern docks. Timber, butter and other products are exported. In April, 1932, there were serious riots in the city, and a great deal of damage was done. They were largely due to discontent on the part of public servants. Pop. (1932) 218,400.

The Province of Auckland, of which the city is the capital, covers about half of North Island.

Auckland Group of islands in the Pacific Ocean. They are 180 m. south of New Zealand and cover 329 sq. m. The largest is Auckland, which covers 280 sq. m. and on it is Port Ross, with a good harbour. The islands, which are uninhabited, belong since 1863 to New Zealand.

Auction Sale at which a person offers property for sale on the understanding that the highest bidder obtains it. The seller or vendor may put a reserve price on the property, below which it will not be sold, but it is illegal for him to employ a person, called a puffer, to bid up the price, unless he states openly that he is so doing. By a law passed in 1928 it is illegal to offer consideration to any person in order to induce him to abstain from bidding at an auction sale. The person making the offer and also the one accepting it can be punished by fine or imprisonment. **A Dutch Auction** is the reverse of an ordinary auction. The property is started at a high price which is reduced by stages until someone makes a bid.

Auctions are conducted by **auctioneers.** Anyone can act as an auctioneer provided he takes out a licence which costs £10 a year. Auctioneers usually combine their calling with that of a valuer or appraiser and sometimes of an estate agent. They have a professional organisation, the Auctioneers & Estate Agents Institute at 29 Lincoln's Inn Fields, London, W.C. This provides training for those who wish to enter the profession.

Auction Bridge Card game, a form of ordinary bridge. The essential difference is that the right of making trumps is put up to auction instead of being taken by the players in turn.

Beginning with the dealer each player may bid in turn, the one who bids highest securing the right to declare trumps. No trumps ranks highest and then follow spades,

hearts, diamonds and clubs. The values per trick are 10, 9, 8, 7 and 6 respectively. To secure the declaration a player must make the highest bid in points. Thus he will not secure it by bidding four clubs if an opponent bids three no trumps, because three no trumps (30) is higher than four clubs (24). Players can double and redouble a call and in this case the number of points lost or won is doubled or redoubled. Thus, if a call of three no trumps is doubled and redoubled, the declarer, if victorious, will count 40 points per trick.

As in ordinary bridge the one who secures the bid plays also his partner's hand which is exposed on the table. He scores below the line, or towards game, for every trick made in excess of six; his opponents cannot score below the line. Both sides, however, can score above the line, which does not count towards game, but adds to the points obtained. Failure to make the number of tricks declared counts 50 each trick to the opponents. Honours are scored according to a scale. Little slam, or 12 tricks, counts 50 points, grand slam, or 13 counts 100. Game is made by the first side to score 30 points below the line and rubber by the first side to score two games. Rubber counts 250 points above the line. *See* BRIDGE; CONTRACT BRIDGE.

Aucuba Hardy evergreen shrub of the laurel family. It may be grown in shady places in the garden, or in large pots. It should be planted in March or October, and can be propagated by taking cuttings either sown in a frame, or rooted in the open in the autumn.

Audenshaw Urban district of Lancashire, 5 m. from Manchester, on the L.M.S. Rly. It has engineering works and cotton mills. Pop. (1931) 8460.

Audiphone Instrument for assisting hearing. It consists of a plate of thin vulcanite bent and kept by strings in a certain degree of tension. The edge is placed in contact with the front teeth and so by carrying the sounds to the brain makes them audible to persons with defective hearing.

The **audiometer** is an instrument invented in 1873. It is an electrical apparatus used to test the sense of hearing.

Audit Formal examination of the accounts of a company or association of any kind. It is usually conducted by auditors who are trained accountants. The national accounts are audited by officials in the office of the comptroller and auditor-general.

In former days the term audit was used for the occasion on which tenants came to pay their rent to their landlord. It was usually marked by a dinner or other feast, and at some of the colleges of Oxford and Cambridge a special ale, called **audit ale**, was brewed for use on these occasions.

Auditor Person who audits the accounts of a company. By English law every limited liability company must have an auditor who is elected by the shareholders. He must examine the books and accounts of the company and make his report on the balance sheet. To-day auditors are almost invariably chartered, or other accountants. They are employed also to audit the accounts of municipal corporations and other public bodies.

Audley Urban district of Staffordshire, 4 m. from Newcastle-under-Lyne, on the L.M.S. Rly. It is a coal mining centre. Pop. (1931) 13,619.

Audley End Village of Essex, just outside Saffron Walden, on the L.N.E. Rly. The house called Audley End is the seat of Lord Braybrooke. Built between 1603 and 1616, it is a magnificent house in the Elizabethan style and contains some wonderful treasures.

Augean Stables In Greek legend some stables owned by Augeas, King of Elis. Hercules, as one of his labours, was ordered to cleanse these stables which held 3000 oxen. He did this by turning two rivers through them. Augeas refused to give to him the promised reward of 300 oxen and thereupon he was killed by Hercules.

Augsburg City of Bavaria, 37 m. from Munich. Its buildings include the cathedral and the churches of S. Ulrich, S. Anna, S. Maurice and the Holy Cross, all with features of interest. The town hall, with its golden hall, the hall of the butchers, the arsenal and the Perlach Tower are notable secular edifices. The Fuggerei, a collection of houses for the poor, was built about 1530. The Fuggernaus is one of several mansions dating from the great period of the city's history. The gateways and bastions of the fortifications still stand and the city is adorned with several squares and some beautiful fountains. Augsburg manufactures cotton and woollen goods, and there are engineering works and paper mills.

The city owes its name to the Emperor Augustus in whose time it was a Roman settlement. In the Middle Ages it was a great trading and financial centre, one of the most important in Europe, and was a free city until 1806 when it was given to Bavaria. Pop. 170,000

The **Confession of Augsburg**, drawn up in the city in 1530, is a statement of the Lutheran faith. It was the work of Melanchthon.

The **League of Augsburg** was formed in 1686 against Louis XIV. of France who had just seized Strasbourg and other parts of Alsace. Its members were the Emperor Leopold I., the Kings of Spain and Sweden, the Netherlands and several German and Italian princes. In 1688 it was joined by Great Britain and it carried on the war against France that was ended in 1697 by the Treaty of Ryswick.

Augur In ancient Rome a priestly official. Their business was to foretell events from signs and omens, such as the flight of birds, the movements of beasts, etc.

Augustan Age Name given to the period during which Augustus ruled over the Roman Empire. It was remarkable for its literary glories as Virgil, Horace, Livy, Ovid and others lived and wrote at this time. In England the reign of Anne is sometimes called the Augustan age.

Augustine English saint and archbishop. He became a monk and later prior of a monastery in Rome. In 597 Pope Gregory I. sent him to England at the head of 40 monks to convert the English. The party landed in Kent and by the kindness of King Ethelbert was allowed to settle in Canterbury. In 597 Augustine was consecrated a bishop, and in 601 was made archbishop over

England. He died May 26, 604, and was buried in Canterbury. Later he was canonised.

Augustine Christian saint and theologian. Aurelius Augustinus was born at Tagaste in Tunis, Nov. 12, 353, his parents being Patricius, a Roman official, and Monica, a Christian. He was educated at home and then went to the university of Carthage. He became a teacher of rhetoric in his native town and then in Carthage, Rome and Milan.

In 387, having accepted Christianity, he was baptised. He then passed some years in retirement studying hard, before being made a presbyter and then a priest. He was sent to assist the Bishop of Hippo and in 395 was himself elected bishop there, a position he held for the rest of his life. He died during the siege of Hippo by the Vandals, Aug. 28, 430.

Augustine's writings include two books of supreme value. One is his *Confessions*, perhaps the greatest work of its kind and one of compelling interest; the other is *De Civitate Dei* (The City of God), a defence of the Christian Church, and its place in the world. He also left many letters and sermons, and some commentaries on the Scriptures.

Augustinian Order of canons in the Roman Catholic Church. The date of its foundation is uncertain, but it was reorganised in the 12th century, and was strong in England, and more so in Scotland, until the Reformation. The canons occupy themselves with ordinary clerical work, although they live in communities. Their most famous house is the hospice on the Great S. Bernard Pass, and they have several in England. They claim to have been founded by S. Augustine and are sometimes called Austin canons. There is a similar order for women.

Augustinian, or Austin friars is an order of mendicant monks dating from the 5th century. They had a house in London in the street called Austin Friars.

Augustus Roman emperor, born Sept. 23, 63 B.C., a son of Gaius Octavius and Atia, a daughter of Julius Caesar's sister. After his father's death he was adopted by his uncle and took the name of Gaius Julius Caesar Octavianus. When Caesar was murdered in 44 B.C., he was studying away from Rome, but returned at once to take his place. Having been elected consul, he formed an alliance with Antony, from which sprang the triumvirate—Lepidus making the third member—that restored order in Rome by a ruthless severity towards its enemies. In 42 the triumvirs led an army against Brutus, who was killed at Philippi. A breach with Antony followed, but this was soon closed, and the Roman realm divided among the three. Octavian took the western portion and Antony the eastern, leaving Africa to Lepidus.

Octavian next crushed the aspirations of Pompey, and removed Lepidus from power before entering upon his final quarrel with Antony. This broke out in 42 B.C. contributory causes being Antony's intrigues with Cleopatra in Egypt and his repudiation of his wife, a sister of Octavian. Octavian's fleet under Agrippa won the famous sea fight at Actium in 31 B.C., after which both Antony and Cleopatra committed suicide.

Octavian was now sole ruler of the whole Roman world. A visit to Egypt was followed by a splendid triumph in 29 B.C., when the title of Augustus was given to him. He already possessed the extraordinary powers bestowed upon him by the Senate, but these, in 27 B.C., he offered to resign. Instead, further powers were given to him, including the command of the army with the title of imperator.

For the next 41 years Augustus, as he was now called, was, except in name, an emperor with unlimited powers. These years were a period of peace and prosperity of no ordinary kind. The empire was well governed, special attention being paid to the provinces, although its borders were not extended. Reforms of various kinds, financial and others, made easier the lot of the people and created the idea of *Pax Romana*, a world of ordered peace. Rome was rebuilt, and its literary glories made the Augustan age. He died Aug. 19, A.D. 14.

Augustus Name of two kings of Poland. Frederick Augustus was born at Dresden, May 12, 1670, being a son of the elector of Saxony. In 1694 he became elector of Saxony on the death of his brother, and in 1697 he was chosen King of Poland, taking the name of Augustus. In 1704 he was defeated by the Swedes and deposed, but he returned in 1709, and remained king until his death at Warsaw, Feb. 1, 1733.

Auk Two birds of the family alcidae. The great auk, now extinct, is remarkable because it lacked the power of flight. It was about the size of a goose, with black plumage on the head, and was found in the northern hemisphere, especially Newfoundland and Spitzbergen. It fed on fish, and laid a single large egg. Great numbers were killed for the feathers, and the bird became extinct before 1850. The eggs are valued by collectors. The little auk is still found in the northern hemisphere. It is about 8 in. long and can fly.

Auld Reekie Nickname of Edinburgh (*q.v.*).

Aumonier Stacy. English writer. He was born in 1887, the son of a sculptor and was educated at Cranleigh School. He became an artist, exhibiting at the Royal Academy, and also appeared as an actor chiefly in sketches written by himself. His reputation, however, was made by his writings, especially his short stories, of which a great number appeared in the magazines and in a volume form. He also wrote several novels. Aumonier died Dec. 21, 1928.

Aurangzeb Famous Mogul ruler of Hindustan. He was born in November, 1618, and died March 3, 1707. He spent his youth in struggles with his brothers for their father's throne, and during his reign, his religious zeal, coupled with the growth of the Mahratta power, weakened his empire beyond repair.

Aurelian Roman emperor. Lucius Domitius Aurelianus was born of poor parents about 213, became a soldier and one of the generals of the Emperor Claudius. On the death of Claudius in 270 he was declared emperor by the troops. His short reign was occupied in beating back the barbarians who had invaded his empire, and in other wars. He crushed a rival who had set himself up in Gaul and was rewarded with the title of the restorer of the world, and a splendid triumph in Rome. His other deeds included crushing rebellions in Rome and in Egypt, and in introducing reforms into the army and the state. He was murdered near Byzantium while on a campaign against the Persians in 275.

Aurelian began the building of the great wall in Rome which was named after him. Parts of it still stand. It was 12 m. in circum-

ference and 60 ft. high. Begun in 271, it was finished in 280.

Aureole In Christian art the radiance placed by artists around a divine or holy figure. It should be distinguished from the nimbus, which surrounds the head only.

Auricula Flowering plant. A native of Switzerland, it will also grow in Great Britain, where it is a popular garden flower. It has a rosette of smooth leaves and bears flowers on the top of a leafless stem. The original auricula was yellow, but varieties in many colours have been produced. The auriculas are suitable for the border and do well in ordinary soil. In addition to the Alpine auricula there is a show auricula which is grown in pots in a frame, or in a cold greenhouse.

Aurochs Large animal now extinct. A kind of wild ox, it was found in Europe and from it the domesticated ox has sprung. It seems to have disappeared in the 17th century, its last habitat being Lithuania. Bones of the animal have been found in Great Britain, and these show it to have been an animal of enormous size.

Aurora Goddess of the dawn and as such the goddess of youth and beauty. She was the Latin equivalent of the Greek Eos, and was believed to rise every morning in the east and cross the sky in a chariot drawn by two horses. Her husband was Tithonus.

The **aurora borealis** is a phenomenon seen at night in northern latitudes. It consists of beams of many coloured lights quivering in the sky. It is seen in the north of Norway and in corresponding latitudes. A similar phenomenon in the southern hemisphere is called the **aurora australis**, or southern lights. The cause of the phenomena is unknown, but it has been suggested that it is connected with emanations of an electro-magnetic nature from the sun.

Auscultation Medical term meaning listening to sounds in the body. The method is employed by doctors who use the stethoscope for this purpose. In this way they obtain some knowledge of the condition of the heart and the lungs.

Austen **Jane.** English novelist. A daughter of Rev. George Austen, she was born at Steventon in Hampshire, Nov. 16, 1775. She was educated at home and in cultured surroundings, and read a good deal. In 1801 she went to live in Bath and in 1805, her father being dead, moved to Southampton. In 1809 she settled at Chawton, and died at Winchester, July 18, 1817. She was buried in the cathedral there.

Jane Austen wrote six novels and these give her an assured place in English literature. In order of appearance they are *Sense and Sensibility*, *Pride and Prejudice*, *Mansfield Park*, *Emma*, *Northanger Abbey* and *Persuasion*. All but the last two were published anonymously. The novels deal with a narrow social circle and lack entirely the elements of sensation and surprise, but within these limitations they are perfect. The characters are depicted with remarkable fidelity and consistency, and not a little humour.

In 1871 *Lady Susan*, written when she was very young, was published. In 1928 *The Watsons* appeared, an unfinished novel completed by other hands. Her *Life and Letters* have been written by W. A. and R. A. Austen Leigh, and there are many other books on her work and influence.

Austerlitz Town in Moravia. It is about 14 miles from Brünn and is famous because here Napoleon won one of his greatest victories. The French had just taken Vienna, and the Austrians were gathering help to recover it. The Prussians had not yet arrived, but Austrian and Russian troops were assembled near Austerlitz, and there Napoleon decided to attack them. Their strength was over 80,000; he had about 65,000 men. On Nov. 28 the two armies came into touch, and on Dec. 2 the battle was joined. At first the French were pressed back, but the emperor countered this by attacking the Russians' flank. There was a desperate struggle, but in the end the Russians were driven back and a like fate was suffered by their reserves. The French cavalry and artillery did much damage and the allies lost altogether nearly 30,000 men. The French lost about 7000.

Austin **Alfred.** English poet. Born at Headingley, Leeds, May 30, 1835, he was educated at Stonyhurst, Oscott and the University of London. He became a barrister, but worked as a journalist, being editor of *The National Review* 1883-93. He wrote a good deal of poetry, and in 1896 was made poet laureate. He died June 2, 1913.

Austin **John.** English jurist. A miller's son, he was born near Ipswich, May 3, 1790, and after entering the army turned to law, and in 1819 became a barrister. He was made Professor of Jurisprudence in the University of London in 1826, a post he held until 1832. He died at Weybridge Dec., 1859, having passed some years in France and Germany.

Austin's fame rests upon his writings, given first in the form of lectures. They are contained in two volumes, *The Province of Jurisprudence Determined* and *Lectures on Jurisprudence*. His definitions are remarkable for their precision, and are regarded as permanent contributions to the history of law. He is responsible for the Austinian theory of law. This confines law to the commands of a sovereign who has power to enforce it, and does not regard customs and usages which belong to an earlier age as within this category.

Austin **Sir Herbert.** English manufacturer. Born at Little Missenden, Bucks., Nov. 8, 1866, he was educated as an engineer. He spent a few years in Australia, but in 1890 returned to England and became connected with a firm making machinery for sheep shearing. The possibilities of the motor-car soon attracted his attention, and in 1890 he started in business for himself at Northfield, Birmingham. In a few years he was one of the largest makers of motor-cars in the country. He was specially successful with the small cars known everywhere as "baby Austins." From 1919 to 1924 Austin, who was knighted in 1917, was M.P. for the King's Norton division of Birmingham.

Australasia Word used for Australia, New Zealand and their dependencies. It thus includes, as well as Tasmania which is part of the Commonwealth of Australia, New Guinea, New Caledonia, New Hebrides, the Solomon and Fiji Islands, and other groups.

Australia Continent, island and also a self-governing commonwealth under the rule of King George V., and as such part of the British Empire. It covers 2,971,581 sq. m. and had, in 1932 a population estimated at 6,549,076. These figures include Tasmania,

which is not part of the island, but is included in the Commonwealth. There are about 60,000 aborigines.

The continent has a coastline of about 8000 m. It extends for about 2000 m. from north to south, and rather more from east to west. Much of the country is a great plain, but there is a considerable mountain range, the Australian Alps, in the east. Mt. Kosciusko, 7300 ft., is the highest point. The three great rivers are the Murray, Darling and Murrumbidgee, all in the east. Torrens is the largest of many lakes. Sydney and Melbourne are the greatest centres of population, and Sydney the principal seaport.

The Commonwealth was founded in 1901, when the six states, New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania, were united in a federation. Northern Territory, not being a state, came under the rule of the Commonwealth which, in 1928, divided it into two parts, North and Central. The Commonwealth has a foreign possession in Papua, and under mandate from the League of Nations administers the Bismarck Archipelago, part of New Guinea and certain of the Solomon Islands, formerly German colonies. To serve as the federal capital a new city called Canberra was laid out. In May, 1927, the Parliament buildings there were opened by the Duke of York.

The Commonwealth is governed by a governor-general, representing the king and a cabinet which is responsible to a parliament of two houses. One of these is the Senate, to which each state sends six representatives. The members of the other, the house of representatives, vary in number according to the populations of the several states, but it was 76 in 1932.

Australia's chief industry is the rearing of sheep for their wool, and the world's wool is largely supplied from here. Cattle are kept, and beef and mutton exported. Agriculture suffers from the want of water on vast areas, but irrigation schemes have done much to overcome this handicap. Wheat is extensively grown, and in the hotter parts—for one-third of the country is within the tropics—cotton, sugar, and the rarer fruits are cultivated. The vine is grown, and Australia produces a good deal of wine for export. Butter, flour and hides are other exports. Of minerals, the output of gold and silver is less than formerly. Coal and lead are also mined, lead being especially an Australian product. Timber is cut and exported.

A high proportion of Australia's inhabitants live in cities and towns, and there manufactures of all kinds are carried on. An important group is the one that turns the native metals into finished or semi-finished articles. Another is concerned with the preparation of foodstuffs, and a third with the spinning and weaving of cotton and other textile materials. Australia protects her industries by placing high tariffs upon imported goods. Preferences, however, are allowed on goods sent from Great Britain and some other parts of the Empire. These vary according to the class of goods, but they are substantial, and provide a good deal of revenue. Other revenue comes from an income tax, customs duties, death duties and a land tax.

Australia uses the British systems of coinage and weights and measures. The Commonwealth Bank, a state institution, controls the issue of bank notes and the banking system follows the English model. The legal system is also English, and includes a court of appeal. A simple form of land transfer is in operation.

Compulsory military training was introduced in 1907, and in the World War the Australian forces won undying fame. There is a navy and an air force. The railway system, 26,000 miles in all, is mainly owned by the nation. There is a trans-continental line in being, and another, north to south, is projected. The Post Office, with the telegraph and telephone services, is a national institution. The country has set up a service of air mails and a chain of wireless stations. The state provides pensions for the aged and infirm, and benefits for cases of maternity. Australia is represented in England by a High Commissioner whose headquarters are at Australia House, Strand, London, W.C. In 1932 a new departure was the appointment of a cabinet minister, Mr. S. M. Bruce, to reside in London.

HISTORY.—In 1685 Australia was visited by William Dampier, but the first settlement was only made in 1788, eighteen years after Captain Cook's arrival. By thus settling at Sydney the English obtained possession of the continent, but for a time it was only used for convicts, who were sent to Botany Bay. About 1790 free settlers began to arrive, and these made their homes on or near the coast. Within the next fifty years or so the five states came into being, New South Wales being the senior. Representative institutions were soon given and then followed responsible government, the last to secure this being Western Australia in 1890. During these years, especially between 1817 and 1874, the interior of the country was explored and surveyed.

In 1851 the discovery of gold in Victoria led to an increase in its population.

On the political side the chief event of the late 19th century was the desire for a federal union. This came to fruition in 1901. Since then perhaps the outstanding features of Australia's political life have been the strength of organised labour, tested in several costly strikes, and the twin determination to keep the country for the white man and to protect its industries against external competition.

After 1901 the Government of the Commonwealth was conducted by the party under Sir E. Barton and Alfred Deakin that represented the more conservative elements in the country, although for a time the latter was only able to remain in office by an alliance with labour. In 1908-09 Andrew Fisher, the leader of the Labour Party, was Premier, as he was again in 1910 and 1914-15. In 1915 he was succeeded by his colleague, W. M. Hughes, who remained in power until 1922 and represented Australia at the peace conference. His government was, however, in practice, a national one.

In 1922 Hughes was defeated and a Conservative, S. M. Bruce, became Premier. He was in office until 1929 when Labour again was successful at an election and its leader, J. H. Scullin, took charge of affairs. His period of office was marked by grave economic difficulties, the culmination of a policy of excessive borrowing, coupled with serious falls in the prices of the commodities produced. The credit of Australia gave way and drastic measures were taken to support it; taxation was increased, expenditure reduced, imports restricted. The interest on loans was reduced, and agreements made for balancing the Commonwealth and the state budgets.

In 1931 New South Wales refused to meet the

interest due on its loans in London and New York, but the Commonwealth shouldered the burden, and in 1932 passed legislation for the attachment of revenues in New South Wales to cover the payments made. Mr. Lang, premier of the state, opposing the Federal Government in its purpose, was dismissed by the Governor, Sir Philip Game. Before this Mr. Scullin had been defeated at a general election in 1931, and a Coalition Government had been formed under Mr. J. A. Lyons, a former colleague. In Western Australia at this time there was an agitation for secession from the Commonwealth, but the United Australia party held its ground, and was returned to power at the 1934 election. Mr. Lyons is still (1936) Prime Minister. Since 1931 Australian finance has made a progressive recovery.

In 1914 Australia sent a large contingent to assist in the war against Germany. Conscription was rejected, but 400,000 men volunteered and nearly 60,000 were killed. The Australian corps did splendid service in Gallipoli and Palestine, but its feats there were more than equalled by those on the Western Front in 1917 and 1918, especially in and around Pozières. The Australian Navy did good service to the allied cause.

Australia Day National holiday in Australia. It is Jan. 26, the anniversary of the day on which Sydney was founded. It is sometimes called Wattle Day.

Austria Republic of Europe, created in 1918. It has an area of 32,369 sq. m., and in 1931 had a population of 6,732,625. Its own people call it Oesterreich. It consists of nine provinces, Burgenland, Lower Austria, Upper Austria, Salzburg, Carinthia, Styria, Tyrol, Vorarlberg, and the capital, Vienna. The government is conducted by a president, elected, as in the United States, every four years, and a parliament of two houses.

The members of the Lower House (Nationalrat) are elected every four years, all men and women over 21 voting. The members of the Upper House (Bundesrat) are chosen by the parliaments or diets of the provinces. They can advise only. There is a council of ministers, or cabinet, responsible to the parliament. The national flag has three horizontal stripes, the top and bottom being red and the centre white. Vienna is the largest city. Other populous places are Graz, Linz, Innsbruck and Salzburg.

In 1922, when the finances of the new country were in a serious condition, the League of Nations appointed a committee to inquire into the matter. A loan was raised, and many reforms were carried out, the result being that Austria's financial condition became, for the time being, satisfactory. In 1929, however, fresh difficulties arose, and in 1932 the financial position was again very grave. In April a conference met in London with the object of finding out how Austria and the other Danubian states could be saved from bankruptcy. In 1933 Dr. Dollfuss (assassinated, July, 1934) became dictator, taking over the entire state executive.

The basis of the coinage is the gold schilling, a new coin worth 10,000 kronen. The coins in circulation are mostly token money. The National Bank, opened in 1923, is a private, not a state, institution.

Austria has an army, but not compulsory service. Her only navy consists of a few gunboats on the Danube. By the treaty of S. Germain, 1918, the army must not exceed 30,000 men. The same treaty forbids the country to have an air force, or to manufacture or import aircraft. Flying for commercial purposes, however, is developing, and Vienna is an important air port.

Although many people work on the land, Austria, like Great Britain, imports food stuffs. Wheat, rye, barley, oats and potatoes are grown. Sugar and tobacco are produced, and there are some manufactures. Coal and iron ore are mined, and a good deal of timber is cut. Tariffs are charged on all goods entering the country. Some of the railways are owned by the State.

There is much traffic on the Danube, but Austria has no seaports. A canal to unite the Rhine and the Danube now (1933) being cut, will, it is hoped, be of great benefit to the country. Austria has a Consul-General at 18 Belgrave Square, London, S.W.1.

Austria was originally a mark or border district on the Danube, being the East Mark. In 1156 it was made into a duchy, and in 1282 it passed under the rule of a member of the Hapsburg family, a rule that lasted until 1918. Enlarged at the close of the Middle Ages it covered about 50,000 sq. m. From the time of the emperor, Charles V., its rulers were also heads of the Holy Roman Empire, and historians of the 17th and 18th centuries use Austria and the Empire as synonymous terms. In 1804, just before the Holy Roman Empire was dissolved, the Emperor Francis took the title of Emperor of Austria, and this empire lasted until the close of the World War. Its symbol was the double-headed eagle which its rulers took as successors of the old Roman emperors.

Austria-Hungary Empire of Europe. It lasted from 1867 to 1918, and had only two rulers, Francis Joseph and Charles. It was formed in 1867, when Austria and Hungary made an agreement or *Ausgleich*, much as England and Scotland did in 1707. Before that time they had been quite independent of each other, although ruled by the same sovereign. It was often called the Dual Monarchy, and its joint affairs were looked after by three departments of state, each under a minister, and by two delegations, as they were called, one representing each country. The monarchy broke up as a result of the World War, and Austria and Hungary again became independent of each other.

Austria-Hungary had an area of 261,000 sq. m. and a population of over 50,000,000. It consisted of the various provinces of Austria, of Bohemia, Silesia, Moravia and other dependent districts, and of Hungary, including Croatia-Slavonia. Bosnia and Herzegovina were added in 1878.

Austrian Succession War of the. European war. It began in 1740, when Frederick the Great of Prussia invaded Silesia, and ended with the Peace of Aix-la-Chapelle in 1748. It was caused partly by Prussia's desire for revenge on Austria for alleged double dealing, partly by the growing spirit of Prussian aggrandisement. It involved most of the great European nations, France, for diplomatic reasons, especially urging the partition of Austria and the election of the Elector of Bavaria as Emperor.

Auteuil Suburb of Paris, famous for its racecourse. It lies to the south-west of the city between the Bois de Boulogne and the Seine. Races take place here nearly all the year round.

Author Person who produces or creates something To-day, however, it relates chiefly to one who writes, and so creates a piece of literature or music, whether novel, article, play, poem, opera or sonata. The writing is the author's property until he sells it, and as such is protected in all civilised countries by the law of copyright.

In Great Britain there is an Incorporated Society of Authors, Playwrights and Composers that exists to protect the interests of authors. It was founded in 1883 and any writer can become a member on payment of a small subscription. The offices are at 11 Gower Street, London, W.C. The Authors' Club is at 2 Whitehall Court, S.W. 1. *See* COPYRIGHT.

Authorised Version *See* BIBLE.

Autobiography Biography written by oneself. Notable autobiographies are those of Gibbon, Benvenuto Cellini and John Stuart Mill. The famous *Diary* of Pepys is an autobiography, as is the *Confessions* of Rousseau. Others are the *Confessions* of S. Augustine, the *Confessions of an Opium Eater* by De Quincey, and the *Apologia* of J. H. Newman. Sir E. Gosse's *Father and Son* is an excellent modern example.

Autochthones People who had always lived in a country, its first or original inhabitants. It is therefore equivalent to aborigines (*q.v.*).

Autocracy Form of government in which the ruler, or autocrat, does as he likes. Such do not exist to-day, but they were known to the Greeks and others of the ancient world. The Government of Russia, as it was before 1916, may fairly be called an autocracy.

Auto da Fé (Act of faith). Name given to a ceremony associated with the Spanish Inquisition. After sentence had been passed on heretics, a procession and service took place, the chief figures therein being the officials of the Inquisition and the condemned persons. Mass was celebrated and the judgment read out. The sentence, which was then carried out, usually took the form of burning the condemned in public, and this gave to the auto da fé its sinister meaning.

Autogiro *See* GYROPLANE.

Autograph Originally a document in one's own handwriting. To-day it means a signature only. A document wholly in one handwriting is called a holograph.

The collecting of autographs is a hobby with many persons and some collections are very valuable. One of the best was that made by the late Alfred Morrison, of Basildon Park, Reading. Albums in which persons ask their friends to write their autographs were popular in the 16th and 17th centuries, and there are examples in the British Museum.

Autolycus Greek hero. A son of Hermes, he lived at the foot of Mt. Parnassus, and was known as a thief. As he could change everything he touched he was very successful in escaping detection, but at last Sisyphus thought of a ruse. He burned his name into the hoofs of some cattle which Autolycus quickly stole. Sisyphus then found them when visiting the thief.

Automatic Writing Name given to a form of writing which psychic subjects produce when in a trance or semi-hypnotic condition. It first appeared in America about 1850-60, and is associated to-day with the planchette. It is used effectively in connection with investigation into abnormal mental states.

Automatism Theory that all the actions of living beings, men included, are automatic, that is, they are brought about by the action of the body, not by the action of the brain. The brain or will, according to this doctrine, does not originate or cause any action; it merely records it. This idea was taught by Descartes.

Automaton Anything that works by itself; strictly, an automatic machine. More commonly, however, it means the figure of a man or animal or bird that does certain actions, such as walking or singing, by itself. Automatons of this kind were made by the Greeks and through the ages ingenious men have tried to produce them. In recent years Mr. J. N. Maskelyne produced an automaton that could play cards and chess, and also do problems in figures. The robot is a modern form of automaton. *See* ROBOT.

Automobile Usual word in the United States for the motor car. In Great Britain the great motoring societies use it, *e.g.*, the Royal Automobile Club and the Automobile Association. The former was founded in 1897, its club house is 89-91, Pall Mall, London, S.W. 1, and it has a country club at Woodcote Park, Epsom. There is a similar club in Paris and other countries. The Automobile Association exists to look after the interests of motorists as regards using the roads and such matters. It dates from 1905, and its headquarters are at Fanum House, New Coventry Street, London, W. 1.

Autoplasty Surgical operation to replace a damaged or lost part of the body by using skin, bone or other tissue from other parts of the same body. It was employed in England many years ago. During the Great War much progress was made, and some extraordinary feats of autoplasty were performed. Skin, bone and flesh were grafted on to injured parts and terrible disfigurements were successfully dealt with.

Autopsy Internal examination of a dead body, often called a post-mortem. To perform this operation a medical man must obtain the consent of the relatives of the deceased, unless foul play is suspected. In this case the Home Office or the coroner may order an autopsy.

Autun City of France, on the river Arroux in the department of Saône et Loire. It is famous for its cathedral. There are remains of several Roman buildings, including two fine gateways. The town has manufactures, and agricultural produce is marketed here. Pop. 15,500.

Auvergne District in the centre of France. It was once a separate province and had its own dukes. Before the Revolution it was divided into two parts, the capitals being Aurillac and Clermont. In the west are the Auvergne Mountains, extinct volcanoes, one or two of which are over 6000 ft. high.

Auxerre City of France, on the river Yonne, 110 m. to the S.E. of Paris. Its chief glory is the beautiful cathedral, with its Gothic choir and the stained glass. Auxerre is the capital of the department of Yonne. Pop. 22,000.

Ava Deserted city of Burma, on the Irrawaddy River, 10 m. from Mandalay.

From 1364, when it was founded, until 1782 it was the capital of Burma. It was again the capital 1823-37. In 1839 an earthquake did much damage and the city's importance gradually declined. There are remains of its walls and palaces and of several temples. Lord Dufferin took the title of Marquess of Dufferin and Ava, and his eldest son is called the Earl of Ava.

Avalanche Gigantic mass of snow or ice, mixed with stones and earth, which falls from the mountains into the valleys. It often causes great loss to life and property. These falls occur chiefly in the Alps. Scientists have divided avalanches into four kinds. A drift avalanche is just snow driven by the wind. A rolling avalanche is a mass of hard snow that rolls down and gets larger as it goes on. A sliding avalanche is one that moves by its own weight, which also gets greater as it goes. The most dangerous are glacial avalanches. These are masses of frozen snow and ice, which in spring, when the snow begins to melt, break loose from the parent glacier and begin to move. *See* GLACIER.

Avalon To the Celts the place to which the heroes went at death. There they feasted and rested after their deeds of valour. Thither, according to Malory, King Arthur was taken, after he had been wounded. Tennyson makes use of this legend in *The Idylls of the King*, calling it the "island valley of Avilion." Avalon has been associated with Glastonbury, but there is no warrant for this.

Avars Tribe, or group of tribes. They came from Asia into Europe, where the Emperor Justinian made use of them to conquer the Bulgarians. They settled down in Pannonia, the modern Hungary, and were very troublesome neighbours to the Byzantine Empire, as well as to the Franks, Lombards and other peoples to the west of them. In 796 Charlemagne put an end to their raids.

Avebury Village of Wiltshire. It is 7 m. west of Marlborough, and is noted for the monuments of the Druids that have been found there. These are circles of stones, the outer circle being about 500 yds. in diameter. Some of the stones are as much as 20 ft. high, and 12 ft. thick. Scholars think they formed a Druid temple.

Avebury Lord. John Lubbock was born in London, April 30, 1834. He went to Eton, became a baronet on his father's death, and from 1870 to 1900 was an M.P., first as a Liberal, and then as a Liberal-Unionist. He was a banker, an hereditary calling in his family, but he is better known for his books and for his work in securing bank holidays, which was done by an Act of 1871. His books were very popular indeed, especially perhaps *The Pleasures of Life*, *The Use of Life*, and those about ants and bees. In 1900 he was made a baron and he died at Kingsgate, near Margate, May 28, 1913.

Avens Plant, a species of geum. There are two kinds, common avens and water avens. They are perennials, and belong to the order *rosaceae*. The common avens grows in hedgerows nearly all over Great Britain. It has yellow flowers not unlike buttercups. The flowers of the water avens which grow in damp places are much larger.

Aventine One of the seven hills of Rome. It is on the left hand of the Tiber to the S.W. of the Palatine. Servius Tullius, one of the early kings, made it part of the city and on it built a famous temple to Diana. For long the hill was the plebeian quarter.

Aventurine Name both of a stone used for ornament and a glass made chiefly in Venice. The stone, which is found in the Ural Mountains, is reddish brown, or greyish brown in colour and has a brilliant look. The glass, however, is more brilliant in appearance.

Average In the ordinary sense the mean of a number of figures. It is obtained by adding together the figures and dividing the total by their number. Thus, if a man on six days works these hours : 6, 7, 8, 4, 5, 6, or 36 hours altogether, he works 6 hours a day on an average.

All insurance is based on averages; the average ages at which people die, the average number of accidents in a given industry, and many others. In marine insurance average is used in a special sense. Losses to cargo are worked out either on a general or a particular average. This work is done according to elaborate rules by skilled men called average adjusters.

On the Stock Exchange, to average is to buy some more shares at a lower price than was given for those already bought.

Avernus Lake in Italy, 100 m. from Naples, and once the crater of a volcano. It is 2 m. round. The ancients looked upon it as the entrance to the infernal regions, hence Virgil's line *Facilis descensus Averno*. The Romans made it a harbour and cut a canal to link the lake and the sea. In 1536 these works were destroyed by an earthquake.

Averroes Name given to the Arab philosopher, Abul-ibn-Roshd. In 1126 he was born at Cordova, and he became both a lawyer and a doctor. He died, Dec. 12, 1198. His name lives, however, because of his *Commentaries* on Aristotle, for whose teaching he had a profound respect. He took Aristotle's ideas and gave them a new currency, founding a school of thought to which Roger Bacon belonged. This flourished for many years, and Averroes was regarded by several generations as the great exponent of Aristotle's ideas.

Aviary (Lat. *avis*, a bird.) Place where birds are kept in captivity. An aviary should be of metal, as such can be kept clean more easily than wooden ones. Care must be taken in selecting the birds, as some birds do not agree well with others. Birds from tropical countries need special temperatures, and food and drink must be carefully provided. In Great Britain to-day the tendency is to replace the aviary by the bird sanctuary, which has the great advantage of giving a freedom which the best aviary cannot do. This, however, only applies to domestic birds; foreign birds, if kept, still require an aviary. *See* BIRD.

Aviation Science and practice of flying machines, or aeronautics. There is little to choose between the two terms, but aeronautics is perhaps the more generally used. *See* AERONAUTICS.

Avignon City of France, standing on a hill above the Rhône, 53 m. from Marseilles, on the direct railway line from Paris. The chief building is the great palace in which the Popes lived from 1309 to 1378. Near is the cathedral of the Nôtre Dame dating from the 12th century and round the city are the old walls. There are some manufactures. The city

remained the property of the Pope until 1797, when it was sold to France. Pop. (1931) 57,228.

Avlona Alternative name for the capital of Albania, generally called Valona.

Avoca Vale in Wicklow, Irish Free State. It is regarded as one of the beauty spots of the country. The little rivers Avonmore and Avonbeg unite to form the Avoca, which runs for nine miles to the Irish Sea at Arklow. The valley through which it flows is the **Vale of Avoca**, about which Thomas Moore wrote some famous lines. It is one of the few parts of Ireland where minerals are found.

Avocet Genus of birds. Their characteristics are red feet, long legs, bare thighs and a long, slender bill curving upwards. They are found nearly all over the world, but not in England, although at one time they were common in the fen district.

Avogadro **Amadeo.** Italian scientist. He is famous for the discovery of a law which is named after him. Briefly stated, Avogadro's law is that under the same conditions of pressure and temperature equal volumes of all gases contain an equal number of molecules. Born in 1776 he was Professor of Physics at Vercelli, and then Professor of Mathematics at Turin. He died in 1856.

Avoirdupois System of weight in use in Britain and America :

16 drams	=	1 ounce (oz)
16 ounces	=	1 pound (lb.)
28 pounds	=	1 quarter (qu).
4 quarters or 112 pounds	=	1 hundredweight (cwt)
20 hundredweights	=	1 ton

In it also a stone of 14 lb. is used.

The word is of French origin, meaning goods of weight. Its basis is a grain of wheat, and a pound is supposed to be equal in weight to 7000 grains.

Avon Three short rivers in England and two in Scotland. The word means water. The **Warwickshire Avon** is nearly 100 miles long, and is associated with Shakespeare as it flows past Stratford. It runs from Naseby in Northamptonshire, past Warwick and other places, to the Severn at Tewkesbury. The **Bristol Avon** rises in the Cotswolds and flows by Bath and Bristol to the Severn at Avonmouth. It is 70 miles long, and carries the shipping of Bristol. The **Wiltshire Avon** is only about 50 miles long. It flows from Devizes, past Salisbury, to the English Channel at Christchurch. One of the Scottish Avons is in Banffshire, a tributary of the Spey. The other, in Lanarkshire, is a tributary of the Clyde. Each is about 30 miles long.

Avonmouth Seaport of Gloucestershire. It stands at the mouth of the Avon, 6 m. from Bristol and is the outport of that city. It was founded in 1877, and its docks can accommodate very large vessels. The G.W. and L.M.S. Rlys. run into it.

Avory **Sir Horace Edmund.** English lawyer. Born Aug. 31, 1851, he was educated at King's College, London and Cambridge. He became a barrister and in 1889 was made junior counsel to the Treasury. There he earned a great reputation as a prosecuting counsel, especially in criminal cases. In 1910 he was made a judge and he has tried some of the most sensational cases of fraud, such as the Hatry case in 1930. He died June 13, 1935.

Avranches Town of France, on the west side of the Contentin, the peninsula that juts out into the English Channel, 7 m. from Cherbourg. In its splendid cathedral, which was destroyed at the Revolution, Henry II. was solemnly pardoned for his share in the murder of Becket. A stone in the square shows where he knelt on that occasion. Pop. 7000.

Awe Loch in Argyllshire. It is the longest in Scotland, and one of the most beautiful. It is 23 m. long and covers about 15 sq. m. Its width varies, the broadest part being 3 m. across. There are several islands in the loch, and on these are ruins of a castle and churches, dating back to a time when the country population was greater than it is today. The little river Awe, only 5 m. long, flows from Loch Awe to Loch Etive, through the Pass of Brander. It is a good salmon river. The loch is reached from Oban, 22 m. away.

Axenstrasse Highway in Switzerland, part of the S. Gotthard Road. It is really a tunnel through the solid rock, and runs for 7 m. by the side of the lake of Lucerne. It was finished in 1866.

Axholme District in the north of Lincolnshire. Called an island, it lies between the rivers Don, Idle, Torne and Trent. It covers about 75 sq. m. and the soil is very rich. At one time it was a marsh, but about 1630 it was drained by the Dutch engineer, Cornelius Vermuyden. Epworth and Crowle are on the island, which is famous for its potatoes.

Axinite Mineral also called axestone because the Maoris and others use it for the heads of axes. Very hard, it is greenish in colour and is found in Cornwall as well as in China and other parts of Asia.

Axminster Urban district and market town of Devonshire. It is on the River Axe, 27 m. from Exeter and 116 from London, on the S. Rly. It gives its name to a variety of carpet, but this is no longer made in the town. Pop. (1931) 2327.

Axolotl Larva, or early form of the salamander. Found in North America, it resembles a large newt and for long was believed to be a kind of newt. It becomes a salamander when it is deprived of water, and so loses its gills.

Aye-aye Curious animal belonging to the lemur family, it is only found in Madagascar. Very little is known about it, although there are specimens in European zoological gardens. About the size of a cat, with a very bushy tail and paws like those of a monkey, it lives chiefly on insects, prowling about for them at night, but will also eat sweet vegetables. A strange feature is its middle finger, which is long and thin.

Aylesbury Borough and market town; also the county town of Buckinghamshire. It is 41 m. from London, and is on both the L.N.E. and L.M.S. Rlys. It has large printing works and other manufacturing establishments, but lives largely on its agricultural trade. Around is the **Vale of Aylesbury**, with some of the richest land in England. The King's Head and some houses date from the 15th century. The town gives its name to a duck bred in the district chiefly for the table. Pop. (1931) 13,382.

Aylesford Village of Kent. It is 38 m from London by the Southern Rly. and 3 from Maidstone. It is visited here is a famous cromlech called Kit's Coty

House, and other remains of early man. Near here took place the fight in which Horsa, one of the invaders of England, was killed in 455.

Aylesford Earl ... English title held by the family of Finch. Hencage Finch, a son of the first Earl of Nottingham, a prominent lawyer in the reigns of Charles II. and James II., was made an earl in 1714, five years before his death. The title has since been held by his descendants. The earl's estates are in Kent and his eldest son is called by courtesy Lord Guernsey.

Aylesham Town of Kent, just outside Dover. It was planned in 1921 as a garden city, and houses the workers at the Snowdown Colliery. 400 houses have been built, and the place has a population of about 2,500. Through the centre of the town is a boulevard 100 ft. wide. This runs into a market square, and on either side of it streets branch off.

Ayr Burgh and county town of Ayrshire; also a manufacturing town, a seaport and a watering place. It stands at the mouth of the River Ayr (33 m. long), 40 m. from Glasgow, by the L.M.S. Rly. The town itself is on the right bank of the river; the suburbs of Newton and Wallacetown are on the left. There are engineering and chemical works, and factories for making woollen goods. The harbour is equipped for dealing with coal, the chief article of trade.

Race meetings are held four times a year. The historic interests include the "Twa Brigs" made famous by Burns. S. John's Church and the Wallace Tower are reminders of the town's important past. Pop. (1931) 36,784.

Ayrshire County of Scotland. It has a long line of coast facing the Irish Sea. In olden times it was divided into three parts, Carrick, Kyle and Cunningham. It is 79 m. long and covers 1132 sq. m. In the south are some hills, but elsewhere the country is mainly flat. Ayr is the capital. Other towns are Ardrossan, Kilmarnock, Irvine and Saltcoats. Smaller ones include Troon, Beith, Fullarton, Cumnock and Stewarton. There are a number of short rivers, Ayr, Irvine, Gurnock, Doon and Girvan, and several lochs. Farming is the chief occupation but there are some coal mines. The county is specially noted for its cows and its cheese.

For the visitor the chief interest of Ayrshire is its association with Burns. James Boswell is another famous native. Other places of interest include Turnberry Castle and Crossraguel Abbey, both in ruins. The great Ayrshire family is the Kennedys. Prestwick with its golf course is in the county. Pop. (1931) 285,182.

Aytoun **William Edmonstoune.** Scottish poet. He was born in Edinburgh, Jan. 31, 1812, and educated there and in Germany. He became a lawyer, but spent much of his time in writing. Besides writing the *Bon Gaultier Ballads*, in which he was helped by Sir Theodore Martin, Aytoun made two collections, *Ballads of Scotland* and *Lays of the Scottish Cavaliers*. He died Aug. 4, 1865, having been for some time Professor of Rhetoric at Edinburgh University.

Ayuthia City of Siam. Until 1767 it was the capital of the country. It is built on piles in the middle of the River Menam, 42 miles from Bangkok, and has some notable ruins of Hindu temples. Pop. 12,000.

Azalea Genus of deciduous shrubs belonging to the order *Ericaceae*, and botanically allied to the rhododendron. Originally brought from North America, China and Japan, they have been extensively cultivated in England both for garden and greenhouse. They are largely grown in Holland and Belgium for export. A British variety *A. procumbens* is found on some Scottish moors.

Azerbeijan Soviet republic allied to the U.S.S.R. To the west of the Caspian Sea, it is about the size of Scotland, being 32,686 sq. m. in extent. Its population is about 500,000. They are mostly peasants engaged in growing corn, cotton, vegetables and other products, and in keeping cattle, but some are employed in and around Baku in getting and refining the oil. In race they are mostly Tartar. The capital is Baku.

Azimuth Word used by astronomers for the distance of a star in angular measure from the north or south point of the meridian, as the case may be.

Azo Word, much used by chemists, meaning without life. It is a shortened form of azota, a name given by Lavoisier to nitrogen. **Azo-compounds**, therefore, are organic substances derived from aromatic hydrocarbons which contain nitrogen in the molecule. **Azobenzene** is one of the most important, and its derivatives are very useful dyes.

Azores Group of islands in the Atlantic Ocean. They belong to Portugal, which is some 900 miles away, and cover altogether about 922 sq. m. The largest, in order of size, are: S. Michael's, Terceira, Pico, Fayal, S. George and Graciosa. Angra do Heroismo on Terceira is the capital. Ponta Delgada on S. Michael's is the largest town: and Horta, the capital of Fayal, has the best harbour. The climate is very mild. The inhabitants are mainly of Portuguese descent. They earn their livelihood by growing fruit, tea and sugar, fishing and making baskets and other articles, as well as wine. Pop. 253,596.

Portugal secured these islands by colonising them in the 15th century. Off Flores took place the famous fight between Sir Richard Grenville in the *Revenge* and the Spaniards.

Azov **Sea of.** Gulf in the south of Russia. It lies to the north of the Black Sea, is 220 m. long and covers 14,660 sq. m. The Strait of Kertch, or Yenikale, joins it to the Black Sea. Its currents make navigation difficult, but there are some seaports on the coast, notably Taganrog and Mariupol. The Don flows into it and its waters are almost fresh. The town of Azov stands on the Don, about 10 m. from the sea.

Aztec Indian people living in Mexico when the Spaniards invaded it in the 15th century. The name is that of the land to which they are said to have come when they settled in Mexico about 1100. There they founded a powerful kingdom, their capital being where Mexico City now stands. This was destroyed by Cortes in 1519. The race and its language still survive, the latter is a Nahua dialect spoken to-day by about a million persons of Aztec blood.

The Aztecs knew something of astronomy, and had their own method of reckoning time. They used picture writing, worshipped many gods, and their priests had great power. Human sacrifices were demanded.

BAAL Heathen deity. The word means lord and was given, therefore, to a number of gods, but it was never the name of a particular one unless the Babylonian Bel is a form of Baal. The Semites had a host of Baals, gods of springs, trees, animals, and other things, and the Jews were constantly attracted to the worship of one or other of them. Baal worship may be described as the worship of the male forces of nature. In some places, but not in all, Baal was the sun god.

Baalbek Former city of Syria, 35 m. from Damascus. It was founded by the Phoenicians, and was soon a centre for the worship of their god, Baal. Its ruins, mainly from Roman times, include two massive temples, dedicated to Jupiter and Bacchus, the great Temple of Jupiter and the Acropolis, excavated in 1902-3. Baalbek was an important place until the time of the Crusades, and later, when it belonged to the Arabs. From 1840 to 1918 it was Turkish. In Oct., 1918, it was entered by British troops.

Babar Founder of the Mogul Empire. A khan, or chieftain, in Central Asia, in 1526, he burst into India, took Delhi, Agra and other places, and set up his empire, Agra being his capital. He died in 1530. Babar wrote some *Memoirs* which have been translated into English, and also some poems. His name means "tiger," a tribute to his ferocious character.

Babbacombe Small seaside resort, just outside Torquay. It is a very popular place for pleasure seekers, but is remembered in a more gruesome connection. In 1885 John Lee was charged with having murdered his employer, Miss Keyse, in her house here. He swore innocence, but was found guilty and sentenced to death. Three times the hangman tried to execute him, but each time was unable to do so. Lee, therefore, was kept in prison until released in 1907. *See* KENT'S CAVERN.

Babel Tower built by the ancients. It was erected (Genesis ii), by the descendants of Noah against the will of God, who destroyed the plan by making the builders talk a variety of languages. The builders hoped, by its means, to escape the consequence of another flood. It has been thought that the tower was built at or near Babylon, and there the ruins of two towers have been discovered, but nothing certain can be said on the subject. To-day the word babel is used for noise or confusion.

Bab-el-Mandeb Strait between Asia and Africa. Only 15 m. wide, it separates Asia from Africa, leading from the Indian Ocean to the Red Sea. Perim is in the strait, which is divided by that island into the large and the small strait. The Arabs call it "the gate of tears" in memory of many disasters therein.

Babeuf **François Noel.** French politician. He was born at S. Quentin, Nov. 23, 1760, and was a clerk when the Revolution broke out. He soon made himself conspicuous as a leader. He started a paper and had the courage to stand up to Robespierre. In 1796 when there were serious disasters in Paris, he was again prominent, suggesting a new reign of terror. He was arrested, and executed May 27, 1797.

Babiism Word describing a form of Mohammedanism that arose in Persia about 1843. It is named after its founder, who called himself Bab-el-Din. His teaching became very popular, but the shah and his ministers disliked it, and, in 1850, Bab was taken and executed. The sect, however, flourished, and his followers are still found in China, India and Japan, as well as in Persia, and a few in the United States. Babiism contains inter-mixtures of Christianity and Buddhism, and is free from some of the crudities of Mohammedanism. For instance, Bab taught the equality of women with men. He believed he was the incarnation of God.

Babington **Anthony.** English politician. He was the son of a rich man in Derbyshire, and when Mary, Queen of Scots, was a prisoner at Sheffield, was one of her pages. In 1586, being then 25 years old, he formed a plot to free the queen, but spies told the authorities in London. Babington, with other plotters, was arrested, and executed, London, Sept. 20, 1586.

Babirusa Curious animal of the same family as the pig. In the male the upper teeth are not in the mouth at all, but grow through the skin of the face, and then turn backwards over the forehead. It is found in certain parts of the East Indies.

Baboon Kind of monkey. They belong to the genus called dog-headed, a mandrill being an example. Ferocious, ugly and strong, they can travel easily on all fours as their arms and legs are about equal in length. The baboons are natives of Asia and Africa, and live chiefly in rocky places.

Babu Hindu designation. Its English equivalent is Mr., but we understand by it a native of India who knows a certain amount of English, an Anglicised Hindu.

Babul Tree of the acacia family. Its wood is suitable for sleepers, and it produces arabic. A dye for tanning is obtained from the bark.

Babuna Pass in the Balkans, in Serbia, on the road from Veles to Monastir. Here in Nov., 1915, a battle was fought between the Serbians and the Bulgarians, who forced their way through the pass.

Baby Farming Practice of taking over the care of babies for payment. Baby farming led to so many abuses that Parliament intervened, 1871. A series of measures, culminating in the Children Act, 1908, has considerably checked a traffic which frequently caused the death of children whom the "farmers" found it profitable not to maintain.

Babylon Ancient city of Asia. It stood on the Euphrates, about 60 m. south of Bagdad, and was the capital of the Babylonian empire. Its great period was from about 1800-500 B.C., but its foundation may go back 3000 years earlier, or even more. It stood on both sides of the river, and as recent excavations show, was an enormous city

filled with magnificent palaces, temples and other buildings. Its hanging gardens were counted one of the seven wonders of the world. Its ruins cover something like 50 sq. m.

In 689 B.C. Babylon was partly destroyed by Sennacherib, but was rebuilt and in the time of Daniel was at the height of its glory. When Cyrus took it from Belshazzar it passed to the Persians. Alexander the Great, who died here, included it in his empire, but after his time decay set in and it was soon a deserted mass of ruins. Excavating work has been done on the site, and discoveries are constantly being made.

Babylonia One of the great empires of the ancient world. Babylonia is sometimes called the land of the Chaldees. It was the country through which the Tigris and the Euphrates flowed, the modern Iraq.

The country was probably inhabited by civilised man as far back as 9000 B.C., but little is known of it before 4300 B.C. It was at first divided into a number of City States. The chief people were the Sumerians, to whom Babylonia owes its earliest culture, in the south, and the Akkadians in the north.

Of the City States the chief were Akkad, Lagash, Ur, Kish, Erech, Sippar, Opis, Umma and Adab. Each was ruled by a patesi, as he was called, but later kings appeared. The greatest of these was Sargon, King of Akkad, who lived about 3800 B.C.

About 2300 B.C. the Kingdom or Empire of Babylonia came into being, and survived until 539 B.C. Of its first dynasty the greatest king was Hammurabi, the law-giver, who founded Nippur and by his wars made his country larger and greater. Other dynasties followed, but before 1200 B.C. the power of Babylonia was on the wane. To some extent it was restored by Nebuchadnezzar I., who lived about 600 B.C., but he could not bring Assyria again under the rule of Babylonia.

A second period of decline was checked, although only for a short time, by a second Nebuchadnezzar, the king of the Bible story. After his death in 561, however, the end came quickly. In 539 the Persians entered Babylon as conquerors and the empire disappeared.

The Babylonians had good houses, a knowledge of art and letters, and an elaborate system of law. Their religion was polytheistic, Bel being their chief god, and the priesthood was very powerful.

The Babylonian Captivity is the name given to a series of three deportations of the Jews by Nebuchadnezzar, as mentioned in the book of Jeremiah. The captivity gave rise to some of the most touching of the Psalms. After the overthrow of the Babylonian Empire by the Persians the return to Jerusalem took place, under the leadership of Ezra and Nehemiah (*q.v.*).

Baccarat Card game in which heavy gambling is possible. Baccarat is much played in France, at Monte Carlo and elsewhere, but it is illegal in Great Britain. There are various forms, and some of the baccarat clubs have their own rules.

The game is between a banker, who may be an official of the club or casino, or one of the players, and the players are called punters. The banker, using several packs of cards shuffled together, deals two cards to each player and two to himself. The value of the cards is 1 for the ace, 2 for the two, and so on to the nine. The ten and court cards count nothing. The banker receives money, according to the stakes arranged, from those whose cards total less than do his own, and also from those whose cards total over 9. He pays to those who are nearer 9 than he is himself. In the case of a tie, the stake remains for the next coup or round. The banker starts the game by staking a certain sum of money; if this is lost the players are said to have broken the bank.

Bacchus Roman god of wine and fertility. Bacchus is identical with the Greek god Dionysus. Legends tell how he travelled, teaching people to grow the vine, and how he married Ariadnê, whom he met in Naxos. His exile and other evils were due to the hatred of Juno.

The name of Bacchus is usually associated with drunkenness and licentiousness. Enrolled among the gods, his worship was soon widely prevalent, and many festivals were held in his honour. A feature of these was the presence of women attendants, called **Bacchae,** or **Bacchantes.** In Rome the festivals, called **Bacchanalia,** grew more and more objectionable, until, in 186 B.C., they were forbidden. The Dionysia, as the celebrations were called in Greece, were marked by much drinking of wine and were equally licentious. Bacchus is identified with the Egyptian Osiris.

Bacchylides Greek poet. Born at Ceos, for long he was considered one of the great lyric poets of Greece, although few of his poems were known. In 1896, however, twenty poems by him were discovered in Egypt. The manuscripts are in the British Museum. He died about 150 B.C.

Bach **Johann Sebastian.** German musician. He was born at Eisenach, Saxony, March 21, 1685. Taught by his father, Johann A. Bach, he was in turn organist at Arnstatt, Muhlhausen, Weimar and Kothen. At Leipzig, where he was from 1723 until his death, July 28, 1750, he was director of music at the two chief churches and at the university.

Bach produced a great quantity of work and had an enormous influence on the development of music. His most famous pieces, perhaps, were written for the organ, but he also wrote for the violin and the clavier. The improvements he introduced into the playing of the latter instrument had much influence on the playing of the modern piano. His compositions were issued in 52 volumes by the Bach Society at Leipzig, 1850-1900. They include the magnificent Mass in B Minor, the Passions of S. Matthew and S. John, over 200 cantatas, sacred and secular, and a great number of other pieces. In London there is a Bach Choir, founded in 1876, which exists to give performances of his works.

Three of Bach's sons were musicians. The eldest, Wilhelm, was organist at Dresden and Halle. Carl Philip was a prolific composer and was employed by Frederick the Great. Johann was at one time a musician at the court of George II. in London.

Bacillus Minute organism in shape like a tiny rod. The study of these is called bacteriology (*q.v.*). The word means "a small rod."

Back **Sir George.** English explorer. He was born in Stockport, Nov. 6, 1796, became a sailor and went with Sir John Franklin on a voyage of discovery. In 1833, when in command of an expedition, he discovered the river in Canada which is sometimes called the Black River, although better known

as the Great Fish River. He became an admiral and a knight and died June 23, 1878.

Backache A common complaint in human beings. It is often present in persons who are anaemic or debilitated and is a frequent symptom in hysteria and neurasthenia. A variety of causes may give rise to it. It may be an early symptom of any infectious fever, or due to kidney disease, certain liver troubles, rheumatism or neuralgia. In women it is most commonly due to slight displacements of the womb. In cases of frequent backache, which may be caused by rheumatism, adopt a vegetarian diet and drink large quantities of water between meals, avoiding coffee, strong tea, and alcohol. Massage is beneficial, and undue muscular fatigue should be avoided. *See* LUMBAGO.

Backbarrow Village of Lancashire. It stands on the little River Leven, not far from Lake Windermere. Here is a waterfall, which is used to generate electricity for near-by works and for supplying power to Barrow-in-Furness.

Backgammon Indoor game. Backgammon is played by two persons on a special board, which is divided into two parts by a raised bar. This gives each player a home or inner table on the left and an outer table on the right. Each player has 15 men, one playing with the white ones, and the other with the black, not unlike draughts. Two dice are also required. The board is marked with points for scoring, six at each end.

The object of each player is to move his men from their outer table through the two parts of the enemy's territory to their home table, and then to remove them from the board. He throws the two dice together and, according to their fall, moves his pieces. He can either move two of these at once or move one piece twice. The name refers to the fact that the pieces go back. A variant of the game is known as Russian backgammon.

A form of backgammon called chouette has been introduced. At this more than two persons can play.

Backhaus **Wilhelm.** German pianist. Born at Leipzig, March 26, 1884, he first appeared in public in 1900 and his genius won immediate recognition. In 1905 he was made professor of piano playing at the Royal College of Music, Manchester, but in the same year he won the Rubinstein prize in Paris and resigned his post. He was then free to undertake tours throughout Europe and America, and he played in most of the great centres to enthusiastic audiences.

Backsheesh In India and other parts of the East, a present of money given in return for a favour of one kind or other, often a trading privilege. Put plainly, it means a bribe. The word is spelt in several ways.

Bacon Popular article of food. It is the flesh of the pig after it has been cured, curing being a process of pickling and drying and sometimes smoking. The people of Great Britain eat, of bacon and ham together, about 600,000 tons a year. Bacon has a high food value. It is sold according to the brand, Wiltshire, for instance, but the names refer to-day rather to the method of curing than to the place of production.

Great Britain imports much bacon from Ireland, Canada, Denmark and the United States, but a good deal is produced at home. Greater attention is now paid to the required breed of pig, and bacon factories, on the Danish model, have been established. These are usually co-operative undertakings. Bacon is still cured in the farm kitchen, but only on a small scale. In the United States and Denmark, all bacon must be passed by state officials before it can be sold. Bacon was not included in the articles on which an import duty was placed when Great Britain's fiscal policy was changed in 1931-32, but in April, 1932, a commission was set up to reorganise the marketing of bacon and other pig products.

Bacon **Francis.** English statesman and thinker. Born in London, Jan. 22, 1561, he was the son of Sir Nicholas Bacon, a successful lawyer. Sir William Cecil, the great Lord Burghley, was Bacon's uncle.

Having studied at Trinity College, Cambridge, Bacon went to Paris with the English ambassador, but in three years he was again in London studying law. In 1582 he became a barrister of Gray's Inn, and in 1584, M.P. for Melcombe Regis. For twenty years or so he lived a busy life, and won fame as orator, writer and lawyer. In 1607, being then Sir Francis, he became Solicitor-General, in 1613 Attorney-General, and in 1616 Lord Chancellor and a peer, taking the title of Viscount S. Albans. As Chancellor, Bacon was charged with taking bribes. The result was prison, fine and the loss of office, but pardon came quickly, and the loss and discomfort were slight. He died April 9, 1626.

Bacon's writings are among the greatest contributions to human thought since the time of the Greeks, notably his *Essays*. His *Novum Organum* marks him as the great forerunner of the modern system of scientific research. Other books are the *New Atlantis*, in which he anticipated the use of the telephone, *The Advancement of Learning*, and a *Life of Henry VII*.

It has been argued, with some measure of success, that he was also the author of Shakespeare's plays.

Bacon **Roger.** English scientist. He was born at Ilchester, in Somerset, in 1214. He studied at Oxford and in Paris, and became a Franciscan friar; thus arose the name Friar Bacon. At Oxford he was engaged in what to-day is known as scientific research. He invented the magnifying glass, and something very like gunpowder, and started a belief in the possibility of inventions that have since come about, such as the steamship and the telescope. Like other men who were in advance of their age, he was not left in peace by the authorities. He was a prisoner for eight years and, again, for ten years. On both occasions his books were condemned. The greatest of these is his *Opus Majus*, an encyclopædia of the sciences. The friar was again a free man at Oxford when he died in 1294.

Bacteriology The study of bacteria or microbes, really a branch of biology. These bacteria, or bacilli, are minute vegetable organisms that pervade all forms of life, and play an important part in the causation of disease. Not all of them, however, are harmful.

The science is quite modern, although in the 17th century the connection of microbes and disease was pointed out by more than one observer. Pasteur did as much as anyone to establish its principles, and another great name was Koch. Its great progress has been made

possible by two inventions: powerful lenses which enable the bacteria to be examined, and aniline dyes which make their different parts visible.

Bacteriologists cultivate bacteria and study the results of inoculating animals with them. Medical science in its campaigns against various diseases owes much to bacteriology, which is also of great value in enabling experts to test the purity or otherwise of food supplies. Bacteria are utilised in many trade processes.

Bactria Former country of Asia. It extended from the Hindu Kush to the Oxus. It is now part of Afghanistan, being almost identical with the district of Balk. Its capital was Bactra, and it was famous for its camels. It was conquered by Cyrus, and then by Alexander the Great, who settled Greeks herein. About 250 B.C. the kingdom of Bactria was set up, but this only lasted for about 100 years.

Bacup Town of Lancashire. Bacup is on the Irwell, 22 m. from Manchester, on the L.M.S. Rly. Its chief industry is the spinning and weaving of cotton, but there are several others, among them paper making and dyeing, for which the river water is specially suitable. Bacup has been a borough since 1882. Pop. (1931) 20,606.

Badajoz City of Spain. Only four miles from the frontier of Portugal, it was long an important fortress. During the Peninsular War the French besieged it more than once, and at last got hold of it; it was then the turn of the British. Wellington's assault in April, 1812, ranks as one of the great feats of the British army. The siege began on March 17, and on April 6 the city was stormed. The attack is described by Napier in his *History of the Peninsular War* (Vol. IV.). The city stands on the Guadiana, 315 m. from Madrid. It has a cathedral and an old castle.

Baddow Two villages in Essex called Great and Little. Great Baddow is 2 m. from Chelmsford and Little Baddow about 4 m., the latter being on the Chelmer. Pop. 2582.

Baden Republic of Germany and a state of the German Republic or Reich, being the fourth largest state therein. Its size is 5820 sq. m., and its population over 2,312,500. The Rhine divides it from Alsace, and on the south is Switzerland. Karlsruhe is the capital, but Mannheim has more people. Another place herein is Heidelberg with its university. It is a mountainous and beautiful district, as it includes the Black Forest and one side of the Lake of Constance.

Baden began as several little German states which were united in 1771 under one ruler, the margrave. In 1871 it became part of the new German Empire. In 1919 a republic was set up, and a new constitution framed. This consists of a single elected house and a cabinet under a president responsible to it. Proportional representation is in force and the people have the right of using the initiative and the referendum.

Baden Name of two European towns. One is 17 m. from Vienna, and the other in Switzerland, 13 m. from Zürich. Both have mineral springs. Near the Austrian Baden is Meierling, the house where, in 1889, the Crown Prince Rudolph committed suicide. In 1714 at the Swiss Baden there was signed one of the treaties that ended the War of the Spanish Succession. From 1426 to 1712 it was the capital of the Swiss Confederation.

Baden-Baden Watering place of Germany. Sometimes called Baden, this place is in the Black Forest, 23 m. from Karlsruhe. Many visit it for the waters, which were known in Roman times. For some time Baden was the chief town of the state of Baden. Before 1871, when it was included in the German Empire, it was one of Europe's greatest gaming centres. Pop. 22,000.

Badenoch Name of a district in the S.E. of Inverness-shire, Scotland. It is about 40 m. long, and may be described as the Valley of the Spey. A mountainous area, it is mainly deer forest, and contains Loch Ericht. King Robert II. had a son called the Wolf of Badenoch who ruled this district. Later it became the property of the Marquess of Huntly, who bears the title of Lord of Badenoch.

Baden-Powell **Lord.** Robert Stephenson Smyth Baden-Powell, the founder of the Boy Scout movement, was born Feb. 22, 1857, entered the army, and in 1896-7 was in the force that defeated the Matabele. About this time he obtained his knowledge of scouting, but it was not until 1899 that he became a popular hero as the defender of Mafeking. Baden-Powell was afterwards head of the constabulary in South Africa, and Inspector-General of cavalry in England. In 1908 he founded the Boy Scout movement, and in 1909 he was knighted. He has written several books, mostly about his wars and adventures and on scouting. He was made a baron in 1929. *See* BOY SCOUTS.

Badge Something worn on a person to show that he or she belongs to a certain society or organisation, or is of a certain rank. The various regiments of the British Army have each their distinctive badge; other badges show the rank of the wearer. The navy and air force have also their badges, as have various associations of civilians. Between badges and coats-of-arms there is a distinct difference. Any society can adopt a badge, but to take a coat-of-arms certain formalities are necessary. In 1930 the king granted a new badge to baronets. *See* ARMS.

Badger Animal found in Great Britain and elsewhere. It lives mainly underground and feeds on insects, roots, and, at times, mice and young birds. Its average length is about 3 ft., and it is grey in colour, save that its head is striped with black. It is found in Great Britain, in various parts of Europe and in China, where it serves for human food. In Great Britain its only practical use to-day is to provide hair for brushes. Formerly it provided both food and sport, and baiting the badger with dogs was a popular amusement until forbidden in 1580. An old English name for it is **the brock.**

Bad Lands Distinctive name for a considerable area on the E. side of the Rocky Mountains in the United States. It is so called, because, on account of its dryness, practically nothing will grow. The states concerned are North Dakota, South Dakota, Nebraska, Wyoming and Montana. The Bad Lands contain very many fossils of mammals.

Badminton Seat of the Duke of Beaufort. It is in Gloucestershire, 14 m. from Bristol and is a large house, fairly modern, in a park of 9 m. circumference. As the Dukes of Beaufort have been noted sportsmen, the name of their chief residence

has been given to a game, a club, a drink, and a library. The club is a London sporting club in Piccadilly, founded in 1876. The library consists of books on sporting subjects. Badminton has a station on the G.W. Rly.

Badminton Outdoor or indoor game. It came from India into Great Britain about 1873. It is not unlike lawn tennis, but can be played indoors. The implements are a shuttlecock and racquets lighter and smaller than those used for lawn tennis. It is also played in the open, and a special ball is often used in such cases, as the shuttlecock is too light to resist wind.

As in lawn tennis two or four persons take part in a game. The court should be 44 ft. long and 20 ft. wide, and be divided into four parts. The net should be about 5 ft. high. The server must send the shuttlecock into the court diagonally opposite to him, and the player there must return it or lose the point. No faults are allowed in serving, which must be underhand. Points are scored by aces, and 15 aces make a game. In Great Britain the game is controlled by the Badminton Association and since 1899 and 1900 there have been matches for the annual championship, both in singles and doubles. International matches are also played between England, Scotland, Ireland and other countries.

Baedeker Karl. German publisher. Born Nov. 3, 1801, he was the son of a bookseller. In 1827 he started in business in Coblenz, and in 1839 with John Murray, the London publisher, he issued a guide book to Holland, Belgium and the Rhineland. Others followed, and, before the World War, these guides were the most popular of their kind. They were published in English and French, as well as in German. Baedeker died Oct. 18, 1859. His business is carried on by his descendants at Leipzig.

Bael Plant akin to the orange, spelt also Bhel. It grows in India, and its fruit is used as a cure for dysentery. A perfume and a dye are obtained from the rind, and the seeds are used to make cement. It is usually dried before it is ripe, and in dried slices is imported into England.

Baffin William. English explorer. He was a Londoner by birth. In 1612 he went as pilot with an expedition to discover the N.E. passage, and in 1615 he made a like voyage. It was on the latter occasion that he explored Baffin Bay. At other times he was engaged in whaling. He was killed in a fight at Ormuz, Jan. 23, 1622.

Baffin Bay Inland sea of North America between Canada and Greenland. It is entered by Davis Strait from the Atlantic. Other openings lead into the Arctic Ocean. It is about 825 m. long, and contains whales and seals. It is navigable for about four months in the year. West of the bay is Baffin Island. This is 237,000 sq. m. in area, being thus the largest island in the world after Australia and Greenland. Its only inhabitants are a few Eskimos on the east coast.

Bagamoyo Seaport of Tanganyika. It is on the coast just opposite Zanzibar, and at one time was a noted caravan station. Before the World War it was in German East Africa, but in 1916 the British took possession of it. Pop. 12,000.

Bagatelle Indoor game. It is a form of billiards, although it probably developed from shovel board. The table is 10 ft. long and 3 ft. wide, covered with green cloth. At the top end are nine holes or cups, numbered one to nine, and the players, using a cue, try to get the balls into these holes. There are four white and four red balls as well as a black ball which is spotted when play begins. If this is sent into a hole it counts double. The aim of each player is to score as many points as possible with the nine balls. In another form of the game an arch with nine holes in it is placed across the board and the balls are sent into them. There are bagatelle boards with pockets, but the game in this case, as cannons are essential, should rather be described as billiards on a small scale.

Bagdad City of Iraq. Standing on both sides of the Tigris, 300 m. from the Persian Gulf, it is the chief town of Iraq and an important trading centre. There is a considerable trade along the river in the products of a rich land, and the presence of the British administration introduced new interests and increased activity. Its communications are good. In addition to the caravan routes goods go by water up and down the Tigris, and there are railway, motor-car and air services.

Bagdad is a typical Oriental city. Founded in 763 by one of the caliphs, it became, under Haroun al-Raschid, one of the world's splendid cities, the capital of a great empire, famous for its buildings and as a seat of learning. This lasted until 1258, when the Mongols ravished it. The city became Turkish in 1636, and remained so until 1917 when the sultan lost it.

Bagdad figured in the World War. The British reverses in Mesopotamia were retrieved by Sir F. S. Maude, who, having re-taken Kut in February, 1917, chased the Turks up the Tigris. On March 11, the city was entered by the British. Pop. 250,000.

Bagdad Railway Railway of Asia Minor. It was planned to unite Constantinople with the Persian Gulf, Bagdad being an important place on the route. As far as Koneih there was already a line in existence, the Anatolian Railway; the Bagdad line was intended to continue this from Koneih in Asia Minor to the Gulf. Its total length was 1500 m.

In 1899 the Turkish Government granted the necessary permission. The idea was that Great Britain, Germany and France should be jointly responsible for it, but in 1903 Great Britain withdrew, and Germany, with France as a junior partner, went vigorously to work. The alliance of Germany and Turkey during the World War made further progress possible, and during the struggle the main line was continued. Of the branch lines one went to Aleppo and another to Alexandretta.

When the armistice came and the line was handed over to the Allies, 1200 miles of it were working. Soon the section from Bagdad to Basra was working and the only unfinished section was the one from Nisibiu to Samarra.

Bagehot Walter. English writer. Born at Langport in Somerset, Feb. 3, 1826, the son of a banker there, Walter was made a partner in the bank, but much of his time was occupied in writing. He wrote a good deal for reviews, and in 1860 he became editor of *The Economist*, a paper founded by James Wilson, his father-in-law. His books, all lucid and popular, are *The English Constitution*, *Lombard Street* and *Physics and Politics*. He died at Langport, March 24, 1877.

Bagirmi Name of a country in Africa and of the people who live therein. A French possession, it lies south of Lake Chad, and has a population of about 150,000. The people are of negroid race, ruled by a sultan. Massenia is the capital.

Bagnalstown Market town of the Irish Free State, also called Bagenalstown. It is in Co. Carlow, 10 m. from Carlow, and 62 m. from Dublin, on the Gt. S. Rlys. The town is named after the Bagenals, one of whom, called **King Bagenal**, lived at Dunleckny about the end of the 18th century. He was a remarkable figure; very fond of drinking and of company, he dined with loaded pistols in front of him, and when 79 years old fought a duel seated in his chair. Pop 1800.

Bagnigge Wells Old London pleasure resort. A tavern, Ye Olde Bagnigge Wells, in King's Cross Road, marks the site. It was opened in 1757 because a medicinal spring was found here. Later it became one of London's pleasure gardens, and remained so until about 1841.

Bagpipe Musical instrument. It is chiefly associated with the Scottish Highlands, but there are also Irish and Northumbrian bagpipes. It consists of a series of pipes attached to a windbag. On one, called the chanter, the melody is played. The others are the drones that produce the accompaniment. The chanter has a double reed; the drones a single one each. In the Scottish pipes the wind is supplied by the player; in the Irish bellows are used. The Irish pipes have the greater compass.

The bagpipe was known in Scotland in the 12th century, or earlier, and the kings and chieftains had their pipers, often an hereditary calling. Schools for pipers were kept by some of these families. Shakespeare mentions a Lincolnshire bagpipe and an instrument like the bagpipe was used in very early times in Europe. There is a great deal of music for the bagpipe in existence, especially in Scotland.

Bagshot District in the N.W. of Surrey near Windsor. Called in full Bagshot Heath, at one time it was a royal forest, and it is still Crown property. Bagshot Park, the residence of the Duke of Connaught, is on the site of a house used by James I. when hunting. The village of Bagshot is 27 m. from London by the Southern Rly.

Bagshot Beds are a series of sands overlying the London clay in the South of England. Examples can be seen at Studland in Dorset or at Alum Bay in the Isle of Wight.

Bagster Samuel. English publisher. A Northampton man, he was born in 1772. Having started in business in London, he made a name for himself by publishing cheap Bibles. These were chiefly polyglot Bibles with notes, and so he was able to sell them without encroaching upon the privileges of the universities, the only publishers of the Bible proper. He died March 28, 1851.

Bahadur Title of honour. In India natives use this word, which means "brave," as a title of respect when speaking to officers. Lord Roberts was to them Bobs Bahadur.

Bahamas Group of islands in the West Indies, called by the Spaniards Los Cayos. They belong to Great Britain, and stretch for about 650 m. almost from Florida to Haiti. They number nearly 700, but most of them are little more than rocks. Great Abaco, about 1600 sq. m. in extent, is much the largest; others are Grand Bahama, New Providence, Eleuthera, San Salvador, Acklin, Cat and Long Island. They cover about 4400 sq. m., and have a population of about 62,000. Nassau, on New Providence, is the chief town. The people are chiefly negroes, the descendants of slaves. Fruit is grown on the islands and fishing is another industry. Sponges are cultivated, as is sisal. There is a governor, and associated with him are two councils, executive and legislative, and an elected parliament.

The Bahamas were discovered by Columbus, in 1492, but were not settled until 1629, when some Englishmen made their homes here. It was not until 1783, however, that Spain finally ceased to claim them. Two events in the history of the United States have brought great prosperity to the Bahamas. One was the Civil War, when they were used by blockade runners, and the other the introduction of prohibition. Their nearness to the American coast makes the Bahamas a favourite resort for those who wish to drink what they like.

Bahia Seaport of Brazil. Its full name is Sao Salvador de Bahia, or the Bay of San Salvador. It is 800 miles from Rio de Janeiro, and has a large trade with Europe. It has a good harbour, is a railway terminus and has regular services to Liverpool and other ports. Bahia was founded by the Portuguese in 1510, and was the capital of Brazil before 1763. It is now the capital of a state of the same name. Pop. 330,000.

Bahia Blanca Seaport of Argentina. It is 425 m. from Buenos Aires and stands on the River Naposta, about 6 m. from its mouth, where a good harbour has been constructed. Several railway lines converge on the port, through which passes a good deal of grain. In addition to Bahia itself on the river, there are three harbours on the bay, all being part of the port. Ingeniero White has elevators for grain, and good accommodation for ships, and the same can be said of Puerto Galvan, both being provided by the railway companies. Puerto Belgrano is a naval station, but has also facilities for cargo. The name means "White Bay." Pop. (1931), 102,430.

Bahr Arabic word, meaning river or lake. The various parts of the Nile are, Bahr-el-Abiad, the White Nile, Bahr-el-Azrek, the Blue Nile, and Bahr-el-Aswad, the Black Nile. Bahr-el-Jebel is the Upper Nile.

Bahrain Group of islands in the Persian Gulf and under the protection of Great Britain. Bahrain, or Aval, is the largest; others are Maharaq and Sitra. Manama is the capital; the only other town is Maharaq. Pearl fishing is the main industry, and fruit is grown.

Bahrain has good roads, a wireless station, and a regular steamer service with India. A remarkable feature is a cemetery covering many miles and dotted with enormous burial mounds, some being 50 ft. high. This island covers about 200 sq. m.; the others are much smaller. The islands are ruled by a native chief and Great Britain has a political resident at his court. Pop. 120,000.

Baikal Lake in the S. of Siberia, the largest freshwater lake in Asia. It is 300 m. long, of varying breadth, and covers about 13,000 sq. m. Around it are the

Baikal Mountains, and in it are several islands. There are many fish in the lake, one of them, the golomynka, being found nowhere else.

Bail Term used in English law. In Great Britain a person accused of an offence may either be kept in prison until his trial comes on, or be let out on bail. If the latter, he and one or two other persons promise that, if he does not appear when requested, they will forfeit a certain sum of money, which is fixed by the magistrates. Bail is allowed in England only for minor offences. Much is left to the discretion of the judge.

Baildon Urban district in the West Riding of Yorkshire. It is 4 m. from Bradford and the chief industry is the manufacture of chemicals. Pop. (1931) 7794.

Bailey Part of a medieval castle. The bailey was at first a wall, this being the Latin meaning of the word. It now means the court that lies between the outer wall and the keep. In some castles there were both an outer and an inner bailey. There is a good example in the castle at Durham.

Bailey **Sir Abe.** S. African mine owner. He was born in Cape Colony, Nov. 16, 1864. He was educated in England, but soon returned to Africa, and was one of those who were imprisoned in 1895 for agitating against the dominance of the Boers. He fought in the war of 1899-1902, and was a politician, but his main energies were devoted to business, especially in Rhodesia. His wife, Lady Bailey, is one of the first and most daring of airwomen.

Bailie Official in Scotland. He corresponds somewhat to the English alderman. The burgh councils have bailies among their members, these being elected by the councillors as the aldermen are in England. The bailies are also magistrates.

Bailiff English official. Officials of the county courts in England are called bailiffs, as are the men who, under the sheriff's orders, distrain for rent and debts of other kinds, serve writs, collect fines, and do similar work.

Another kind of bailiff is a man employed by a landowner to look after an estate or farm. In the Channel Islands the bailiff is an important person, as he is the president both of the law courts and of the parliament. In former times certain English cities, Westminster for instance, had a high bailiff. There was also a bailiff of Dover Castle and of other strongholds.

Bailleul Town of France, 46 m. from Calais. The Germans took it in April, 1918, but the British won it back in the following August. Much damage was done to it during the fighting, but this has now been repaired. Pop. 13,070.

Baillie **Lady Grizel.** Scottish heroine and poetess. A daughter of the Earl of Marchmont, she was born Dec. 25, 1665. She helped her father, a Covenanter, to escape from his enemies, and later went with him to Holland. After 1688 she returned to Scotland, and in 1692 married George Baillie of Jerviswood. Her poems are still remembered in Scotland. She died Dec. 6, 1746.

Baily **Francis.** English astronomer. His name is perpetuated because, during an eclipse of the sun on May 15, 1836, he discovered what are now known as Baily's Beads. These are parts of the sun's edge left visible as the ragged rim of the moon passes over it; as then lit they look like beads. Baily was born at Newbury, April 28, 1774, and became a stockbroker. When he had made a competence for himself, he began to study astronomy, and his observations proved most valuable. He died Aug. 30, 1844.

Baird **Sir David.** Scottish soldier. Born at Newbyth, Dec. 6, 1757, he entered the army in 1779 and led the force that stormed Seringapatam. Later he commanded a force in Egypt, in Capetown and one in Copenhagen. He was in Spain with Wellington, and was wounded at Corunna, losing his left arm. Made a baronet in 1810, he died Aug. 18, 1829.

Baireuth Town of Bavaria, also called Bayreuth, and a famous musical centre. It is on the Main, 60 m. from Nuremberg. Until 1791 it was the chief town of a tiny state, ruled by a branch of the Hohenzollern family. Its reputation is really due to Richard Wagner who lived here. King Louis II. of Bavaria, a great lover of music, made it possible for a theatre to be built according to Wagner's ideas. Called the Wagner Theatre, it was opened in 1876, and in it, from time to time, festivals are held in honour of Wagner. Pop. 35,000.

Baize Coarse woollen or cotton cloth, with a long nap on both sides. It is usually dyed red or green, and is used for coverings of various kinds, also for curtains and aprons. It is now made in and around Halifax, but at one time it was made at Colchester and the neighbourhood. French and Flemish settlers introduced it there about 1560, and the word bay, an older form, is still found at Colchester and Dedham.

Bakehouse Place used for baking bread, cakes and pastries. Bakehouses are subject to the Factory Acts, and must be kept clean and ventilated and proper provision made for those who work in them. The Factory Act of 1901 provides for a pure water supply. No underground place can be used for a bakehouse unless the district council or other authority approves of it. No place on the same level as a bakehouse and part of the same building may be used as a sleeping room unless the two are completely separated.

Bakelite Commercial material. It owes its origin and its name to H. Baekeland, a chemist. Consisting of phenols and formaldehyde, it is made hard by the application of heat. It is not unlike celluloid, save that it is harder and does not catch fire. It is used for making buttons, umbrella handles and other articles where its peculiar qualities are desirable. A liquid form is used to harden certain materials, fibre and paper, for instance. Brass articles are protected by a coating of bakelite varnish, and paper impregnated with it is suitable where electric insulation is necessary.

Baker Maker of bread. The earliest professional bakers were a few men employed by rulers and noblemen; elsewhere the housewives were the bakers. The advance of civilisation and the increase of population, however, called into existence a class of bakers. To-day the baker makes extensive use of machinery and produces bread on a large scale.

One of the London livery companies is the Bakers. A company of white bakers existed about 1300 in London: later this was united with the brown bakers to form a livery company. The hall is in Harp Lane, London, E.C.

In London a school for bakers and confectioners is carried on at the Borough Polytechnic, Borough Road, S.E. They have a trade organisation. The National Association of Master Bakers, Confectioners and Caterers, and their own trade papers, among them *The Baker and Confectioner*.

Baker Sir Samuel White. English explorer. Born in London, June 8, 1821, in 1861 he began his African journeys, explored the source of the Nile and discovered and named the Albert Nyanza. Later the Khedive of Egypt successfully employed him to put down the slave trade in his territories. Baker, who was made a knight and a pasha, was a famous hunter of big game and wrote several books dealing with his travels and adventures. He died in Devonshire, Dec. 30, 1893.

Bakewell Market town and urban district of Derbyshire. It is 26 m. from Derby, on the Wye, and has a station on the L.M.S. Rly. The town is surrounded by magnificent scenery and is a centre for the Peak district. Chatsworth, Haddon, and other places of interest are not far away. All Saints' is a beautiful old church, and there is a 17th century grammar school. There are some old almshouses and a very old cross, probably 8th century. Pop. (1931) 3012.

Bakewell Robert. English agriculturist. Born in 1735, he was a farmer in Leicestershire, and was continually trying experiments in breeding and growing. Some failed, but he succeeded in rearing heavier sheep and cattle and in growing improved foodstuffs. He had a special breed of black horses and started a club for breeding purposes. At his farm he made a collection of skeletons and carcases for purposes of comparison. He died Oct. 1, 1795.

Baking Powder Cooking ingredient. It consists of tartaric acid and bicarbonate of soda, mixed with ground rice and flour. When damped the acid acts on the bicarbonate and gives off carbonic acid gas. It is used, like yeast, for raising bread and pastry.

Bakst Leon Nicolaievitch. Russian artist. Born in 1866 he studied in Petrograd, but his chief work has been done in Paris, where he settled in 1906. There he made a great reputation by his designs for stage costumes and decorations, especially, perhaps, for the Russian ballet.

Baku Capital of the Soviet Republic of Azerbeijan. It is a port on the Caspian Sea and a great oil centre. Railways connect it with the interior of Russia and Batum on the Black Sea, 560 m. away, and steamships with other ports on the Caspian. Before the war the output of oil from the wells and refineries in and around Baku was enormous, but during the struggle much damage was done.

Once in possession the Soviet Government cost little time in reviving the industry. A great output was again secured, but nothing was done to compensate the dispossessed owners of the oil fields. The town is a station on the air route from Moscow, and its trade with Persia is still very considerable. Its population is estimated at about 452,000.

In 1918 Great Britain sent an expedition to Baku to check, if possible, the advance of the Turks in that area. Major-General R. C. Dunsterville leading his small "Dunster Force," as it was called, left Bagdad in Jan., 1918, but it was not until June that he reached Enzali on the Caspian. The next event was the seizure of Baku by some Armenians and Persians, who asked Dunsterville to join them. The Turks, however, continued their advance; the Armenians and Persians proved unreliable, and in Sept. the British withdrew, losing heavily in the necessary fighting. In Nov., after the Armistice, Baku was again occupied by the British, but they left it in Aug., 1919, since when the Bolshevists have been in undisputed possession.

Bakunin Mikhail. Russian politician. Born in 1844, he was an aristocrat and an army officer, but he soon went abroad, and became a revolutionary. He was sent to Siberia, but escaped, and lived in the United States and then in London. He died at Berne, June 13, 1876. He taught a doctrine of anarchy, really a kind of despotism, not unlike the Bolshevism of to-day.

Bala Lake and town of Merionethshire, Wales. The lake is 4 m. long and the Dee begins its course here.

The market town and urban district of Bala stands at the north end, on the G.W. Rly., 12 m. from Corwen. It has a golf course. Pop. (1931) 1395.

Balaam Biblical character. He was a magician who was bribed by Balak, King of Moab, to curse Israel. On his way to do this he was stopped by an angel and reproved by his own ass, which was given the gift of speech (Numbers xxii.).

Balaclava Village and harbour on the Black Sea. It is 8 m. from Sebastopol and in 1854, during the Crimean War, it was used as a base by the British. On October 25, 1854, the Russians made an attack here, but they were beaten back by a charge of the heavy cavalry brigade under Lord Scarlett. Then followed a charge of the light brigade which lost nearly half its number of 673 in the attempt. Afterwards it was realised that the order was a mistake, but the feat made the name of Balaclava immortal.

A Balaclava helmet is a woollen cap made to fit over the head and ears. They were worn in the Crimea, hence the name.

Balance Apparatus for weighing, often called scales. They are used for weighing goods of all kinds and may be divided into arm balances, lever balances, and the older weight balances. In addition there are spring balances that are used for weighing heavy loads. Apart from these although the principle is the same are the delicate balances used by scientists, and the immersion balance is one that finds the weight of an article by dipping it in water.

Balance of Power Phrase meaning the preservation, especially in Europe, of an equality of strength between countries or groups of countries. The idea that no one country shall become too powerful for the safety of the others grew up in the 15th century, and was behind the various coalitions against France formed in the 17th and 18th centuries, and the later alliances that existed in Europe before the outbreak of the World War. That struggle changed fundamentally the structure of the European States, but the idea of a balance of power among them still exists.

Balance of Trade Phrase meaning the excess of imports over exports or *vice versa*. If a country imports more than it exports, the balance of

trade is against it; if the reverse is the case the balance is favourable. In the case of Great Britain, and also of some other countries, invisible imports must be included, these being such things as interest on loans, shipping charges, and the like. Although imports greatly exceed exports in value, experts, taking the above facts into account, state that in most years the balance of trade has been favourable to Britain.

This, however, was not so in one or two years after the War. In 1926 there was a small adverse balance, but in the succeeding year (1927) the balance was again favourable. In 1931, however, the balance was the other way—£110,000,000, and in August a serious position arose. To remedy this, Great Britain abandoned the gold standard and placed heavy duties on certain classes of imported goods. A general tariff followed in 1932. The figures for 1932, 1933 and 1934 (£56,000,000, £4,000,000 and £1,000,000) show how the debit balance decreased. Details for 1934 are as follows :—

Excess of Imports over Exports	£295,000,000
Excess of Government receipts ..	9 000,000
National Shipping income	70,000,000
Overseas Investment income ..	175 000,000
Short Interest and commission ..	30,000,000
Miscellaneous	10,000,000
	£294,000,000

Balata Substance made from the gum of the bullet tree. It is employed to make belting for machinery and as a substitute for gutta percha. It is also used for insulating purposes and for the soles of boots and shoes. Sometimes called Surinam gutta percha, the gum is found in Dutch Guiana, in Surinam, and in British Guiana, Venezuela and elsewhere. A tree about 20 in. in diameter will give out about 2 lb. of balata.

Balaton Largest lake in Hungary. The subject of many legends and of much poetry, it is 47 m. long and covers about 250 sq. m. It is 55 m. from Budapest. On the north side are hills covered with vines, the south side is less picturesque. Its waters are carried to the Danube. Plattensee is another name for the lake.

Balboa Port of Panama. It is also called Port of Ancon. At the Pacific end of the Panama Canal, it has a good harbour which can accommodate the largest vessels, and has facilities for storing great quantities of coal and oil. There is a wireless station. An electric railway runs from here to Panama. United States officials manage the port. Pop. 8000.

Balboa **Vasco Nunez de.** Spanish explorer. Born at Xeres, Spain, in 1475, when young he crossed the Atlantic. At first he lived in Santo Domingo, but he went to Darien and became governor of that country. He lost his position in 1514, and his life, three years later, being beheaded. It was Balboa and not Cortez who, in 1513, was the first European to see the Pacific. In Panama a silver coin, equal to the American dollar, is called the balboa.

Balbriggan Town and watering place of the Irish Free State. In Co. Dublin, it is 22 m. from Dublin, on the G.N. of Ireland Rly. It was once noted for the hosiery produced here, called Balbriggan. Pop. 2300.

Balbus Roman consul, in full, Cassius Cornelius Balbus, he lived in the times of Caesar, Cicero and Pompey. A native of Cadiz, he was made a Roman citizen, and in 40 B.C. was chosen consul. Before this he had been prosecuted for assuming the rights of a citizen, but had been triumphantly defended by Cicero.

Baldachino Canopy over an altar. Baldacco is the Italian word for Bagdad, and from that city came the materials of which some of the canopies were made. Others were of wood, stone or metal. They were supported by four columns. The finest example in the world is in S. Peter's at Rome. Another form of the same word is **baldacchino**, which describes the silk canopy that covers the host when it is carried in procession, or covers a prince of the Roman Church in like circumstances.

Balder Sun god of Norse mythology called "the beautiful." His father was Odin, his mother Frigg, and his wife Nanna. Fearing for her son, Frigg persuaded all nature, except the mistletoe, to swear not to harm him. The evil Loke, having learned the secret, secured a dart of mistletoe. Innocently, Balder's blind brother used this dart and Balder fell dead.

Baldmoney English wallflower. The flowers which many people in England call by this name are species of the gentian. (*q.v.*)

Baldness Hereditary baldness is incurable, but since the hair is affected by the general state of the health, the condition may be caused by overwork, worry, malnutrition, lack of fresh air and sunlight, constipation, decayed teeth, etc. The constant pressure of hard hats interfering with the blood supply of the scalp is also a predisposing cause.

A type of baldness (*Alopecia Areata*), in which sudden loss of hair in patches occurs, is due to constitutional causes. In all such types of baldness the predisposing cause should be ascertained and removed, attention paid to the general health, plenty of fresh air obtained—removing the hat whenever possible—and treatment sought by ultra-violet light. Scalp massage is also beneficial. (*See* also DANDRUFF).

Baldock Urban district of Hertfordshire, on the L.N.E. Rly., 37 m. from London. In 1925 a Roman cemetery was unearthed here and some interesting finds were made Here is a Post Office radio receiving station. Pop. (1931) 3171.

Baldric Girdle or belt worn by soldiers in the Middle Ages. Made of leather it was worn either over the shoulder or round the waist, being used to hold a sword or bugle. The strap round the neck which held the shield was also called the baldric.

Baldwin Name of several European soldiers. A number of Baldwins were counts of Flanders, one of them being the father-in-law of William the Conqueror. A later Baldwin was a crusader and when, in 1204, Constantinople was taken, he was made its emperor. His nephew, another Baldwin, was also emperor, but he lost Constantinople in 1261, twelve years before his death.

Other Baldwins were successful crusaders. Baldwin, Count of Boulogne, took Jerusalem, and was king there from 1100 to 1118, when he was succeeded by his nephew, another Baldwin. Later three other Baldwins ruled in Jerusalem. One of them Baldwin III., was a famous

soldier. The last of the five, only a child, was poisoned by his mother in 1187.

Baldwin Stanley. English statesman. He was born at Bewdley, Worcestershire, Aug. 3, 1867. His father was Alfred Baldwin, the son of an ironfounder, who built up the great engineering business now included in Baldwins, Ltd. His mother was a Macdonald, the gifted daughter of a Wesleyan minister. He went to Harrow and Trinity College, Cambridge, and later entered his father's business. Business and family responsibilities did not, however, prevent him from taking part in county affairs.

In 1908 he became M.P. for the Bewdley division and head of the family business. Before the Great War began the control of the business passed, by amalgamation, to other hands, and Baldwin was free to give his whole time to politics. In 1917 he was made a Junior Lord of the Treasury and then Joint Financial Secretary to the Treasury. In 1921 he became President of the Board of Trade and a member of the Cabinet.

These offices were in a Coalition Government, and for the destruction of the Coalition Baldwin was as much responsible as any man. He believed that Conservative principles were best for the country, but that they would have no chance until their supporters were unfettered by an alliance with those who held other views. The result was that in October, 1922, Bonar Law became Premier and Baldwin Chancellor of the Exchequer. As Chancellor he went to Washington and arranged for a settlement of Britain's debt to the United States.

In May, 1923, Bonar Law resigned, and Baldwin became Prime Minister. In December, believing that tariff reform was essential if unemployment was to be reduced, he decided to dissolve Parliament. The result of the election was unfavourable to his views, and in January, 1924, he resigned.

In October, 1924, another election took place. This time the Unionists secured a large majority, and again Baldwin became Prime Minister. In 1927 he went on a short visit to Canada, the first Prime Minister to do so.

In 1929, after the general election had proved unfavourable to his party, he resigned office and was leader of the opposition until 1931. In Aug., 1931, he helped to form a national government, serving under Mr. Ramsay MacDonald, and himself Lord President of the Council and deputy Prime Minister. When Mr. MacDonald for health reasons resigned the premiership in June, 1935, Baldwin became leader of the national government, continuing in office after Nov., 1935, when he was given substantial support at the General Election.

On England and *Our Inheritance* are published volumes of his non-political speeches. His many honours include the Chancellorship of the University of Cambridge.

Mr. Baldwin married Miss Ridsdale, and his family consists of two sons and four daughters. The elder son, **Oliver**, has pronounced socialistic opinions. From 1929 to 1931 he was socialist M.P. for Dudley. He has written books dealing with his travels and adventures; in 1932 he published *The Questing Beast*, and in 1933, *Unborn Son*.

Bale Heavy package covered with canvas and usually bound round with hoops or rope. The bales are usually put in a press to reduce their size. In a sense a bale is a measure of weight. A bale of American cotton weighs 500 lb., one of Egyptian weighs 700 lb., and one of West African 400 lb. The bale of wood is not quite such a fixed quantity. It averages about 320 lb. Jute and coffee are also packed in bales.

Balearic Islands Group of four islands and eleven islets in the Mediterranean. They cover 1935 sq. m., and form one of the provinces of Spain, which is 134 m. away. The inhabitants earn their living by growing fruit and wheat, fishing and making wine. Salt and marble are other exports. The four large islands are Majorca, Minorca, Iviza and Formentera. Palma is the capital, Port Mahon is another seaport, Iviza has a magnificent harbour. Pop. 360,000. In Roman times the islands were famous for their slingers, who were hired by both the Romans and the Carthaginians. For 100 years after 1232 the islands formed the little kingdom of Mallorca, but later became part of Aragon and then of Spain.

Balfe **Michael William.** Irish musician. He was born in Dublin, May 15, 1808. He studied music in various centres and became famous owing to his fine baritone voice. Later he lived in London, and wrote a number of light operas, such as "The Bohemian Girl" and "The Puritan's Daughter." Some of his songs, for example, "Killarney" and "Come into the Garden, Maud," are still popular. He died Oct. 20, 1870.

Balfour **Earl of.** British statesman and philosopher. Arthur James Balfour was born at Whittingehame, Haddingtonshire, July 25, 1848, the eldest son of James Maitland Balfour, his mother being a daughter of the Marquess of Salisbury. His school was Eton and afterwards he went to Trinity College, Cambridge.

In 1874 Balfour became Conservative M.P. for Hertford, and in 1878 Private Secretary to his uncle, Lord Salisbury. He was associated with the Fourth Party. In 1885 he became M.P. for East Manchester and President of the Local Government Board. A little later he was made Secretary for Scotland, and in 1887 became Chief Secretary for Ireland. His success in that difficult, even dangerous post, has passed into English political history.

In 1891 Balfour became leader of the Unionist Party in the House of Commons. In 1895 he became First Lord of the Treasury, and again head of the Government in the Commons, and in 1902 he succeeded Lord Salisbury as Prime Minister. A difficult period, the years 1902-5 were perhaps the least successful part of Balfour's career. His party was divided on tariff reform, the result being the election of January, 1906. Just before this Balfour had resigned his post as Prime Minister, but he continued to act as the head of his party until 1911. Then 63 years of age, he resigned and his political career was regarded as closed.

The formation of a Coalition in 1915, however, proved that this idea was wrong. Balfour became First Lord of the Admiralty at a critical time, May, 1915, and Foreign Secretary in Dec., 1916. It was at this time that he paid his memorable visit to America, helping thus to bring the United States into the war. In 1919 he became Lord President of the Council, and in 1922 he was made an earl. He remained Lord President under Mr. Bonar Law and Mr. Baldwin, and returned to the same position in 1925 in Mr. Baldwin's second ministry. He left office with the other members of the Cabinet in 1929 and died March 19, 1930.

Lord Balfour's best known books are *The Foundations of Belief* and *The Defence of Philosophic Doubt.* His honours are almost numberless, among them President of the British Academy, chancellor of the universities of Cambridge and Edinburgh, Knight of the Garter, F.R.S., and the Order of Merit.

Two of Balfour's younger brothers were men of note. **Gerald William Balfour,** who became the 2nd earl in 1930, was a brilliant classical scholar at Cambridge. From 1885 to 1906 he was an M.P., and from 1895 to 1906 he was in turn Chief Secretary for Ireland, President of the Board of Trade, and President of the Local Government Board. **Francis Maitland Balfour,** although only 31 when he was killed in the Alps in 1882, had made such a reputation at Cambridge by his scientific work that a professorship was created for him. Another brother, **Eustace Balfour,** who also died young, married Frances, daughter of the Duke of Argyll. **Lady Frances Balfour,** known as a champion of women's rights, wrote in 1930 a book of memories called *Ne Obliviscaris.*

BALFOUR DECLARATION. Term used for the promise of the British Government, made through Lord Balfour as Foreign Secretary in 1917, to make Palestine into a "national home" for the Jews after the Great War Thanks largely to this declaration, Britain became the mandatory power for Palestine under the League of Nations in 1919.

BALFOUR NOTE. Note addressed by Lord Balfour for the British Government in 1922 to the European Powers, undertaking that Great Britain would not demand more in reparations and allied debts than she required to liquidate her own debt to the U.S.A.

Balfour **Jabez Spencer.** British financier. Born in 1849, he founded, about 20 years later, the Liberator Building Society, in which great sums were invested. It seemed sound until 1892 when the crash came, over £8,000,000 being involved. Balfour was arrested at Buenos Aires and was found guilty of fraud, the sentence being 14 years. In 1906 he was released and he died at Newport, Mon., Feb. 23, 1916. He was a Liberal M.P. for Tamworth, 1880-85, and Burnley, 1889-93, the first Mayor of Croydon, and gave away considerable sums of money.

Balfour **Sir Arthur.** English manufacturer. He was born in London in 1873. Having settled in Sheffield, he founded the firm of Arthur Balfour & Co., and became a dominant figure in the steel industry. He served on various committees, and was a leader in industrial matters. In 1923 he was knighted, and in 1929 received a baronetcy. As he was chairman of a committee appointed in 1924 to inquire into the export trade its reports are often called the Balfour Reports.

Balfour of Burleigh **Lord.** Scottish title dating from 1607. In 1716 it was forfeited, as the holder was a Jacobite, but in 1869 it was restored to a descendant, Alexander Hugh Bruce. Reckoned as the sixth baron, he was Secretary for Scotland from 1895 to 1903, when he resigned as he was a free trader. He died July 6, 1921, and the title passed to his son.

Balfrush Town of Persia. Also spelled Barfurush and Balfurush, it is on the River Bhawal only 12 m. from the Caspian Sea. It has a considerable trade with Russia which goes partly by caravan and partly on the Caspian. Pop. 30,000.

Balham District in the south-west of London. It is part of the Borough of Wandsworth, a thickly populated region, on the S. Rly., and a tube line. Tooting Common is near. Balham and Tooting unite to send a member to Parliament.

Bali Island in the East Indies belonging to The Netherlands. It lies to the east of Java and is sometimes called Little Java. It covers over 4100 sq. m., and has about 1,000,000 people. The Dutch have owned it since 1849. The inhabitants are Brahmans who grow cotton, sugar, rice and coffee, and work in metal. Buleleng is the capital. On the island, which is subject to earthquakes, is a great volcano over 10,000 ft. high.

Baliol Name of a Scottish family. Of French origin, it took its name from Bailleul. In 1290, when Scotland had no king, one of the claimants was **John Baliol,** a descendant of King David I. Edward I., the overlord of Scotland, favoured him, and he was crowned. Later, however, he took the side of France against England, and in 1296 he gave up the kingdom. He died in 1315.

His eldest son, **Edward,** was crowned King of Scotland at Scone in 1332, as a rival to David II. The Scots turned him out, and he only came back by the help of the English king. In 1356 he gave up the throne and in 1367 he died, the last of his family.

Balk In billiards a line drawn across the table 29½ in. from the bottom cushion. When a ball is in balk it can only be played at indirectly. Another balk is the ridge of land left unploughed between two ploughed areas, and a third is a roughly squared beam of timber.

Balkan Peninsula District of Europe occupied to-day by the countries of Yugoslavia, Greece, Bulgaria, Rumania and Albania. It covers about 350,000 sq. m., and has about 40,000,000 people. Its boundaries are the Danube and the Save on the west, the Black Sea on the east, and the Mediterranean with its subsidiary seas elsewhere. It is sometimes called the Near East.

The Peninsula is a mountainous district, although there are plains in Rumania and Yugoslavia. The Balkan Mountains run through it, and there are other ranges. The rivers, except the Danube, are short and rarely navigable.

After 1453, when the Turks took Constantinople, they conquered the Balkans and this region they kept until the 19th century, when their hold was gradually unloosed. One by one the independent or semi-independent states emerged, the World War finished the process, and to-day the Turk has no foothold in the Balkans, for Constantinople (Istaubul) may fairly be regarded as outside it. *See* BULGARIA, RUMANIA, YUGOSLAVIA, ETC.

Balkan Wars Two wars in 1912 and 1913 waged by the several Balkan states, including Turkey. In 1912 Bulgaria, Serbia, Greece and Montenegro, formed an alliance to free Macedonia from Turkish rule. Mobilisation began, and early in Oct. Montenegro declared war on Turkey. The other members of the league formally asked for the independence of Macedonia. This was refused, and Turkey declared war on Oct. 17. Immediately Macedonia was invaded.

The chief areas for the fighting were Thrace and Macedonia. In Thrace the Bulgars, who had about 300,000 men in the field, besieged Adrianople. On Oct. 23-24 they won a great

battle at Kirk Kilisse, and a few days later another at Lule Burgas, but they failed on Nov. 17-18 to get possession of the Chatalja lines. In Macedonia the Serbians and Greeks, also about 300,000 strong, were operating. The Serbians took Novi Bazar, and won a battle at Kumanovo in Oct.; in Nov. they took Monastir, while the Greeks entered Salonika.

The Great Powers renewed their efforts to stop the war, and on Dec. 3 Bulgaria and Serbia, but not Greece, signed an armistice with Turkey: in Feb. the war began again. Defeat again was the lot of the Turks. Adrianople at last surrendered, and the first war ended. By the Treaty of London Turkey gave up all she possessed west of a line drawn from Midia on the Black Sea to Enos on the Aegean.

The Second War. The Balkan allies quickly quarrelled over the spoil. Serbia and Greece agreed to act together and in June they were attacked by Bulgaria. Having first arranged for her price, the cession of the Dobrudja, Roumania joined the alliance against Bulgaria, and seizing the opportunity, Turkey quickly recovered Adrianople. Several defeats were inflicted on the Bulgarians, who were soon forced to make peace. A treaty signed at Bukarest ended the second war.

Turkey regained Adrianople and Thrace, east of the Maritza. Her lands west of the Maritza went to the conquerors, Serbia, and Greece and Montenegro, as agreed, obtained the Dobrudja. Another result of the war was the creation by the Powers of an independent Albania.

Balkhash Great lake in Central Asia. About 120 m. from the frontier of China, it is about 330 m. long, and covers 8500 sq. m. Like the Caspian Sea its waters are salt. Another name for it is Tengis.

Ball **Albert.** English airman. The son of an alderman in Nottingham, Ball was born Aug. 21, 1896. In 1914 he joined the army, but soon became an officer in the Royal Flying Corps. In that service he performed some remarkable feats, at least 40 successful air fights being to his credit. He became a captain, won the M.C. and D.S.O., and was made a freeman of Nottingham. On May 7, 1917, he fought his last fight and probably met his death on that day. The V.C. was awarded posthumously, and a statue erected to him in the castle grounds at Nottingham.

Ball **John.** English social reformer. He was a priest, who went about the country preaching the equality of man, and the need for social reform.

His words did much to stir up the peasants in 1380, but he was in prison at Maidstone when Tyler led them to London. The rebels freed him, but when all was over he was seized and was hanged at S. Albans, July 15, 1381.

Ball **John.** English golfer. Born at Hoylake in 1863, he became noted as a golfer. In 1894, although an amateur, he won the open championship, and he was amateur champion in 1888, 1890, 1892, 1894, 1899, 1910 and 1912, a unique record. He also won the Irish open championship three times.

Ball **Sir Robert Stawell.** British astronomer. He was born in Dublin, July 1, 1840, and was educated at Trinity College there. He was chosen Astronomer Royal of Ireland in 1874. He was knighted in 1886, and in 1892 he became Professor of Astronomy at Cambridge. He died, Nov. 25, 1913. Ball is best known for his lectures and writings, which simplified astronomical facts for average men and women.

Ballad Story or song, usually in short verses.

We cannot say when the first ballad was written, but certainly before printing was invented. Many of the old ballads had probably been altered considerably as they have been passed down the generations, such, for instance, as those, among the old English ballads, that describe the deeds of Robin Hood. Perhaps the most notable of old ballads are those of Scotland and the Border region, such as the *Ballad of Chevy Chase*. Of many collections of ballads mention may be made of Bishop Percy's *Reliques*, and Sir Walter Scott's *Border Minstrelsy*. Sometimes humorous verses, such as the *Bab Ballads* and the *Bon Gaultier Ballads*, are called by this name, but these are not ballads proper.

Ballade Form of poem first used in France. It consists of four stanzas, the first three of 7 or 8 lines each, having a common refrain. The rhymes, when 8 lines are used, are a-b, a-b, b-c, b-c. The fourth stanza consists of four lines, and is in the nature of a summary. Villon and Verlaine wrote ballades, and English readers will find examples in the poetry of Swinburne and Andrew Lang.

Ballantrae Village on the west of Ayrshire, Scotland. It is famous because of its association with R.L. Stevenson's romance, *The Master of Ballantrae*. It is 12 m. from Girvan and its people are chiefly fishermen and their families. At one time it was noted for its smugglers. Pop. 1100.

Ballantyne **Robert Michael.** Scottish author. Born in Edinburgh, April 24, 1825, in 1841 he went to Canada as a clerk in the Hudson Bay Company's service. In 1848, just after his return to Scotland, he published his first book, *Hudson's Bay*. After this came no less than 80, mostly straightforward stories of adventure. Among them are the popular *Coral Island* and *The Lighthouse*. He died in Rome, Feb. 8, 1894.

Ballarat City of Victoria, Australia. It is 74 m. from Melbourne and is the second largest city in the state. East Ballarat, which adjoins it, is a separate town. The city is chiefly known as a centre of the gold mining industry. Here, in 1851, a rich gold field was discovered. Pop. (1931) 41,750.

Ballast Material—iron, stone, gravel or anything heavy that is put in a ship to steady her. A merchant ship is said to be in ballast when she has a cargo. Some ships take ballast in the form of water, kept in tanks and let in or out as required. For the same purpose ballast is carried by balloons.

Ballater Village of Aberdeenshire, 43 m. from Aberdeen, on the L.M.S. Rly. Balmoral is reached from here.

Balleny Group of five islands in the Antarctic, called after John Balleny, a whale fisher, who discovered them in 1839. On one of them is a volcano, 12,000 ft. high.

Ballet Combined performance of professional dancers. It is a combination of dance and music by a number of performers acting together, and is usually given as a public spectacle. In this form it dates from the 15th century. In Italy and in France very elaborate ballets were performed, and in their composition the greatest artists and musicians were employed. Corneille and Molière, Mozart and Beethoven may be mentioned in this

connection. Earlier, Leonardo da Vinci had worked on a ballet.

The ballet was introduced into England in the 18th century and was very popular during the early part of the 19th. It then fell somewhat out of favour, but in 1908 Serge Diaghileff introduced the Russian ballet into England, where it made a great impression. It was greatly helped by the dancing of Pavlova, Genèe and Isadora Duncan. Other names associated with the modern ballet are those of Bakst, Max Reinhardt and Gordon Craig.

Ball-flower Ornament found in Gothic architecture. It consists of a ball almost enclosed by the sculptured petals of a flower and is effectively used in mouldings of the Decorated Period of the 13th century. There are fine examples in the cathedrals of York, Lichfield and Hereford.

Ballina Market town and seaport in Mayo, Irish Free State. It is on the River Moy, and has a small harbour. It is the chief town for the trade of Mayo, and has a suburb, Ardnaree, across the river in Sligo. In 1798 the French were for three weeks masters of Ballina. Pop. 4700.

Ballinasloe Market town of Co. Galway, Irish Free State, on the River Suck, 93 m. from Dublin, on the G.S. Rly. Its fair, held in October, where horses, sheep and cattle are sold, is one of the largest in Ireland. There are also some industries. A race meeting is held here in July. It is the terminus of the Grand Canal which leads to the Shannon. Pop. 5100.

Ballinrobe Market town of Co. Mayo, Irish Free State. It is on the little River Robe, 15 m. from Claumorris, on the G.S. Rly. A race meeting is held here in Sept. Pop. 1600.

Balliol College College of the University of Oxford. It was founded in 1263 by John de Baliol, father of the King of Scotland. Some of its buildings date from the 15th century. Its modern reputation for scholarship began in 1870 when Benjamin Jowett became master. Under him were trained Asquith, Grey, Lansdowne, Milner and Curzon, and other distinguished people. Earlier members include Cardinal Manning, Archbishop Temple and Matthew Arnold, and earlier still was Adam Smith. The buildings are in the angle formed by Broad Street and S. Giles.

Ballistics Science of gunnery. It is studied by artillery officers whose business it is to know how projectiles of various weights and shapes will travel when fired. It deals with the force of gravity, the resistance of the air and other matters that affect the flight of a bullet or a shell.

Balloch Village of Dumbartonshire. It stands at the south end of Loch Lomond and is a calling place for steamers on the lake. Ballochmyle in Ayrshire is immortal because of Burns's poems *The Lass of Ballochmyle* and *Farewell to Ballochmyle*.

Balloon A device consisting of a bag filled with a gas lighter than air. With balloons the science of aeronautics may be said to have begun. The idea that men could invent a machine that could travel in the air is by no means new, but it was 1783 before the brothers Mongolfier produced a fairly satisfactory balloon. The first balloons were filled with hydrogen, a very expensive form of inflation, but after 1825 coal gas was used.

Balloons slowly became more serviceable. They were used for exploring the upper air, and in the American Civil War were first used as an aid to military operations. A great increase to their utility came with the invention and perfecting of the dirigible balloon. Although to some extent superseded by the aeroplane and the airship, the balloon still has its uses. Meteorologists find small balloons, called balloon sondes, useful for examining the atmosphere, as, carrying automatic recording instruments, these can rise to heights where man cannot possibly live.

The military uses of the balloon were fully proved during the World War, when captive balloons were much used for observation purposes. Some of these, the sausage balloons, a German invention, were of stronger material and could remain in the air during a gale.

The ordinary balloon is made either of varnished cloth or goldbeater's skin. Over this is a network of fine cord which holds the car in which the passengers sit. Apparatus for releasing the gas, if necessary, and ballast to be thrown overboard, are also provided.

A balloon race for the Belgian Gordon-Bennett Cup is held periodically. In 1927 an American balloon, the *Detroit*, was successful. Germany holds the ballooning record of 1895 m. The British record is 1117 m.

In 1931 an Austrian professor, named Auguste Piccard, ascended nearly 10 m. in a balloon. With a companion he was in an hermetically sealed cylinder, and they were in the air for 17 hours. The ascent was made from Augsburg. In 1933 a Soviet balloon rose about 12 m. into the stratosphere.

Ballot Method of secret voting. At one time little balls were used for this purpose, as they are to-day in certain clubs, and this accounts for the name. To-day voting papers are employed. On one of these the voter makes a mark (x) against the name of the candidate or candidates he prefers and then places it in a sealed box. Vote by ballot was first used in England in 1870 at an election for the London School Board. In 1872 an Act of Parliament ordered it to be used at all Parliamentary and other public elections. It is used now at elections in all the countries of the civilised world.

Ballybunnion Village on the coast of Kerry, Irish Free State. It is 9 m. from Listowel, a monorail running between the two. It has a wireless station.

Ballycastle Seaport in Co. Antrim N. Ireland. On Ballycastle Bay, it is 68 m. from Belfast. Opposite is Rathlin Island. There is some fishing and a little shipping, also a wireless station. Pop. 1500.

Ballyclare Market town of Co. Antrim, N. Ireland. It is 9 m. south of Belfast. The bleaching of linen is the chief industry. Pop. 3300.

Ballymena Urban district of Co. Antrim, N. Ireland. It is on the River Braid, 33 m. from Belfast, on the L.M.S. (Northern Counties of Ireland) Rly., and turns out a great quantity of linen. Pop. 11,300.

Ballymoney Market town of Co. Antrim, N. Ireland. It is 8 m. from Coleraine. Linen is manufactured, and the market is a fairly important one. Pop. 3100.

Ballymote Market town of Co. Sligo, Irish Free State. It is 14 m.

from Sligo, and is on the G.S. Rly. There are ruins of a castle there. Pop. 900.

The Book of Ballymote, now in the Royal Irish Academy, contains some valuable information about the early history of Ireland. It is written in Gaelic, on vellum. A facsimile of it was published in 1887.

Ballynahinch Market town of Co. Down, N. Ireland. It is 21 m. to the south of Belfast and on the Belfast and Co. Down Rly. People visit it to drink the waters. Pop 1600.

Ballyshannon Seaport and market town of Co. Donegal, Irish Free State. It is built on both sides of the River Erne, 3 m. from Lough Erne, and 15 m. from Donegal, on the G.N. Rly. Small vessels can enter the harbour, and the place is a centre for salmon fishing. To the old Irish Parliament Ballyshannon sent two members. Pop. 2300.

Balm Anything with a soothing or healing quality. The word is a shortened form of balsam. Balm of Gilead, or oleobalsam, is obtained from trees that grow in Arabia and Abyssinia, where it is valued as a medicine and as a scent. In N. America there is a poplar called Balm of Gilead. The buds of this provide a medicine. *See* BALSAM.

Balmain Town of New South Wales, and really a suburb of Sydney. It stands on the western side of Darling Harbour, and is an industrial area, with factories for the making of soap and other articles, and also shipbuilding yards. There is a coal shaft, said to be the deepest in the world.

Balmerino **Lord.** Scottish title. It is taken from a village in Fifeshire, 4 m. from Dundee. In 1604 Robert Elphinstone was made Lord Balmerino, and his descendant, Arthur, the sixth lord. He was taken prisoner at Culloden and was beheaded on Tower Hill, London, Aug. 11, 1746, the last person to die in this way in England.

Balmoral Royal residence in Aberdeenshire. It is 8 m. from Ballater, which is its railway station. The Dee flows by it, and the scenery around is magnificent. The estate was bought by Prince Albert in 1848, and soon afterwards the castle was built. Queen Victoria spent a good deal of time here. The estate now covers about 25,000 acres, much of which is a deer forest. It then became the Scottish residence of King Edward VII., and later of King George V.

A Scottish cap is called the Balmoral.

Balquhidder Beauty spot of Scotland. The Braes of Balquhidder, famous for connection with Rob Roy, are in Perthshire, near Loch Voil. The village is on the L.M.S. Rly., and in its churchyard Rob Roy was buried in 1734.

Balsa Tree growing in S. America. The wood is very light and therefore very useful for many purposes, *e.g.*, the construction of aircraft. It is used by the Indians for rafts, and on this account the raft is called a balsa. The logs are connected together and sometimes covered with hide, and are then propelled by oars or sails.

Balsam Herb and resin. Balsams are of two kinds, although the one is related to the other. One class are herbs and the other resins. They possess fragrant or healing properties, perhaps both.

As herbs the balsams are a large genus. Most of them grow in tropical countries, but some are found in Great Britain and other parts of Europe and N. America. A large group called *impatiens* have a curious characteristic. When the seeds are ripe the seed vessel rolls up suddenly and bursts scattering the seeds with much force. The common balsam and the giant balsam grow in gardens. The latter has a stem 10 ft. high. The yellow balsam called touch-me-not, grows wild, as do other kinds. The balsams of India have white and red flowers. Australia has its own variety of balsam trees.

The gums and resins called balsams are obtained from certain trees, usually by cutting the bark. They give out a pleasant, if pungent, odour and are much used in making drugs and medicines. Some are used to make incense and varnish. Balsam of Peru and Balsam of Tolu are obtained from trees growing in Central and S. America. Balsam of Copaiba from the same area, is one of the most useful. From its resin an oil is distilled, which has a high medicinal value.

The balsam fir is a tree that grows in the United States and Canada. Sometimes called the balm of Gilead fir, it grows at times to 60 ft. high. From it is obtained a fluid called Canadian balsam, very useful as a cement.

Balta One of the Shetland Islands. Balta Sound is the strait separating that island from Unst. The name is also that of a town in Ukraine.

Baltic **The.** Company of merchants in London. Named after the Baltic Sea, its full title is the Baltic Mercantile and Shipping Exchange. It has about 2500 members —shipping merchants, shipowners and shipbrokers. The offices are in St. Mary Axe, E.6. The older Baltic was a company of merchants, founded in the 16th century, who traded with ports in the Baltic. The present company, although it keeps the name, by no means confines itself to the Baltic trade.

Baltic Port Small seaport in Estonia. It is 33 m. from Reval or Tallinn. It is the only harbour in the gulf of Finland that is open all the year. The Estonian Government has made it a free port, and a railway runs from here to Reval.

Baltic Sea Great sea of N. Europe. It is almost a lake, as only narrow channels between Denmark and Sweden connect it with the North Sea. The Kiel Canal is a shorter and safer route between the two seas.

The Baltic covers 170 000 sq. m., and in it are the Gulfs of Bothnia, Finland and Riga. The countries bordering it are Sweden, Denmark, Germany and Russia, as well as the newer ones, Finland, Latvia, Lithuania, and Estonia, which are called the Baltic States. In it are many islands, Gothland and Dago among them, and several belonging to Denmark. Many rivers flow into it, the longest being the Vistula and the Oder. The chief ports are Copenhagen, Stockholm, Helsingfors, Leningrad, Stettin, Lubeck, Riga, Libau, and Reval. Navigation is hindered during some months by ice, but ice breakers do something to lessen this handicap to trade.

In the 16th and 17th centuries the Baltic Sea was, from the commercial point of view, far more important than it is to-day. Its ports were among the richest and most prosperous in the world and in union they formed the powerful Hanseatic League.

During the World War there was some fighting in the Baltic between the Russian and the German Navies. The difficulty of entering the sea isolated the Russian Navy from its

allies, but British submarines got through, and in 1915 and 1916 harassed the German ships therein.

Baltimore City of the United States, the capital of the State of Maryland and an important seaport. It stands on the Patapsco River, 11 m. from Chesapeake Bay and 185 from New York, and owes its importance to its position near the sea on the one side and the great producing areas of coal, cotton, wheat and other necessaries on the other.

Baltimore is a modern city with straight streets on the American plan. Its area was enlarged in 1918. The Johns Hopkins University, the Johns Hopkins Hospital and the Enoch Pratt Library are notable features.

Shipping is the city's chief industry. There are two harbours which are well provided with docks and all modern facilities for storing and handling cargoes. Steamers go regularly to ports on both sides of the Atlantic. Baltimore is a great railway centre, and lines radiate in all directions. Many manufactures are carried on and much food is preserved here. The city was founded in 1729 and much of it was burned down in 1904. Pop. (1930) 804,874.

Baltimore Village of Co. Cork, Irish Free State. It stands on Baltimore Bay, 8 m. from Skibbereen, on the G.S. Rly. The people are chiefly fisherfolk, and here, in 1887, the Baroness Burdett-Coutts set up a school for teaching the technique of fishing.

Baltimore Lord. Irish title. It is chiefly famous because of the connection of its early holders with the American colonies. George Calvert, a Yorkshire man, became an M.P. and was from 1619 to 1625 Secretary of State. After he resigned he crossed the Atlantic in order to found a colony in Newfoundland, and just before his death, April 15, 1632, he had secured a large slice of land further south. This became the property of his son, Caecilius (1606-75), who founded there the State of Maryland. Its capital was called Baltimore.

Baluchistan Province of India. It is of importance because of its position on the frontier, Persia and Afghanistan being its neighbours. It has a coastline of 600 m. on the Arabian Sea, and consists of three parts. The smallest part is British Baluchistan, a British possession since 1879. Next is the British Agency Territories, under the direct rule of the Indian Government.

The largest part of Baluchistan consists of the native states of Kaelat and Las Bela. These have their own rulers, but a political agent watches their affairs in the interests of India as a whole. Altogether the country covers 134,638 sq. m. and has (1931), 868,617 inhabitants.

Baluchistan is mountainous, and has a few short rivers. The people are chiefly Baluchis, Pathans and Persians, who live a somewhat primitive life. They grow cotton, cereals and dates, rear camels and horses and trade with India and Persia. From time to time its tribes cause anxiety to the Indian Government, as, for instance, in 1918 when an expedition was sent against them.

Balzac Honoré de. French novelist. He was born May 20, 1799, at Tours, obtained his education at Vendôme and in Paris, and was for a time in a lawyer's office. However, he refused to become a lawyer, and began to write, living in the meanwhile in poverty in Paris. His first books brought him very little, and in a short time he was home again.

The change in Balzac's fortunes began in 1829 or thereabouts, and *The Chouans*, 1829, and *The Wild Ass's Skin*, 1831, mark the change. For twenty years he wrote almost incessantly. He lived in various places, associated with all kinds of people and recorded his observations in his books. He died on Aug. 18, 1850.

Balzac must obviously be compared with Dickens. Both wrote a great deal; both drew largely from their own wide experiences of life; both showed an intimate knowledge of the human heart. Balzac is the coarser, Dickens has the more genuine humour. The greatest of Balzac's productions is *The Human Comedy*. This and his other books have been translated into English.

Bamberg City of Bavaria. It is 36 m. from Nuremberg, near where the River Regnitz falls into the Maine. There is an upper and a lower town. The interest of the city lies in its cathedral, rebuilt in the 13th century, and other old buildings. Two palaces are reminders of the time when the Bishops of Bamberg were great princes ruling a wide territory; at one time this covered 2000 sq. m. The city carries on various manufactures and has some shipping along the river. Pop 50,152.

Bambino Representation of the Infant Jesus Christ in swaddling clothes. They are much seen in Italy, where some are the work of the great artists. The most famous, in the church of Ara Coeli in Rome, is believed to work miracles. It is shown on the Epiphany, Jan. 6, which is the Feast of the Bambino. The word is Italian, meaning "baby."

Bamboo Malayan name for a grass. It grows in great profusion in India, China and other parts of Asia. It is also found in America and Africa, especially the West Indies, and some species will grow in English gardens. The stem of the bamboo, which sometimes grows to a height of 100 ft. or more, combines lightness and strength, and is therefore very useful for building, furniture, etc. The young shoots and seeds are eaten, and paper is made from the mature plant.

Bamburgh Village on the coast of Northumberland, famous for its ruined castle. Bamburgh is 4 m. from Belford. It was, in the 6th century, the residence of the Kings of Northumbria, and on a rock looking out to sea King Ida built the first castle. Being near the Scottish border was often attacked, and after the Wars of the Roses became a ruin. In 1894 it was restored. S. Aidan's Church is a 7th century building and in the churchyard Grace Darling is buried.

Bampton Village of Devonshire. It is 7 m. from Tiverton, on the G.W. Rly. It is famous for the fair held every October, when ponies, sheep and cattle are sold. Pop. 1100. Another Bampton is a village in Westmorland.

The Bampton Lectures are eight sermons or lectures delivered in Oxford every year by a leading theologian of the Church of England. They are afterwards published. The fee to the preacher is £120 a year, left by the Rev. J. Bampton, Canon of Salisbury, who died in 1751.

Banana Tropical tree and fruit, also called the plantain. The fruit of the banana tree is a popular article of food to-day, and its cultivation has become a great

industry in the West Indies, East Indies, Uganda and other tropical countries. The tree, of which there are several varieties, will grow to a height of 20 ft. It has a high food value and contains less water than most fruits.

Great Britain's supply comes chiefly from the West Indies, Columbia and the Canary Islands. The banana, however, has other uses. The fruit is dried and ground into a meal, or used in making an intoxicating liquor. Bananas are exported in bunches when green, being allowed to ripen later, and special vessels have been built to carry them. In 1932 16,823,000 bunches of bananas were imported into Great Britain. In 1927 Jamaica decided to tax the bananas exported.

Banat Hungarian district, 11,000 sq. m. in area, bounded by the Danube and the Theiss. Its capital is Temesvar and its full name the Banat of Temesvar. It became part of Hungary in 1718. After the war the Peace Conference decided to divide it between Rumania and Yugoslavia.

Banbridge Market town of Co. Down, N. Ireland. So called because it stands on the River Bann, it is 24 m. from Belfast, on the Great Northern (Ireland) Railway, and is famous for the linen produced here. Pop. 5000.

Banbury Borough and market town of Oxfordshire. It is 77 m. from London and 21 from Oxford, on the G.W. and L.M.S. Rlys. Its cross, familiar through the nursery rhyme, was pulled down in 1610: the present cross is modern. There are some manufactures, but Banbury is chiefly a market for the sale of corn, cattle, etc. A horse show is held in August. Pop. (1931) 13,953.

Banbury Lord. English politician. Frederick George Banbury was born in 1850 and educated at Winchester. He became a stockbroker and was long chairman of the G.N. Rly. In 1892 he entered the House of Commons as a Unionist, first as M.P. for Peckham, and then for the City of London. In 1902 he was made a baronet. In the House where, except for a few months, he remained until made a baron in 1924, he was a most persistent questioner. Nothing escaped his notice and the slightest inaccuracy in procedure was quickly pointed out by him. His only son was killed during the Great War.

Banca Island of the Dutch East Indies. It is 150 miles long and covers about 4550 sq. miles. Muntok is the capital. A great deal of tin and some other metals are mined; bananas, rice and other tropical products are grown, and much of the island is covered with forest. The Strait of Banca separates Banca from Sumatra. Of the population of 120,000, about 40,000 are Chinese.

Banchory Health resort and market town of Kincardineshire. It is on the Dee, 17 miles from Aberdeen, on the L.N.E. Rly., and is a popular holiday resort. Pop. 1800.

Bancroft George. American historian. Born at Worcester, Mass., October 3, 1800, he was educated at Harvard and travelled in Europe, where he made friends with Goethe and Hegel. In his own country he was in turn a schoolmaster, a collector of customs at Boston and a politician as Secretary of the Navy. This led to a post abroad and he was minister in London from 1846 to 1849, and in Berlin from 1867 to 1874. He died in Washington Jan. 17, 1891. Bancroft was the author of an authoritative *History of the United States.*

Bancroft Sir Squire. English actor. Born in London May 14, 1841, he first appeared on the stage in Birmingham. In 1865 he appeared in London, where he made a reputation by playing in T. W. Robertson's comedies, *Society, Caste,* and others. More important, as an aid to success, was his marriage in 1867 to the actress Marie Wilton. Spoken of as the Bancrofts, the pair acted together and from 1879 to 1885, when they retired, they managed the Haymarket Theatre, London. In 1897 Bancroft was knighted and on April 19, 1925, he died. Lady Bancroft died May 22, 1921. The Bancrofts wrote *On and Off the Stage* and *Recollections of Sixty Years.*

Banda Name give to twelve small islands in the Dutch East Indies. They are 60 miles south of Ceram, and cover 18 square miles. At one time a British possession, they have been Dutch since 1814. The chief town is also named Banda and the sea in which they are is the Banda Sea. The islands are subject to volcanoes and earthquakes.

Bandana Handkerchief made in India of fine silk. It is usually very brightly coloured, with designs or spots in white on a coloured ground. The word is also used for a material of silk or cotton that is made in much the same designs and colours.

Bander Abbas Seaport of Persia, also called **Bender** or **Bunder Abbas.** It is near the entrance to the Persian Gulf. Through it passes a good deal of Persia's trade, the exports including dates and carpets. As the harbour is an open roadstead lighters are used to carry the goods to and from the shore. During the Great War the harbour was controlled by the British. Pop. 10,000.

Banderillero Participant in a bull fight. They are the men who plunge banderillas, or small darts about 18 in. long, into the bull to enrage him.

Banderole Long, narrow flag which flies at the masthead of a fighting ship, or sometimes carried at the funeral of a great man. The word was also used for the streamer fastened to the lance of a knight and had other meanings now obsolete. Another spelling is **Bannerol.**

Bandfish Fish with a long, thin, flat body. They have tiny scales and are red in colour, but are rarely seen in Great Britain.

Bandicoot Animal found in Australia. There are several kinds. Like the kangaroos they are marsupials, *i.e.* they carry their young in pouches, and the hind legs of the two are similar. The bandicoot, however, is smaller, only about the size of a rabbit. With a pointed nose, it feeds chiefly on insects,

Band of Hope Temperance Organisation. In 1848 societies called by this name were founded, chiefly among the pupils in Sunday Schools conducted by Nonconformists. The members promise to abstain entirely from the use of intoxicants. In 1855 the Band of Hope Union was established as a central organisation. Its offices are at 59 and 60 Old Bailey, London, E.C. It issues a paper, *The Band of Hope Chronicle.* Scotland and Ireland have each a Band of Hope Union.

Bandolier Belt worn by soldiers over the left shoulder for the purpose of carrying cartridges. These are placed in loops sewn in the belt. An ordinary bandolier holds about 90 rounds.

Bandon Town and river of the Irish Free State. The town, properly called Bandonbridge, is a market town in Co. Cork, 20 miles from Cork, on the G.S. Rlys. Its industries include brewing and distilling. It was founded in 1608 by the Earl of Cork for Protestants. Pop. 3100. About 5 m. down the river is **Bandon Quay**, or Kilmacsimon Quay, where there is a certain amount of shipping.

The River Bandon is 40 m. long. It flows past Bandon into Kinsale harbour and is noted for its salmon.

Bandon Earl of. Irish title, held since 1800 by the family of Bernard. In 1755 Francis Bernard, an M.P. and a landowner in Co. Cork, was made a baron, and in 1800 an earl. He died in 1832. The family seat is Castle Bernard, near Bandon, and his eldest son is called Viscount Bernard.

Bandy Kind of hockey played on the ice. Eleven players take part on each side. The ground should be 150 yards long by 100 wide, although the game can be played on a smaller area. The sticks, or bandies, should not be more than two inches wide and four feet long and the ball, or cat, is of hard rubber, about the size of a lawn tennis ball. The goalposts are 12 feet wide.

Baneberry One of the names for a herb found wild in copses in the north of England, chiefly on limestone. It bears small white flowers and black berries which are poisonous. The herb christopher is another name.

Banff Burgh, seaport and market town; also the county town of Banffshire. It stands on the Moray Firth, facing north, and is 50 miles from Aberdeen and 72 from Inverness, being reached by the L.N.E. Rly. The industries include fishing and shipping, for which there is a harbour with good accommodation. As a pleasure resort Banff has many attractions, including two golf courses and fishing in the Deveron. Pop. (1931) 3489.

Banff Pleasure resort of Alberta, Canada. In the Rocky Mountains, it is an important station on the main line of the C.P.R. It is on the Bow River, 88 miles from Calgary, and stands in an immense national park. Around is magnificent scenery, while further attractions are hunting and fishing. Banff has some medicinal springs. Pop. 1000.

Banffshire County of Scotland. In the north-east of the country, it covers 630 square miles and has a coastline of 30 miles on the Moray Firth. Much of it is mountainous; but there is some low and fertile land near the coast. It contains Ben Macdhui, the second highest mountain in the British Isles. The chief rivers are the Deveron, Spey and Avon. Banff is the county town. Other places are Cullen and Buckie on the coast, Keith, Macduff and Dufftown. The Duchess of Fife and the Duke of Richmond are landowners. Pop. (1931) 54,835.

Bangalore Capital of the Indian state of Mysore. To the Hindus "the city of beans," it is 225 miles from Madras, from which it can be reached by railway. Standing high, about 3000 feet, it is healthy and on that account has a considerable European colony. The most interesting building is the fort, in which are the remains of Tippoo Sahib's palace. Bangalore was founded in 1537 and was taken by the British in 1791. To-day it is an important military station. Pop. (1931) 306,470.

Bangkok Capital of Siam and its chief seaport. It stands on the River Menam about 20 miles from its mouth. The old city is surrounded by walls. Outside are other cities: the native quarter, the populous Chinese quarter and the commercial quarter. Bangkok is the centre of an excellent railway system and from it main lines go to all parts of the country. In the city itself are many canals which are used as highways and on which many people dwell in boats.

Bangkok is the banking and commercial centre of Siam, but its chief industry is shipping. Owing to a bar in the river, large ships load and unload on the island of Kohsi Chang. Bangkok has a wireless station. Pop. 452,000, about a third being Chinese.

Bangor City of Caernarvonshire. It stands on the Menai Strait, 8 miles from Caernarvon and 235 from London, and is reached by the L.M.S. Rly. Here the tubular and suspension bridges cross the strait, as Bangor is on the direct road to Holyhead. The industries include the export of slate from the Bethesda quarries. Here is the University College of North Wales and it has had a bishop since the time of S. Deiniol in the 6th century. The present cathedral was built in the 16th. Pop. (1931) 10,959.

Another Bangor is a village in Flintshire and another a town in Maine, U.S.A.

The Bangorian Controversy was a dispute in the Church of England about the nature and extent of the church's authority over individuals. It was started in 1717 by Benjamin Hoadly, Bishop of Bangor.

Bangor Seaport and market town of Co. Down, Northern Ireland. It stands on Belfast Lough, 12 miles from Belfast and is served by the Belfast and County Down Railway. The industries include fishing, but Bangor is better known as a watering place. Here was a famous abbey destroyed in the 9th century by the Northmen. Pop. (1926) 13,316.

Bangweolo Lake. Shallow lake, 3700 ft. above sea level, in N. Rhodesia, formed by the head streams of the Congo. It was first discovered in 1868 by Livingstone.

Banian Nautical term. To seamen banian days are days on which the food is poor, or on which no meat is served. At one time there were two banian days each week in the British Navy and later one, no meat being provided. The phrase comes from the bania, a caste of Indians, chiefly traders and moneylenders, who do not eat meat.

Banishment Forcible removal from one's own country. It differs from outlawry which, strictly speaking, is to put a man outside the protection of the law, and from transportation which is sending a criminal to a definite place.

Banjermassin Capital and seaport of Dutch Borneo. It is on the south coast, built on both sides of the River Martapura. There is a certain amount of shipping and all round are rice fields. As it lies very low the town is often flooded and consequently many of the houses are built on piles. Here in 1700 the East India Company set

up a trading station. It became a Dutch possession in 1817. Pop. 50,000.

Banjo Instrument used to accompany singing. They are made with five, six or seven strings, and are played by plucking the strings with the fingers, or striking them with the backs of the nails. The banjo may also be played with a plectrum.

Bank Place where money is kept and where dealings in money are conducted. In Great Britain banks are regulated by special laws which make it practically impossible for a private person to carry on a bank, as was done before 1834.

Banks are of several kinds. (1) **International banks,** such as the Bank for International Settlements opened at Basel in 1930. (2) **State banks,** such as the Commonwealth Bank in Australia and the Federal Reserve Banks in the U.S.A. (3) **Joint stock banks,** such as Lloyd's, the Midland, the Chartered Bank of India and others that have branches throughout the countries which they serve. (4) **Banks such as Baring's and Rothschild's** that are occupied chiefly with foreign business. (5) **Savings Banks,** including the Post Office Savings Bank, which receive and pay out money, but do not carry on other banking business. In this class are municipal savings banks such as the one at Birmingham.

The settling of accounts between the different banks is carried out by means of clearing houses. The chief of these is in Post Office Court, Lombard Street, London, E.C. Valuables such as jewellery, plate, etc., can also be deposited at a bank for safety, the banker acting as a bailee.

Banker Card game. It can be played by five or six persons. The full pack of 52 cards is used. The dealer deals out three cards to each player and then turns up for himself until an eight or a lower card appears. A pool having been provided by contributions from all, betting begins. Each player, other than the dealer, without looking at his cards, may bet, up to the amount of the pool, that one of his cards in the same suit is higher than the one which the dealer has turned up. At the end of the round the contents of the pool go to the dealer. Another player then deals and the game continues.

Banket Kind of rock. Gold is obtained from various kinds of rock and other material, for instance the sand in river beds. Its most prolific source, however, is the rock in what is called banket formation, as that of the Rand.

Bankhead **Tallulah.** American actress. She was born in Duntsville, Alabama, U.S.A. Jan. 31, 1902 and began her stage career as Gladys Sinclair in *Squab Farm* at the Bijou Theatre, New York, in 1918. Her first London appearance was as Maxine in *The Dancers* in 1923. In 1930 she played the heroine's part in *The Lady with the Camellias.*

Bank Holiday Day on which by law banks and public offices must be closed. Other business houses also close on these days which have become general holidays. In England and Wales the bank holidays are Easter Monday, Whit Monday, the first Monday in August, and Dec. 26 (Boxing Day), if it is a weekday, and if not, Dec. 27. Good Friday and Christmas Day are not strictly speaking bank holidays, although they are general holidays. The reason is that they were holidays before the passing of the Act of 1871 that established bank holidays. Ireland has an additional bank holiday—S. Patrick's Day (March 17). In Scotland the bank holidays are New Year's Day, the first Monday in May and the first Monday in August, also Christmas Day and Good Friday. Other days, for instance, a coronation day, can be made bank holidays by royal proclamation.

Banking Business of receiving and lending money. The banking system is based on the fact that in consideration of safety and accessibility people are willing to lend money at nominal or even no interest and to allow it to be lent by the banker to others at a substantial rate of interest. The banker, in short, makes his profit by borrowing cheap and lending dear. To this primary business modern banking has added the issue of notes, which were in origin and still are in theory promissory notes, and the facilitation of commercial transactions by the buying and selling of bills of exchange.

Money is placed with a banker either on current account or on deposit. In the former case the money may be withdrawn at any time and as a rule no interest is allowed. In the latter case notice of withdrawal is required. Of the money received by the banker only sufficient is kept in cash to meet the daily requirements of customers. A certain amount is invested in gilt-edged securities, but the bulk of it is used for loans on approved security.

The first bank in the modern sense was the Bank of Amsterdam founded in 1609. Until the establishment of the Bank of England in 1694, such banking as there was in England was carried on by goldsmiths who received deposits of money and valuables and issued receipts which by usage were treated as negotiable instruments. The issue of notes by the Bank of England, which was a new feature of banking, may have been based on this practice.

In the 18th century all over the country private banks sprang up and these did the banking business of the land in a haphazard fashion until the 19th century. The important legislation of 1834 made it practically impossible for futher private banks to be established and a little later the limited liability company was introduced. Gradually most of the existing banks became companies of this kind, and as they had a considerable amount of uncalled capital they were able to offer good security to depositors who had lost heavily through the failures of private banks.

Towards the end of the 19th century a process of amalgamation set in with the result that in a few years the ordinary banks, save one or two, were gathered into five great organisations, Midland, Lloyd's, Barclay's, Westminster and National Provincial. Some retained their name and identity, but they are none the less part of one of the " big five," which also controlled banks in Scotland and Ireland.

The great development of banking in the 19th century was facilitated by the use of the cheque, which is really a bill of exchange. These are now used on an enormous scale for transferring money from one person to another, and dealing with cheques forms a very large part of the banker's daily business.

Entrance to a bank is usually obtained after examination by a director. To protect the interests of the employees there is a Bank Officers' Guild. For the profession as a whole there is the Institute of Bankers at 5 Bishopsgate, London, E.C.4. This holds examinations, the passing of which is necessary to any serious

advancement in the profession. Scotland and Ireland have similar institutes.

BANKING AS A CAREER. An application for an appointment to a clerkship in a bank should, as a rule, be addressed to the Staff Department at the Head Office of the Bank, though in some cases appointments are made locally. It should be supported by the introduction of a substantial customer of the bank or of some responsible person connected with it. All candidates will be required to produce evidence of a good general education, and, if their application is favourably considered, must pass an entrance examination, which is usually, though not invariably, excused to holders of a Matriculation or School Certificate.

The usual ages for admission to Clerkship are from 17 to 19 and the commencing salary at the earlier age is from £70 to £90 a year in London and about £20 a year less in the country. For the first fifteen years there is a scale of salaries which in normal cases will bring the salary at the end of that period to a sum varying from £350 to £400 a year.

As a rule all the administrative positions are filled by appointments from the clerical staff, and there is therefore the fullest opportunity to rise to positions which in some cases command very high salaries. Salaries are paid free of Income Tax, and in all the large banks pensions are available on retirement at the age of 60-65 and Provident Funds or other arrangements exist by means of which provision is made for allowances in case of a breakdown in health and for grants to widows and orphans in the case of death.

After appointment clerks are expected to pass the Associate Examination of the Institute of Bankers. This examination is in two parts, preceded by a Qualifying Examination, exemption from which is granted to holders of the recognised School Certificates (*i.e.* the "First Examinations" according to the classification of the Board of Education).

The subjects of the Associate Examination are the Practice and Law of Banking, Economics, English Composition, Foreign Exchange, Commercial Geography, Accountancy, and the chief commercial languages.

It is usual to make a monetary grant of £15 on completion of Part I. and an additional £30 on obtaining the Associate Certificate. A good place in the pass list is an important element in future promotion.

Some of the larger banks offer appointments to the holders of a University Degree, the age of admission and the commencing salary being higher than in the case of ordinary appointments, and there is also a system of foreign scholarships for selected men willing to go abroad.

Banking Term used by airmen. It means making an aeroplane turn to one side. To bank his machine the airman raises one wing above the other so that he can turn it rapidly.

Bank Note Paper unit of currency. In Great Britain these notes are only issued by the Banks of England and Scotland, but in the 19th century any bank could issue them, although after 1834, only under strict conditions. In Scotland notes for £1 are issued. In England the lowest was for £5, but since 1928 Bank of England currency notes for 10*s.* and £1 have been issued. They are legal tender.

English bank notes are printed on special paper made at Laverstoke and great precautions are taken to prevent forgeries. The Chinese used notes in 2800 B.C. In 1658 the Bank of Sweden issued them and soon they were found in most European countries. England and Scotland used them before 1700.

Bank of England Bank that acts as banker to the British Government. About 1691 a Scotsman, William Paterson, who was in favour with William III., propounded a scheme for the establishment of a central bank, and in 1694 parliamentary sanction was obtained for the issue of a charter creating a corporation styled "The Governor and Company of the Bank of England," with a capital of £1,200,000. The Bank was empowered to carry on all such transactions as were carried on by the continental banks and in addition was given the privilege of issuing notes.

By an act of 1826 the Bank was given a monopoly of issuing notes for London and 65 miles round, and by the Bank Act of 1844 the Bank was divided into two distinct sections—the issue department and the banking department. As the private banks disappeared it secured without further legislation the monopoly of issuing notes for the whole of the country, but this privilege was partially suspended during the World War when the Treasury superseded the use of gold as currency by issuing currency notes for £1 and 10*s.* In 1929 the issue of currency notes was transferred from the Treasury to the Bank.

The Bank of England carries out many state functions, such as fixing the bank rate, and acts as banker to the British Government and to the joint stock banks. Its headquarters are in Threadneedle Street, London, E.C., and it is under the management of a governor, a deputy governor and directors appointed by the stockholders, its principal officer being known as the comptroller. The work of rebuilding the Bank on a much enlarged plan was completed in 1931.

Bank Rate Rate of discount allowed from time to time by the central bank of a country, *e.g.*, the Bank of England, on first-class bills of exchange. The effect of the bank rate is to regulate the rate of interest charged by bankers, which is usually one per cent. above bank rate. The bank rate is determined by the state of the country's gold reserves. When these are depleted, the bank rate is raised, and the resulting dearness of money attracts a flow of gold into the country.

Bank Return Statement of liabilities and assets which by law the Bank of England is required to publish weekly. It is divided into parts, the first showing the state of the issue department, *i.e.*, the amount of notes outstanding and the gold and securities held against them, and the second the state of the banking department.

Bankruptcy Condition of a person who has been declared by a court of law as unable to pay his or her debts. The English law of bankruptcy is contained in Acts passed in 1914 and 1926, both founded on an Act of 1883. Their object is to protect the debtor's property and to distribute his assets fairly among his creditors. A man can become bankrupt by filing his own petition, or can be made bankrupt by his creditors, if he owes them more than £50. After his property has been distributed among his creditors, he is released from all his liabilities towards them, but his discharge can be suspended if there is reason for it. In that case he is an undischarged bankrupt and cannot trade in his own name. He is, however, liable

to punishment if he has been guilty of acts of fraud or has committed certain offences, such as not keeping proper account books.

There is a court of bankruptcy in Carey Street, London, W.C. Elsewhere bankruptcy cases are heard in the county court. There the bankrupts are examined before judges or registrars, who watch over the management of their affairs. In Scotland bankruptcy is called sequestration.

Banks Sir Joseph. English naturalist. Born Feb. 13, 1743, he was a son of William Banks, M.P. for Peterborough. He studied natural science at Oxford, particularly botany. Having inherited a large fortune from his father, he made a scientific expedition to Newfoundland and Labrador in 1766. He went with Captain Cook to the Pacific in the *Endeavour* which was fitted out at his expense. In 1772 he made an expedition to Iceland. He was elected president of the Royal Society in 1778, created a baronet in 1781, and sworn of the Privy Council in 1797. He died, June 19, 1820, and bequeathed his collections to the British Museum.

Banks gave his name to an island in the Arctic Ocean and to Banks Strait which separates it from Melville Sound and connects Melville Sound with the Arctic. A group of islands in the S. Pacific is called Banks Islands, and there is a Banks Island off British Columbia.

Bankside District of London, famous because here stood the Globe Theatre of Shakespeare's day. It is on the south side of the Thames, in the city of Southwark. In the time of Elizabeth there were several theatres here; also rings for bull and bear baiting.

Bann Two rivers of Northern Ireland, the Upper and the Lower Bann. The former rises in the Mourne Mts. in Co. Down and flows into Lough Neagh; the latter flows out of Lough Neagh and debouches into the Atlantic at the mouth of Lough Foyle. The Lower Bann is the boundary between the counties of Antrim and Londonderry.

Bannatyne George. Scottish collector. Born in 1545, he was a native of Forfarshire and carried on business as a merchant in Edinburgh. Having, in 1586, fled from Edinburgh, owing to an outbreak of plague, he amused himself in the country by collecting and writing out Scottish poems of the 15th and 16th centuries. He died in 1608. The Bannatyne Manuscripts (800 folios) are now in the National Library, Edinburgh, and are valuable sources for Scots poetry. In 1823 Sir Walter Scott was instrumental in founding the Bannatyne Club for the publication of Scottish historical and literary material.

Banner Name for a flag, especially a flag carried on festive occasions. In medieval times it was the flag, bearing the coat of arms of a noble, which was carried before him and his men when they were summoned to join the royal forces.

At one time there was an order of knights banneret, these being knights higher in rank than knights bachelor, but lower than baronets. A knight banneret was a man knighted on the battlefield for gallant conduct, the last case of the kind being Sir John Smith, knighted by Charles I. at Edgehill (1642). Earlier a noble who brought his vassals to battle under his own banner was a banneret.

Bannockburn Burgh near Stirling in the county of Stirling, Scotland. Originally a coal mining village, it has developed into a small town with various industries, chiefly textile.

Its name is celebrated for the decisive battle in which Robert Bruce defeated Edward II's attempt to relieve the English garrison at Stirling, and secured the independence of Scotland. It was fought on June 24, 1314. The exact site of the battle is doubtful. Recent research tends to show that the actual engagement took place about 2 miles east of the place that is traditionally known as the field of Bannockburn. In 1929 the site was bought for a national park.

Banns Announcement in a church that a marriage will take place between two persons named. The custom dates from the time when, there being no daily newspapers, forthcoming events were announced in a public place. Banns are used in the Church of England and the churches associated with it, the Roman Catholic Church and the Church of Scotland. In the Church of England they are obligatory, unless a licence from the bishop or a certificate from a registrar has been obtained. They must be read in the church of the parish or parishes in which the pair live. This is done at morning prayer on three consecutive Sundays and those who know of any "just impediment" to the proposed marriage are asked to declare it. *See* MARRIAGE.

Banshee Fairy or spirit that announces death. In Ireland and parts of the Scottish Highlands the people believe in a banshee, a fairy who makes mournful noises near a house when a person is about to die.

Banstead Village of Surrey. It is on the edge of Banstead Downs, a fine open stretch of common, and is 14 miles from London by the S. Rly.

Bantam Most westernly province of Java, Dutch East Indies. It covers an area of 3050 sq. m. The region is volcanic and there are numerous geysers and hot springs. The principal products are rice, indigo, coffee and pulse. The capital and seaport is Serang, with a population of 21,656. The province has a population of 897,400.

Bantam Small fowl, produced by a special method of breeding. Nearly every ordinary breed of fowl has its bantam breed. The flesh of bantams is very succulent, but they are reared mainly for show purposes. The males are very pugnacious. The name is that of a district in Java from which bantams are said to have come.

Bantam is also used for anything small. In boxing **bantam weights** are fighters under 8 stone 6 lb. The **bantam battalions** in the World War were composed of men too small to pass the usual physical tests.

Banteng Wild ox found in the Malay peninsula and the islands in that region. They live in the jungle and are very fierce.

Banting Frederick Grant. Canadian scientist. Born in Canada, 1891, he was educated at Toronto. His name is associated with the insulin treatment for diabetes, which he discovered during investigations into pancreatic secretion, 1921-22. He was awarded the Nobel Prize, 1923, and an annuity to enable him to carry on his work.

Bantock **Sir Granville.** English musician. He was born in London, Aug. 7, 1868, and was educated for the Indian Civil Service, but abandoned that idea for music. He had a distinguished career at the Royal Academy of Music, being the first winner of the MacFarren scholarship for composition. He toured America and Australia as conductor of the Gaiety Orchestra and was musical director of the Tower, New Brighton. In 1900 he became director of the school of music in Birmingham and in 1908 professor of music at the university there. He conducted and adjudicated at various musical festivals. His compositions include a Hebridean symphony-*The Seal Woman*, an opera, *Omar Khayyam*, *Atalanta in Calydon*, *The Song of Songs*, *The Burdon of Babylon*, *Pilgrim's Progress*, incidental music to *Macbeth*, *Five Choral Songs and Dances* and *Prometheus Unbound*. He was knighted in 1930.

Bantry Market town of Co. Cork, Irish Free State. It is 58 m. from Cork City and has a station on the Gt. Southern Rlys. Its position at the head of Bantry Bay makes it a good centre for tourists, fishermen and others. Pop. 3120.

Bantry Bay Opening of the Atlantic on the south-west coast of Ireland. It is 25 m. long and in it are Bere and Whiddy Islands. There was an aircraft station on the latter during the Great War. At the head of the bay is Glengariff.

In Bantry Bay on Aug. 1, 1689, a battle was fought between the English and French fleets.

Bantu Negro peoples of Southern Africa. All belong to the same racial and linguistic stock. The original home of the Bantu seems to have been northern or equatorial Africa, whence they spread southward during historic times, conquering and supplanting the aboriginal inhabitants, of whom the Bushmen and the Hottentots are the remnants. The Bantu tongue, though it has many dialectal variations, is the native speech of all Africa south of the equator.

Banville **Théodore Faullain de.** French poet, novelist and dramatist. He was born in 1823 and his first work was a volume of poems entitled *Les Caryatides* (1842) which was followed in 1846 by *Les Stalactites*, and in 1857 by *Odes Funambulesques*, which established his position as a poet. A second series of these appeared ten years later and after the Franco-Prussian War, *Idylles Prussiennes*. Among his dramatic works is *Gringoire*, better known in England under the title of *The Balladmonger*. He died in Paris, March 12, 1891.

Banyan Large tree that grows in the E. Indies. It sends out branches of enormous length, from which shoots grow downwards and so form supports for the tree. They thicken until they resemble trunks and by their aid the tree is able to spread over a great extent of ground. Some of these trees can shelter thousands of persons and they are so called because the banyans, or Hindu merchants, used them as market places.

Baobab Tree of the order sterculiaceae. It is found chiefly in Africa, but also in the East Indies and South America. Its trunk is often 30 ft. in diameter. The natives use the bark for making ropes and clothing, and the leaves, when made into a powder, as a condiment. They eat the fruit, which is called sour gourd and monkey bread, and make a medicine of its juice. It has been used for the manufacture of paper.

Bapaume Town of France. About 15 miles from Arras, it figured prominently both in the Franco-Prussian and the World War. In the former it was the scene of a bloody but indecisive battle in which the French claimed the advantage. In the latter it was an important position in the battle of the Somme, and still more in the battle of Bapaume-Peronne, which followed immediately upon the Battle of Amiens (Aug. 8-21, 1918). After the World War Bapaume was adopted by Sheffield. Pop. 4000.

Baptism Sacramental rite of initiation into membership of the Christian Church. It consists of a symbolic purification by water. It is performed by total immersion, or by sprinkling or pouring water on the head. In most churches it is bestowed upon infants, but the Baptists only confer it upon adults. They practise complete immersion.

Baptistery Part of a church which is used for baptisms. Usually it is the end or part of the building where the font is placed, but in some cases a separate building has been erected. In Italy there are some magnificent baptisteries, notably the one at Florence with its famous bronze doors, and one at Pisa. In England there is a detached baptistery at Cranbrook.

Baptists Denomination of Protestants. They reject the practice of infant baptism on the ground that initiation into the fellowship of Christians should be confined to those who make a profession of Christian belief, of which infants are incapable, and hold that the only mode of baptism authorised by Scripture is immersion. Their denominational organisation is similar to that of the Congregationalists.

In Great Britain the Baptists arose in the 17th century and now form a considerable body. In the United States, where they have flourished since 1630, they form the largest evangelical denomination after the Methodists. Like most evangelical bodies they have from time to time split into various sects, the best known division being between the General (or Arminian) and the Particular (or Calvinistic) Baptists, but in the 19th century these came together again. In Great Britain the Baptists have 4238 chapels, 1925 ministers and 890,000 members. In addition there are 600 churches and about 20,000 members of the Strict Baptists, who do not admit members of other churches to the communion. Most Baptist churches belong to the Baptist Union founded in 1813. The offices are in 4 Southampton Row, London, W.C.1. The Baptists have a missionary society and training colleges for ministers.

Bar In heraldry a bar is a narrow band across a shield. There may be four of these on any part of the shield or coat of arms. The **bar sinister**, a mark of illegitimacy, is really the head sinister.

In music a bar is used to divide the music into equal parts. It is represented by straight downward lines. Another bar is an obstruction at the mouth of a river. In some rivers navigation is made difficult, if not impossible, by the presence of bars composed of silt driven together by currents.

Bar Word used for the higher branch of the legal profession. It comes from the rail or bar which was used to divide one part of a law court from another. There is a similar bar in the House of Commons. Beyond this only members can pass and to it offenders against the privileges of the House are summoned.

The whole body of barristers constitute the bar, king's counsel being those who are called within the bar, and we speak of the English, Irish, Canadian and other bars.

Barabbas Criminal released by Pilate on the demand of the Jerusalem mob in preference to Jesus. The name Barabbas is only a patronymic, and the suggestion has been made that his own name, like his fellow prisoner's, was Jesus (Joshua). Hence the point of the mob's cry, "Not this man but Barabbas," *i.e.* not Joshua Bar-Joseph, but Joshua Bar-Abbah.

Barbados Island of the British West Indies. About 80 miles east of St. Vincent, it is 21 miles long, and its greatest breadth is 14½ miles. Its area is 166 sq. miles. The soil is fertile and the climate pleasant and remarkably healthy. The main industries are the growing of sugar and cotton. The capital is Bridgetown. The administration is vested in a governor, who is assisted by a nominated executive council and an elective house of assembly. Nine-tenths of the inhabitants are negroes of a superior type. Barbados was annexed to the British crown in 1605. Pop. (1931) 173,674.

The Barbados gooseberry, which grows in the West Indies, bears fruit very like the ordinary gooseberry. The tree reaches a height of 15 ft.

Barbara Christian saint who lived in the 3rd century. Tradition says that after her conversion she was beheaded at Nicomedia by her father who was then struck by lightning. Her feast is Dec. 4.

Barbarian Term used by the Greeks for all who were not of their race, but especially for the Persians. The Romans used it in a like sense, but especially for the Goths, Vandals and others who harassed and devastated their land. To-day it refers to people on a low plane of civilisation.

Barbarossa Name meaning "red beard," and given to two famous Barbary pirates. In the 16th century they plundered towns and vessels and were soon the most feared of all the corsairs of the time. Another noted Barbarossa was the emperor Frederick I.

Barbary Old name for a district on the north coast of Africa from Egypt to the Atlantic. Inhabited chiefly by Berbers and covered to-day by Tripoli, Tunisia, Algeria and Morocco, it is mainly of interest because of its pirates. They began operations on a large scale in the 15th century, when the Mediterranean was a great highway of trade. For three centuries from Algiers, Tunis and other ports, they made piracy a regular business, taking tribute from merchants who paid to be unmolested. Adventurers from England and other countries joined their ranks.

In 1801 their raids led to war between the United States and Tripoli and later between the same country and Algeria. This ended the payments of tribute to the pirates, who received another blow in 1816 when a British fleet bombarded Algiers and set free many prisoners.

The **Barbary ape** is a tailless monkey found in Tunis and Morocco and also at Gibraltar.

Barbecue Name given to a sheep or an ox when roasted whole, as is sometimes done on days of festivity. It was originally the framework that was placed above the fire in order to hold the animal being roasted, but was afterwards used for the beast itself. In the United States a barbecue is a feast where animals are cooked in this way. Another barbecue is a floor raised in the middle and used for drying coffee.

Barbel Freshwater fish. It is so called because it has four barbels, or little beards, over its upper jaw. Not unlike the carp, it is found in some British rivers, but is rather coarse for food. Specimens may be as long as 2 ft. and weigh 12 lb. In other parts of Europe there is a much larger species of barbel.

Barber One who attends to the hair and beard. Kings and great men had barbers in very early times, and in the 15th century and thereabouts they ranked as a skilled profession, being surgeons and dentists as well as barbers. There was a company of barbers in London in 1462, and this became in 1541 the Company of Barber Surgeons. In 1745 barbers were forbidden to act as surgeons and the company was divided. To-day barbers, more generally called hairdressers, form a strong trade organisation and have their own trade paper, *The Hairdressers' Weekly Journal*. The Barbers' Company is one of the livery companies of the city of London.

Barberini Italian family. In the 11th century there were Barberinis in Florence, but it was not until Maffeo Barberini became Pope Urban VIII. in 1623 that they became rich and famous. Urban made a brother and two nephews cardinals, while another nephew was made a prince. The Barberini Palace was built in Rome and the library collected. In 1722 the last male Barberini died, and his daughter married a Colonna. The Barberini Library was sold to the Pope in 1902, and in 1930 Barberini Villa in the Alban Hills, was presented to him.

Barberry Shrub found in hedges in Britain; also in other parts of Europe and in the eastern states of the U.S.A. It grows to a height of 5 or 6 ft., bears small yellow flowers and red berries. The bark is useful in dyeing.

Barberton Town of the Transvaal. It is in the centre of a district where gold is mined, 283 m. by railway from Pretoria. Pop. 1900.

Barbette Platform in a fort from which guns fire over a parapet. It is more generally used, however, for the circular armour that protects the big guns in a battleship. The barbette differs from the turret inasmuch as it does not swing round with the guns. Barbettes were first used in British warships in 1876, and in those built until 1892.

Barbican Fortification, usually circular, that defended the entrance to a castle or sometimes an outpost connected with a town or castle. Barbicans can be seen to-day at the castles of Alnwick and Warwick, while at Carcassonne there is a remarkably fine one. The name is retained by streets in London, Plymouth and elsewhere.

Barbieri **Giovanni Francesco.** Italian painter. A native of Ferrara, he was born in 1591, and first came into prominence during the short reign of Pope Gregory XV., whose patronage he obtained. In 1642 he settled in Bologna where he founded a school of painting. There are frescoes by him in the cathedral of Piacenza and other good examples of his work are in the Pitti Gallery, Florence, and the National Gallery, London. He died in 1666.

Barbizon French village, famous for its school of painting. About 5 m. from Fontainebleau, on the edge of the forest, it is a most attractive spot. About 1840 some French painters settled here, working on a common idea—nature as it appeared to them, freedom from the conventional ideas that prevailed. The chief members of the group were Corot, Millet and Theodore Rousseau.

Barbour John. Scottish poet. Born in 1316, his chief work is *The Bruce*, an heroic poem on the life and adventures of King Robert the Bruce, and his lieutenant, the good Sir James Douglas. Several other early examples of Scots literature have been attributed to him. He was an ecclesiastic, and for some time held the position of Archdeacon of Aberdeen, but later entered the service of the Crown and became a high official of the Scottish Exchequer. Barbour, who died in 1395, may be described as the father of Scottish literature.

Barcelona City and seaport of Spain, on the north-east coast, 430 m. from Madrid, and the second largest city in the land. There is a fine Gothic cathedral, museums and libraries, a university and a broadcasting station. Barcelona has many manufactures and around the old town are new industrial suburbs. There is a large shipping trade, for which there is a commodious harbour. Pop. (1931), 991,262.

Another Barcelona is a town in Venezuela.

Barclay Scottish family. It is chiefly famous for its connection with banking and brewing. Like many other bankers, the first banking Barclays were Quakers. In 1736 James Barclay, a son of David Barclay, a linen merchant in Cheapside, London, joined his relatives, the Freames, in a banking business carried on in Lombard Street at the sign of the Spread Black Eagle. Later, Barclay became the chief proprietor, and in the 19th century the firm was known as Barclay, Bevan, Tritton & Co. Other banks were absorbed by it, as the era of amalgamations came on, one of these being the famous bank of Gurney & Co. of Norwich. In 1896 it became a limited company; in 1917 it was renamed Barclay's Bank, and it is now one of the "big five." Another Barclay helped to found the brewing firm of Barclay, Perkins.

Bard Poet or singer, especially a Celtic poet or singer. Many of them were kept in the homes of kings and chieftains to sing about their exploits, and the calling was at one time hereditary. They were especially prominent in Ireland and Wales, but were also kept in Scotland. In Ireland they existed as late as the 16th century. In Wales the Druids supplied many bards, but there were others. The tradition is kept alive to-day by the election of bards at the Eisteddfods.

Bardsey Small island off the coast of Caernarvonshire, N.Wales. With an area of about 400 acres, it has a lighthouse and a harbour. It is associated by tradition with the old Welsh bards.

Barebone English politician. A leather seller in Fleet Street and a man of substance, he became noted as a preacher. Called Praise God Barebone, he was elected for the City of London to the Parliament that met in 1653, and although he took little part in its business it was called after him. It consisted of 139 members and sat from July to Dec., 1653, when Cromwell dissolved it. Barebone tried hard to prevent the return of Charles II. For this he was imprisoned, but he was soon released. He died in Jan., 1680.

Bareilly City of the United Provinces, India. It is 150 m. from Lucknow and about the same from Delhi, and is an important railway junction, a busy city with some manufactures, the chief town of a district and division. Pop. (1931), 144,031.

Barents Willem. Dutch explorer. Three times he tried to find the north-west passage, but in vain. The third time (1596) his vessel was caught in the Arctic ice and he died in 1597 while trying to reach Lapland. In 1871 a Norwegian sailor found traces of his winter quarters there, and 4 years later part of his journal. The northern part of Novaia Zemblia is named Barents Land. Barents Sea is a part of the Arctic Ocean. An island near Spitzbergen also bears his name.

Barfleur French seaport. It is 15 m. east of Cherbourg on the Cotentin Peninsula, and was a prosperous seaport in the Middle Ages. From here in 1120 the *White Ship* that carried Prince William sailed on its fatal voyage. To the north is Cape Barfleur off which, May 19, 1692, was fought a naval battle between the English and the French. It was an English victory, and on this account several English battleships have been named Barfleur.

Barge Board Sloping board which in timber houses was placed at the gable ends or over windows so as to mask the horizontal roof timbers and protect them from the weather. They were often elaborately ornamented, and were much in vogue in the architecture of the Middle Ages. The correct name is verge board.

Barham Lord. British seaman. Charles Middleton was born at Leith in 1726 and entered the navy. He did good service for several years in West Indian waters in the convoy and protection of trade. He was comptroller of the navy from 1778 to 1790, and was elected M.P. for Rochester in 1784. For a short time (1794-95) he was a Junior Lord of the Admiralty. In 1805 he was appointed First Lord of the Admiralty and was raised to the peerage. Barham died June 17, 1813, and his barony passed by special remainder to his daughter who married into the family of Noel, afterwards earls of Gainsborough.

Barham Richard Harris. Author of *The Ingoldsby Legends*. He was born at Canterbury, Dec. 6, 1788, educated at St. Paul's and Brasenose College, Oxford, took orders in 1813, and was presented to the living of Snargate, Romney Marsh. In 1821 he was appointed a minor canon of St. Paul's, and some years later became Vicar of St. Mary Magdalene and St. Gregory Cardar, and Priest in Ordinary to the Chapels Royal. From time to time he made various attempts in literature, but without success, until 1837, when Bentley, the publisher, an old friend, asked him to contribute to his *Miscellany*, of which Dickens was editor. Barham accordingly began to contribute, under the name of Thomas Ingoldsby, the tales in delightfully comic verse which have made his name famous. *The Jackdaw of Rheims* is regarded as the masterpiece of the Ingoldsby series. He died June 17, 1845.

Baring Maurice. English author and diplomat. Born in London, April 24, 1874, and educated at Eton and

Cambridge, he served in the Diplomatic Service, 1898-1904, and then became a journalist and war correspondent, and was on the staff of the R.F.C. during the War. His works include *The Russian People* (1911); *Diminutive Dramas* (1911); *R.F.C.H.Q.* 1914-18 (1920); *Cat's Cradle* (1925); *Daphne Adeane* (1926); and *Coat without Seam* (1929).

Barium One of the metallic elements. It is not found in the pure state, but only in combinations as barium sulphate, or barium carbonate or witherite. It is prepared by electrolysis of the fused chloride. The compounds of barium are poisonous. Its chemical symbol is Ba, its atomic weight 137.37, and atomic number 56. The name is from a Greek word meaning heavy. The salts are used for various purposes. Barium chromate and barium sulphate are used as pigments, barium hydride is used in sugar refining, and barium nitrate is used to make blasting powder.

Bark Outer covering of the trunks and branches of trees. Some varieties are very useful for tanning and as a source of drugs. The bark used by tanners is from the oak, willow and other trees that contain tannic acid. Oak bark is also used as a mordant in certain dyes. The bark of the cinchona yields quinine, while from other barks eucalyptus, quonia, salicin and other drugs are obtained. Angostura, myrrh, cascara, cassia and other substances are also bark products. The value of cinchona, or Peruvian bark, was discovered by the Indians and handed on to the Jesuits, who introduced it into Europe about 1640. **Bark cloth** is a fabric made from the inner bark of several plants and used for clothing, matting, etc.

Barker **Sir Herbert.** English manipulative surgeon. Born at Southport, April 21, 1869, he was under the tuition of Mr J. Atkinson, whose practice he took over in 1904. He has cured thousands of joint abnormalities and flat-foot, but has never been officially recognised by the medical profession. He was knighted in 1922 for his services in the War.

Barker **Thomas.** English artist. Born in 1769 in S. Wales, he moved to Bath and began his career by copying the Old Masters. Some of his pictures are in the National Gallery, London, and at S. Kensington, and his designs have been used for pottery and textiles. He died in Bath, Dec. 11, 1847.

His son, **Thomas Jones Barker** (1815-82), painted the meeting of Wellington and Blücher, so often seen as an engraving, and other military scenes.

Barking Borough and market town of Essex, near the confluence of the Roding with the Thames, 9 m. from London. It can be reached by the L.M.S., L.N.E. and District Rlys. It is now mainly an industrial area, which includes the works of the London Gas Light and Coke Co., and the sewage works of the London northern outfall at **Barking Creek**. Here, too, are works for generating electricity, greatly enlarged in 1931-32. Pop. (1931) 51,277.

Barley (*Hordeum sativum*). Cereal, probably the first to be cultivated by man. A wild species (*H. spontaneum*) is found in Western Asia. Three sub-species of cultivated barley are distinguished, *viz.*, the two-rowed (*H. distichon*) which is the best for malting; the six-rowed (*H. hexastichon*), which is not much cultivated in Great Britain owing to the poor quality of the grain; and the four-rowed (*H. vulgare*), commonly known as bere or bigg, which was formerly much used for malting, but has now been generally superseded by the two-rowed sub-species. Barley is the most hardy of the cereals, and at one time was largely used for breadmaking, but it is now cultivated mainly for use in brewing and distilling and in domestic cookery. It yields about 35 or 40 bushels to the acre, and the world production is about 180 million quarters, a quarter being 400 lb. The British Isles produce (1932) about 5,400,000 quarters and Canada 11,000,000. Barley imported from foreign countries into Great Britain must pay a duty of 10 per cent.

Barleycorn **John.** Name given to the personification of barley when it is used for making malt liquor. It is also used to denote the malt liquor itself, as in the poem "John Barleycorn," by Robert Burns. Barleycorn is also a measure, about one-third of an inch.

Barmecides (*i.e.*, sons of Bermek). Persian family that rose to great influence under the Abbasid caliphs of Bagdad. One was the celebrated Jaafar, the intimate companion of Haroun Al Raschid. It is from the legend of him told in the *Arabian Nights* ("The Story of the Barber's Sixth Brother") that the proverbial expression, Barmecide feast, applied to any benefit that is purely illusory, is derived.

Barmouth Watering place and urban district of Merionethshire. It stands on the estuary of the Mawddach amid some of the finest scenery in Wales. It is 234 m. from London, on the G.W. Rly. Pop. (1931) 2491.

Barnabas (son of consolation). Surname of Joses, a Cypriot Levite. He is first mentioned (Acts iv-36) as one of the earliest adherents of the primitive church in Jerusalem. It was Barnabas who was sent out by the church to investigate the reports of the spread of Christianity in Asia Minor, and who brought Paul from Tarsus to Jerusalem.

Barnacle Term applied generally to members of the crustacean order *Cirripedia*, and in particular to the true or ship barnacle (*lepas*) and the common acorn shell (*balanus*). The former consists of a fleshy stalk and five calcareous shells enclosing six pairs of appendages (called cirri). The animal attaches itself to floating wood by means of the stalk, and the function of the cirri is to separate from the water the minute particles which form its food.

Barnacle Goose (*brantaleucopsis*) Migratory bird. In summer it is seldom found outside the Arctic circle, but in winter is found in large flocks on the western shores of the British Isles and other parts of the temperate zone.

Barnard **Edward Emerson.** American astronomer. Born at Noelville, Tennessee, Dec. 16, 1857, he studied astronomy and was given charge of the observatory at Vanderbilt University, Nashville, where he was educated. In 1887 he was made an assistant at Lick, and in 1895 became Professor of Astronomy in the University of Chicago and director of the Yerkes Observatory. He died Feb. 7, 1923. Barnard's discoveries included one of Jupiter's satellites.

Barnard **George Grey.** American sculptor. Born May, 24 1863, he lived for

some years in Paris, where he studied art and began his work. This soon made him known in his own country, to which he returned about 1895. His bronze statue of Lincoln at Cincinnatti was severely criticised, but all admit the excellence of the "Great God Pan" in Central Park, New York; "Let there be Light," and other pieces.

Barnard Castle Market town and urban district of Durham. Situated on the Tees, 15 m. from Darlington, it is principally an agricultural centre, but has some manufactures. It is served by the L.N.E. Rly. The castle from which the town takes its name is now a ruin; it was the scene of Sir Walter Scott's *Rokeby*. The Bowes Museum has a fine collection of china and tapestry. Pop. (1931) 3883.

Barnardo **Thomas John.** Irish philanthropist. A native of Dublin, he was born July 4, 1845. He did evangelistic work in the Dublin slums, and in 1866 began the study of medicine at the London Hospital with a view to qualifying as a medical missionary. In 1870 he founded in Stepney the celebrated Barnardo homes. He died Sept. 19, 1905.

The Homes are at 18-26 Stepney Causeway, London, E. 1, and there are auxiliary homes in the country. The average number of children in residence is nearly 8000, and altogether over 100,000 have passed through. Many of the boys are trained and then sent to Canada.

Barn Dance Popular dance. It is danced by two persons to a tune not unlike a Scottish air. It was introduced into London at the Gaiety Theatre about 1890, the name coming from the U.S.A.

Barnby **Sir Joseph.** English musician. Born at York, Aug. 12, 1838, he received his musical education at the Royal Academy of Music, London. He was appointed organist of St. Andrew's, Wells Street, London, in 1862, and two years later founded Barnby's Choir, which he continued to direct until 1871, when he became conductor of the Albert Hall Choral Society. In 1875 he was appointed precentor and director of music at Eton College and principal of the Guildhall School of Music in 1892, in which year also he was knighted. A popular composer of hymn tunes and part songs, he died Jan. 28, 1896.

Barnes Urban district of Surrey. It is bounded by the Thames and is 7 m. from London by the S. Rly. Here are the grounds of the Ranelagh Club, once those of the manor house of Barn Elms. Barnes Common is an open space. The river makes here a bend northwards and the district in the loop is called Castelnau. Pop. (1931) 42,439.

Barnes **Ernest William.** English prelate and scientist. Born April 1, 1874, he was educated at King Edward's School, Birmingham, and Trinity College, Cambridge, and was for some years a fellow and tutor of Trinity. Having made numerous important contributions to mathematical and physical research, in 1909 he was elected F.R.S. In 1902 he was ordained, but held no pastoral office until 1915 when he was appointed Master of the Temple. In 1918 he became a canon of Westminster and in 1924 Bishop of Birmingham. Dr. Barnes is the recognised leader of the Modernist school in the Church of England, and has devoted himself to the task of restating the essentials of the Christian faith in the light of modern science.

Barnes **George Nicoll.** British politician. Born Jan. 2, 1859, he worked for some years as an engineer. He was appointed assistant secretary of the Amalgamated Society of Engineers in 1892 and general secretary in 1896. In 1906 he was returned to Parliament as Labour member for the Blackfriars (now Gorbals) division of Glasgow. On the formation of Mr. Lloyd George's administration at the end of 1916 he took office as Minister of Pensions, and in the following year was included in the War Cabinet. In 1919 he relinquished his department, but remained in the Cabinet as minister without portfolio. He retired from political life in 1922, since when he has devoted himself to League of Nations work.

Barnes **William.** Dorsetshire poet. He was born at Rushay in the vale of Blackmoor, Feb. 12, 1800. He started life as a solicitor's clerk and afterwards became a schoolmaster. In middle life he took orders in the Church of England, and after holding a curacy in Whitcombe, became Rector of Winterbourne Came, near Dorchester, where he remained for the rest of his life. He published in 1844 *Poems of Rural Life in the Dorset Dialect*, and two more volumes in 1857 and 1863. A combined edition of his poems was published in 1879. Barnes died Oct. 7, 1886.

Barnet Residential area of Hertfordshire and Middlesex, consisting of three urban districts. The most southerly of these is Friern Barnet, so called because the manor formerly belonged to the Friary of S. John of Jerusalem, with a population (1931) of 23,081. Next is East Barnet. Pop. (1931) 18, 542. The most northerly is Chipping or High Barnet, an old market town which has a famous horse fair every Sept. Pop. (1931) 14,721. All are served by the L.N.E. Rly., and High Barnet also by the L.M.S. line.

In the Wars of the Roses High Barnet was the scene of the battle of Barnet in which Edward of York (Edward IV.) routed the Lancastrians and gained the throne. It was fought April 14, 1471.

Barnett **Samuel Augustus.** English clergyman. He was born at Bristol, Feb. 8, 1844, and went to Wadham College, Oxford, where he took orders. In 1872 he was appointed Vicar of S. Jude's, Whitechapel, and, aided by his wife (Henrietta Octavia Rowland), he began a remarkable system of social and educational work in the east-end of London. He early enlisted the interest and co-operation of Arnold Toynbee (*q.v.*) and other helpers, chiefly from Oxford, which resulted in 1884 in the foundation of Toynbee Hall, of which he was first warden. He was appointed a canon of Westminster in 1906, and he died June 17, 1913. Barnett House, at Oxford, was founded in his memory. His *Life* was written by his wife, who, for her services, was created a D.B.E.

Barnoldswick Urban district of Yorkshire (W.R.). It is 7½ m. south-west of Skipton, on the Leeds and Liverpool Canal. It has limestone quarries and cotton factories. Pop. (1931) 11,915.

Barnsley County borough of Yorkshire (W.R.). It is 15 m. north of Sheffield on the river Dearne: is served by the L.M.S. and L.N.E. Rlys., and is on the Leeds and Liverpool Canal. Barnsley lies in an important coalfield, and has numerous manu-

factures, including iron and steel, leather goods, linen and paper. Pop. (1931) 71,522.

Barnstaple Borough, seaport and market town of Devon. It stands on the estuary of the Taw, 40 m. from Exeter and 187 from London, and is served by the G.W. and S. Rlys. Features of the town are Queen Anne's Walk, the Pannier Market and Butchers' Row, while the bridge across the estuary is notable for its length. The town has some shipping and several manufactures, including the making of Barum ware, Barum being its old name. Pop. (1931) 14,693.

Barnum **Phineas Taylor.** American showman. He was born July 5, 1810, in Connecticut. In 1844 he exhibited General Tom Thumb, and this was the first of his successes. In 1871 he began to make the collection of animals and freaks that, called the Greatest Show on Earth, a combination of circus and menagerie, was known everywhere as Barnum's. He died at Bridgport, Connecticut, April 7, 1891.

Baroda Native state of India. Within the province of Bombay, it consists of four territories under British protection. The total area is 8135 sq. m., and the population, 2,126,522. The capital is also called Baroda. The ruler or Gaekwar celebrated the fiftieth anniversary of his accession, Jan., 1936.

Barometer (Gr. *baros*, weight ; *metron*, a measure). Instrument for measuring atmospheric pressure. It was invented in 1643 by Torricelli, a pupil of Galileo. In its simplest form it consists of a glass tube closed at the upper end and filled with mercury. The lower end is plunged into a cistern of mercury, and the height assumed by the mercury column is dependent upon the atmospheric pressure on the surface of the cistern ; thus falling mercury means falling pressure and probable rain.

The **aneroid** barometer, a form which is convenient for certain purposes (such as the estimation of relative heights by airmen and mountaineers) consists of a " vacuum box " of thin corrugated metal, the sides of which respond to changes of atmospheric pressure. A system of levers links up the box with an indicating needle or, in the barograph, with an automatic recording apparatus.

Baron Title of honour. Originally it was a title applicable to all the vassals of rulers, bishops and lords, the bishops of Durham, for instance, had their barons. Later the term was restricted to the greater barons who in England alone had the right to receive a writ of summons to Parliament.

To-day baron is the lowest of the five ranks in the peerage of the United Kingdom. New barons are created of letters patent, which states how the title shall descend. In the case of the older baronies, those created by writ, it descends to daughters equally if there is no son. The coronet of a baronet has on it six silver balls, and he is addressed as my lord. His children are entitled to the prefix honourable. The number of barons is about 440, and there are a few baronesses in their own right.

Baronet Holder of an hereditary title. He is called Sir and to distinguish him from a knight the abbreviation Bart or Bt. is placed after the name. He is always addressed by his Christian name with Sir prefixed. The first baronet was made in 1611 by James I. Irish baronets were first created in 1619. In 1625 baronets of Scotland were first created, and were called baronets of Nova Scotia. To-day all baronets created are baronets of the United Kingdom. They take precedence of all knights except Knights of the Garter. The badge of the order is the bloody hand of Ulster, as the first baronets were created in order to obtain money to help to settle persons in Ulster. To-day there are about 1200 baronets, the senior being Sir H. Bacon. In 1930 a new badge was prepared for them.

Baronscourt Irish seat of the Duke of Abercorn. In Co. Tyrone 3 m. from Newton Stewart, it is a fine modern house standing in beautiful grounds.

Baron's Court is a district in London between Hammersmith and Earl's Court. It has a station on the District Rly.

Baroque Term now used to describe any style of architecture distinguished by extravagant ornamentation. More particularly it refers to the decadent style that flourished in Italy from the 16th to the 18th century.

Barotse Land Formerly a kingdom of C. Africa, it is now a native reserve. It is in the Upper Zambesi territory of N.W. Rhodesia, and became a British Protectorate in 1916, by the wish of the native King Lawanika, who was succeeded by his son, Yeta III. The capital is Lialui, but the chief station and British residency is at Mongu. The district is well-watered, and the natives are adaptable and hard-working.

Barracks Buildings for soldiers and marines. Great advances have been made in British barrack construction, elaborate provision being made for the health, comfort and recreation of the men. The newer barracks have been built on the light-construction principle, which substitutes for the old substantial buildings one-storey buildings of steel and light brickwork. Barrack buildings include, in addition to accommodation for the rank and file, the officers' mess, the sergeants' mess, recreation rooms, and separate quarters for men " married on the strength."

Barracuda Name of several fishes resembling a pike. The great barracuda found in the West Indies is sometimes 6 ft. long and as ferocious as a shark. Those found in the Pacific and Indian Oceans are smaller and less savage. This fish is eaten in Australia, S. America and S. Africa.

Barrage Volume of artillery fire directed on a definite area. A creeping barrage is a volume of fire intended to protect advancing troops. It must be carefully timed and aimed so as to fall in front of them and to move forward at the same rate. It is also called curtain fire. These barrages were much used during the World War, the first occasion being during the battle of the Somme. Another form used in the war was one fired behind the enemy in order to cut off reinforcements or supplies.

Barrage has an older but allied meaning. It is used for a bar made in a river to increase the depth of water, *e.g.*, the Nile barrages.

Barras **Paul François Jean Nicolas, Comte de.** French soldier and statesman. Born, June 30, 1755, he came into prominence early in the Revolution when he identified himself with the Jacobin faction. As commander of the Republican forces at the siege of Toulon, he was the first to recognise the merit of Napoleon Bonaparte, then a lieutenant

of artillery. He helped to organise the *coup d'état* of 9 Thermidor, 1794, by which Robespierre was overthrown. He was appointed chief of the Directory Government, but it was overthrown in 1799 by Bonaparte on his return from Egypt. For the rest of his life Barras lived in retirement. He died Jan. 29, 1829.

Barrel Legal measure of capacity for ale and beer. It is equal to two kilderkins, or 36 gallons. It is also used conventionally in certain trades as a dry measure of weight varying according to the commodity. Thus a barrel of beef equals 200 lbs., a barrel of butter equals 224 lbs., a barrel of flour equals 196 and 228 lbs., a barrel of gunpowder equals 100 lbs., a barrel of raisins equals 112 lbs., and a barrel of soft soap equals 256 lbs.

Barrès **Maurice.** French scholar and politician. He was born Aug. 17, 1862, at Charmes (Vosges), studied law in Paris, but soon gravitated to journalism and literature. His first important work was *Sous l'oeil des Barbares* (1888) which he followed up with *Un Homme Libre* (1889) and *Le Jardin de Bérénice* (1891). In 1897 he published *Les Déracinés*, the first volume of a trilogy entitled *Le Roman de l'Energei Nationale*. In 1906 he was elected to the Academy. During the World War he wrote *La Grandé Pitié des Eglises Françaises* (1914), *L'Ame Française de la Guerre* (1915) and other works. He died Dec. 4, 1923.

Barrett Wilson. English actor and dramatist. Born, Feb. 18, 1846. After some years in the provinces, mainly in Yorkshire, he came to London in 1879 as manager of the Court Theatre, where his most notable achievement was to bring Modjeska before an English audience in a version of *La Dame aux Camelias*. In 1881 he began his long connection with the Princess's Theatre, where he produced *The Lights of London*, *The Silver King*, *Romany Rye*, and other plays which established his reputation as a romantic actor and dramatist. His *Hamlet* (1884) was more a popular than an artistic success. He toured the United States four times. His later notable productions included dramatisations of *Benny-Chree* and *The Manxman*, and a religious drama with an early Christian setting, *The Sign of the Cross*, which ran for over 500 nights. In addition to plays he wrote several novels. He died July 22, 1904.

Barrhead Burgh of Renfrewshire. It is on the River Levern, 9 m. south-west of Glasgow, and is served by the L.M.S. Rly. Its chief industries are engineering, calico printing, and cotton spinning and bleaching. Pop. (1931) 12,308.

Barrie **Sir James Matthew.** Scottish dramatist, novelist, and essayist. He was born at Kirriemuir in Forfarshire (Angus), May 9, 1860, and, after graduating in the faculty of arts at Edinburgh University, worked for some time as a leader writer on *The Nottingham Journal*. Moving to London, he attracted attention by the charming sketches of Scottish country life which he contributed to the *St. James's Gazette*, *The British Weekly*, and other journals. These were published in book form as *Auld Licht Idylls* (1888) and *A Window in Thrums* (1889), which established him as a popular author. After two volumes of essays, *My Lady Nicotine* and *When a Man's Single*, he published in 1891 a Scottish novel *The Little Minister*, afterwards successfully dramatised. *Sentimental Tommy* (1896) and its sequel *Tommy and Grizel* (1900) consolidated his reputation.

But all his successes as a novelist were destined to be eclipsed by his dramatic achievements. He had already written a farce, *Walker, London* (1892), produced successfully by J. L. Toole, a sentimental comedy, *The Professor's Love Story* (1894) and a problem play *The Wedding Guest* (1909), which was a comparative failure, but with *The Admirable Crichton* and *Little Mary* he at once created a unique place for himself as a master of whimsical humour. His *Peter Pan*, a play for children, has been produced every Christmas season since its first production in 1904. Among his long series of brilliant successes are *Pantaloon*, *Alice-sit-by-the-Fire*, *Mary Rose*, *Dear Brutus*, *What Every Woman Knows*, and *Shall We Join the Ladies?* He wrote *The Two Shepherds*, produced 1936, specially for Elisabeth Bergner. Barrie was created a baronet in 1913 and appointed to the Order of Merit in 1922. He was elected rector of St. Andrew's University in 1921.

Barrister Member of the upper, or advocacy, branch of the legal profession in England. Barristers have an exclusive right of audience in all the superior courts, including quarter sessions. There, however, if no barristers are in attendance solicitors may plead. They alone are eligible for all paid judicial offices.

In England the right to call persons to the bar is vested in the four Inns of Court, Middle Temple, Inner Temple, Lincoln's Inn and Gray's Inn, which collectively form a kind of legal university. Those intending to become barristers must join one of these inns, eat dinners there, pass certain examinations. Certain exemptions in these matters are given to university graduates. The fees amount to something over £100, part of this being the stamp duty. Each inn exercises discipline over its members, subject to a right of appeal to the judges. In recent times an elective body, the bar council, has been set up to give rulings on professional etiquette, etc. A barrister may not appear in court save on the instructions of a solicitor. They are of two grades, juniors (stuff gownsmen) and king's counsel (silks). As a rule a silk may not appear in any cause without the assistance of a junior.

The term barrister is also used in Ireland, where admission to the profession is regulated by the King's Inn, Dublin. For Northern Ireland there is a bar in Belfast. The term is also used in Canada, Australia and other parts of the British Empire, but there the division between barrister and solicitor is less sharp than in England. In Scotland the equivalent is the advocate (*q.v.*).

Barrow (Anglo-Saxon *beorh*, a hillock). Ancient burial mound. Barrows are found in many parts of the world, and are especially numerous in the British Isles. They are generally, but by no means invariably, round, and, broadly speaking, the difference of shape corresponds to a difference of racial and cultural origin, the round barrows being the work of a brachycephalic people, while in the long barrows we usually find dolichocephalic skulls.

Barrow **Sir John.** English administrator. He was born in 1764 near Ulverston. At the age of 18 he went on a voyage to Greenland in a whaler, and later obtained an appointment as mathematical usher in a school at Greenwich, where he was

introduced to the notice of Lord Macartney. He served on Macartney's staff in China and South Africa, and was employed successfully on several important missions. In 1804 Henry Dundas (Lord Melville) appointed Barrow second secretary of the Admiralty. He was one of the founders of the Royal Geographical Society and took an active part in promoting the Buchan and Franklin Arctic expeditions. He died Nov. 23, 1848.

Barrow-in-Furness County borough and seaport of Lancashire. It stands on Morecambe Bay opposite Walney Island, 265 m. from London by the L.M.S. Rly. (Vickerstown on Walney Island is part of the borough). A great industrial centre, wholly created in the 19th century when iron was discovered in the neighbourhood, it has iron and steel works, shipbuilding yards and many related industries. Steamers used to go regularly to the Isle of Man, Belfast and elsewhere but they have been discontinued. Pop. (1931) 66,366.

Barry Seaport and urban district of Glamorganshire. It is 7 m. from Cardiff and 160 m. from London, opposite the Island of Barry in the Bristol Channel. Barry Docks, opened in 1889, have accommodation for all but the very largest vessels. Another industry is flour milling. The town is served by the G.W. Rly. Pop. (1931) 38,916.

Another **Barry** is a village in the county of Angus. It is 8¼ m. north-east of Dundee, and is chiefly known for its Territorial Force artillery camp.

Barry **Sir Charles.** English architect. He was born in London, May 13, 1795 and travelled in Italy, Greece and the Near East. He acquired a marked predilection for Italian architecture, which he showed in the various important commissions with which he was entrusted after starting in business in London. These included many public buildings in the provinces and the reconstruction of the Treasury buildings in Whitehall. On the destruction of the Houses of Parliament by fire, Barry was commissioned to design the new buildings, which are the greatest monument of his genius. He died, May 12, 1860, a few months before their completion. He was elected A.R.A. in 1840 and R.A. in 1841, and was knighted in 1852.

Two of Barry's sons became architects. One **Edward Middleton Barry** (1830-80) completed the Houses of Parliament. The eldest son was **Alfred Barry** (1826-1910) who held several high positions in the church including the Bishopric of Sydney, 1884-89. His fourth son was **Sir John Wolfe-Barry,** (1836-1918) the famous engineer.

Barter Primitive method of exchanging commodities, *i.e.*, direct exchange without the intervention of any form of currency. True barter is found only in the very simplest communities. At an early stage a community begins to select some article of value as a standard, *e.g.*, pelts or cattle. This gives their transactions the appearance of barter, though they are really primitive currency transactions.

Bartholdi **Frédéric Auguste.** French sculptor. Born in 1834 in Alsace, he studied art and exhibited first in 1855. His best work is the statue of Liberty at the entrance to New York harbour. His "Lafayette" is in New York and his works include "The Lion of Belfort" and others of a patriotic nature. He died Oct. 4, 1904.

Bartholomew Saint, apostle and martyr. One of the twelve apostles first called by Jesus Christ, he was possibly the same as Nathanael "the Israelite without guile." He is said to have evangelised Armenia and India, but the tradition has no historic basis.

Bartholomew Fair Old London market, principally for cloth goods. It was founded early in the 12th century and continued to be held annually at Smithfield until 1840 and then at Islington. Of ecclesiastical origin, it was in its earlier days an occasion for the performance of miracle plays and mysteries, and after the Reformation shows of all sorts made it a great attraction to the London populace. The disorders of the rabble who resorted to it led to its abolition as a nuisance in 1855.

Barthou **Jean Louis Firmin.** French politician and writer. Born Aug. 25, 1862, he became a lawyer. In 1889 he entered the chamber of deputies and in 1894 was made Minister of Public Works. He was Prime Minister for nearly a year in 1913. During the Great War he was a member of Painlevé's cabinet and in 1918 Minister for War, later becoming president of the Reparations Commission. In 1922-24 and 1926-29 he was vice-president of the cabinet under Poincaré, then under Briand. His writings secured his election to the Academy in 1919. He was assassinated at Marseilles Oct., 1934.

Bartoli **Taddeo.** Italian artist. Born at Siena in 1363, he painted frescoes depicting the life of the Virgin in the Cathedral of Siena, at Perugia and Genoa, and in the church of S. Francis at Pisa. Other frescoes are in the museum at Pisa, and the municipal palace at Siena. In the Louvre is one of his earliest works, "The Virgin among the Saints," painted in 1390. He died in 1422.

Bartolommeo **Fra.** Italian painter. A native of Florence, he became a Dominican monk, hence the epithet Fra. He was friendly with Savonarola and lived in the convent of S. Mark. Later he lived in Rome and worked with Raphael, but he was again in Florence when he died, Oct. 31, 1517. His paintings include one of S. Mark in the Pitti Palace, Florence.

Bartolozzi **Francesco.** Italian engraver. The son of a Florentine goldsmith, he was born about 1727, and for some time worked under his father. He studied painting at Florence and engraving at Venice, and, after a short time in Rome, migrated to London in 1764. He lived in London for nearly 40 years, producing a very large number of engravings, chiefly from Italian masters. In 1802 he was appointed director of the National Gallery at Lisbon, where he remained until his death, March 7, 1815.

Barton Parish of the Isle of Wight. It is of interest to geologists because it gives its name to the formation called Barton Beds. These are noted for the fossils that are found therein, these being remains of plants and fishes which can only live in a climate warmer than the one now prevailing in England. The beds are about 300 ft. thick and are also found at Alum Bay, Isle of Wight.

Barton **Elizabeth.** English fanatic, called the Maid of Kent. She was in domestic service at Aldington, Kent, and in her nineteenth year, while recovering from an

illness, went into trances and began to prophesy. She was admitted as a nun to the convent of S. Sepulchre, Canterbury, where her utterances became still bolder and more remarkable. She denounced Henry VIII. for divorcing Catherine of Aragon, and this led to her being interrogated before Cranmer, when she confessed that her trances were fraudulent. Along with several monks who had been associated with her, she was arrested and executed at Tyburn, April 20, 1534.

Barton Sir Edmund. Australian politician. Born in Sydney, Jan. 18, 1849, he had a brilliant career at the university of Sydney. He then practised at the New South Wales bar and in 1889 became a Q.C. In 1879 he entered the state legislature. He was Speaker of the Assembly from 1883 to 1887, and Attorney-General in 1889 and in 1891. Always a keen advocate of federation, he was appointed chief of the delegation sent to London in 1900 to promote the establishment of the Australian Commonwealth. In the following year he became the first Prime Minister of the Commonwealth, but resigned to become a judge of the high court in 1903. He died Jan. 7, 1920.

Barton-upon-Humber Urban district of Lincolnshire. It is on the Humber, 6 m. from Hull, which is on the opposite side of the river, and 172 m. from London, on the L.N.E. Rly. It is connected by steam ferry with Hull, but it is proposed to make a tunnel beneath the Humber here. Pop. (1931) 6330.

Barton-upon-Irwell District of Lancashire. On the western outskirts of Manchester, it was here that Brindley constructed the aqueduct to carry the Bridgewater Canal over the Irwell.

Baruch Hebrew writer, mentioned in the book of Jeremiah as the prophet's secretary. The name appears in the title of two non-canonical books: (1) The Book of Baruch, a work by more than one hand, dating from early in the second century B.C. It is known only from the Septuagint and Vulgate, but probably was originally written in Hebrew. (2) The Apocalypse of Baruch discovered in the Milan library in 1866. The manuscript dates from the 6th century A.D., and is a Syriac translation from a Greek original. The Apocalypse of Baruch has close affinities with the 4th Esdras.

Baryta Sulphate of barium. It is usually found in lead ores and one of its uses is in the making of baryta paper used by photographers. This is paper coated with a mixture of sulphate of barium and gelatine.

Basalt Variety of marble. Of volcanic origin it is often found in layers, but sometimes in columns as in the Giant's Causeway and at Staffa. In colour it is dark grey or black, and, being very hard and tough, it is suitable for road making.

Base Term used in chemistry. Bases are substances capable of combining with acids to form salts, usually, in inorganic chemistry, the oxides and hydroxides of metals, and especially of the alkali metals and the alkaline earths. They can be distinguished by their power of turning red litmus blue.

Baseball National game of the United States. Its origin is unknown, but it appears to have been first played systematically about 1840. The first code of rules was drawn up by the Knickerbocker Baseball Club of New York in 1843 and thereafter the popularity of the game spread rapidly all over the country. It is now played by professional teams which are formed into leagues for the purpose of competing with one another.

The game is played by nine players a side on a lozenge shaped field, each point of the lozenge having a base. Near the middle of the field, opposite the home base, is the pitcher's place. The pitcher corresponds to the bowler in cricket. The catcher, corresponding to the wicket keeper, stands behind the batsman at the home base. There are fielders at each of the bases (in-fielders), the others being known as out-fielders. On hitting the ball the batsman must run for the first base and his object is to make a complete circuit without being put out, which constitutes a run. An innings ends when three batsmen have been put out, which can be done in several ways. The most usual is for the ball to reach a fielder at a base before the batsman arrives there. Players, especially the catcher, are heavily protected, and substitutes are allowed for injured players. Baseball is played regularly in London at Stamford Bridge.

Basel City of Switzerland, also called Bâle and Basle. It is situated on the Rhine and is an important railway junction for lines to France, Germany and Italy. Its university was founded in 1460. The industries include the making of chemicals and ribbons and there are large electricity works here. In 1929 the city was made the headquarters of the new bank for international settlements. Here a famous church council met from 1431 to 1449 and here Erasmus lived and was buried. Pop. (1930), 148,063.

Bashan District of Palestine. East of the Sea of Galilee, it is mentioned in the Old Testament and was famed for its bulls.

Bashi Bazouk Irregular mounted infantry of the Turkish army. They were maintained and armed by the Government, but received no pay and wore no uniform. Their name became notorious during the Bulgarian atrocities of 1876.

Bashkir Soviet republic. It is in the Ural region and covers 145,386 sq. m. A member of the union of Soviet Republics, its capital is Ufa. The name is that of the Bashkirs, a Finnish people. Pop. 2,740,000.

Basil Name given to several aromatic herbs. One is sweet basil which is grown in Europe and is used in cooking as is the bush or lesser basil. The wood of holy basil, called tulni by the Hindus, is used to make prayer beads.

Basil Name of two Roman emperors of the East. Basil I., founder of the Macedonian dynastry, was a favourite of Michael III., who made him his chamberlain. He murdered the emperor's colleague Bardas, and was raised to his place in A.D. 866. In 867 he murdered Michael and reigned alone. He proved a capable and energetic ruler, carried out important legal reforms and resisted the claims of the see of Rome to superiority over Constantinople. He died in 886.

Basil II., surnamed Bulgaroktonos, or slayer of the Bulgars, was a son of Romanus II., and a descendant of Basil I. The most notable event of Basil II's reign was the subjugation of Bulgaria, which, after some

years of sporadic war, was achieved in 1014. He died in Dec., 1025, having reigned since 976.

Basil Saint and father of the Church surnamed the Great. A brother of Gregory of Nyasa, he was born in Cappadocia, 329. He studied at Constantinople and at Athens. He was ordained in 363, and was chosen Bishop of Caesarea seven years later. With his pen and in the pulpit he showed himself the most redoubtable champion of orthodoxy against the Arians; he also did much to improve the liturgy and to reform the monastic life of the Church in the East. His most famous work is *De Spiritu Sancto*. He died Jan. 1, 379, and his feast is Jan. 30.

Basildon Two villages of Berkshire called Upperand Lower. They are on the Thames, 8 m. from Reading.

Basilica Architectural term. It was applied by the Romans to any large building used as an exchange, law courts, etc. The conventional form was a rectangle at least twice as long as it was broad, the interior having a two-storied colonnade running round it. There were several basilicas in and about the Roman Forum, the largest being the Basilica Julia. At a later date the term was extended to the larger Christian churches, which were similar in form to the civil basilicas. Examples of the later forms of Christian basilica are S. John Lateran and S. Maria Maggiore in Rome.

Basilisk Genus of lizard of the Iguanidae family. It is found in Mexico and South America and is distinguished by the presence in the male of erective crests on the head, on the back and on the tail.

In the 17th century a large brass cannon was called a basilisk.

Originally the word referred to a kind of dragon, a fabulous monster of hideous appearance and great malignity; it was sometimes called a cockatrice.

Basingstoke Borough and market town of Hampshire. It is 48 m. from London and is reached by the S. and Gt. Western Rlys. It is also served by a canal. The town was at one time a centre of the wool trade, but is now chiefly known as a centre for agricultural produce. Agricultural implements are made. Pop. (1931), 15,320.

Near is the village of **Old Basing**. It contains the ruins of Basing House, which was held by the Marquess of Winchester for Charles I. during the Civil War. He called it "Loyalty House."

Basket Ball Outdoor game. It was invented in 1891 in Massachusetts. It is played by two teams on a space 60 ft. by 40 ft., and each team consists of five players. Both centres stand in a central ring and the referee tosses the ball over their heads. Keeping the ball in constant play and touched by the hands only, each team tries to propel it into the opposing goal which is a net 18 ins. wide hung from a metal ring backed by a screen. The game is played by men and women, boys and girls, and there are slight variations in the rules when played by women and girls. The English variant of the game is called net ball (*q.v.*).

Basque Race of unascertained origin. It forms the bulk of the population of the provinces of Biscay, Alava, Gulpuzcoa and Navarre in northern Spain and also in parts of the department of Basses Pyrénées in France. A vigorous race, extremely independent and conservative, for long they were allowed by the Spanish crown to retain a large measure of autonomy, and every Basque freeholder was acknowledged to be noble. The Basque folk dances and sports are remarkably interesting.

Basra Town and seaport of Iraq. It is situated on the western bank of the Shatt-el-Arab, about 35 m. from the Persian Gulf, and 270 from Bagdad, and owing to the low-lying ground is subject to inundations. The climate is unhealthy. The town is intersected by small tidal canals. The principal exports are dates, for which the Basra vilayet is celebrated, wool, gum and attar of roses. Since the establishment of the kingdom of Iraq, its consequence has revived. The British captured it from the Turks in Nov., 1914, and used it as a base for the campaign in Mesopotamia. Works were erected for the shipping, etc., and its docks are now equipped in the most modern manner. Pop. 35,000.

Bass Fish of the perch genus. Known to the Romans as lupus, or wolf, from its voracious disposition, it is from 12 to 18 ins. in length and frequents the southern coast of England and the eastern shore of Ireland. A marine fish, some species thrive in fresh water and these acquire a more delicate flavour. On the Kentish coast this fish is known as the sea dace.

Bass Musical term. It denotes: (1) The lower part of the musical system, approximately from middle C to the extreme low limit; (2) The lowest part of any piece of music; (3) The lowest male voice; (4) The lowest pitch of certain classes of instruments, *e.g.*, bass viol, bass drum, etc.

Bass Family that gives its name to a famous beer. This is brewed at Burton-on-Trent by Messrs. Bass & Co., Ltd., and its excellence is said to be due to the qualities of the water there. The first Bass to brew ale at Burton was William Bass, who began business there in 1777. His grandson, Michael Thomas Bass, joined the business later, and under his control it became one of the largest in the world. He took two assistants into partnership and called it Bass, Ratcliffe & Gretton. He was M.P. for Derby from 1848 to 1883 and died at Rangemoor, his seat in Staffordshire, April 29, 1884. His son, Michael Arthur Bass, was made a baronet, and in 1886 a peer, as Baron Burton. As he had no sons the title passed, when he died in 1909, to his daughter, the wife of J. E. Baillie, who became Baroness Burton.

Basset Horn Tenor clarinet. It is fuller of tone than an ordinary clarinet. A transposing instrument in F, its music is written a fifth higher than it is sounded when the treble clef is used; a fourth lower when the bass is used. It was used by Mozart and Mendelssohn.

Basset Hound Small dog. It has a long body and crooked legs; in colour it is black and white, with tan on the head. It is kept chiefly as a pet.

Bassoon Wind instrument. It is the bass of the oboe family and in orchestration forms the bass of wind instruments when used together. It is played with a double reed connected by a brass crook to a tube nine feet long doubled on itself.

Bas-Relief Form of mural decoration which projects but little from its background. It was used by the ancient Egyptians, Persians and Romans, and fine examples are the Elgin marbles in the British Museum. Good modern work was done by Flaxman, Thorwaldsen and Canova.

Bass Rock Islet in the Firth of Forth. It consists of a mass of volcanic rock about one mile in circumference and 350 feet in height. On it S. Baldred (d. 756) had a hermitage, and in the 17th century a castle, which was used as a prison, was erected here.

Bass Strait Strait which separates Tasmania from the Australian mainland. It is named after George Bass, surgeon of H.M.S. *Reliance*, who surveyed it in 1798. It varies in width from 80 to 140 m.

Basswood Tree of North America, also called the American lime. It bears yellowish flowers. The wood of the tulip tree is also called basswood and at one time this was a name for the common lime, bass or bast being obtained from its inner bark.

Bastard Child born out of wedlock. By the common law of England such is incapable of succeeding to property by right of relationship. But while a bastard has no legal kindred, his natural kinship counts for the purpose of intermarriage; thus, a bastard sister is within the prohibited degrees as regards marriage. In England under the Poor Law a bastard follows, not his father's, but his mother's settlement.

The law of most European countries, including Scotland, has always provided that a bastard becomes legitimate on the subsequent marriage of his parents. The law of England for long refused to admit this principle, but in 1927 it was altered and a bastard in England can become legitimate, just as in Scotland, by the subsequent marriage of the parents, provided they were free to marry each other when the child was born.

Bastille Term originally applied to the various strong points in the fortifications of Paris, but later restricted to the castle of S. Antoine. During the Fronde the Bastille was captured by the insurgents (Jan. 13, 1649) and its retention by them was one of the terms of peace. It reverted to the king in 1651, and gradually came to be used more as a state prison than a fortress. Orders for incarceration in the Bastille were called *lettres de cachet* Blank *lettres de cachet* could be bought like postage stamps, a scandalous traffic that permitted the Bastille to be used as means of gratifying private enmity. At the outbreak of the Revolution the Bastille was demolished by the Parisians on July 14, 1789. The event is commemorated by the Fête Nationale (July 14).

Bastinado Form of punishment once used in the East, particularly in Turkey. It consisted of a long continued series of light blows on the soles of the feet. A prolonged bastinado was capable of killing the victim.

Basutoland British possession in South Africa. It is bounded on the east by Natal, on the south and south-west by the Cape Province, and on the north by the Orange Free State. It forms the south-eastern edge of the great tableland of South Africa, with the great rampart of the Drakenberg on the seaward side. The country is mountainous, but there are large fertile and level tracts which make it a great grain-producing area. Cattle, sheep and goats are reared. The population is about 500,000, practically all natives. The white population is very small. The capital is Maseru, and the area 11,716 sq. m.

Basutoland was taken by the British in 1884 and is now a crown colony. It is governed by a resident commissioner. The Basutos are a branch of the great Bantu race, and culturally the most advanced in South Africa.

Bat Flying animal. The wings are formed from the two front limbs. In these the fingers are greatly developed and are united by a membrane, which when spread out form wings not unlike an umbrella. Bats live on insects, but the larger bats found in India eat fruit, and will suck blood from a living being.

Batavia Seaport and city of Java; the capital of that island and of the Dutch East Indies. Its harbour is 6 m. away at Tanjonk Priok. It is on the north-west coast at the mouth of a river, and is divided into two parts, the native city and the European quarter, where the Dutch have erected some fine buildings for public purposes. The Batavia Museum of arts and sciences is notable. Much of the trade of the island passes through the port. Pop. 290,000.

Batavia, the name being taken from a tribe called the Batavi, is the old name for Holland. The republic set up by Napoleon in 1806 was called the **Batavian Republic.**

Bath City and county borough of Somerset. It stands on the Avon, 107 m. from London and 12 m. from Bristol, and is served by the G.W. and L.M.S. Rlys. It owes its importance to its mineral springs, the virtues of which were known to the Romans, who founded the city and called it Aquae Sulis. Their baths and other buildings are the most remarkable Roman remains in Britain. In the 18th century Beau Nash discovered its possibilities as a fashionable health resort. He built a concert room and the pump-room, and about this time the town was laid out with its squares and circuits that make it so attractive. It still has a great measure of popularity as a health resort, as the waters are beneficial for gout, rheumatism, sciatica, and other like affections. It gives its name to a diocese, Bath and Wells, although the cathedral is at Wells.

The chief buildings are the abbey church, a magnificent perpendicular edifice and the pump-room and the baths. There are a number of houses with historic associations. Pop. (1931) 68,800.

Bath Earl of. English statesman. Born March 22, 1684. William Pulteney was educated at Westminster and Christ Church, Oxford. In 1705 he became M.P. for Hedon. At first he was a stout henchman to Walpole, and on his accession to power (1714) he became Secretary of War. On the fall of Walpole in 1741 he was asked to form a ministry, but declined. He was then (1742) made a peer as Earl of Bath and entered the cabinet, retiring in 1746. He died July 7, 1764, when his title became extinct.

Bath Marquess of. English title borne since 1789 by the family of Thynne In 1682 Thomas Thynne was made Viscount Weymouth. Thomas (1734-96), the 3rd viscount, was made Lord Lieutenant of Ireland in 1765. From 1768-70 he was Secretary of

State, and he filled the same position, 1775-79. In 1789 he was created Marquess of Bath and he died Nov. 19, 1826. The marquessate has since been held by his descendants. The family seat is Longleat in Wiltshire, in the midst of the family estates. The eldest son of the marquess is called Viscount Weymouth.

Bath Order of the. English order of knighthood. It dates from 1399, but was revived in 1725, after being long in desuetude, by George I. at the instigation of Walpole, who saw in it a cheap and effective means of bribery. At first it consisted of a grand master and 36 companions, and was purely military. It was reconstituted in 1815 in three grades—Knights Grand Cross (K.G.C.B.), Knights Commanders (K.C.B.), and Companions (C.B.). In 1847 a civil division was added. The Bath ranks next in dignity to the Garter and is in particular the decoration associated with high rank in the services, military and civil. The ribbon is crimson, and the motto is *Tria juncta in uno*. The chapel of the order is Henry VII.'s Chapel, Westminster Abbey.

Bathgate Burgh of Linlithgowshire, Scotland. It is about 20 m. west of Edinburgh, on the L.N.E. Rly. The centre of a rich mineral district, it has coal, iron and shale mines and freestone quarries. The manufactures include paraffin and chemicals. Pop. (1931) 10,097.

Bathsheba One of the wives of David and mother of Solomon. She was originally the wife of David's officer, Uriah the Hittite, whose death David treacherously procured in order that he might possess her (2 Sam. ii., and 1 Kings i.).

Bathurst Earl. English title. Allen Bathurst (1684-1775) belonged to an old Sussex family and was M.P. for Cirencester from 1705 to 1711 when he was raised to the peerage as Baron Bathurst of Battlesden. He was advanced to an earldom in 1772.

Henry, the 2nd earl (1714-1794), son of the preceding, was M.P. for the family borough of Cirencester in 1735. In April, 1754, he was appointed a judge of the Common Pleas and next month became Lord Chancellor, and was raised to the peerage as Baron Apsley, succeeding his father as Earl Bathurst in 1775. He resigned the Great Seal in 1778, but a year later rejoined North's administration as Lord President of the Council.

Henry, the 3rd earl (1768-1834), son of the 2nd earl, was elected M.P. for Cirencester in 1783 and appointed a Lord of the Admiralty by Pitt in the same year. He was subsequently Lord of the Treasury (1789-1791), and a Commissioner of the Indian Board of Control (1793-1802). When Pitt resumed office in 1804, Bathurst became Master of the Mint, and later President of the Board of Trade under Portland and Perceval. In the Liverpool administration he was Secretary for War and the Colonies (1812-1827), and he held office for the last time as Lord President of the Council under Wellington (1828-1830). He died July 29, 1834.

Seymour Henry, the 6th earl (born 1864), married a daughter of Lord Glenesk. Cirencester House is the family seat, and the earl's eldest son is called Lord Apsley.

Batik Process of dyeing fabric to produce marbled colour effects. The material is immersed in different coloured dyes successively, the parts to remain unaffected in each stage being covered by hot wax. The name is also applied to the fabric so treated, and the design produced by this method.

Batley Borough of Yorkshire (W.R.), on the L.M.S. and L.N.E. Rlys., 188 m. from London. The main industry is woollen (shoddy) manufacture, and there are coal mines and stone quarries in the neighbourhood. Pop. (1931) 34,573.

To the south is the district of **Batley Carr**, which has a station on the L.N.E. Rly.

Battalion In modern armies the chief infantry unit. It consists approximately of 1000 of all ranks. In the British Army the battalion system dates from the reorganisation of 1871 when the various regiments of foot were linked, usually in twos, each former regiment becoming a battalion of a regiment organised on a territorial basis.

Normally a British regiment consists of two regular, or first line, battalions, two special reserve battalions and an undefined number of Territorial Force battalions. During the Great War service battalions were raised and some regiments had 30 or more battalions in the field. The commanding officer of a battalion holds the substantive rank of lieutenant-colonel. A battalion is divided into four companies, each under a major or a captain, and each company into platoons.

Battenberg Name of a German family. The original counts of Battenberg in Hesse Nassau became extinct early in the 14th century, but the title was revived in the middle of the 19th century in favour of the morganatic wife of a younger son of the Grand Duke of Hesse, who was given the rank of princess. Two of her sons, Prince Louis and Prince Henry, settled in England. Louis rose to the rank of admiral in the British Navy. On the outbreak of the Great War he abandoned his German name and title, took the family name of Mountbatten, and was created a peer as the Marquess of Milford Haven (*q.v.*).

Henry of Battenberg married the Princess Beatrice, youngest daughter of Queen Victoria, and died of fever contracted on active service in Ashanti, Jan. 21, 1896. Their daughter, Victoria Eugenie (Ena), married Alphonso, who, until 1931, was King of Spain. Of their three sons, Maurice was killed in action Oct. 27, 1914; and Leopold died April 23, 1922. The eldest, Alexander, having taken the name of Mountbatten, was created Marquess of Carisbrooke in 1917.

Battering Ram Military engine employed in siege warfare in early times. It consisted of a massive wooden beam slung on a stout frame and furnished with an iron head, the repeated strokes of which were capable of making a breach in the strongest wall. A wooden penthouse was often built for the protection of the soldiers who operated the ram.

Battersea Borough of London, one of the 28 in the county. It is on the south side of the river and bridges link it with Westminster. It has stations on the S. Rly., and it includes the busy district round Clapham Junction Station and part of Clapham Common. Battersea Park is a fine open space. The industries include engineering and soap works. Pop. (1931) 159,542.

Battery In military usage, any unit of two or more guns in a fortification or in the field. A battery of mobile artillery consists of six guns (three sections) in the horse artillery, and, as a rule, four guns

(two sections) in the field artillery, with their complement of officers and men. The commanding officer of a battery ordinarily has the substantive rank of major.

Battery Group of machines or appliances. It is used in this sense in the electricity, mining, engineering and other industries. In electricity a battery is a collection of cells, primary or secondary, used for the production or storage of the power, in small lighting sets, wireless receivers, etc.

In 1932 it was announced that Dr. J. J. Drumm, of University College, Dublin, had invented a storage battery that makes the storage of power for traction purposes a practical proposition. *See* ACCUMULATOR, CELL.

Battle Market town and urban district of Sussex. It is 7 m. from Hastings and 51 from London, on the S. Rly. Its most famous building is Battle Abbey. The first abbey was founded by William the Conqueror after his victory at Senlac, and it was a rich religious house until the dissolution of the monasteries. The site is occupied by a modern residence in which some of the abbey ruins have been included. After the Great War it was sold and became a school for girls. In 1930 the building was burned down. The town has an agricultural trade. Pop. (1931) 3490.

The Battle Abbey Roll is a list of warriors supposed to have come over to England with William the Conqueror. Really it is of later date.

Battle Cruiser Large warship which is faster, but less heavily armed, than a battleship. Battle cruisers developed from the old armoured cruisers, and the first to be built for the British navy was the *Indomitable* launched in 1908. Others, including the *Lion* and *Tiger*, were built, and these did much fighting during the Great War, and suffered heavy losses at Jutland, including the *Queen Mary*, *Invincible* and *Indefatigable*. At present (1932) the British navy has only three battle cruisers: the *Repulse* and *Renown* of 26,500 tons and 6.15 in. guns, and the *Hood*, the largest warship afloat. Completed in 1921, the *Hood* displaces 41,000 tons and carries 8.15 in. guns. The *Tiger* was broken up in 1932.

Battleship Ship used for purposes of warfare. In practice the word is confined to the largest ships in the fleet. These are the successors of the ships of the line which composed the striking force of fleets in the days of Nelson, and also of the triremes of the Greeks and the galleys of the Romans. The modern battleship, costing some £6,000,000, is a structure of remarkable strength, size and speed, perhaps the most wonderful piece of mechanism yet devised by science.

The first modern battleship dates from about 1862. In 1863 the British Government launched ironclads with turrets and from these the present ships have developed. They became larger, swifter and stronger, carrying more and heavier guns. The *Royal Sovereign*, launched in 1890, was one of a class that prepared the way for the Dreadnoughts. The innovation about these ships was that they were armed only with big guns, except for the small ones used to repel torpedo attacks. They displaced 17,900 tons and carried 12 in. guns. The *Iron Duke* class, their successors, carried 13.5 in. guns and displaced 23,600 tons, while the *Queen Elizabeths* carried 15 in. guns and displaced 27,000 tons. Such were the superdreadnoughts which formed the nucleus of the Grand Fleet in the Great War.

To-day (1932) there are four classes of battleships in the British navy. Three of these are the *Queen Elizabeths*, the new *Royal Sovereigns*, also with 8.15 in. guns, and the *Iron Dukes* with 10 13.5 in. guns. The latter two classes are slightly smaller than the *Queen Elizabeths*. The fourth class consists of the *Rodney* and the *Nelson*, completed in 1927. They displace 35,000 tons and carry 9 16 in. guns.

Other navies have similar ships, but the Germans have constructed a pocket battleship of only 10,000 tons, which, it is claimed, is equal in power to a super-dreadnought. In 1923, by the Treaty of Washington, a life of 20 years was allowed for battleships.

Batum Seaport of Georgia, on the Black Sea, 600 m. from Baku. There is a harbour and facilities for exporting the oil that is brought by rail from Baku. It is also linked by rail with Tiflis. For long Batum was part of Turkey. In 1878 it was given to Russia, and in 1921 was handed over to the new republic of Georgia. Pop. 46,000.

Bauchi Mountainous province of Northern Nigeria. The area is about 21,000 sq. m., and the estimated population about 1,000,000. Hausa is the speech of the province, in which the chief industry is the mining of tin. *See* NIGERIA.

Baudelaire **Charles Pierre.** French poet. He was born in Paris, April 9, 1821. His youth was unsettled and dissipated, and legal proceedings had to be taken by his relatives for the protection of his property. In 1857 he published his first and most famous volume of poems, *Les Fleurs du Mal*, which was highly praised by Victor Hugo and others, but, owing to his choice of subjects, its author was prosecuted for offending against public morality. Baudelaire had a good knowledge of English and made some remarkable translations into French of the works of Edgar Allen Poe, for which he had the greatest admiration. He died of general paralysis, Aug. 31, 1867. Apart from *Les Fleurs du Mal* and the Poe translations, his best known work is *Petits Poèmes en Prose*.

Bauxite Mineral. The chief ore from which aluminium is obtained. It is used for lining furnaces that are exposed to great heat. The name comes from Les Baux in France, in which country it is chiefly found. Supplies also come from the United States, Hungary and Guiana. *See* ALUMINIUM.

Bavaria Republic of Germany. In the south of the land, it has an area of 29,334 sq. m., and a population of 7,379,590. Munich is the capital and other large cities and towns are Nuremberg, Augsburg, Ludwigshafen, Wurzburg, Regensburg and Furth. It consists of eight provinces and the free state of Coburg was united with it in 1919. It is governed by a premier and a cabinet, who are responsible to a diet, the Landtag, which is elected by the votes of all adults.

For many years Bavaria was ruled by dukes, one of whom was made an Elector in 1623. In 1806 the duke was made a king, and in 1871 the kingdom joined the new German Empire. This lasted until 1918 when a republic was set up. *See* GERMANY.

Baxter **George.** English artist. Born in 1804, he was a son of John Baxter (1781-1858), a printer at Lewes. He became a printer, and is known as the inventor of a method of printing in oils. He died in 1867. Baxter prints are valued by collectors.

Baxter **Richard.** English divine. He was born Nov. 12, 1615, in Shropshire. In 1638 he became a minister at Bridgnorth, and in 1640 at Kidderminster, but when the civil war began in 1642 he went to Coventry and then became a chaplain in the Parliamentary army. In 1649 he returned to Kidderminster where his preaching had an extraordinary influence in reforming the morals of the town. In 1660 Charles II. made him one of his chaplains, but he refused a bishopric. In 1662 the Act of Uniformity drove him from the Church of England, and for the rest of his days he was a Nonconformist preacher in London and Acton. He died Dec. 8, 1691. Baxter's fame rests on his book *The Saint's Everlasting Rest*. He also wrote *The Reformed Pastor* and *A Call to the Unconverted*, and left an *Autobiography*.

Bay Evergreen tree. It has lance-shaped toothless leaves, growing alternately on the stems. It is the true laurel with which the ancients crowned their heroes. Attaining a height of 30 to 60 ft., it is shrub-like in growth with numerous small stems. The insignificant yellow flowers are followed by green berries which ripen to a rich purple. The leaves are aromatic and used in cookery.

Bayard French knight called the Chevalier, whose name has become proverbial as the perfect type of soldier. Born in 1473 he belonged to a noble family of Dauphiné. He served under Charles VIII. of France in Italy, and was knighted for gallantry at the battle of Fornova, and he continued to distinguish himself throughout the Italian wars, on one occasion defending a bridge single-handed against 200 Spaniards. At the battle of the Spurs (1513), by a display of chivalrous punctilio, he became a prisoner of the English, but his bearing so impressed Henry VIII. that he was released at once on his parole not to bear arms for six weeks.

Francis I. promoted Bayard to high command, which he signally justified by his defence of Mezières against the army of the Emperor Charles V. Though his own force consisted of no more than 1000 men, he compelled the imperial army, numbering 35,000 to raise the siege. In 1523 he again went to Italy, and was mortally wounded, April 30, 1524, while guarding the French rear in the retreat across the Sesia.

Bayeux Town of Normandy, on the R. Aure, about 5 m. from the coast. It is an episcopal see and has dyeing and lace-making industries. The museum contains the celebrated **Bayeux Tapestry**, which gives in needlework 72 scenes illustrative of the Norman Conquest of England. According to ancient tradition the tapestry was the work of Matilda, wife of William the Conqueror, but it is now generally believed to have been executed to the order of William's brother, Odo, Bishop of Bayeux, for his cathedral. Pop. (1931), 7530.

Bayonet Short dagger-like weapon made to be fitted to the muzzle of a rifle, and thereby converting the rifle into a kind of pike or spear. The name is commonly said to be derived from the town of Bayonne, where a short dagger called the *bayonette* was made towards the end of the 15th century.

Bayonne Town and port of France. It is situated at the confluence of the Adour and the Nive. It has a fine cathedral dating from the 13th century. Leather and chocolate are manufactured, but the main importance of Bayonne is derived from its commerce. Pop. (1931), 31,727.

Bayou Channel of dead water cut out by natural action from a main river and connecting the main river with another stream. Bayous are a feature of the Mississippi region, and Mississippi is known as the bayou state.

Bayswater District of London. In the metropolitan borough of Paddington, it lies to the west of the city. It is north of Kensington Gardens and the Bayswater Road is a main thoroughfare to and from London. It is served by the District Rly.

Bazaar (Persian *bazar*, a market). Permanent market or street of small shops or collection of streets or stalls under one roof. The term is in general use in India and is found in the Turkish and Arabic languages. A mercantile handbook of 1340 gives *bazarra* as Genoese for a market place and is the first recorded European use of the word.

Bazaine **Achille François.** French soldier. Born Feb. 13, 1811, he served in Africa with the foreign legion as a private soldier, and rapidly rose to the rank of brigadier general. He commanded a brigade in the Crimea and was later promoted general of division. He served with great distinction in Lombardy (1859) and Mexico (1862), and in 1863 was appointed marshal and senator. On the outbreak of the Franco-Prussian War he was given the command of the third corps of the Rhine Army, and subsequently became acting commander-in-chief of all the French forces. After the disaster of Spicheren, he retreated on Metz, where his army was invested by the Germans. Macmahon's attempt to relieve Metz was defeated at Sedan, and Bazaine surrendered with 140,000 men. He was tried by court martial and sentenced to degradation and death, but the sentence was commuted to exile. He escaped to Italy in 1874, whence he went to Madrid. He died Sept. 23, 1888.

Bazalgette **Sir Joseph William.** English engineer. Born March 28, 1819, he was appointed in 1849 engineer to the London drainage commissioners and continued to hold a similar position under their successors, the Metropolitan Board of Works. He designed the main drainage system of London, which after many delays was begun in 1858 and completed in 1865. At the same time he carried out the embanking of the Thames. The first section (Westminster to Vauxhall) was built between 1860 and 1869. A second section (Westminster to Blackfriars) was opened in 1870. The Chelsea Embankment was built 1871-74. The original conception of the Blackwall Tunnel and the Tower Bridge was also due to Bazalgette. Knighted in 1874, he died March 15, 1891.

Bdellium Gum resin that exudes from the balsam tree. There are two varieties, Indian and African; the Indian smells somewhat like cedar wood.

Beachcomber In the Pacific Islands a term for a loafer. Beachcombers are usually wastrels who spend

eir time on the beaches ready to pick up ıything they can find. It also refers to a ttler there who gets a living by fishing for arls.

Beachy Head Prominent headlands on the south coast of ngland. In Sussex, just outside Eastbourne, ıs a chalk cliff, where the South Downs run ıt to meet the sea, and is 533 ft. high.
The battle of Beachy Head was fought June , 1690, between the English fleet under Lord rrington, who had also some Dutch ships th him, and the French fleet. The victory y with the French who outnumbered Tor-gton's fleet.

Beacon Signal, usually on a hill. Such signals often took the form of es lit on hilltops and consequently some hills e now called beacons, for instance, Dunkerry eacon on Exmoor, and Inkpen Beacon in rkshire. Beacons were used as warnings very early times, and there are references them in the Bible and Homer. They were at the time of the Spanish Armada, but since en have been chiefly used at times of re-icing, such as the coronation of King George in 1911. The development of aviation gave em a new life and they are used to light nding grounds.

Beaconsfield Market town and urban district of Bucking-mshire, 21 m. from London. A residential burb for Londoners, its associations are iefly with Burke, who lived here for some ne and is buried here, and with Disraeli. op. (1931) 4843.

Beaconsfield Town of South Africa. It is 3 m. from Kim-rley, and the main line from Capetown, 0 m. away, passes through it. Near are amond mines. Like other places in the British npire it is named after Lord Beaconsfield. Another Beaconsfield is in Tasmania. Since 12 it has been part of the municipality of mberley.

Beaconsfield Earl of. British states-man. Born in London, ec. 21, 1804, Benjamin Disraeli was the iest son of Isaac Disraeli and the grandson another Benjamin Disraeli who had settled England in 1801 and became naturalised. 1817 the family adopted the Christian ith. Benjamin was articled to a solicitor, d in 1826 made a name with a novel, *Vivian rey*. Between 1827 and 1831 he spent a od deal of time in travel. In 1832 he tried enter Parliament as a Radical, and in 35 he stood as a Tory. In the interval he rote a number of books, novels, satires and mphlets, now mainly forgotten. In 1837 he tered Parliament as M.P. for Maidstone, d in a few years he became the leader of a all group called the Young England Party ose ideas are described in his novels, *mingsby*, *Sybil* and *Tancred* which appeared tween 1844 and 1847. He was then M.P. r Shrewsbury, while from 1841-78 he repre-nted Buckinghamshire.
In 1846, when Peel broke his party over the rn Laws, Disraeli became a serious politician. e led the Tory opposition to Peel, and in 1852 came Chancellor of the Exchequer and eader of the Commons under Lord Derby. e had another short spell of office in 1858, but s political reputation was made by the skill ith which he attacked the Liberals when ey were in power (1859-66). In 1867 he was again Chancellor of the Exchequer and was responsible for the Reform Bill of 1867. From Feb. to Dec., 1868, he was Prime Minister. In 1870 he published *Lothair*.

Another period of opposition followed, and in 1874 Disraeli again became Premier. During the next six years he bought up shares in the Suez Canal, made Queen Victoria Empress of India, and attended the Congress of Berlin. In 1878 he was made an earl and in 1880 he resigned office as the result of an unfavourable general election. He died April 19, 1881, in London and was buried at Hughenden, his Buckinghamshire home. Disraeli's wife was the widow of Wyndham Lewis; he married her in 1839. She was made a viscountess in 1868 and died Dec. 15, 1872. Primrose Day (April 19) was inaugurated in honour of Beaconsfield. His *Life* has been written by W. F. Monypenny and G. E. Buckle. Another *Life* is by André Maurois: this has been translated from French into English.

Beadle In England a parish officer. He was usually appointed by the vestry and acted as messenger, attendant, doorkeeper and, when necessary, in other capacities. He also performed duties more proper to the police. In Scotland beadle means church officer. At the universities the beadle has become a bedel or bedell.

Beagle Small hunting dog. It is used chiefly for the hunting of hares, and several packs are kept in England for this purpose, one being by Eton College. They are a miniature breed of foxhound, extremely intelligent and keen of scent. There are two varieties, smooth and rough, but the only difference is the texture of the coat. Beagle packs are followed on foot.

Beak In birds and one or two animals, part of the head. The beak is a horny sheath covering the jaw and used for collecting food and sometimes for fighting. It varies in the different birds, in each case being adapted to the particular need. The beak of the kingfisher is long and slender so that it can dig in the mud. In eagles and other birds of prey it is usually hooked and can deliver a very powerful blow. In some birds it has hairs on it, thus enabling insects to be caught. The turtle possesses a beak, and the long sucking mouths of certain insects are called beaks.

Beam Piece of wood or metal used in building for purposes of support. Wooden beams are used to support the roofs and railings of houses, but in modern commercial structures steel beams or girders take their place. The beam of a ship is her greatest breadth on the water line.

A beam of light or sound is a collection of parallel rays, and beams of electro-magnetic waves are used with success for long distance wireless transmission. In Great Britain beam services to Australia, S. Africa, Canada and India are worked by the Post Office.

Beamish Mining centre of Durham. It is 11 miles from Newcastle-on-Tyne, on the L.N.E. Rly.

Bean Seed of certain leguminous plants. In Great Britain the chief kinds, all used as food, are the broad bean, the French or kidney bean and the runner bean, called the scarlet runner. All will grow in British gardens, and French beans are often forced by being grown under glass. In this way it is possible to secure a supply all the year round. Other

beans, *e.g.* the soya and carob are grown in warmer countries.

The bean tree, which grows in Australia, has yellow flowers and seeds like chestnuts. The bean louse and bean weevil are among the bean pests and beans are also attacked by bean mildew.

Bear A flesh-eating mammal with long, sharp claws, small head and short tail. Bears feed on fruit and insects, as well as on flesh, and all except the heaviest can climb trees. They can stand upright and having seized an enemy in the fore paws can crush it to death. Although very clumsy in appearance they can move rapidly. They hibernate during the winter.

The commonest variety is the brown bear. This is found in Europe and America and is the one led about by showmen. Its flesh is eatable. The grizzly and black bears are found in the United States, though the former, which is the largest and strongest of the bears, is now almost confined to the national parks. The fur of the black bear is valuable. The polar bear is found in the Arctic regions and the spectacled bear in the Andes. In Asia there are the Syrian bear and the Malayan or honey bear, the former having a valuable fur.

Bear baiting is a sport, once popular in England. A bear was put in a pit or chained to a stake and was then attacked by dogs, bulldogs being usually employed. The sport was carried on in England in the 12th century, but its most flourishing period was the 16th and 17th centuries. It fell into disuse in the 18th, although it was not forbidden by law until 1835. Large cities had their bear gardens. In London there were gardens at Southwark, Westminster and Clerkenwell.

Beard Moss (*Usnea barbata*). Pendulous greyish green thread-like lichen. It hangs from the branches of old trees and is found in Britain, and other countries in the temperate regions. An orange dye can be produced from it.

Beardsley **Aubrey Vincent.** English artist. Born at Brighton, Aug. 21, 1872, he worked for some years as an architect's draughtsman. His bizarre talent attracted the attention of Sir Edward Burne-Jones, on whose advice he devoted himself to illustrative and decorative art, and from 1893 until his death he was one of the most widely discussed artists of the day. His work was admired for its exquisite decorative quality and disdain of conventional drawing and criticised for its morbidity and decadence. Much of it appeared in the celebrated *Yellow Book* (1894-1895). He illustrated an edition of *The Rape of the Lock* (1896), and his frontispiece to *Volpone* (1898) is regarded as his masterpiece. He died March 16, 1898.

Beard Tongue Name often used for the flower also called the pentstemon. (*q.v.*).

Bearing In a machine the mechanical device at which the revolving parts make contact with the non-revolving parts. For plain bearings, used when large surfaces are in contact, alloys made to stand friction are used. They are usually in two halves.

The commonest kinds of bearings are ball and roller bearings, which offer much less friction than the plain ones. The balls or rollers are arranged so that they do not touch one another; they move round with the shaft and also revolve on their own centres.

Béarn District in the Pyrenees, once a province of France. Earlier it was part of Gascony and then of Navarre, becoming part of France when Henry of Navarre (Henry IV.) became king in 1589.

Beatification In the Roman Catholic Church a step towards canonisation. The person beatified is declared blessed, and can be venerated. The process usually takes a long time. It was about 30 years in the case of Joan of Arc.

Beatitudes Certain sayings of Jesus Christ that are recorded in Matt. v. and Luke vi. They form the opening passage of the Sermon on the Mount, and each of them begins with the word blessed. S. Matthew gives them more fully than does S. Luke. The word has been used for them since the 4th century.

Beaton **David.** Scottish prelate. He was born in 1494, and was educated as a priest at St. Andrew's, Glasgow, and then in Paris. In 1537 he was made Bishop of Morepoix. Next year he was made a cardinal and in 1539 he returned to Scotland to become Bishop of St. Andrews. He did much to prevent Henry VIII. from uniting Scotland and England. Other actions made him disliked by the reformers and in May 29, 1546, the cardinal was murdered in his castle at S. Andrews.

Beatrice Beloved of Dante. She was the "glorious lady of his mind," the one who typifies the spirit of love. She is mentioned in *The Divine Comedy*, but little is known of her. She was a native of Florence and first met Dante when both were children. She was married to Simon di Bordi and was only 24 when she died in 1290.

Beatrice Princess of Great Britain. Beatrice Mary Victoria Feodora, the youngest child of Queen Victoria, was born in April 14, 1857, and married in 1885 Prince Henry of Battenberg, who died in 1896 while on active service with the British forces in Ashanti. Her eldest son was created Marquess of Carisbrooke and her daughter, Victoria Eugenie, was Queen of Spain until 1931. *See* BATTENBERG.

Beatty **Earl.** English admiral. The son of an Irishman, Capt. D. L. Beatty of Borodale, Wexford, he was born in Cheshire, Jan. 17, 1871. In 1884 he entered the navy. In 1896 he was second in command of the naval brigade that went up the Nile and in 1898 he marched with Kitchener to Khartoum. The Boxer Rebellion in China offered him another chance. There he was severely wounded, but he had made a name for himself, and before he was 30 years old he was a captain and before 40 a rear admiral.

In 1912 Beatty became naval secretary to the First Lord of the Admiralty and in 1913 he went to sea in command of the battle cruiser squadron. He was holding this position when the World War began and he figured prominently in the fighting at sea. On Aug. 28th, 1914, he led his cruisers into the Heligoland Bight to support a raid by lighter vessels and on June 24, 1915, he fought the battle of the Dogger Bank. He was in command of the battle cruisers at Jutland and was in the thick of that engagement.

In Nov., 1916, Beatty succeeded Jellicoe as commander-in-chief of the Grand Fleet, and as such, in Nov., 1918, he received off Rosyth the surrender of the German warships. His reward was a grant of £100,000 and an earldom;

he was also made admiral of the fleet. In Oct., 1919, he became first sea lord, a position he retained until 1927.

In 1901 Beatty married Ethel, daughter of Marshall Field of Chicago. The elder of their two sons, who is known as Viscount Borodale, was elected Unionist M.P. for Peckham in 1931. Beatty's honours include the O.M. and membership of the privy council.

Beauchamp Earl. British title held by the family of Lygon since 1815. William Lygon was made a baron in 1806, and an earl in 1865, taking the title of Beauchamp because of his descent from the Beauchamps who were earls of Warwick. William, the 7th earl, became a leading Liberal politician. From 1899 to 1901 he was governor of New South Wales and from 1907 to 1915 he was in the Liberal ministry as lord steward, first commissioner of works and lord president. Later he was Chancellor of London University and Warden of the Cinque Ports, but he resigned these positions in 1931. His seat is Madresfield Court, Worcester, and his eldest son is called Viscount Elmley. The Viscount is Liberal M.P. for East Norfolk.

Beauclerk Name given to Henry I. of England (*q.v.*) because of his great learning.

Beaufort Duke of. English title held by the family of Somerset. It dates from 1682 when Henry Somerset, 3rd Marquess of Worcester, was made a duke. He was a descendant of Henry Beaufort, 3rd Duke of Somerset, hence the names. Charles Somerset, an illegitimate son of the duke, was made Earl of Worcester in 1513, and his descendant was created marquess in 1642.

The dukes of Beaufort owned at one time enormous estates in Gloucestershire, Monmouthshire, Glamorganshire and elsewhere, where they lived almost as kings, but much of their land has been sold. Badminton is now the family seat. Earlier it was Raglan Castle. Henry, the 7th duke (1792-1853) and Henry, the 8th duke (1824-99) were noted sportsmen. The duke's eldest son is called the Marquess of Worcester.

Beaufort Henry. English cardinal and statesman. One of the children of John of Gaunt by his second marriage, he was consequently a younger half-brother of Henry IV. He was consecrated Bishop of Lincoln in 1398, and, soon after the accession of his half-brother to the throne in the following year, was appointed to the chancellorship of the kingdom, which, however, he resigned in his translation to the see of Winchester as successor to William of Wykeham. In the quarrels between Henry IV. and the Prince of Wales (afterwards Henry V.) Beaufort sided with his nephew and fell into disgrace. On the accession of Henry V., however, he once more became chancellor and took a leading part in government business until 1417, when he resigned in order to be able to attend the Council of Constance.

After the death of Henry V. Beaufort was the leading opponent of the schemes of Humphrey, Duke of Gloucester, he became chancellor for the third time in 1424, and for two years was virtual ruler of England. His position becoming untenable owing to Humphrey's enmity, he again resigned, accepted a cardinal's hat from Pope Martin V., and was appointed papal legate for Germany, Hungary and Bohemia. Later he was recalled to the council, but Humphrey of Gloucester's hostility was renewed and an attempt was made to deprive him of his see. During his later years he took little part in public affairs. He died April 11, 1447.

Beaufort Scale Arrangement for calculating the force of the wind at sea. It was invented in 1805 by Sir Francis Beaufort. The scale consists of the numbers 0 to 12 each of which represents a certain wind velocity. For instance, calm is 0; a gale with a velocity of miles per hour of 39-46 is 8; a strong gale with a velocity of 47-54 is 9; a storm with a velocity of 64-75 is 11 and a hurricane with a velocity of over 75 m. per hour is 12.

Beauharnais French noble family. Belonging to the Orleans district, several of its members became prominent in the late 18th and early 19th centuries. François, Marquis de Beauharnais-Ferté, was a royalist and *emigré* during the French Revolution, but afterwards held high diplomatic office under Napoleon. His brother Alexandre, Vicomte de Beauharnais, was the first husband of Josephine, who afterwards became the wife of Napoleon. He commanded the republican army of the Rhine in 1793, and owing to his failure to relieve Metz was guillotined.

Eugene de Beauharnais, son of Alexandre de Beauharnais and Josephine, and stepson of Napoleon, served with his stepfather in Italy and Egypt, rendered signal services during the consulate, and on Napoleon becoming emperor was given the rank of prince. He was appointed viceroy of Italy, held various high military commands, and in 1810 was created grand duke of Frankfort. After the fall of Napoleon he lived in Munich. He died Feb. 22, 1824.

Beaulieu Village of Hampshire. In the New Forest, it is famous for its ruined abbey, once a Cistercian house. It stands on the River Beaulieu, and near is the residence of Lord Montagu of Beaulieu. A pleasure resort on the Riviera in France, is also called Beaulieu, or the beautiful place.

Beaumarchais Pierre Augustin Caron De. French dramatist. He was born in Paris, Jan. 24, 1732, and was brought up to his father's trade of watchmaker. He was appointed watchmaker to the king, became a popular figure at court, married the widow of a court official, and, obtaining a patent of nobility, assumed the name of de Beaumarchais in addition to his own name of Caron. For some years he led an adventurous life as an agent in the king's secret service, and he took an active part in securing the assistance of France for the American Colonies in the War of Independence. In 1775 he produced his comedy *The Barber of Seville*. A sequel, *The Marriage of Figaro*, was written in 1778. Both comedies have been made into operas—the *Barber* by Rossini and *Figaro* by Mozart. He died in Paris, May 19, 1799.

Beaumaris County town, borough, watering place and market town of Anglesey. It is situated on Beaumaris Bay, at the northern entrance to the Menai Strait, 7 m. from Bangor and 239 m. from London. Pop. (1931) 1708.

Beaumont Francis. English dramatist. The son of a Leicestershire gentleman, he went to Oxford and

became a lawyer in London. His time, however, was mainly passed in the society of Ben Jonson and others at the Mermaid Tavern, where doubtless he met John Fletcher about 1608. The two began to write plays together, sometimes obtaining assistance from others, and their names are inseparably linked. The plays include *The Woman Hater*, *The Maid's Tragedy* and *The Knight of the Burning Pestle*. Beaumont, died March 6, 1616. He was buried in Westminster Abbey, and has a memorial window in Southwark Cathedral.

Beaumontague Putty or cement used in making joints or filling cracks in joinery or iron work. For ironwork, sal ammoniac iron borings, grease and lamp-black are used, and for wood work the ingredients are litharge, white lead, and linseed oil.

Beaumont Hamel Village of France. On the Aisne about 6 m. from Albert, it was the scene of some hard fighting during the Great War. The British attacked it without success in July, 1916, but captured it during the battle of the Aisne in the following Nov. In March, 1918, the Germans attacked it, but the village was held by the British after a hard fight.

Beaune Town of France. It is 22 m. from Dijon on the railway from Paris to Lyons. An old place, it has remains of a castle. In the district of Burgundy, Beaune gives its name to a popular wine made from the grapes of the vineyards near. Pop., 13,780.

Beauvais City of France. Capital of the department of Oise, it is about 50 m. from Paris. The cathedral, begun in the middle of the 13th century, is one of the most remarkable examples of Gothic architecture in existence, with stained glass windows that rival those of Chartres. The principal manufactures are textiles, toys and leather goods. Pop. 18,738.

Beaver Rodent animal found in Europe, Asia and America. In Europe they are found in France and Norway; at one time they were plentiful in Great Britain, especially Scotland. An average animal measures about 30 in. and weighs about 50 lb. Its body is covered with soft brown fur, and its tail is long and thick. It lives in and near water, and feeds chiefly on plants and bark. The fur is valuable, while the Indians eat their flesh. Scent is obtained from it. The beaver is famous for its skill in building. The animals are able to fell trees, and convey them along a stream to a suitable place for a dam. These dams, in which mud is used to fill the gaps between the logs, serve to protect the beaver's home. They are very strong and often quite large

The tall hats worn by men were called **beavers** because at one time they were covered with beaver fur.

Beaverbrook Lord. English politician. William Maxwell Aitken, the son of a Presbyterian minister, was born at New Brunswick, May 25, 1879. Having entered business he was not long in making a fortune, and he was therefore able, in 1909, to settle in England, where he had a good friend in Mr Bonar Law. In 1910 he became M.P. for Ashton-under-Lyne, and in 1911 he was made a knight. During the World War he was associated with the Canadian forces, and was behind the scenes in the political negotiations that preceded the formation of a Coalition Government in 1916. In 1918, having since 1916 been Lord Beaverbrook, he became minister of information. After the war he turned his attention to newspapers, bought *The Daily Express* and later the control of *The Evening Standard*, and founded *The Sunday Express*. In 1929 he handed over the control to his elder son, and devoted himself to the cause of advocating free trade within the empire. His books include *Politicians and the War*.

Bebington Urban district of Cheshire. It stands on the Mersey, 3 m. from Birkenhead, and consists of Higher Bebington and Lower Bebington. It is served by the L.M.S. and G.W. Rlys, and is practically a suburb of Birkenhead. With Bromborough it forms an urban district. Pop. (1931) 26,742.

Bec Short name for the French village of Le Bec Hellouin. It is 26 m. from Evreux, and has remains of an abbey. This was a Benedictine house, founded about 1030 by Hellouin, who was succeeded as abbot by Lanfranc and then by Anselm. William I. endowed it with lands in England, including Tooting Bec, London.

Beccaria Cesare. Italian economist and jurist. He was born in Milan, March 15th, 1735, and was educated by the Jesuits. He began writing on economic subjects in 1762, and two years later he published his celebrated treatise *On Crimes and Punishments*, which was an immediate success and was translated into several European languages. It may be regarded as the foundation of the movement for penal reform. He was appointed professor of law and economics at Milan in 1768, and was made a marquis. He died in Milan, Nov. 28, 1794.

Beccles Borough and market town of Suffolk. It stands on the Wavency, 8 m. from Lowestoft and 109 from London, on the L.N.E. Rly. There is a trade along the river, and the industries include printing and milling. Pop. (1931) 6,544.

Bechuanaland Country of British South Africa. It is bounded on the south by the Orange river, and on the east and north-east by Matabeleland, the Transvaal and the Orange River Colony. The southern region, British Bechuanaland, forms part of Cape Colony. The northern region is styled the Bechuanaland Protectorate, and is virtually a crown colony. Mafeking, the chief town of British Bechuanaland, is also the capital of the Protectorate. The Bechuana, of whom the Basuto (*q.v.*) are a branch, belong to the great Bantu race. They are mainly an agricultural people, but also show considerable skill in metal work and pottery. The combined native population of British Bechuanaland and the protectorate is about 250,000.

Beck Adolph. Victim of a serious miscarriage of justice. A Norwegian residing in London, where he carried on a business as a financial agent, Beck was convicted at the Central Criminal Court, London, in 1896, of frauds on women. His sentence was seven years' penal servitude, which he served. In 1904 he was again convicted, but before sentence was passed the real offender was found. Beck received £5000 as compensation.

Beckenham Urban district of Kent, 9 m. from London, on the S. Rly. It is a residential area. At Monk's Orchard is the new Bethlem Hospital, opened in 1930. Pop. (1931), 43,834.

Becket Thomas. English statesman and ecclesiastic. A Londoner by birth, he was born Dec. 21, 1118, and received a good education, studying for some time in Paris. In 1154 he was appointed archdeacon of Canterbury, and in the following year, on the advice of Theobald, Archbishop of Canterbury, Henry II. made him chancellor. For seven years he showed himself a zealous and capable minister of the Crown, and on the death of Theobald, Henry rewarded him by nominating him to the see of Canterbury.

From that time Becket's attitude changed completely. He resigned the chancellorship, devoted himself to religion and became a determined opponent of Henry's anti-clericalism. In 1164 there was a definite rupture with the king over the Constitutions of Clarendon, and Becket was obliged to withdraw to France. Ultimately, by the intervention of the Pope, a reconciliation was patched up, and Becket returned to England, but relations were still strained. A month later (Dec. 29, 1170), Becket was brutally murdered at Canterbury by some members of the royal household, who, it is said, were prompted to the crime by some incautious words used by the king. Becket was canonised in 1172, and his shrine at Canterbury became a place of pilgrimage.

Beckford William. English writer. Born at Fonthill, Wiltshire, Oct. 1., 1760, he inherited a large fortune and married Lady Margaret Gordon. He is famous as the author of the singular philosophical romance *The History of the Caliph Vathek* which he wrote in French in 1762. An English translation appeared in 1786. From 1784-93 he was M.P. for Wells, and from 1806-20 for Hindon. He spent his money freely in building a country house at Fonthill and in making collections of books and works of art. He also built the tower on Lansdowne Hill, Bath. Beckford died at Bath, May 2, 1844, leaving two daughters, one of whom became Duchess of Hamilton.

Beckford's father, **William Beckford** (1709-70), a London merchant, was M.P. for the city, and twice lord mayor. He is known as a supporter of Wilkes and the author of a short speech which is now on a monument in the London Guildhall. He died June 21, 1770.

Becontree District of Essex. It adjoins Dagenham which can be reached by the L.M.S., and is 11 m. from London. It owes its existence to a huge housing estate, designed to hold 80,000 people, laid out by the London County Council.

Bedale Market town of Yorkshire (N.R.). It is 7 m. from Northallerton, on the L.N.E. Rly. Pop. 1064.

Bedale is also the name of a district near the town, and gives its name to a pack of hounds that hunt this part of Yorkshire.

Beddgelert Village of Caernarvonshire. At the foot of Snowdon, it is 13 m. from Caernarvon. According to local tradition it was the scene of the legend of Llewellyn and his hound Gelert—hence the name, which means Gelert's grave. Pop. 1213.

Beddington District of Surrey. It is on the Wandle, 2 m. from Croydon, on the S. Rly. It is notable because of its association with the great family of Carew, who long lived at the hall, which is now an orphan asylum. Beddington Park is open to the public. With Wallington, Beddington forms an urban district. Pop. (1931) 26,249.

Bede English saint and scholar called the Venerable. About 680, being still a child, he entered the monastery at Wearmouth, near his home. Afterwards he moved to the one at Jarrow of which he became prior. Bede is famous for his *Ecclesiastical History*, which, written in Latin, is very valuable for the information it gives about the early history of England. He wrote other works, and also translated the gospel of S. John. He died at Jarrow, May 26, 735. Later he was canonised and his festival is kept on May 27.

Bedel Official at the older universities. The word is a variant of beadle. At Oxford there are four bedels, one of whom carries the vice-chancellor's mace. Their other duties are to give out notices and generally carry out the vice-chancellor's orders. At Cambridge there are two. Called esquire bedels, both carry maces before the vice-chancellor.

Bedesman Person who offers bedes or prayers for another, also spelled beadsman. As those who did this were usually paid, the word came to mean a pensioner, or the inmate of a hospital or elsewhere. In Scotland the king's bedesmen were licensed beggars who, on the king's birthday, received a blue gown, a loaf, a bottle of ale and a penny for each year of the king's age. They were sometimes called bluegowns, and the last one was elected in 1833.

Bedford County town of Bedfordshire. It stands on the Ouse, 50 m. from London by the L.M.S. Rly. It is a manufacturing town, with large engineering and other works, a market for agricultural produce and is noted for its schools, especially the grammar school founded in 1561, which is one of the country's great public schools. Here is the Bunyan meet-house. Pop. (1931) 40,573.

Bedford Duke of. Title borne by the Russell family since 1694. **John Russell** was made Earl of Bedford in 1550. **William**, the 5th earl, was one of those who asked William of Orange to come over to England in 1688: he was rewarded in 1694 with a dukedom. The best known of his successors was, perhaps, **John**, the 4th duke, a prominent politician in the 18th century. He was Lord Lieutenant of Ireland, 1753-61, and Lord President of the Council, 1763-65, and was the leader of those Whigs who formed the Bloomsbury gang. In 1893 **Herbrand Arthur Russell** became the 11th duke.

The family estates are in Bedfordshire and Devonshire, where are ducal seats Woburn Abbey and Endsleigh near Tavistock. The valuable London property, including much of Bloomsbury and Covent Garden, has been sold. The duke's eldest son is called the Marquess of Tavistock.

Bedford John, Duke of. English prince. The third son of Henry IV., he was therefore a younger brother of Henry V. In 1414 he was made Duke of Bedford, and in 1422 became Regent of France for his young nephew, Henry VI. He carried on the war with the French, at first success-

fully, but less so after the appearance of Joan of Arc. He died at Rouen, Sept. 19, 1435.

Bedford College London College for women. It was founded in 1849 by Elizabeth J. Reid. Its first home was in Bedford Square; later it was moved to York Place, and in 1913 to a building in York Gate, Regent's Park. This cost £130,000 to build, and accommodates 80 students. The college is a recognised training college for teachers and social workers, and in 1918 was recognised as a school for the training of health visitors.

Bedford Level District in the counties of Cambridge, Huntingdon, Northampton, Lincoln, Norfolk and Suffolk. It covers nearly 100,000 acres or about 150 sq. m. At one time it was a vast swamp, but soon after 1600 it was drained by a Dutchman, Cornelius Vermuyden, at the expense of the Earl of Bedford and others. It consists of three parts—north, middle and south—and is now fertile and cultivated soil. The surplus water is carried off by the Ouse, Welland, Nen and other rivers and by artificial channels, especially the old and the new Bedford rivers. These go from the isle of Ely to the Ouse, a distance of 21 m. The Level is managed by a board, consisting of governor, bailiffs and conservators.

Bedford Park Suburb of London. In the borough of Acton, it was laid out as a garden suburb before such suburbs had become general.

Bedfordshire Small inland county of England. It covers 473 sq. m. and is flat, except where the Chiltern Hills enter it in the south-west, and the soil is very fertile. Bedford is the county town; other places of importance are Luton, Dunstable and Biggleswade. The chief river is the Ouse, and the county is served by the L.N.E. and L.M.S. Rlys. Much of the land belongs to the Duke of Bedford, whose seat is Woburn Abbey. Pop. (1931) 206,478.

The **Bedfordshire Regiment,** formerly the 16th of the line, was raised about 1685, and has seen a great deal of active service, including the S. African War and the Great War.

Bedivere One of King Arthur's knights. According to Malory, he shared in many of the adventures of the band. He is specially famed, however, as being the one who stayed with the dying king to the end. It was he who threw the sword Excalibur into the lake, and carried Arthur to the barge. The story is told by Tennyson in *The Passing of Arthur.*

Bedlam Popular name for Bethlem or Bethlehem Hospital. It was founded in London in 1247 as a religious house, and became a home for the insane, the first in the country, in 1403. In 1676 it was moved from Bishopsgate to Moorfields, and in 1815 to Lambeth. There it remained until 1930, when new buildings were erected at Monk's Orchard, Beckenham. The extensive grounds were bought by Viscount Rothermere and opened as a public park.

Bedlington Urban district of Northumberland. It stands on the River Blyth, 4 m. from Morpeth, on the L.N.E. Rly, in a district of coal mines. Other industries include the making of chains. The district around is called Bedlingtonshire. Pop. (1931) 27,315.

The **Bedlington Terrier,** called after the place, has a hard woolly coat, dark blue, tan or sandy in colour. With narrow head and long tail, the animal is an excellent house dog, and has a reputation for killing rats.

Bedloe's Island of the United States. It is in New York Bay, about 1½ m. from the island of Manhattan. On it is the Statue of Liberty, the work of Bartholdi presented to the States by France in 1886.

Bedouin Name given to those Arabs who claim to be descended from Ishmael. They are nomads, living in tribes, each under a sheik, keeping herds of camels, sheep and goats, and are excellent horsemen. They are found, not only in their native Arabia, but in Mesopotamia and other parts of Asia, in Egypt and other regions of northern and central Africa.

Bedstead Framework in which a bed is placed. The bedsteads of the Egyptians and other early peoples were not unlike our couches, and the Romans made something of the kind to rest on. In England and other countries for many years, the only bedstead for the bulk of the people was the floor, but soon the richer classes began to sleep upon wooden benches. These were sometimes placed in recesses or shut off by curtains from the main apartment.

As the country became richer, bedsteads of the modern type appeared. The rich Anglo-Saxons and Normans had bedsteads with posts and canopies. In the 13th century tester beds were seen, and in the 15th came the large square bedsteads that lasted until modern times. There are fine examples of them in the South Kensington Museum. In the 19th century brass and iron bedsteads were introduced and made on an enormous scale, but in the 20th there was a return to the wooden bedstead, but without posts or hangings. Truckle bedsteads were bedsteads made to go underneath larger ones.

Bedstraw (*Galium*). Genus of herbs of the order *rubiaceae.* Slender plants with leaves in whorls of four or more leaves, there are nearly a dozen members of the British species. Among these are goose grass, corn bedstraw and wall bedstraw which are annuals, while the other species are perennial. The perennials include the common hedge bedstraw which has long, weak stems without the hooks which distinguish goose grass.

Bedwellty Urban district of Monmouthshire. It is 7 m. from Pontypool, on the G.W. Rly. In a colliery district, mining is the chief occupation. Pop. (1931) 31,989.

Bedworth Urban district of Warwickshire. It is 3 m. from Nuneaton, and 100 from London, on the L.M.S. Rly. In a coal mining district, it has also some manufacturing industries. Pop. (1931) 12,058.

Bee Insect belonging to the family *hymenoptera.* They have four wings and possess stings. Some, such as the honey bee and the humble bee, live in communities; others are solitary and make their homes by burrowing in the ground.

There are three classes of bee in a hive; the queen bee, who is the one fertile female, the drones, who are the males, and the workers, who are sterile females. They have an elaborate organisation for collecting pollen from

flowers and storing it in the hives. The workers build the combs of honey which, at the proper time, may be taken from the hive, and they produce beeswax. The older workers do the outside work, leaving the care of the hive to the younger ones. At times, usually in the autumn, the drones are killed.

The bee is hatched from an egg laid in the comb of the queen. This becomes a grub in a few days and is fed by the workers. The cell is then sealed up for the grub to become a pupa, from which it emerges as an adult bee. The whole process takes about three weeks. When a hive is too full, some of the bees, having provided themselves with a new queen, swarm out. The swarm, in a single cluster, will usually hang on a tree until it is taken and put into a new hive, when the workers begin to build combs for the eggs.

Beekeeping has been practised for perhaps 4000 years, and is now quite a thriving minor industry in Great Britain and other countries. The hives are usually made of wood and are so arranged that the honey can easily be taken out from time to time. There is a British Beekeepers' Association at 23 Bedford Street, Strand, London, W.C., and a paper is published in their interests. *See* HONEY.

Beech (*Fagus sylvatica*). Tree of the genus *fagus* of which there are many species. Next to the oak it is the finest of British forest trees. It is native to Britain, and attains a height of from 60 to 100 ft., with a girth of from 12 to 20 ft. The bole is massive, with smooth grey bark, and the leaves are oval and smooth, with a delicate silvery fringe on the edge, which falls off as they mature. The foliage is dense and affords inviting shade. In autumn the leaves take gorgeous tints of orange, bronze and amber, making the trees a blaze of colour. The three-sided sharp-edged nuts, or masts, are used as pig food. The copper beech and the purple beech are varieties of this species.

Beecham **Sir Thomas.** English musician. Born April 29, 1879, he was a son of Sir Joseph Beecham, who was made a baronet in 1914. His grandfather was Thomas Beecham, the founder of the pill-making business at St. Helens. Educated at Rossall and Wadham College, Oxford, Beecham devoted his time to music, becoming a conductor and composer. Especially did he work towards establishing a centre for grand opera in London and his concerts and operas were a feature of the London musical season.

Beecher **Henry Ward.** American preacher. Born June 24, 1813, he was a son of the Rev. Lyman Beecher (1775-1863), a minister at Litchfield, Connecticut, and then at Boston, afterwards being head of a theological college in Ohio. Harriet Beecher Stowe (*q.v.*) was his sister. Trained for the ministry under his father, Henry became a Presbyterian minister. In 1847 he was chosen minister of Plymouth Church, Brooklyn, where he remained until his death, March 8, 1887. Beecher was perhaps in his day the most popular preacher in the United States. He also won a reputation as a lecturer, and both preached and lectured in England.

Beechey **Sir William.** English painter. Born at Burford, Dec. 12, 1753, he was first a solicitor's clerk in London. His tastes, however, led him to study art, and he soon made a reputation by his portraits, especially one of Queen Charlotte in 1783. In 1798 he was knighted and elected R.A., and he died Jan. 28, 1839.

Two of Beechey's sons were painters. The third, **Frederick William Beechey** (1796-1856) entered the navy and became an admiral. He went on three expeditions to the Arctic where **Beechey Island** is named after him.

Bee Eater (*Merops apecister*). Migratory African bird. It belongs to the family *Meropidae* which contains over 30 species. About 11 in. in length, it has a long slender bill, the wings are long and pointed, and the outer and middle toes are connected to the first joint. The plumage has tints of chestnut brown and yellow with greenish wings, greenish blue and black quill feathers and a yellow throat bounded by a black line. It resembles the kingfisher in its habits, breeding in holes on river banks where it lays from five to seven eggs which are pure white.

Beef Meat obtained from the carcases of bulls and cows. It is a staple food of the British people, and for long British cattle have been bred for their beef-producing qualities. The introduction of cold storage methods has made it possible to import beef and large quantities reach Britain from Australia, New Zealand, Argentina and elsewhere. In 1929, to encourage the industry at home, a system of marking and grading beef was introduced.

In 1932 the imports of beef into Great Britain amounted to 560,200 tons. Of this, over 460,000 tons came from Argentina. Beef was not made subject to an import duty when tariffs were introduced in 1931-32. The sirloin is usually regarded as the best joint.

Beefeater Name for the Yeomen of the Guard. The body originated at the coronation of Henry VII., in 1485. They always attend at State functions. The Warders of the Tower, or Yeomen Extraordinary of the Guard, are also Beefeaters, and still wear their traditional Tudor uniform.

Beefsteak Club The first Beefsteak Club was formed in 1709, where the fare was restricted to beer or wine, and steaks, and in 1735 "The Sublime Society of Steaks" was founded by John Rich and Lord Peterborough at Covent Garden Theatre. Many famous people gathered here. It dissolved in 1867. A Beefsteak Club was founded by Sheridan in Dublin in 1749, and the present one in London by A. Stuart Wortley in 1875.

Beefwood Name of several tropical trees found in Australia, and of one found in the West Indies. The wood of the former, red in appearance and exceptionally hard, is used by cabinetmakers. The trees have drooping, almost leafless branches.

Beelzebub God of the Philistines. In the New Testament the word is used for Satan (Matt. x; Mark iii; Luke xi).

Beer Beverage in which the chief ingredients are malt and hops. In England, beer is made by infusion and high fermentation processes; the lager beer and other light beers drunk in Europe are made by decoction and low fermentation processes. At one time much beer was brewed in private houses, but to-day it is nearly all produced on a large scale in breweries.

An extract obtained from malted barley and another from maize and sugar are put together. The solution called wort is boiled with hops, and after cooling is fermented with yeast. The proportion of alcohol in beer is not high, never more than 7 per cent, and as low sometimes as 2½.

In Great Britain a large revenue is obtained from the excise duty on beer. In 1931 this was raised to over £5 for every 36 gallons, but it varies somewhat according to the gravity. In addition the retailers of beer, like those of other intoxicating liquors, pay heavy licence duties.

Beerbohm **Max.** English writer and caricaturist. Born in London, April 24, 1872, he was educated at Charterhouse and Merton College, Oxford. He wrote for *The Yellow Book*, and published several volumes including *The Happy Hypocrite* and *Zuleeka Dobson*; and was dramatic critic of *The Saturday Review*. Although a clever and witty writer, Beerbohm is perhaps more famous as a caricaturist. His portraits of celebrities of all kinds are extraordinarily lifelike, while remaining caricatures, and in some cases the legends are the perfection of subtle irony.

Beersheba Town of Palestine. It was about 50 m. from Jerusalem and was regarded as the most southerly point of the country which went from Dan to Beersheba. The modern Bir-es Saba occupies the site.

Beeston Urban district and market town of Nottinghamshire. It is on the Trent, 3 m. from Nottingham, on the L.M.S. Rly. It has lace and other factories, engineering works, etc. Pop. (1931) 16,016.

Another **Beeston** is a suburb of Leeds, on the L.N.E. Rly.

Beeston Castle is in Cheshire, 11 m. from Crewe. It is a magnificent ruin, standing on a hill from which wonderful views are obtained. Built in 1220 it was dismantled in 1646.

Beeswax Yellow wax secreted by bees. With it they form the cells in which they deposit their honey. When the honey has been drained from the honeycomb, the wax is melted in hot water, strained and left to solidify. It can be bleached by the use of nitric acid or chlorine, but the best results are obtained by exposing it in thin layers to sunshine, keeping it moist during the process. Dissolved in turpentine it is used for polished surfaces of furniture or floors. It is also used in candle making and in some ointments.

Beeswing Filmy crust of tartar deposited in port and other wines when they have been kept for a long time. It is a sign of age and resembles a bee's wing in appearance.

Beet Plant grown in Britain and elsewhere chiefly for its roots. Its home is in the southern parts of Europe and it was introduced into England in the 16th century, when it was grown as a food for cattle. Its main characteristic is the high proportion of sugar that it contains. For this reason one variety of it, the sugar beet, which contains 12 per cent. and more of sugar, is grown in Germany and Austria in order to be made into sugar.

In the 20th century, aided by a state subsidy, steps were taken to grow beet in England. Factories were opened in Norfolk, Lincolnshire, Nottinghamshire and elsewhere. There the sugar is extracted by pressure and refined and the refuse used as a cattle food. In 1929 there were 348,000 acres under beet and 3,060,000 tons of beet were produced. The state subsidy came to £4,233,000. The world's production of sugar from beet amounts in a year to about 8,750,000 tons. Chile beets are ornamental plants.

Beethoven **Ludwig von.** German composer. He was born at Bonn, Dec. 16, 1770, the son of a professional singer, and as a child showed extraordinary genius. He was made organist to the Elector of Cologne, but in 1792 he left Bonn for Vienna, where he studied under Mozart. There he lived for the rest of his life, troubled much by deafness. He died March 26, 1827.

One of the world's greatest composers, Beethoven is responsible for a large and varied output. His compositions include nine symphonies, among them one choral symphony, concertos for pianoforte and orchestra and 32 solo pianoforte sonatas. He also wrote two masses, an oratorio, *The Mount of Olives*, the opera *Fidelio* and a great deal of chamber music. His whole life was passed in composing and his work is usually divided into three periods, his greatest pieces being produced in the middle one, which lasted from 1802 to 1814.

Beetle Common insect of the order *coleoptera* of which about 150,000 species have been enumerated. The wings are covered with a pair of horny sheaths, and the limbs protected by a thick cuticle. They have strong jaws and a single pair of antennæ.

Beetles pass through the same life stages as other insects, their first stage being in a form of larva, then pupa and finally the adult. They vary in size. Ordinary beetles are about an inch long, but there are species which are 6 in. long. Some live in water. They feed on plants and animal matter. Most of them are unpleasant visitors and can do damage, but a few species are useful in lawns and gardens. Damage to woodwork is done by the larvæ of certain beetles which bore their way into it.

Beetle Machine or implement used in industry. One form of beetle is a kind of hammer with a wooden head and is employed for driving in posts or ramming down paving blocks. A smaller beetle was used in the household for beating out dust, etc. In cotton and linen mills the beetle is a machine which finishes off material by hammering it over rollers. The process is called beetling.

Begonia Popular plant in English gardens. The tuberous and fibrous rooted species have showy, brilliantly coloured flowers, while the ornamental leaved variety *B. rex* is grown for its beautifully shaped and coloured foliage. Tuberous begonias are not hardy and those planted in early summer must be lifted in the autumn and stored during the winter in dry soil, protected from frost. The ornamental-leaved species do best in moderate heat and should be shaded from a strong sun.

Behaviourism Branch of psychology that is concerned with the objective study of the behaviour of animals and men. The work done by E. L. Thorndike and others has shown that there is much similarity between the behaviour of men and that of the lower animals, and various conclusions have been drawn therefrom. The science owes a good deal to the British psychologist, C. Lloyd Morgan.

Behemoth Animal mentioned in the Bible. There are references

to it in the book of Job and also in some of the books of the Apocrypha. It may have been a hippopotamus or an elephant, or, more probably, a gigantic animal now extinct.

Behn Aphra. First English woman novelist and dramatist. Born at Wye in 1640, she was taken when young to S. America, and there knew Oroonoko, the African slave-prince, upon whose life she based her best-known novel, *Oroonoko*. She returned to England, and married a Dutch merchant. She was sent by Charles II. to Flanders on secret service. Becoming widowed and poor, she earned her living by writing, mostly plays, of which *The Rover* is the best. She died in 1689.

Behring Strait *See* BERING.

Beira Seaport of East Africa. A Portuguese possession, it stands at the mouth of two rivers, the Bussi and the Pungue, and is the capital of the extensive territories of the Mozambique Co. and the nearest seaport to much of Rhodesia, Salisbury being only 370 m. away. It is the terminus of the Beira Rly. which connects with the railways of Rhodesia and a considerable trade passes through it. There is a good harbour. Pop. 17,000.

Beirut Seaport and town of Syria, also called Beyrout. It is on the Mediterranean, 60 m. from Damascus, with which it is connected by railway. The residence of the French high commissioner, it is also the capital of the republic of Lebanon. A very old place, Beirut figures in the history of the Crusades. Pop. 134,655.

Beisan Village of Palestine. It is on the Jordan, about 55 m. from Jericho, and stands on the site of the ancient city of Bethshan. In 1930 an expedition sent out by the university of Pennsylvania unearthed some very valuable relics of Hittite, Egyptian and Phoenician civilisations. The finds show that Bethshan was the centre in Palestine of a great serpent worship.

Beit Alfred. Anglo-Jewish merchant. Born in Hamburg, Feb. 15, 1853, he went to South Africa in 1875 and later started in business as a diamond merchant at Kimberley. In 1884, with Julius Wernher, he began business in London and the firm became the great house of Wernher, Beit & Co. He was associated with Cecil Rhodes in the ownership of the rich De Beers mines and in the affairs of the chartered company. Beit endowed a professorship of Colonial History at Oxford and gave much money for other educational purposes. He died July 16, 1906. His brother, **Otto John**, (1865-1930) was made a baronet in 1924.

Beith Market town of Ayrshire. It is 18 m. from Glasgow, on the L.M.S. Rly. There are some manufactures. Pop. 6300.

Bel Babylonian god. It refers, like the Phoenician Baal, to the god who was lord of men. Another name for Bel was Marduk.

Belcher James. English pugilist. Born in Bristol, April 17, 1781, he became a butcher. After local successes as a fighter he moved to London and became one of the leading fighters of the day, and for some years was champion of England. In his later years he was a publican in Soho, London, where he died July 30, 1811.

Belfast Capital of Northern Ireland and Co. Antrim. Formerly it was the capital of the province of Ulster. It is 113 m. from Dublin and stands just where the River Lagan falls into Belfast Lough. Belfast is mainly in Antrim, but some of its suburbs are in Down. Its chief buildings include the city hall, the Ulster hall, the cathedral, museum and art gallery. Queen's University is the chief educational centre. Royal Avenue is the main business thoroughfare and the new law courts are in Chichester St. Belfast has a broadcasting station. At Stormont are the buildings erected for the Government of Northern Ireland. There were disturbances in the city in 1933.

Belfast is a great seaport. Its docks can accommodate the largest vessels and it has steamer connection with England and other parts. It is served by three railways, the G.N. of Ireland, the Northern Counties and the Belfast and County Down, and is the terminus of each. Shipbuilding and the manufacture of linen are the main industries; others are distilling and bacon curing. There are tobacco factories. Pop. (1926) 415,150.

Belfort Town of France. It stands on the River Savoureuse, 35 m. from Basel and 275 m. from Paris. Pop. 42,511.

Between 1870 and 1918 Belfort was the chief town of the territory of Belfort. This was the part of the department of Haut Rhin which was left to France when the rest of Alsace was taken away in 1870. It covered 235 sq. m.

The **Gap of Belfort**, which the town commands, is a plain 18 m. across between the Jura and the Vosges. A canal crosses it.

Belfry Part of a church that contains the bells. Usually in English churches it is part of the tower or steeple, with a room for the bell ringers just beneath the bells. Some of the older belfries were buildings detached from the church, there being examples of such at Chichester, Evesham, East Bergholt and elsewhere. There are some remarkable belfries in Belgium, notably one at Bruges. In Italy the belfries, called campaniles, are often detached buildings as at Florence and Venice.

Belga Currency unit of Belgium. It is equal to five francs and 35 belgas go to the pound sterling. It was introduced in 1926 when the Belgian currency was stabilised and its use is compulsory in foreign exchange transactions.

Belgian Congo *See* CONGO.

Belgium Kingdom of Europe. Part of the region called the Netherlands, it has a coastline on the North Sea and on the land side it is bounded by the kingdom of the Netherlands, Germany and France. Its area is 11,752 sq. m. and it has a population of 8,159,185 (1931). This is 674 per sq. m. and makes it the most thickly populated country of Europe. It is divided into nine provinces, Antwerp, Brabant, Flanders W., Flanders E., Hainaut, Liége, Limbourg, Luxembourg and Namur. Since 1919 it has also included the cantons of Eupen and Malmedy. Brussels is the capital and the largest city. The towns next in size are Antwerp, Liége and Ghent. Other places full of historic interest include Bruges, Louvain, Courtral, Namur and Mons. The chief rivers are the Scheldt and the Meuse, but neither is wholly Belgian.

The S.E. of the country, where there is a rich coalfield, is a prosperous manufacturing area. Iron and steel are produced and motor cars, artificial silk, glass and lace are manufactured. The rest of the country is mainly

an agricultural area, but a large part is still covered with forests, these being chiefly in the Ardennes. Wheat, barley and other cereals are grown, but much land is used for growing beet for sugar, flowers and vegetables mainly for export, and fruit.

Belgium is governed by a king and a council of ministers responsible to a parliament of two houses, the Senate and the Chamber of Representatives. Senators are elected, part of them by direct vote of the people, part by the provincial councils and part by the Senate itself. Representatives are chosen by proportional representation and, like the senators, sit for four years. Most of the people are Roman Catholics. They are divided into Walloons who speak French and Flemings who speak Flemish, and from time to time language differences have troubled the country.

Having been ruled by the Dukes of Burgundy and the Kings of Spain, Belgium, then called the Spanish Netherlands, passed to Austria in 1714. In 1814, having been under French rule since 1795, it was united with Holland to form the kingdom of the Netherlands, but by the revolution of 1830 the kingdom of the Belgians was founded, its first king being Leopold of Saxe-Coburg. He was succeeded by Leopold II. and in 1909 by Albert. In 1914 the neutrality of Belgium was violated by Germany. War broke out and, until 1917, the greater part of the country was occupied by the Germans. It was recovered at the peace, and in the succeeding years Belgium has made great progress industrially. King Albert met his death while mountaineering, Feb., 1934, and his son Leopold III. succeeded. Leopold's queen, Astrid, was killed in a road accident, Aug., 1935.

Belgrade Capital of Yugoslavia; previously the capital of Serbia. It stands on the south bank of the Danube, where it is joined by the Save. Near the river is the lower town, while the upper town with the citadel is on a hill. There is a university, National Library and a National Theatre. In 1931 an observatory was opened here. The city is the trading centre of the country and has many buildings built since the Great War on western models. For the shipping there are wharves along the river. It is also well served by railways. Pop. (1931), 241,542.

In Dec., 1914, the Austrians entered Belgrade, but they were soon ejected. In Oct., 1915, it was taken by the Germans who kept it until the armistice.

Belgravia District of London lying S. of Knightsbridge, E. of Sloane Street and not far from Victoria Station. In it are Belgrave Square, from which it takes its name, and Eaton Square, while adjacent streets include Wilton St. and Ebury St., all the property of the Duke of Westminster.

Belial Biblical word for the wicked. In this sense it is used in the books of Samuel and 1 Kings. S. Paul (2 Cor. vi.) uses it for Satan, and Milton, in *Paradise Lost*, for the spirit of lust.

Belize Capital of British Honduras. A seaport, it stands at the mouth of the Belize River where that stream falls into the Caribbean Sea. Its harbour is small, so large vessels anchor outside. Mahogany, sugar, etc., are exported. In 1931 the town was devastated by a tornado followed by a tidal wave. The name is a corruption of Wallace. Pop. (1931), 16,687.

Bell Hollow implement made of metal and intended to give forth a ringing noise when struck. It usually possesses a clapper or tongue which, when agitated, serves to make the sound. **Church bells** are hung in a belfry or tower, usually a group together, and the ringing or chiming of them in order to produce a harmony is quite an art, being known as campanology. Several English bells weigh over 10 tons, while the great bell at Moscow weighed 200 tons. Somewhat similar to a peal of church bells is a carillon in which the bells are played by a keyboard as a piano.

Other bells are **handbells**, by which tunes are played; house or **jingle bells**, which are agitated by pulling a cord or wire; and bells placed on animals, in order to know their whereabouts, for instance, the bell wether. **Harness bells** were for warning purposes. *See* BELL METAL, CAMPANOLOGY.

Bell **Alexander Graham.** British inventor. Born in Edinburgh, March 3, 1847, he was educated there and became a doctor. His main concern, however, was phonetics, a subject in which his grandfather and his father had both taken a lively interest. He went to America to become a professor at Boston, his subject being the physiology of the voice. This led, naturally, to the study of sound transmission, and in 1876 he patented an invention which was the nucleus of the telephone. Bell died Aug. 22, 1922.

Bell **Gertrude Margaret Lowthian.** English traveller. A daughter of Sir Hugh Bell, Bart., she belonged to the family that has made the firm of Bell Bros. one of the largest concerns in the iron and steel industry of Middlesbrough. Educated at Oxford, she travelled a good deal in Arabia and gained an intimate knowledge of that country. During the Great War Miss Bell served in the Intelligence Department in Iraq, and from 1917 until her death on June 12, 1926, she was a political officer in Bagdad. Her *Letters*, edited by her stepmother, Lady Bell, were published in 1926.

Bell **Henry.** British inventor. Born in Linlithgowshire, April 7, 1767, Bell became a millwright and then a shipwright. In 1791 he set up a business in Glasgow, his idea being to build a vessel that could be worked by steam. After some years of hard work he succeeded and his boat, the Comet, was able to travel from Glasgow to Greenock by steam, this event being a landmark in the development of the steamship. He died Nov. 14, 1830.

Bell **Robert Anning.** English artist. Born in London in 1863, he was educated at University College School. His work includes illustrating books and designing stained glass, as well as painting pictures. In 1918 he was made A.R.A. and in 1922 R.A. Bell's pictures are in several public collections and his mosaics in the Houses of Parliament and Westminster Cathedral.

Belladonna Alternative name for the plant called the deadly nightshade. It is used more particularly for the poison which is extracted from the plant and from which atrophine is prepared. Belladonna is employed in medicine as a narcotic and mydriatic. It is useful in certain internal complaints, and is most commonly used for dilating the pupils in certain eye diseases.

Bellary City of India. In the province of Madras, it is 300 m. from that city by rail. It is an important railway junction and has some textile manufactures.

An enormous 16th century fort commands the city. Bellary is the capital of a district. Pop. 40,000.

Belle Isle Strait and island in the Atlantic. The strait, between Newfoundland and Labrador, is 85 m. long and about 12 m. wide and is on the nearest route between Canada and Europe though, owing to ice, it can only be used in the summer. The island, 21 m. in circumference, stands at the entrance to the strait. Another island, about the same size and also named Belle Isle, is in Conception Bay, Newfoundland.

The French Belle Isle is off the coast of Brittany. It covers about 33 sq. m. and has 10,000 inhabitants, mostly fishermen and their families. It is famous for its grottoes. Le Palais, a small seaport, is the capital. In 1759 the English fleet defeated the French fleet near this island, which was in English hands from 1761 to 1765.

Bellerophon Greek hero. He was a son of the King of Corinth. The King of Argolis, wishing to have him killed, sent him to Iobates, King of Lycia, who was requested to bring about his end. Iobates, therefore, sent him to kill Chimaera, a fire breathing monster, but by catching and using Pegasus, the winged horse, Bellerophon slew the monster. Iobates made him his successor and married him to his daughter.

A succession of British warships have been named **Bellerophon.** One was the vessel which received Napoleon when he gave himself up in 1815.

Bellingham District of London. In the borough of Lewisham, it is 9 m. from the city, on the S. Rly. Here are the Lewisham baths. Most of the houses have been built by the L.C.C., which bought the land for housing purposes. There is a village in Northumberland called Bellingham.

Bellingshausen **Fabian Gottlieb Von,** Russian explorer. Born Sept. 9, 1778, he entered the navy. In 1819 he was the leader of an expedition that went to the Antarctic, where he discovered Alexander Land and Peter Land. Later he commanded the Russian fleet in the Baltic and was Governor of Kronstadt. Bellingshausen Sea in the Antarctic is named after him. He died Jan. 13, 1852.

Bellini Name of three Venetian painters, father and two sons. **Giacomo** or **Jacopo Bellini** (d. 1468) painted portraits and frescoes. A few of his works survive, but he is better known as the father of Gentile and Giovanni Bellini.

Gentile Bellini (1429-1507) painted "The Preaching of S. Mark" in Milan and several other works, many of which are in Venice. He is well represented in the National Gallery, London, where are his portrait of Mohammed II. and an "Adoration of the Magi." He died in Venice, Feb. 28, 1507.

Giovanni Bellini (d. 1516) has left several very famous pictures, one being that of the doge Loredano in the National Gallery, London, where is also "The Agony in the Garden." Other works of his, including "The Madonna and Saints," are in Venice. He is also notable as being the master of Titian, Tintoretto and Giorgione. Some regard him as the greatest Italian painter of the 15th century. He died in Venice, Nov. 29, 1516.

Bell Metal Hard alloy or bronze used for making bells. It consists of one part tin to three of copper. The same alloy with a small admixture of zinc or lead is sometimes used for certain parts of machinery in place of steel, owing to its non-corrosive qualities.

Belloc **Jean Pierre Hilaire.** English writer. Born July 27, 1870, his father was a Frenchman and his mother Irish. He was educated at the Oratory School, Edgbaston, and at Oxford, serving as a conscript in the French army between the two periods. On leaving Oxford, having taken English nationality, he entered upon a career as a man of letters, broken by four years (1906-10) spent in Parliament as Liberal M.P. for E. Salford.

Belloc's literary output is enormous and varied, yet mostly of high quality. The charm of his writing is perhaps best seen in his travel books such as *The Path to Rome* and *The Four Men. The Bad Child's Book of Beasts* and its companion volumes are deservedly popular. In works such as *The Servile State*, he attacks the political life of the day. Among historical works are a *History of England, Richelieu*, and *Cranmer*. In 1931 he published *A Conversation with a Cat*, in 1934 a study of *Charles I.*, in 1935 *Milton*, and in 1936 *The Battle Ground.*

Bellona Divinity in Roman mythology. The goddess of war, and wife or sister of Mars, she was worshipped at Rome in her temple on the Campus Martius, founded in B.C. 1296, outside the city gates.

Bell Rock *See* INCHCAPE ROCK.

Bells Word used on ships to denote the time. The day is divided into six periods of four hours and each half hour represents one bell. There are thus eight bells in each period. A period begins at 12 o'clock, therefore 12.30 is one bell, 1 o'clock is two bells and so until 4 o'clock is reached, when the cycle begins again. The name is due to the fact that a bell is rung each half hour.

Belmont Town of Cape Province, S. Africa. It is 50 m. from Kimberley and about 35 m. from the Orange River. It came into notice in 1899 when a British force under Lord Methuen, advancing to relieve Kimberley, was opposed by the Boers entrenched in the hills. After a sharp fight, Nov. 23, 1899, they were driven away and the advance continued.

There is a **Belmont** in Surrey. This is a residential district on the edge of Banstead Downs, 12 m. from London, on the S. Rly.

Belomancy Divination by arrows, *belos* being the Greek word for a dart. It is mentioned in the Bible (Ezekiel xxi.) and was practised by the Greeks. The Koran forbids it.

Belper Market town and urban district of Derbyshire. It stands on the Derwent, 8 m. from Derby, on the L.M.S. Rly. Textiles are manufactured and there are engineering works. Pop. (1931) 13,023.

The title of **Baron Belper** has been borne by the Strutt family since 1856 when it was granted to Edward Strutt (1801-80). He was a grandson of Jedediah Strutt, the inventor, who set up a cotton mill in Belper about 1776.

Belshazzar Last king or ruler of Babylon. He was the king who gave the feast at which Daniel read the writing on the wall (Daniel v.), and was killed when Babylon was entered by the Persians in 538 B.C.

Belt Two sea channels of Denmark, Great and Little. The **Great Belt** divides the island of Zealand from Funen and the **Little Belt** divides Fünen from the mainland. The Great Belt is 40 m. long and the Little Belt 30 m. long. Both lead from the Kattegat to the Baltic, the Great Belt being the more direct route. Both, however, are difficult, even dangerous, to navigation.

Beltane Name of an old pagan festival once observed in many parts of Great Britain and Ireland. In ancient times it marked the festivals of fire which were held to celebrate the coming of summer. A cake, specially baked, was divided and the pieces used to cast lots. The luckless individual who drew a certain piece was shunned and avoided, and it is believed that in remote times the holder was sacrificed. The Beltane ceremonies were carried out with songs and dances, and the kindling of bonfires through which cattle were driven and the young men leaped. Forms of this latter rite continued as late as the early part of the 19th century.

Beluga Cetacean of the dolphin family, also called the white whale. It is from 12 to 15 ft. in length and almost pure white. It is found in the Arctic seas and the gulf of St. Lawrence, and occasionally off the north coast of Britain. The great sturgeon, huso, is also known by this name.

Belvedere Part of a building from which a good view can be obtained; also a summer house in a garden. The idea and the name are both Italian and belvederes were usually built in the form of a turret with windows on all sides, on the top of the main building. In the court of the Belvedere at the Vatican is the **Apollo Belvedere.**

Belvedere is the name of a district in Kent. It is on the Thames, near Erith, being 14 m. from London by the S. Rly.

Belvoir Castle Seat of the Duke of Rutland. It stands on a hill in Leicestershire, about 7 m. from Grantham. There has been a castle here since about 1100, but the present one only dates from about 1808. It contains some valuable works of art and the gardens are very beautiful. **Belvoir Hunt** was founded in 1750 and is closely associated with the dukes. The kennels are at Belvoir and the country is in Leicestershire and Nottinghamshire.

Bembridge Village on the E. coast of the Isle of Wight. There was a seaplane station here during the Great War. Pop. 1973.

Bembridge beds is a geological term for certain deposits found in the Isle of Wight and Hampshire. They are in three layers and in the top one is a band of limestone in which are very interesting remains of insects. They are seen at Colwall and other bays in the west of the island and on the north coast near Osborne.

Bemersyde Estate in Berwickshire. From the 12th century until modern times it was the residence of the Haig family. It stands on the Tweed, about 2 m. from St. Boswells. **Earl Haig of Bemersyde** took his title from here and in 1921 the estate was presented to him, the money having been raised by public subscription.

Ben Celtic word for a mountain, very common in Scotland. Many peaks in that country have the prefix ben, such including Ben Nevis (4406 ft.) the highest mountain in the British Isles; Ben Macdhui, one of the Cairngorms (4296 ft.); Ben Lawers in Perthshire (3984 ft.); Ben Avon, another of the Cairngorms (3843 ft.); Ben Cruachan in Argyllshire (3689 ft.); Ben Wyvis in Rossshire (3429 ft.) and Ben Lomond in Stirlingshire (3192 ft.).

Benares City of India. It stands on the Ganges in the United Provinces, 400 m. from Calcutta. A sacred city to the Hindus, it is visited every year by thousands of pilgrims who bathe here in the Ganges. There are many temples, notably the golden temple dedicated to Siva and the so-called monkey temple. It has a Hindu university opened in 1916 and does a trade in jewellery, silks and other products of India. The Ganges is crossed here by the Dufferin bridge, 3500 ft. long. Pop. (1931), 205,315.

The **state of Benares** is ruled by a maharajah who has a salute of 13 guns. His capital is Ramnagar, near Benares. The state's area is 870 sq. m. Pop. (1931) 391,272.

Benbow **John.** English seaman. Born March 10, 1653, his father was a tanner at Shrewsbury. As a boy he went to sea and was in the navy when war broke out with France in 1689. He took part in the naval battles of the war and in 1696 was made a rear-admiral. Later he commanded a fleet in the W. Indies and there, in 1702, he met a French fleet stronger than his own. In a running fight of four days Benbow had a leg taken off by a shot. He returned to Jamaica and died at Port Royal, Nov. 4, 1702.

Several British warships have been named Benbow. The last was a dreadnought completed in 1914. She carried ten 13.5 in. guns, displaced 25,000 tons and was fitted to serve as a flagship.

Bench In its main sense a long seat. Thus it is used for the seats in Parliament. In the House of Lords the cross benches are seats for independent members. It is also used as a general term for the judges, as opposed to the bar, as the barristers who appear before them are called. This is due to the fact that in early days the judges sat on a bench above the floor of the court, while those appearing before them were on the floor itself.

Bencher Barrister who has been chosen a member of the governing body of his inn. The four inns in London and also the King's Inn in Dublin have benchers, who have certain privileges as to rooms, meals, etc.

Bench Mark Mark used by surveyors. It is a fixed point that serves as a datum line from which other measurements can be made or checked. The bench mark of the Ordnance Survey takes the form of a broad arrow. Bench marks are also used in tidal observations.

Bendigo City of Victoria, Australia. It is 100 m. from Melbourne, Victoria, and was first called Sandhurst. It stands in the centre of the gold mining district and has also an agricultural and general trade. Pop. (1931) 33,690.

Bendigo English pugilist. Born in Nottingham, Oct. 11, 1811, his name was William Thompson. One of three brothers he was nicknamed Abednego, which soon became Bendigo. From 1832 to 1850 he was a popular and successful figure in the prize ring, being champion of England, 1839-45. Later he was converted and was associated

with William Booth in his early evangelistic work. He died Aug. 23, 1880.

Benedicite Canticle of the Christian church. It is a song of praise with the refrain "Praise Him and magnify Him for ever." In the prayer book of the Church of England it appears as an alternative to the Te Deum at morning prayer; it is also sung in the Roman Catholic and Greek churches.

Benedict Saint and founder of the greatest of the monastic orders, the Benedictines. He came from Nursia, in Italy, and was educated at Rome. For a time he lived a hermit's life and then took charge of a monastery, where, apparently, he was very uncomfortable. After this Benedict began to collect a following, men who shared his ideas. He set up 12 monasteries and in 529 founded the one at Monte Cassino which became so famous. There the saint died in 543, after he had written his *Rule* on which monastic life in Western Europe is based.

Benedict Name of 15 popes. The first 13, with the possible exception of II. and VII., were not very noteworthy. **Benedict II.** was canonized and his festival is on May 7. **Benedict VII.**, pope from 974 to 983, did a great deal to help monasticism to get a strong footing in Europe. **Benedict XIV.**, an Italian, was Archbishop of Bologna before he became pope in 1740. He reigned until 1758.

Benedict XV. was born at Genoa, Nov. 21, 1854, his family name being Chiesa. A fine scholar, he was a secretary at the Vatican before being made Archbishop of Bologna in 1907. In 1914 he was created a cardinal and later in the year he was chosen pope. He died Jan. 22, 1922, having been pope through the period of the Great War.

Benedictine Popular liqueur. Green in colour, it was invented by the monks of the Benedictine Monastery at Fécamp, hence its name. It is sometimes called Dom because of the inscription D.O.M. *Deo optimo maximo*, on the label. It is made commercially to-day at Fécamp.

Benedictines Monastic order founded by S. Benedict. It dates from 529 when Benedict established a monastery on Monte Cassino. In 580 the monastery was sacked and the monks went to Rome whence the order spread throughout Europe. The rule is not very strict. The order has always been interested in education and several universities and many schools owe their origin to the efforts of its members. The habit is black and the motto, *laborare est orare*, "to labour is to pray." About A.D. 600 communities of nuns were established and these soon became very numerous. The Carthusians are a branch of the Benedictines, who at one time had, it is said, nearly 40,000 houses throughout the world.

In England the first Benedictine was S. Augustine, who established a Benedictine house at Canterbury. There were 360 houses in England at the time of the Reformation. To-day there are about 700 Benedictine houses in the world, either priories, abbeys or convents. In England there are 3 abbeys, Ampleforth, Downside and Buckfastleigh.

Benedictus Song used in the Christian church. It is taken from Luke i. where Zacharias, the priest, thanks God for performing His promises. In the Church of England it is sung after the second lesson at morning prayer. It begins "Blessed be the Lord God of Israel."

In the Roman Catholic church the benedictus is the canticle taken from Math. xxi. and beginning "Blessed is he that cometh in the name of the Lord."

Benefice In the Church of England a property that provides a living for a clergyman or other ecclesiastic. A rector and a vicar are both holders of benefices, but a curate is not. Bishops and deans are also beneficed clergy.

Beneficiary Person who receives the benefit or income from a property, although he or she is not the legal owner. For instance, "A" leaves £5000 in trust for a daughter. The legal owners of this sum are the trustees and it is invested in their names, but the daughter is the beneficiary.

Benefit of Clergy. A privilege formerly enjoyed by clergymen of being tried for offences in the ecclesiastical courts, where their punishment was often negligible. As at one time any one who could read could secure this privilege it was greatly abused and was curtailed in the time of Henry II. It remained, however, except in cases of treason and other serious crimes, until 1827, when it was formally abolished.

Benes Eduard. Czech statesman. Born May 28, 1884, he became in 1908 a lecturer on sociology and economics at Prague University. In 1915 he left his country and reached Paris, where, with his old teacher, T. G. Masaryk, he helped to organise the Czecho-Slovaks into a nation, conducting a newspaper on behalf of the cause. When, in 1919, Czecho-Slovakia came into existence, he was chosen its Foreign Minister, and in 1921-22 he was Premier. He was mainly responsible in 1921 for the Little Entente between his country, Rumania and Yugo-Slavia, and was still Foreign Minister in 1932. *My War Memories*, an English translation of one of his books, appeared in 1928.

Benevento City of Italy. It is 31 m. from Naples and has some old and remarkable buildings. These include a round church dating from the 8th century, the cathedral and the castle. The triumphal arch, one of Trajan's, is in an excellent state of preservation and there are remains of the walls. Pop. 36,962.

Benevolence Act of kindness or a gift of any kind made in the spirit of goodwill. Historically it has quite another meaning. A benevolence is a gift made by a subject to the king, and by pressure or compulsion Edward IV. extorted money, called benevolences, from his subjects, as did his successors, Richard III. and Henry VII., although in 1481 benevolences had been declared illegal. James I. tried this way of raising money, but in the time of Charles I. parliament finally stopped it.

Benfleet Urban district and watering place of Essex. It is 29 m. from London, on the L.M.S. Rly. It consists of North Benfleet and South Benfleet. Pop. (1931) 12,091.

Bengal Presidency of India. It covers 82,277 sq. m. and has a population of 47,592,500. Calcutta is the capital; other large towns are Howrah and Dacca. Most of the people speak Bengali. Bengal has been a presidency since 1912, as it had been from 1699 to 1834. At its head is a governor who

is assisted by an executive and a legislative council. The latter consists of 140 members, of whom 114 are elected.

Bengal Bay of. Part of the Indian Ocean, on the E. side of India and Burma. The Ganges, Brahmaputra, Irrawaddy, Mahanadi and Godavary rivers flow into it. There are no good ports on the W., but on the E. are Akyab, Moulmein and Rangoon. The chief groups of islands are Andaman, Nicobar and Mergui.

Benguela Seaport of Angola, W. Africa. It is on Lobito Bay and belongs to Portugal. The terminus of a railway that crosses the Continent to Beira, it passes through the Belgian Congo and Rhodesia and is controlled by the Portuguese, Belgian and British authorities. The final link was opened in 1932.

Benin Former kingdom of Africa, now part of Nigeria. It takes its name from the Beni, a negro tribe. In 1897 the kingdom was invaded by British troops and taken under British protection.

Benin is also the name of a river in Nigeria and of a town that stands near it. The town was the capital of the kingdom. Pop. 15,000.

The **Bight of Benin** is part of the Gulf of Guinea. It has a coastline of nearly 500 m.

Benjamin Jacob's youngest and favourite son. The word means "son of my right hand." His mother was Rachel. His father showed a special affection for him when he sent his ten sons to buy corn in Egypt (Gen. xlii), but kept Benjamin at home. From him one of the twelve tribes was descended and named.

Ben Nevis Highest mountain in the British Isles. Situated in Inverness-shire, Scotland, it rises to an altitude of 4406 ft. above sea-level. Its lower rocks are mainly granite, and on its N.E. side is a precipice of 1500 ft. An observatory built here in 1881 was closed in 1905.

Benn **William Wedgwood.** British politician. Born May 10, 1877, he entered Parliament in 1906 as Liberal M.P. for the Tower Hamlets. From 1910-15 he was a Junior Lord of the Treasury. He served with the yeomanry and the naval air service in Egypt, Gallipoli and Italy, winning the D.S.O. From 1918-27 he was M.P. for Leith and in 1929 he was elected for N. Aberdeen. He was then a member of the Labour party and in 1929 he was made Secretary for India. In 1931 he resigned office and lost his seat in Parliament.

Benn's father, **Sir John Williams Benn** (1850-1922), founded the firm of Benn Bros., publishers of trade papers. He was a leading member of the L.C.C., being its chairman, 1904-05, and a Liberal M.P., 1892-95 and 1904-10. In 1914 he was made a baronet.

His eldest son, **Sir Ernest John W. Benn**, became head of Benn Bros., which firm he greatly developed. His books include *Confessions of a Capitalist*, *Letters of an Individualist*, *Account Rendered*, 1930, and *This Soft Age*, 1933. In 1933 also he launched a new "anti-political" weekly, *The Independent*.

Bennett **Enoch Arnold.** English novelist and dramatist. He was born at Shelton, near Hanley, May 27, 1867, and became a law student there. Later he moved to London and became a journalist, working as such from 1893 to 1900, part of the time as editor of *Woman*. In 1898 he published his first novel, *A Man from the North*, and in 1902 he made a name with *Anna of the Five Towns*. He followed this up with *A Great Man*, *The Old Wives' Tale*; and the trilogy: *Hilda Lessways*, *Clayhanger* and *These Twain*. Other successes were *Helen of the High Hand*, *The Card*, *The Regent* and a volume of short stories called *The Matador of the Five Towns*. These books deal with life in the five towns of the Potteries, thinly disguised by the author, and stand as his best work. They portray the conditions there with a vivid fidelity that stamps him as a master of his art. London is mainly the scene of his later works, which, although books of considerable power, lack the vitality of the earlier ones. They include *The Pretty Lady*, *Elsie and the Child*, *Riceyman Steps*, *Lord Raingo* and *The Grand Babylon Hotel*.

Bennett was also a keen student of the theatre. He wrote *The Great Adventure*, an adaptation of his novel *Buried Alive*, and other plays, and with E. Knoblock was responsible for *Milestones* and *Mr. Prohack*. He wrote a good deal of dramatic criticism and in his later years articles on a variety of subjects for the press. He died March 27, 1931. Two stories, *Dream of Destiny* and *Venus Rising from the Sea*, were published posthumously in 1932.

Bennett **James Gordon.** American journalist. Born in Banffshire, Sept. 1, 1795, he went to Canada in 1819. In 1835 he started *The New York Herald*, which became one of the foremost newspapers in the United States. He died June 1, 1872.

His son, also **James Gordon Bennett,** took control of the paper on his father's death and, in 1875, helped *The Daily Telegraph* to send Stanley out to find Livingstone. In 1887 he established a Paris edition of the *Herald*. Interested in sport and adventure, he presented the Gordon Bennett Cup for ballooning and sent out an expedition to the Arctic. He died May 14, 1918.

Bennett **Richard Bedford.** Canadian politician. Born July 3, 1870, in New Brunswick, he practised as a lawyer there. In 1897 he moved to Calgary and soon became a member of the legislature of Alberta. In 1911 he entered the Dominion House of Commons as a Conservative. In 1917 he was Director of National Service and in 1921 Minister of Justice in the Coalition Government. In 1926 he was Minister of Finance, and in 1927 he was chosen leader of the Conservative party. In July, 1930, he became Prime Minister, attending the Imperial Conference in London in Oct., 1930. He held office till Oct., 1935, when he became Leader of the Opposition.

Bennett **Sir William Sterndale.** English musician. He was born in Sheffield, April 13, 1816, and in 1826 entered the Royal Academy of Music, London, which produced his first piano concerto in 1833. In 1836 he met Mendelssohn and Schumann in Leipzig. In 1849 he helped to establish the Bach Society, and in 1851 he became professor of music at Cambridge. He was conductor of the Philharmonic Society, and principal of the Royal College of Music from 1866 until his death. Knighted in 1871, he died Feb. 1, 1875.

Ben Rhydding Inland watering place of Yorkshire (W.R.). It stands on the Wharfe, 9 m. from Bradford. There is a hydropathic establishment here and the place can be reached by the L.M.S. and L.N.E. Rlys.

Benson **Arthur Christopher.** English scholar. The eldest son of E. W Benson, afterwards archbishop, he was born April 24, 1862, and educated at Eton and King's College, Cambridge. His life was divided between Eton, where he was an assistant master, 1885-1903, and Cambridge, where he was master of Magdalene College from 1903 until his death, June 17, 1925. A graceful writer. Benson wrote the *Life* of his father, biographies of Rossetti, Pater and others, and essays and poetry. His volumes of essays include *The Upton Letters* and *Through a College Window*. He was also one of the editors of *The Correspondence of Queen Victoria*.

Benson **Edward Frederic.** English novelist. A son of Rev. E. W. Benson, he was born July 24, 1867, and educated at Marlborough and King's College, Cambridge. He worked as an archaeologist for a time and travelled a good deal, but his reputation is that of a writer. A long list of novels beginning with *Dodo*, 1893, stands to his credit. Of them *Vintage, Mammon and Co., The Luck of the Vails, The Challoners, The House of Defence, The Osbornes, Dodo the Second, David Blaize, Miss Mapp* and *Pharisees and Publicans* may be mentioned. He has also written the autobiographical *Our Family Affairs*, and in 1932 appeared a book on Charlotte Bronte.

Benson **Edward White.** English prelate. Born in Birmingham, July 14 1829, he was educated there and at Trinity College, Cambridge, of which he became a fellow. He was ordained and, having been assistant master at Rugby, he was appointed head of Wellington when that school was opened in 1859. He left in 1872 and after a few years at Lincoln was chosen first bishop of Truro in 1877. In 1883 he was appointed Archbishop of Canterbury and died suddenly at Hawarden, Oct. 11, 1896. A man of great ability and remarkable energy, Benson was also known as the father of three brilliant sons. Two of these are noticed separately. The third, **Robert Hugh Benson** (1871-1914), was an Anglican clergyman before becoming a priest in the Church of Rome.

Benson **Sir Francis Robert.** English actor. Born Nov. 4, 1858, a son of William Benson, J.P., he was educated at Winchester and New College, Oxford, where he was known as an athlete and an amateur actor. In 1882 he went on the stage and in 1888 founded a company of his own. Benson's chief work has been done in presenting Shakespearean plays and for over 25 years he organised the Shakespeare Festival at Stratford. He also set up a school of acting. He was knighted in 1916, and in 1930 issued his *Memoirs*.

Bent Grass (*Agrostis*). Large genus of grasses, containing nearly a hundred species. They are found on waste land and meadows, and flourish in damp, poor soil. They are of little use for agricultural purposes. One species (*A. canina*) is used for lawns, and it is given to cats and dogs for medicinal purposes.

Bentham **Jeremy.** English author. Born Feb. 15, 1748, he was educated at Westminster and Queen's College, Oxford. In 1770 he published *A Fragment on Government*, in which he criticised Blackstone's theory of the constitution. He passed his whole life in writing and study, and left a number of works of which the most important is his *Introduction to the Principles of Morals and Legislation*. He died June 6, 1832, and his skeleton may be seen in University College, London, where in 1932 the centenary of his death was celebrated.

Bentham was the great English advocate of utilitarianism; the aim of politics for him was the greatest good of the greatest number. His ideas have been most influential, as on them most of the great reforms of the 19th century were based.

Bentinck **Lord George.** British politician. A son of the 4th Duke of Portland, he was born Feb. 27, 1802. He served in the army and then became private secretary to his uncle, George Canning. In 1826 he entered Parliament as M.P. for King's Lynn. He died Sept. 21, 1848. Bentinck was one of the leading sportsmen of his day, especially as a patron of the Turf, and a man of great popularity and influence.

Bentinck **Lord William.** English administrator. A son of the 3rd Duke of Portland, he was born Sept. 14, 1774, and entered the army. From 1803-07 he was Governor of Madras. Having served in the Peninsular War he was made Governor of Bengal in 1827. In 1833 he was appointed the first Governor-general of India. His rule there was very beneficent; he stopped the cruel practice of suttee and put down the thugs. He died in Paris, June 17, 1839.

Bentley District of Yorkshire (W.R.). It is on the Don, 2 m. from Doncaster and 158 from London, and is a coal mining centre. The station is Arksey on the L.N.E. Rly. In May, 1932, there were serious floods here and a great deal of damage was done to the mines and the houses.

Bentley **Richard.** English scholar. Born the son of a farmer, at Oulton, York, Jan. 27, 1662, he went to St. John's College, Cambridge, and was ordained. He was made keeper of the royal libraries in 1694. In 1699 he wrote his *Dissertation on the Epistles of Phalaris*, a wonderful piece of scholarship, which proved the letters to be forgeries and gave Bentley a European reputation. In 1700 he was chosen master of Trinity College, Cambridge, where his overbearing attitude led to serious troubles with the fellows. He died July 14, 1742. Bentley's work included editions of Horace and Terence and work on *Paradise Lost*.

Benue River of Africa. Rising almost in the centre of the continent, it enters Nigeria and, flowing west, falls into the Niger at Lokoja. It is navigable for small craft beyond Yola which, with Garua, is on its banks. The Niger's chief tributary, it is 800 m. long.

Benzene Colourless but inflammable liquid, a by-product of coal gas manufacture. It is used in the manufacture of dyes and in gas for lighting purposes. It is also a powerful solvent of fats and resins. In chemistry it is important as being the type of a number of substances called aromatic compounds. It is sometimes called benzol.

Benzine Volatile inflammable liquid obtained from petroleum. The word is sometimes used for petroleum spirit generally. It is used for cleaning articles of clothing and as a solvent for resin. It should not be confused with benzene.

Benzoin Resin or gum obtained from the stem of a tree growing in Java

and other islands of the E. Indies. It is pleasant to the taste and smell and is used in making perfumes and incense. It is also useful in medicine.

Benzoic acid is made from benzoin, but on a much larger scale from toluene. It is used in medicine and in the making of colours.

Beowulf Hero of an Anglo-Saxon poem. Therein we are told how he killed the monster Grendel and another monster, Grendel's mother, and finally a dragon. In the end he was himself killed. The poem was written in the 7th and 8th century in Scandinavia and is invaluable because of the details it gives about the daily lives of our Teutonic ancestors. The MSS. is in the British Museum.

Berber White race living in N. Africa. To this people belong many of the inhabitants of Morocco and Tripoli and they are also found in Algeria and Tunis. The Kabyles and the Riffs of Morocco are Berbers, as are the Tuaregs who live in the Sahara. They are related to the Egyptians. Many of them have accepted Mohammedanism and they number about a million.

Berber Town of the Anglo-Egyptian Sudan. It stands on the Nile, 20 m. from its junction with the Atbara, and is a station on the railway from Wadi Halfa to Khartoum. At one time it was a great centre for caravans and it still has a considerable trade. Pop. 10,000. Berber is also the name of a province in the Sudan.

Beresford **Baron.** British sailor and politician, long known as Lord Charles Beresford. Born Nov. 10, 1846, Charles William de la Poer Beresford, was the second son of the 4th Marquess of Waterford. Whilst only a lieutenant he accompanied King Edward VII., when Prince of Wales, on his visit to India in 1875-76. Later he gained distinction at the bombardment of Alexandria, where he commanded the *Condor*. In the Nile Expedition of 1884 he commanded the naval brigade. During the years of peace he held a series of commands, including the Mediterranean Fleet, 1905-07 and the Channel Fleet, 1903-05, and 1907-09. He was made an admiral in 1906. Beresford was also a politician. From 1874-80 he was M.P. for Waterford and from 1885-89 for E. Marylebone. From 1897-1900 he sat for York, from 1902-03 for E. Woolwich and from 1910-16 for Portsmouth. In 1885-86 he was a Lord of the Admiralty and in and out of Parliament he was a leading and sometimes pugnacious speaker on naval matters. In 1916 he was made a peer and he died Sept. 6, 1919.

Beresford **Viscount.** British soldier, Born at Waterford, Oct. 21, 1768, he entered the army in 1785, and took part in the recapture of Capetown in 1806 and in other campaigns, including the capture of Buenos Ayres in 1808. Later he served in the campaigns in Portugal, and in 1809 was given command of the Portuguese army. He was made a Knight of the Bath for his services at Busaco in 1810, and defeated Soult in the following year. He was created a baron in 1814, and a viscount in 1823. He died Jan. 8, 1854, without issue, and the title became extinct.

His estates passed to his stepson, Alexander James Beresford Hope (1820-87), who was prominent as a leader of the High Church Party. For nearly 20 years he was M.P. for Cambridge University and he helped to found *The Saturday Review*.

Bergamot Cultivated variety of citrus. Its rind contains an essential oil which is extracted and used in perfumery. The **bergamot pear** is a small brown skinned juicy pear, the flavour of which somewhat resembles bergamot.

Bergen City and seaport of Norway. It stands on a bay, 190 m. from Oslo. With a large harbour, it does a considerable trade and is a fishing and tourist centre. The city has some manufactures. Pop. (1930) 98,303.

Bergerac **Savinien Cyrano de.** French writer. He was born in Périgord in 1619 and entered the army. He wrote several plays including *Agrippine*, which brought him fame, but more remarkable is his *History of the States of the Moon and the Sun*, only published after his death in 1655. Cyrano had a very large nose which was the cause of many duels, and this characteristic was brought out in Rostand's play, *Cyrano de Bergerac*, which had a remarkable success when produced in Paris in 1897, and in London in 1919.

Bergson **Henri.** French philosopher. Born in Paris, Oct. 18, 1859, he came of a Jewish family. In 1900 he became professor of philosophy in the College de France. His philosophy, which has exercised a good deal of influence, is laid down in his books. He believes in empiricism, that knowledge comes from experience, and that consciousness, or what is actually known, is the central problem of metaphysics.

Beri-Beri Disease frequent in the hot countries of Asia, Africa and America. It is very devastating and causes great weakness, leading often to paralysis. It sometimes attacks sailors. Scientists have devoted much attention to it and it is now believed that it is due to the eating of rice which has been polished, with resultant deficiency of vitamin B.

Bering Sea Part of the N. Pacific Ocean. It is about 1000 m. from N. to S., and 1500 m. from E. to W. Both the sea and the strait of the same name were discovered in 1648 by Deshnef, a Russian, but were named in honour of Vitus Bering, a Danish navigator. The sea is open only from June to November, ice floes causing obstruction during the rest of the year, and fogs are almost continual.

Soon after 1867, when Alaska was sold to the United States, disputes arose between American and Canadian fishermen about the right to capture seals. The Americans contended they could regulate the captures as they wished; the Canadians that they had a prescriptive right to share in it. The matter was referred to arbitration and the court in Paris found for Canada and Great Britain. The Canadian sealers were compensated and rules made for the future of the industry.

Berkeley Market town of Gloucestershire. It stands on a hill above the Severn, 144 m. from London, and has a station on the G.W. Rly. Its castle is one of the most perfect remaining in England. In it Edward II. was murdered. Around the town is the vale of Berkeley, famous for its cheeses. The town gives its name to a hunt. Pop. 790.

The title of **Earl of Berkeley** has been borne by the Berkeley family since 1679 and the barony since 1295. At one time the earl owned valuable property in London, including

Berkeley Square, but this was sold to Sir Marcus Samuel in 1919.

Another **Berkeley** is a city of California. It is 10 m. from San Francisco and here is the University of California. Pop. (1930), 82,109.

Berkeley George. Irish philosopher. Born near Kilkenny, March 12, 1685, he went to Trinity College, Dublin, became a fellow and was ordained. He travelled about Europe for some years as tutor to noblemen, and in 1724 became Dean of Londonderry. From 1728 to 1731 he was in America, after which, in 1734, he was made Bishop of Cloyne. He resigned in 1752 and died Jan. 14, 1753. By his writings, notably *The Treatise on the Principles of Human Knowledge* and the *Vindication*, Berkeley greatly influenced philosophical thought.

Berkhampstead Name of two places in Hertfordshire. **Great Berkhampstead** is an urban district, 28 m. from London, on the L.M.S. Rly. The little River Bulbourne and the Grand Union Canal pass by it. There is a public school here. Originally a grammar school dating from 1541, it was refounded in 1841 and is now a public school for 500 boys. There are a few ruins of the castle. Pop. (1931) 8053.

Little Berkhampstead is the centre of a rural district. This word is sometimes spelt Berkhamsted.

Berkshire Inland county of England. It is bounded on the north by the Thames and covers 724 sq. m. Partly hilly, it has Inkpen Beacon on its Hampshire border and other downs elsewhere. The Vale of the White Horse is in the county as is Windsor with its forest. The rivers are the Kennet and the Loddon. The Kennet and Avon Canal crosses the county, which is also served by the G.W. and L.N.E. Rlys. Reading is the county town. Other towns are Windsor, Abingdon, Maidenhead, Newbury, Wallingford and Wokingham. The county sends three members to Parliament. It is in the diocese of Oxford. Pop. (1931), 214,181.

The title of **Earl of Berkshire** has been held by the family of Howard since 1626. It is now, as it has been since 1745, united with the earldom of Suffolk.

The **Berkshire Regiment**, known as Princess Charlotte of Wales's, consists of the old 49th and 66th. The depot is at Reading.

Berlin Capital of Germany and the largest city of the republic. It stands on the Spree, 84 m. from Stettin on the Baltic and 180 m. from Hamburg, on the North Sea. A great railway centre, it has also water commerce with the rest of Germany and the sea. The manufacturing industries are many and various, but it is chiefly known as a commercial centre, a university town and the seat of government. Before 1871, when it was made the capital of Germany, it was the capital of Prussia. With suburbs the city covers 341 sq. m., and has over 4,024,286 inhabitants.

Unter den Linden is the best known thoroughfare and the Tiergarten the chief of several parks. In it are the Zoological Gardens and near by the buildings of the Reichstag. Around the palace, once the residence of the Kaiser, are other public buildings, including those of the university. Berlin is a broadcasting centre and an aircraft station, the terminus being at Tempelhof.

The **CONGRESS OF BERLIN** was a meeting of representatives of the Great Powers held in 1878 to discuss the affairs of Turkey, which had just been beaten by Russia. Rumania, Serbia, Montenegro, and to some extent Bulgaria, were made independent of the Sultan. Bosnia and Herzegovina were put under the rule of Austria and Cyprus under that of Great Britain.

The **BERLIN DECREE** was an order made by Napoleon in Nov. 1806, forbidding all trade with Great Britain. He was then in Berlin, having just conquered Prussia at Jena.

Berlioz Hector. French composer. Born Dec. 11, 1803, he studied music at the Conservatoire in Paris and in 1830 won the Grand Prix du Rome. In 1842 he undertook a concert tour abroad and during the next few years his visits to London and other capitals made him very popular. He married an Irish actress, Harriett Smithers, and died March 9, 1869. His symphonies and his setting for Faust are perhaps his best works, but his religious pieces and his opera, *Beatrice and Benedict*, are noteworthy.

Bermondsey Borough of London, one of the 28 in the county. It is on the south side of the river and in it are the south end of the Tower Bridge and Tooley St. The centre of the leather industry, here are tanneries and the technical college of the trade in Tower Bridge Road. The borough, which includes Rotherhithe, contains docks and wharves which employ some of the inhabitants. There is a university settlement in Farncombe St. Pop. (1931) 111,526.

Bermuda Grass Kind of grass found in most warm countries, including the southern part of Europe and the U.S.A. It is also found in India where it is called Dool. Other names are Sentil Grass and Devil Grass. It is a perennial with erect branches which flower.

Bermudas Group of islands in mid-atlantic. They are nearly 600 m. from the coast of the U.S.A. and number about 360, but only about 20 are inhabited. Their area is about 19½ sq. m. The largest is Great Bermuda (13 sq. m.), St. George, Ireland, Somerset and St. David are others. Hamilton is the capital; St. George is the old capital.

A crown colony, Bermuda is governed by a Governor and an Executive Council, with a Legislation Council of nine members and an elected House of Representatives of 36. The scenery is beautiful and the soil fertile. The islands are a popular holiday resort for Americans and are used by the British as a naval base. There are good harbours, and docks and other accommodation for warships have been built. Pop. (1931) 27,789.

Bernadotte Name of the royal family of Sweden. Jean Baptiste Bernadotte, a French soldier, became a marshal under Napoleon. In 1810 he was chosen crown prince of Sweden and in 1818 he succeeded to the throne as Charles XV. The present King is his descendant.

Bernard French saint known as Bernard of Clairvaux. Born in Burgundy about 1091, he belonged to a noble family. In 1113 he entered a Cistercian house and in 1115 became head of one at Clairvaux. There he remained until his death, Aug. 20, 1153. Bernard wrote a great deal, including some hymns, translations of which are in English hymnals. He had a great reputation as a theologian and was prominent in preaching

the Second Crusade, in assisting the Knights Templars and in condemning the teaching of Abelard. He founded a reformed branch of the Cistercians, who are often called the Bernardines. In 1173 he was canonised.

Berne City of Switzerland, capital of the confederation and of the Canton of Berne. It stands on the Aar, which almost makes a circle round it, and which is here crossed by several bridges. There is a university, and two old towers, remains of the city's defences, still stand. The name means "bear," and in the Bear's Den bears are kept by the city authorities. Owing to its position several international conferences have met here. One was the conference at which, in 1887, the Berne Convention, which settled the question of international copyright, was signed. Pop. (1930) 111,783.

Bernese Oberland Part of the Alps, which lie in the Canton of Berne, Switzerland, and are noted for their magnificent scenery. Some of the highest peaks include the Finsteraarhorn (14,026 ft.), the Aletschhorn (13,723 ft.), and the Wetterhorn (12,166 ft.). Grindelwald is one of the loveliest valleys and Meiringen is another tourist resort. One of the best known lakes is Interlaken, near the Jungfrau.

Bernhardi **Friedrich Von.** German author. Born Nov. 22, 1849, the son of a diplomatist, he entered the army in 1869 and rose to be a general. He became known in 1912 by his book which was translated into English as *Germany and the Next War* and was much read just before the Great War. It was a statement of the gospel of force and the right of Germany to make war in order to secure her aims. In 1921 Bernhardi wrote a volume on Germany's struggle between 1914 and 1918. He died July 10, 1930.

Bernhardt **Sarah.** French actress. Born in Paris, Oct. 24, 1844, her mother was German and her father French. After a course at the Conservatoire, she appeared on the stage in Paris in 1862, abandoning her baptismal name of Rosine for Sarah. About 1869 she began to make a reputation and for the next 30 years she was the greatest tragic actress in the world; with a magnetic personality, a wonderful voice and other gifts, she played with remarkable success the leading rôle in the great tragic dramas. In 1899 she opened her own theatre in Paris and she frequently acted in London, New York and elsewhere. In 1915 she lost a leg, but she continued to act almost until her death, March 26, 1923. A volume of *Memoirs* appeared in 1907.

Bersaglieri Name given to the "sharpshooters" of the Italian Army. The first units were raised in 1836, and commanded by La Marmora. They were specially trained in rapid marching, shooting and scouting. They wear a black slouch hat, with drooping cock's feathers. Since 1928 they have been composed entirely of cyclist regiments.

Bertha English queen. She was a Frankish princess who married Ethelbert, King of Kent, about 560, and was instrumental in converting him to Christianity, with the result that religion spread widely among the Anglo-Saxons. She was canonised and her day is kept on July 4.

Berthelot **Pierre Eugene Marcellin.** French politician and scientist. Born in Paris, Oct. 29, 1827, he became professor of chemistry at the College de France in 1861. In 1885-87, having been Inspector General of Higher Education since 1876, he was Minister of Education, and in 1895-96 he was Foreign Minister. In 1900 he became a member of the Academy. He died March 18, 1907. He was one of the founders of the science of thermo-chemistry.

Berthollet **Claud Louis, Comte de.** French scientist. Born Dec. 9, 1748, he became an authority on dyes and dyeing and was appointed to an important position in Paris in connection with that industry. His chemical discoveries, which were concerned with saltpetre, chlorine, ammonia and other substances, were of great value to industry. He was made a senator and count by Napoleon and he died Nov. 6, 1822. He wrote a standard book on dyes.

Bertillon **Alphonse.** French criminologist. Born in Paris in 1853, he was the son of Louis Adolphe Bertillon (1821-1883), professor at the school of anthropology in Paris. Alphonse entered the police service and became head of the identification department in Paris. He was responsible for the system of identification which is named after him. This rests upon the theory that the bony parts of the human body do not change in size after adult life is reached. By accurate measurements of these, therefore, criminals can be identified. A witness in the Dreyfus case, Bertillon died Feb. 13, 1914.

Bervie Burgh, seaport and market town of Kincardineshire, sometimes called Inverbervie. It stands at the mouth of the River Bervie, 13 m. from Montrose and 88 m. from Edinburgh, on the L.N.E. Rly. There are flax mills and chemical works. The first machine in Scotland for spinning yarn was established here in 1788. Pop. (1931) 1032.

Berwickshire County of Scotland. In the S.E. of the country it is divided from England by the Tweed. It is 457 sq. m. in area and includes much of the Lammermuir Hills, some points exceeding 1500 ft. in height. In the centre is the fertile region called the Merse, and there is about 20 m. of coastline. The Tweed with its tributaries and the Eye are the chief rivers. Duns is the county town, and other places are Coldstream, Eyemouth and Lauder. The county unites with Haddingtonshire to send a member to Parliament. It contains much of historical interest, including Fast and other border castles. Pop. (1931) 36,601.

Berwick **-upon-Tweed.** Borough, seaport and market town of Northumberland. It is at the mouth of the Tweed, 67 m. from Newcastle, on the L.N.E. Rly. Spittal and Tweedmouth are part of the borough. The main industry is shipping. Three bridges cross the river here, one having been opened in 1928. Berwick owes its historic importance to its position between England and Scotland, and it was repeatedly taken by one and then the other. For a time it was a neutral town, but in 1885 it was definitely attached to Northumberland. It was made a county of itself in 1836. Pop. (1931) 12,299.

Berwyn Mountains of Wales. This range of heights borders Merionethshire, Montgomeryshire and Denbighshire. The chief elevation is Moelsoch (2716 feet).

Beryl Silicate of aluminium and beryllium found in granite and other

crystalline rocks. It is usually green but sometimes yellow, white or pink. The better varieties, transparent and beautiful, are emeralds or aquamarines. The ordinary beryl is of little value.

Beryllium Metal used, on account of its lightness, for certain parts of aeroplanes and internal combustion engines. It occurs chiefly in the form of the mineral beryl which is found in many parts of the world, and is prepared by an electrolytic process. In colour it is white and it can be forged and rolled into thin sheets. It is four times as elastic as aluminium and twenty-five times as elastic as steel. Its melting point is 1280 deg. C. It resists the action of the air and does not easily tarnish. Atomic wt. 9.02.

Besançon City of France. It stands on the Doubs, 76 m. from Dijon. Besançon was long a free city and at one time was the capital of Franche Comté. It is now a centre of the watch-making industry and has other manufactures. Pop. 58,500.

Besant **Annie.** English theosophist. Born Oct. 1, 1847, she was a daughter of W. P. Wood. In 1867 she married Rev. Frank Besant, a brother of Sir Walter Besant, but the two separated after a few years. About 1874 Mrs. Besant became a secularist and worked with Charles Bradlaugh; she was also a member of the Fabian Society. In 1889 she accepted theosophy as taught by Madame Blavatsky, and for some years lived in India where she associated herself with the extreme nationalists. Her writings and speeches caused her arrest in 1917 and in 1918 she was president of the national congress. She died in September, 1933.

Besant **Sir Walter.** English author. Born at Portsmouth, Aug. 14, 1836, he was educated at King's College, London, and was later a scholar of Christ's College, Cambridge. His earlier works were written in collaboration with James Rice, the two probably best known being *The Golden Butterfly* and *Ready Money Mortiboy*. After the death of Rice, in April, 1882, he wrote alone. In his novel, *The Chaplain of the Fleet*, he gives an interesting description of the old Fleet prison and the Fleet marriages, and in *The Children of Gibeon* he writes of the miseries of sweated labour. His novel, *All Sorts and Conditions of Men*, dealing with the life of workers in the East End of London, was instrumental in instituting the movement which resulted in the building of the People's Palace at Mile End. Beside fiction his work included biographies and volumes of criticism, and his later years were devoted to a survey of London, which was unfinished at his death. In 1884 he founded the Society of Authors. He was knighted in 1895 and died June 9, 1901.

Bessarabia District of Rumania. In the east of the country, it lies between the Dniester, the Pruth and the Black Sea, and is a fertile and in the main a level area. The chief town is Kishinev, others are Bender and Akkerman. Bessarabia was a Turkish possession from 1503, but much of it was taken by Russia in 1822 and in 1878 it was formally given to Russia. During the Great War there was much fighting on the borders. In 1917, when Russia was overthrown, Bessarabia became a republic, but was soon forced to ask help from Rumania. This ended in the union of the two countries, which was recognised by the Supreme Council in 1920. It is now a province of Rumania, and has an area of 17,146 sq. m. Pop. 2,344,000.

Bessborough **Earl of.** Irish title held since 1739 by the family of Ponsonby. Bessborough is a small place in Co. Kilkenny, and in 1721 a landowner, then William Ponsonby, was made Baron Bessborough. In 1739 he was made an earl. The earl's eldest son is called Viscount Duncannon, and the 9th earl, when bearing this title, was M.P. for Dover, 1913-20. Later he became chairman of several undertakings. In 1931 he was appointed Governor-General of Canada.

Bessemer **Sir Henry.** English inventor. Born Jan. 19, 1813, a son of Anthony Bessemer, a Huguenot, he assisted his father in a small chain making business in Hertfordshire. Soon they moved to London where the son was able to exercise his genius for invention. He made bronze powder by a new method, dies that were proof against forgery, lead pencils from waste and other articles. When the Crimean War began he turned his attention to gun making, and when his ideas were ignored or rejected in England he went to France. The result of his experiments was the production of a superior kind of steel, which, made by his process, was called Bessemer steel, and was soon in general use for railways and other purposes where great strength and resisting power were essential. Knighted in 1879, he died March 15, 1898.

Betel Nut Seed, or nut, contained in the fibrous orange-coloured fruit of the pinang or betel palm (*areca catechu*). The fruit is as large as a hen's egg. The nut is sliced, sprinkled with lime, and then rolled in the leaf of the betel pepper and chewed by natives in India and the Malay Peninsula where it grows. It is a digestive stimulant, and the use of it gives a red stain to the teeth.

Bethany Village of Palestine. The name means the "house of dates." The village is on the southern slope of the Mount of Olives, about 2 m. from Jerusalem.

Bethel Place in Palestine, also called Beitin. It is about 11 m. from Jerusalem. The name means "house of God," and the place is the site of Jacob's dream and the spot where Abraham set up his tent. It is now a heap of ruins.

Bethesda Urban district of Caernarvonshire. It is 5 m. from Bangor and took its name from the Nonconformist chapel here. The principal source of employment is in the great slate quarries at Penrhyn. Pop. (1931) 4476.

Bethesda **Pool of.** Spot within the wall of Jerusalem, near S. Stephen's gate. The name means "house of mercy," and it was here that Christ healed the impotent man.

Beth-Horon Two villages in Palestine. Beth-Horon, the upper, is now known as Beit-ur-el-Foka, and is 10½ m. N.W. of Jerusalem. It was one of the boundaries of the land given to the sons of Ephraim and was the scene of a great slaughter of the Amorites when pursued by Joshua.

Bethlehem Town of Palestine. Only 5 m. from Jerusalem, it is famous as the birthplace of Jesus Christ and also of King David. Here is the grotto of the Nativity, the Church of the Nativity and other churches belonging to various Christian bodies. The word means the "house of bread." To-day the name of the place is Beit Lahm. Pop. 6650.

The **Knights of Bethlehem** was a military order that existed in the 16th century to defend Lemnos against the Turks.

Bethlehem Borough of Pennsylvania, U.S.A. It stands on the Lehigh River, 56 m. from Philadelphia and is a centre of the iron and steel industry. At South Bethlehem are the vast works of the Bethlehem Steel Corporation. It is also a great centre of the Moravians and has a university, Lehigh. Pop. (1930) 57,892.

Bethlehemites Roman Catholic religious order. Founded in 1660 in Guatemala, its members undertook to nurse the sick and teach the young. It spread among the peoples of South and Central America, also Mexico, and existed until suppressed in 1820. There was an order of the same name in England in the 14th century.

Bethlen **Count Stephen.** Hungarian politician. Born Oct. 8, 1874, he belonged to an old and rich family of Transylvania. In 1901 he was elected to the diet, or parliament, of Hungary and there for nearly 20 years he was one of the leaders of the opposition. After the Great War he assisted in driving Bela Kun from the country and in restoring order after the short Bolshevist régime. In 1921 he became Prime Minister, and for the next ten years he was responsible for the direction of affairs. He reformed the finances, the electoral system and the land laws, and foiled the attempts of the ex-Emperor Charles to recover the throne. In 1931 he resigned office.

Bethmann-Hollweg **Theobald von.** German politician. Born Sept. 29, 1856 the son of a professor, he entered the Civil Service in 1879. In 1901 he was made President of Brandenburg and in 1907 Vice-President of the Ministry of Prussia. In 1909 he was chosen to succeed Bülow as Imperial Chancellor, a post he held in 1914. He conducted the negotiations that preceded the Great War, defending the action of his country as necessary to its existence. He held office until July, 1917, when he resigned. In 1919 he published his *Memoirs*, again trying to justify Germany, and on Jan. 2, 1921, he died.

Bethnal Green Borough of London, one of the 28 in the county. It is on the north side of the Thames, and to the east of the city. Among its industries is the manufacture of furniture. In Cambridge Road is a museum, a branch of the Victoria and Albert. Pop. (1931) 108,178.

Bethsaida Village of Palestine. Situated on the western shore of the Sea of Galilee, it was the birthplace of Andrew, Peter and Philip. Now only a heap of ruins marks the spot. Another Bethsaida, at the other end of the Sea, is the place where the 5000 were fed by Christ.

Bethune Town of France. It is 24 m. from Arras in a coal mining region. There are some manufacturing industries. In the Great War Bethune was an important outpost for the allied armies and there was much fighting around it. Pop. 16,000.

Betony Plant of the genus *betonica*. The purple or wood betony is found in England and elsewhere in Europe. It has purple flowers and leaves with deep, rounded teeth. It was formerly used in medicine.

Betterton **Thomas.** English actor. The son of a servant of Charles I., he was born at Tothill St., Westminster, about 1635. He left the business of book-selling and went on the stage, winning great success, despite his ungainly figure, low voice and other handicaps. He was associated with Mrs. Braceegirdle in conducting a theatre in Lincoln's Inn Fields, and later in the Haymarket, London. He died on April 28, 1710, and was buried in Westminster Abbey.

Betting Risking money on a race or other event of which the issue is uncertain. In horse racing it is done chiefly by the agency of bookmakers who follow the odds on or against each particular horse as a stockbroker does the prices of shares. It is a very elaborate and highly organised business, and in great races such as the Derby, betting starts months beforehand and the odds vary from day to day until the race is run. Tattersalls in London is the recognised headquarters of betting.

Betting was long illegal in Great Britain. Nevertheless, it was very prevalent, as it is to-day, with bookmakers everywhere and starting prices and other odds given regularly in the newspapers. In 1926 it was legalised by the introduction of a tax on betting, and of a system of licences for bookmakers. In 1928 the tax was reduced and in 1929 it was abolished, but bookmakers still pay £10 a year for a licence. The extra charge for their telephones was abolished in 1930.

Since 1928 betting by means of a totalisator has also been legal in England, and to-day much betting is done in this way. In 1933 the totalisators on greyhound racing courses were made illegal. *See* SWEEPSTAKE.

Bettws-y-Coed Urban district and pleasure resort of Caernarvonshire. It stands where the Llugwy falls into the Conway, in the midst of some of the most beautiful scenery in Wales. Near are the famous Swallow Falls. It is 238 m. from London, on the L.M.S. Rly. Pop. (1931) 912.

Betty **William Henry West.** English actor. Born at Shrewsbury, Sept. 13, 1791, he appeared on the stage in Belfast when only a boy. In 1804, having made a reputation in Ireland and Scotland, he went to London. There his success as a boy actor was instantaneous and remarkable. He was called the young Roscius and once, in 1805, the House of Commons adjourned to see him play *Hamlet*. In 1808 he left the stage and spent three years at Cambridge University. He then resumed his career as an actor, but his popularity did not return. He died Aug. 24, 1874.

Beverley Borough and market town in the East Riding of Yorkshire. It stands near the river Hull, 8 m. from the city of Hull and 29 from York, on the L.N.E. Rly. It has some manufactures and a trade in agricultural produce. Its minster dedicated to S. John, is one of the finest churches in England. Races are held near the town, which has an aerodrome. Pop. (1931) 14,011.

Bewdley Borough of Worcestershire. It stands on the Severn, 3 m. from Kidderminster and 137 from London, on the G.W. Rly. There are several industries including rope making. Pop. (1931) 2868.

Bewick **Thomas.** English engraver. Born Aug. 12, 1753, at a village in Northumberland, he was apprenticed to an engraver. Later, after gaining experience in

London, he entered into partnership with his employer. By careful attention to detail he made a reputation and his woodcuts are to-day much valued by collectors. Between 1784 and 1822 he prepared the illustrations for a number of books, including *A History of British Birds* and an edition of *Aesop's Fables*. Bewick's brother, John Bewick (1760-95), and his son, Robert Elliot Bewick (1788-1849), were also engravers.

Bexhill Borough and watering place of Sussex. It is 5 m. from Hastings, but the two almost form one continuous frontage to the sea. The old town lies inland; on the coast is Bexhill-on-Sea, of modern growth. The former has an interesting Norman church; at the latter are the pavilion and other attractions for visitors. Bexhill is 71 m. from London, on the S. Rly. Pop. (1931) 21,229.

Bey Turkish dignity. The title is given to superior officers of the army, and to notable foreigners. The meaning is "lord," and the title comes between pasha and effendi.

Bezique Card game. It is played by two persons who use two packs of cards from which all the cards up to and including the sixes have been removed. Eight cards are dealt to each player, the seventeenth is turned up for a trump and the rest form the stock from which the two hands are replenished. The players then play for tricks, the object of each being to secure aces and tens, and certain combinations, *e.g.*, king and queen which must be declared.

Bhang Indian drug. It is the native name for hashish, a narcotic which is smoked or taken internally. It produces in its victims voluptuous visions, followed by very heavy sleep, but it invariably leads to mental disorder.

Bhel Indian fruit. When not quite ripe it has a pronounced astringent quality, and the root, bark and leaves of the tree have a similar property. Besides being useful in medicine, the tree furnishes yellow dye, perfume and a cement.

Bhopal State of India. In the centre of India, it covers 6900 sq. m. Its ruler, the nawab, is entitled to a salute of 19 guns; he is descended from the Afghan chief who founded the state in 1723. He succeeded his mother, the begum, who abdicated in 1920, and died in May, 1930. Bhopal is also the name of an agency that includes the native state. Pop. 730,000.

The capital is the town of Bhopal. This has a fort, a palace and various government buildings. Pop. 56,000.

Bhutan Independent state of India. It is in the Himalayan region of the North of Bengal and is very mountainous. It covers 18,000 sq. m., and its rivers are tributaries of the Brahmaputra. The inhabitants, the Bhutans, speak a Tibetan dialect and belong nominally to the Buddhist faith. The ruler of the country is the maharajah and by a treaty made in 1910 the British Government is consulted on all foreign affairs. The people cultivate the soil for rice and other crops, and there are large forests. Pop. 300,000.

Biafra **Bight of.** Bay of Africa. Into this great curve of the west coast of Africa flow several rivers including the Niger, New and Old Calabar, Cameroon, and Gaboon. The bay contains the island of Fernando Po.

Biarritz Town and watering place of France. It stands on the Bay of Biscay, 5 m. from Bayonne, and is a favourite resort for British visitors. The town has casinos and the sands and bathing are excellent. Pop. 22,955.

Bibi Eibat Name of a rich oil field in the Baku district. It lies to the south of the town, and the industry is controlled by a company subordinate to the Soviet Republic of Azerbeijan.

Bible The books of holy scripture. They comprise 39 Hebrew works in the Old Testament and 27 Greek works in the New Testament besides 14 books of the Apocrypha. The Old Testament contains the law, the prophets and others collectively entitled hagiographa. The New Testament contains four gospels, apostolic acts, 21 epistles, mostly Pauline, and the book of the Revelation. Hebrew MSS. of the 9th century A.D. and Greek MSS. of the 3rd-4th century are extant. The Septuagint is a Greek version of the Hebrew books prepared at Alexandria by Jewish scholars of the 3rd-2nd century B.C. The Vulgate is a Latin version of the Bible prepared by Jerome in the 4th century A.D.

The first complete English translation of the Vulgate was by John Wycliffe, about 1380; the first translation out of the original tongues of the New Testament and the Pentateuch was by William Tyndale, 1525-34. Miles Coverdale published the first complete English Bible in 1535.

The English translation or Authorised Version, which has been in general use for 300 years and is remarkable for the beauty and dignity of its language, was prepared in the time of James I. and issued in 1611. This was revised towards the end of the 19th century, but the newer or revised version has by no means supplanted the authorised one. The Bible has also been translated into almost every other language of the world.

The Bible contains 1189 chapters in all; 929 in the Old Testament, and 260 in the New Testament. There are 23,214 verses in the Old Testament, and 7959 in the New Testament. The total number of words in the whole Bible is said to be 774,680.

During 1930 the number of volumes sold by the British and Foreign Bible Society was 12,175,292. Of these 1,096,013 were complete Bibles, 1,283,301 were New Testaments, and the remainder were portions of the Scriptures. The Bible is printed by the society in 655 languages.

Bible Christians Religious denomination of Methodist origin. Founded in 1815 by William O'Bryan, a Cornish Methodist lay preacher, whose followers were sometimes called Bryanites, they preached a fervent evangelism throughout England, and had adherents in Canada, Australasia and China. In 1907 their 32,500 members, 218 ministers and 652 chapels were merged in the United Methodist Church. These figures included 1400 converts in China. Incidentally 15,000 members, 159 ministers, and 600 chapels were merged in unions abroad.

Bible Society Association for disseminating a knowledge of holy scripture. The most influential is the British and Foreign Bible Society, founded in London in 1804. Fundamental rules undertake to circulate without comment the English Bible, authorised or revised, omitting the Apocrypha, and when translating to use neutral words for controversial topics. Of translations into 655 languages and dialects, it circulates many millions every year. Nearly

8000 auxiliaries and branches assist in collecting substantial funds.

Bibliography Art or practice of writing about books. The bibliographer may concern himself with form or matter. In the one case he examines and collates books or MSS. by way of recording variant editions, questions of authorship, and details of printing, type, binding, or size. In the other he furnishes the inquirer with reference to the available literature on any topic.

Bibury Village of Gloucestershire. It is on the Coln, 6 m. from Cirencester, and is one of the most picturesque of the Cotswold villages. Arlington Row, some cottages here, is the property of the National Trust.

Bicarbonate Salt in which two equivalents of carbonic acid, H_2CO_3, are combined with one equivalent of base. In popular practice the term denotes bicarbonate of soda or baking soda, $NaHCO_3$, as distinct from carbonate of soda or washing soda, a hydrated form of Na_2CO_3. In medicine it is an antacid and stomachic.

Biceps Two-headed muscle. In human anatomy one pair flexes the forearms upon the upper arms. Each, passing in front of an arm, is attached by two tendons to its shoulder blade and inserted into the radius of the forearm. A corresponding pair, passing behind the thighs, flexes the legs upon them.

Bicester Market town and urban district of Oxfordshire. It is 12 m. from Oxford and 53 from London, on the L.M.S. and G.W. Rlys. There are some industries, and the town is a hunting centre, giving its name to the Bicester Hunt. Cattle fairs are held. There are remains of an abbey. Pop. (1931) 3109.

Bickley Residental district of Kent. It is 12 m. from London by the S. Rly. and 1¼ m. from Bromley.

Bicycle Machine with two wheels used for riding. It is supposed to have been invented by a German, and its early name was velocipede. The first bicycle appeared in England about 1866. It had one large and one small wheel, and was worked by pedals. Soon the safety bicycle, with two wheels of almost equal size was introduced. Bicycling became extremely popular and a great industry grew up at Coventry and elsewhere. The introduction of rubber tyres inflated with air added to the rider's comfort. In Great Britain all bicycles must carry a white light if ridden after certain hours in the evening. Since 1928 they have been compelled to carry also a red light or reflector at the rear at all times.

Bidding-Prayer An exhortation to prayer, which directly informs the congregation on the object for which the prayer is to be said, and ends with the Lord's Prayer. It is used in England in cathedrals, Inns of Court and at University Sermons.

Biddle **John.** "Father" of English Unitarianism. Born at Wotton-under-Edge, Gloucestershire, in 1615, he published *Twelve Questions and Arguments* against the deity of the Holy Spirit, in 1645, and later *Confession of Faith touching the Holy Trinity*, for both of which he was imprisoned. He was banished to the Scilly Isles for three years, returned and taught and preached quietly, but came to London, after the Restoration, was arrested and fined heavily, and died in a debtors' prison in 1662.

Biddulph Urban district of Staffordshire. It is 4 m. from Congleton, on the L.M.S. Rly. It is a coal mining centre. Pop. (1931) 8346.

Bideford Borough, seaport and market town of Devonshire. It stands on the estuary of the Torridge, about 4 m. from the sea, being 220 m. from London, on the S. Rly. The bridge across the Torridge that unites the two parts of the town is remarkable for its length, over 700 ft. It was restored in the 20th century. Pop. (1931) 8782.

Biene **Auguste Van.** Anglo-Dutch musician. He displayed his 'cello playing and acting to great effect in sentimental playlets very pleasing to the general public, a general favourite being a solo called "The Broken Melody." He died Jan. 23, 1913.

Bienne Lake and town of Switzerland. The lake is about 20 m. from Berne, adjoining the Jura Mts. It is nearly 10 m. long and 3 wide. The rivers Thiele and Suza flow into it.

The town stands at the north end of the lake on the River Suza. Its industries include the making of watches. Pop. 36,800.

Biennial (Lat. *bis* twice, *annus* a year.) Plant which lives for two seasons only. Sown in the first season, it flowers and dies in the second. Canterbury bells, coreopsis and mulleins are examples of biennials. By using hothouse methods it is possible to make a biennial flower in the same season as it is grown. Cabbages and beet are biennials.

Bigamy Offence of marrying a second wife or a second husband when the other spouse is alive. In English law this is a crime, and the maximum sentence is imprisonment for seven years with hard labour. If, however, a man or woman marries again when for seven years nothing has been heard of the wife or husband, no punishment will follow unless it is proved that the person charged with the crime had reason to believe that he or she was alive at the time of the second marriage.

Biggleswade Market town and urban district of Bedfordshire, on the Great North Road. It stands on the Ivel, 11 m. from Bedford and 41 from London, on the L.N.E. Rly., and is an agricultural centre. Pop. (1931) 5844.

Bihar Town of India. One of the sacred cities of the Buddhists, it is in Bengal, 38 m. from Patna. In olden times the capital of a kingdom, it was one of the first places to adopt Buddhism, and there are ruins of some of the faith's oldest buildings. Pop. 36,700.

The **Province of Bihar** and Orissa was formed out of Bengal in 1912. It covers 83,161 sq. m. and consists of three divisions; Bihar, Orissa and Chota Nagpur. Patna is the capital. It is watered by the Ganges, and served by the E. Indian Rly. The province is under a governor and a legislative council of 103 members. Attached to it are the feudatory states of Chota Nagpur and Orissa. Pop. (1931) 37,590,356.

Bikaner State of India. It is in Rajputana and covers 23,315 sq. m. Its ruler is a maharajah who is entitled to a salute of 19 guns. He served in the Great War and represented India at the Peace Conference of 1919. Sandy and unfertile, the country is noted for its camels, and its camel corps served against the Turks in Egypt in 1916. Pop. 660,000.

Bikaner, the capital, is a walled town containing some Jain monasteries. The chief building is the palace of the maharajah, and there are some manufactures. Pop. 69,400.

Bilbao Seaport of Spain. It stands near the mouth of the river Nervion, which flows into the Bay of Biscay 350 m. from Madrid. The most important Spanish port on this coast, it exports iron ore from the mines in the vicinity. The river separates the old town from the new one. There is a spacious harbour with wet and dry docks, and other accommodation for shipping. Pop. (1931) 166,758.

Bilbao gives its name to a kind of sword, as it was once famous for its sword blades. From this comes the word **bilboes** or irons. These were used for offenders on board ship, the ankles being fastened together by them. They are mentioned in *Hamlet* and were used in the British Navy until about 1700.

Bilberry Species of shrub of the heath order (*vaccinium myrtillus*). It is a bush, with many angular branches. Its green-tinged rosy flowers produce a dark-blue edible berry, also called the whortleberry, and in Scotland the blaeberry. It grows throughout Britain and in N. Europe, Asia and America.

Bile Thick, bitter fluid secreted continuously by the liver. It is discharged intermittently into the small intestine, or temporarily stored in the gall bladder. It is a complex fluid—golden-yellow in man, greenish in vegetable-feeders—containing in solution salts, acids, pigments and a substance called cholesterol. The normal daily secretion exceeds one pint. Should obstruction prevent flow to the intestine bile is absorbed into the blood, the pigments are deposited in the tissues, and jaundice supervenes.

Bilge Term denoting the breadth of a ship's bottom viewed from inside. The inner skin over the bilge is the floor, and the bilge ends more or less where the sides turn upward. The water which collects upon the ship's bottom, called bilge water, tends to become foul, and is removed by bilge pumps.

Bill In business an account of any kind. In addition to a simple bill given by a trader there are certain special kinds of bill. A bill of lading, which must be stamped with a 6d. stamp, is a statement of goods sent by ship. It constitutes the title to the goods named, and can be transferred from one person to another. A bill of sight is a statement about goods which are imported. In law a bill is a statement of the offence with which a person is charged. This is given to the grand jury and if they accept it the accused goes to trial. This is called a true bill. In Scotland the bill chamber is part of the court of session.

In Parliament a bill is any measure that is introduced. When it has passed through all its stages and becomes law it is called an Act. Bills are divided into public and private, the latter dealing with such matters as railways, canals, etc.

Billericay Town of Essex. It is 5 m. from Brentwood and 24 from London, on the L.N.E. Rly. The old church of S. Mary Magdalene is notable and there is a grammar school.

Billet Log of firewood. From this primary meaning further uses of the word have developed. In metallurgy it denotes a gold ingot or a steel bar. It is the heraldic term designating a bearing formed of a small oblong upright; allusive to the preceding when it occurs in the arms of the Ironmongers Company of London. In Romanesque and Norman architecture it denotes an ornamental moulding simulating short logs, regularly spaced in single or double rows along a sunk moulding.

Billeting Method of lodging soldiers and sometimes their horses in public and private houses. It was practised in very early times, and was much abused in the time of James I. and Charles I. In 1628 the Petition of Right declared it illegal, but private individuals suffered from it until about 1688. From that time until the Great War billeting was confined to innkeepers who were paid for the accommodation given. During the Great War, under an Act passed in 1907, soldiers of the Territorial Force were billeted in private houses, but payment was made. In 1917 power was given by Parliament to the authorities to billet civilians, who were engaged in work of national importance, in private houses.

Billiards Indoor game. The ordinary game is played on a table that measures 12 ft. by 6 ft. 1¼ in. The implements used are cues and three balls, two white and one red. It is usually played by two persons. Each has one white ball and his aim is to cannon, or hit the two other balls in succession, or to go into one of the six pockets that are round the table after striking one of the other balls. He can also score by driving the red ball, or his opponent's ball, into a pocket. It can also be played by four persons, two against two.

A player continues to play until he fails to score, his total being called a break. The score is three points for a pocket off the red, two points for a cannon or a pocket off the white, three points for pocketing the red and two for pocketing the white.

There are other games of billiards, one being pyramids, at which a number can play, each having his own ball of a distinctive colour. The game is controlled by the Billiards Association, Cecil Chambers, Strand, London, W.C., and there are championships for both amateurs and professionals.

Billingham Urban district of Durham. It stands on the Tees, nearly opposite Middlesbrough, and is on the L.N.E. Rly. During the Great War the government had large factories here. These are now part of the great works of Imperial Chemical Industries which makes chemicals of various kinds here. Shipbuilding is another industry. Pop. (1931) 17,972.

Billingsgate London fish market. It is situated near the northern end of London Bridge and dates from 1699. The present building was opened in 1877. The market belongs to the Corporation of the City of London.

Billiton Island in the Dutch East Indies. Situated between Banka and Borneo, it is ovoid in shape, is 55 m. long, and contains 1872 sq. m. Its highest peak is 1670 ft. It has more than 80 tin mines, and also supplies iron and coal. Basketry, copra, sago, timber and tortoises are exported. Pop. 73,409.

Bill of Exchange Document by which debts, especially debts to foreigners, are paid. When a man does not wish to pay for goods he has bought at once he accepts a bill, which he does by signing a document. By this he agrees to pay a certain amount of money at the end of a certain time, or on demand. The person who

receives the bill, if he wants the money, asks a bank or a financial house to discount the bill, *i.e.*, to give him the money less a small amount for interest. If the bank or firm think the accepter of the bill is sound they will do this. Bills of Exchange must be stamped. If payable on demand the stamp is only 2d. In other cases inland bills pay up to 1s. for the first £100 and another 1s. for each £100 or part of £100. On foreign bills the stamp is 6d. for each £100.

Bill of Rights Act of Parliament passed in 1688. It was passed just after James II. had left the country, and the throne was being offered to William and Mary. In it are stated the rights of the English people which James had violated. It states expressly that the sovereign cannot raise money without consent of Parliament, and that no Roman Catholic can succeed to the throne.

Bill of Sale Legal document by which personal property is transferred from one person to another. It is usually done in order to give security for money borrowed, the security being furniture or other personal possessions. A bill must be signed by witnesses and registered in the law courts within seven days. It must be for more than £30, and must be stamped on the same scale as other conveyances of property. It is no longer necessary, as it was at one time, to publish the particulars in *The London Gazette*.

Bilsthorpe Village of Nottinghamshire, in Sherwood Forest. In 1929 a coal mine was opened here and 400 houses built for the miners.

Bilston Market town and urban district of Staffordshire. It is 3 m. from Wolverhampton, on the G.W. Rly. In the Black Country, its chief industries are connected with the iron and steel industries. A coarse pottery is made here, as are grindstones. Pop. (1931) 31,248.

Bimetallism Name given to a monetary system in which both gold and silver are used as standards of value. To-day all countries have only one standard, usually gold. If bimetallism were introduced both metals would be coined freely and there would be a definite ratio between them. Towards the end of the 19th century there was a strong agitation, chiefly in the United States, for bimetallism, but later it died down. The idea was revived in a somewhat different form during the economic crisis of 1931-32. Its introduction would greatly increase the value of silver.

Bindweed Popular name for species of twining herbs, principally of the convolvulus order. The small bindweed, *convolvulus arvensis*, with 1 in. trumpet-shaped flowers, is an agricultural pest. The greater, *C. (calystegia) sepium*, has flowers closing at night. Both are widely distributed in temperate regions. Black bindweed, *polygonum convolvulus*, is of another order.

Bingham Market town of Nottinghamshire. It is 8 m. from Nottingham, on the L.N.E.Rly. Pop. 1576.

Bingley Urban district of Yorkshire (W.R.). It stands on the Aire, 5 m. from Bradford, on the L.M.S. Rly. Its industries are those of the Bradford area, the making of woollens, etc. Pop. (1931) 20,553.

Binnacle Case mounted on shipboard on a breast-high pedestal. It is generally in front of the steering apparatus and steersman. It serves to display a nautical compass, and for reading the compass card at night a binnacle lamp is fitted beneath the hood. Warships usually carry a pair of steering binnacles in front of the steersman.

Binocular Instrument for assisting simultaneous vision with both eyes. In its simplest form a pair of spectacles, it may be a telescope, microscope or stereoscope.

Binyon **Robert Laurence.** English poet. Born at Lancaster, Aug. 10, 1869, a son of Rev. B. Binyon, he was educated at S. Paul's School, London, and at Trinity College, Oxford, where he won the Newdigate Prize for English verse. In 1893 he became an assistant in the British Museum and in 1909 he was made assistant keeper of the department of prints and drawings. In addition to several volumes of poems, including *War Poems*, 1919, Binyon has written some plays and edited catalogues of drawings in the British Museum. He is an authority on William Blake. In 1932 he was made a Companion of Honour.

Bio-Chemistry Study of the chemical aspects of animal and plant physiology. The term denotes those departments of science which were previously called physiological and agricultural chemistry. The more highly specialised researches of recent years have attacked such problems as the plant synthesis of the carbon-compounds; the molecular constitution of chlorophyll and proteins, and the breaking-down of them and of fats by the catalytic action of enzymes; the oxidation of foodstuffs; the co-ordination of mechanisms by the chemical messengers called hormones; the significance of colloids; and the effect upon growth and nutrition of the accessory factors called vitamins.

Biography (Greek *bios*, life). Book that deals with a person's life. If written by himself or herself it is an autobiography. By common consent Boswell's *Life of Johnson* is the most famous biography ever written in spite of its lack of form. Other notable biographies are Southey's *Life of Nelson*, Morley's *Life of Gladstone* and Winston Churchill's *Life of Lord Randolph Churchill*. Lives of most of the celebrities of the 19th century have been written, but these are usually far too long and too laudatory. Lytton Strachey's *Life of Queen Victoria*, which set a new fashion in biography, is an exception, being thoroughly critical.

The biographies of famous men by Plutarch are perhaps the most famous of their kind. Another collection is Walton's *Lives*. Collections of lives written by various writers mainly as works of reference exist. One of the best is *The Dictionary of National Biography* and its supplements. This is confined to British personalities, but there is in existence, although now out of date, a *Biographie Universale*. An American *Dictionary of National Biography* was planned after the Great War, and by 1932 the second volume had appeared.

Biology Science of life and living things. Biology has a wide scope, covering not only the form and formations of animals and plants, but also the philosophical problems of the origin and relationship between different species.

In so vast a subject, biology falls naturally

into two main divisions; botany dealing with plants and zoology the science of animal life. The study of the form and structure of an organism, whether plant or animal, is known as morphology, and this is done, not only by naked eye or microscopic examination but also by dissection (anatomy). Further, the study of the functions comes under the heading of physiology, the problems of reproduction under embryology, and the life of the past embodied in fossil remains under palaeontology. Many other phases of biology are so extensive in their scope that they are regarded as separate sciences, so that the student of biology is compelled sooner or later to specialise in one or other of these subjects.

Biplane Aeroplane with two pairs of wings. These are set one above the other. Other forms are the monoplane and the triplane. *See* AEROPLANE.

Birch Genus of trees or shrubs of the cupuliferous order (*betula*). The British white birch, *B. alba*, grows to 40 or 50 ft. high, and forms immense forests in Russia; its close-grained wood is much used for furniture and bark for tanning. The Canadian black birch, *B. lenta*, grows to 60 or 70 ft. high. The Canadian paper birch, *B. papyracea*, furnishes material for bark canoes. The alpine birch, *B. nana*, is a bush.

Birchington Watering place of Kent. In the isle of Thanet, it is 2 m. from Margate and has become a popular resort. It is 71 m. from London, on the S. Rly. Pop. 3500.

Bird Feathered vertebrate. The class Aves ranks in the animal kingdom between mammals and reptiles. They are warm-blooded, with four-chambered hearts, toothless, and hatch their young from eggs containing albumen and food-yolk in calcareous shells. The fore-limbs are modified as wings.

Among existing birds there are two divisions. Those with raft-like breast bones, the *Ratitae*, which are terrestrial and flightless, comprise the ostrich, rhea, cassowary, emu, kiwi, and the recently extinct moa. The remainder, with keeled breast-bones, the *Carinatae*, have been assembled into four regions with 14 orders and 11,000 species. All have wings adapted for flight except the penguins, whose wings are transformed into rowing paddles. They culminate, in the great *passerine* order, with the true singing birds, which embrace nearly half the whole feathered kingdom. Characteristic of birds are the migratory instinct and that which dictates the protection of the young by the building of nests.

To-day in Great Britain a great deal is done to protect bird life. Cruelty to captive or domestic birds is punishable by law. Cruelty to wild birds is also an offence and there is a Wild Birds Protection Act which forbids the shooting or snaring of certain birds during certain seasons.

Bird sanctuaries are places set apart for wild birds. There are many such in England, one being in Hyde Park, London, and a committee looks after this and others in the royal parks. Other sanctuaries are at Blakeney Point and Cley on the Norfolk coast marshes. There is also a Society for the Protection of Birds at 82 Victoria St., London, S.W. 1.

Birdlime Adhesive substance used for smearing twigs and other suitable surfaces for entangling small birds in order to capture them alive. It is prepared from an exudation of the inner bark of the holly tree, mistletoe, or distaff thistle. An artificial substitute is made with flour starch mixed with other adhesives.

Bird of Paradise Family of birds distinguished by gorgeous male plumage during the breeding season. Allied to the crows, their 50 species are almost confined to New Guinea and adjacent islands; three species inhabit Australia.

Birdoswald Site of the Roman-British station of Amboganna. Situated 4 m. E. of Greenhead, Cumberland, it is the largest fort on Hadrian's Wall, with six-grated ramparts enclosing 5½ acres. The chariot ruts on one threshold are still clear. An inscribed slab, referring to the Dacian cohort, portrays the Balkan scimitar.

Bird's Eye Name for various flowers with central spots or eyes. The mealy primula, with its yellow-centred, purple flowers, is bird's eye primrose; the germander speedwell, with bright blue flowers, is called bird's eye; so is corn adonis, preferably called pheasant's eye. Herb robert is red bird's eye. It denotes also cut-tobacco containing sections of mottled stalks.

Birdwood **Sir William Riddell.** British soldier. Born Sept. 13, 1865, he was a member of a family closely associated with India. Educated at Clifton and Sandhurst, he entered the army in 1883, and with the Bengal Lancers served on the Indian frontier. He was in S. Africa, 1899-1902, and later was military secretary to Lord Kitchener in India. Between 1912 and the Great War he was Quartermaster-General in India and military secretary to the Government. In 1915, at the head of the Australian corps, he went to Egypt and later he led his unit in Gallipoli and France in some of the hardest fighting of the war. For a short time in 1918 Birdwood commanded the 5th Army, and from 1920-30 he was in India, first at the head of the northern army and from 1925 as commander-in-chief. In 1919 he was made a baronet and in 1925 a field-marshal. In 1930, although not a Cambridge man he was appointed Master of Peterhouse.

Biretta Four-cornered head-covering worn by Roman Catholic ecclesiastics. Since the 17th century it has had a cardboard frame covered with cloth or silk, three or four raised ridges, and sometimes a knob or tassel. It is white for the pope, red for cardinals, purple for bishops, and black for the general clergy.

Birkbeck **George.** English philanthropist. Born at Settle, Jan. 10, 1776, he studied in Edinburgh and became a doctor. For three years (1801-04) he was professor at the Andersonian Institution, Glasgow, but most of his later life was passed in London where he practised as a doctor and pushed forward various philanthropic schemes. He died there Dec. 1, 1841.

Birkbeck was the founder of the movement that led to the establishment of the Mechanics Institution in Glasgow, and then in other large towns. He also helped to found the college named after him, the Birkbeck. This is part of the University of London with buildings in Bream's Buildings, Chancery Lane.

The **Birkbeck Building Society**, also named after him, became one of the largest in the country. From it emerged the **Birkbeck Bank**,

which failed in 1911. Its liabilities were nearly £11,000,000, but 16s. 9d. in the £ was returned to the shareholders and depositors.

Birkenhead Seaport, borough and market town of Cheshire. It stands on the estuary of the Mersey opposite Liverpool, with which it is connected by a tunnel and ferry boats. It is 194 m. from London and can be reached by both the G.W. and L.M.S. lines. The chief industries are shipping and shipbuilding. For the shipping there are large docks, covering nearly 200 acres and fitted with huge warehouses. They belong to the Mersey Docks and Harbour Board. Cammell, Laird & Co., and other large firms have shipbuilding yards here. Birkenhead Park is one of the most famous rugby football clubs in England. Pop. (1931) 147,946.

Birkenhead British troopship. She was sent with about 500 soldiers to South Africa where a war with the Kaffirs was in progress. When nearly there, she struck a rock. Whilst the ship sank the soldiers stood in order on the deck, so as to give time for the women and children to be put into the boats. Most of the troops were drowned. The event took place off Cape Agulhas on Feb. 25, 1852.

Birkenhead **Earl of.** British politician and lawyer. Born at Birkenhead, July 12, 1872, Frederick Edwin Smith went to school there and to Wadham College, Oxford. There he had a most successful career, becoming a fellow of Merton College and a lecturer. He was called to the bar and, having established himself as an advocate, was made a K.C. in 1908. In 1906 Smith was elected Unionist M.P. for a Liverpool division and soon made a reputation as a debater. In 1915 he became solicitor-general in the Coalition Government and in 1916 attorney-general. From 1919 to 1922 he was lord chancellor and from 1924 to 1928 secretary for India under Mr. Baldwin. In 1928 he left politics to take up several directorships. He was made a baron in 1919, and Earl of Birkenhead in 1924. He died, Sept. 30, 1930, leaving a son, till then known as Viscount Furneaux, and two daughters. The elder of these, **Lady Eleanor Smith** won repute by her novels, *Red Wagon*, *Flamenco* and others.

Birkenhead was largely responsible for the important laws affecting real property passed in 1922 and 1925, while some of his judgments in the House of Lords are masterpieces of clear reasoning. In 1922 he was chosen high steward of Oxford University.

Birkett **William Norman.** English lawyer. Born at Ulverston, Sept. 6, 1883, he passed a few years in business and then went to Cambridge, where he was president of the union. In 1913 he became a barrister and in 1921 a K.C. In 1923 he entered Parliament as Liberal M.P. for East Nottingham. Birkett was defeated at the election of 1924, but regained his seat in 1929, only to lose it in 1931.

Birmingham City of, England, after London the largest in the country. It is chiefly in Warwickshire, but extensions have taken it into parts of Worcestershire and it has now an area of 68 sq. m. It includes Aston Manor, once a separate borough, Edgbaston, Handsworth, Yardley, King's Norton, Moseley, Erdington and other areas. It is 113 m. from London and is served by the L.M.S. and G.W. Rlys. It is also the centre of a network of canals.

The chief churches are the cathedral (S. Philip's), the Roman Catholic cathedral, S. Martin's and the Central Hall of the Wesleyans. Secular buildings include a group for public purposes in the centre of the city, city hall, council house, art gallery, museum and library. A new civic centre is planned. The hall of memory is the city's war memorial. There are many open spaces, including Aston Park, altogether nearly 3000 acres. The university grew out of Mason College, which in its turn was an outcome of Queen's College, founded in 1828. Most of the university buildings are at Edgbaston.

The industries of Birmingham are mainly associated with metals. Almost every kind of metal is worked here, the products including locomotives, motor vehicles, railway carriages, jewellery, guns, tools, hardware, glassware, plated and enamel goods and a great variety of other articles. Pop. (1931) 1,002,413.

Birmingham **George A.** Pseudonym of the Irish writer, Rev. James Owen Hannay. Born July 16, 1865, the son of a clergyman, he was educated at Haileybury and Trinity College, Dublin. He was ordained in 1888, and from 1892 to 1913 was rector of Westport, Co. Mayo. From 1922-24 he was chaplain in Budapest, and in 1924 he was made rector of Mells, Somerset. Canon Hannay made a reputation with his novels of Irish life, with their humorous and almost impossible plots. Such are, *Spanish Gold*, *The Simpkins Plot*, *The Lost Tribes*, *Lady Bountiful*, *Found Money*, *Goodly Pearls* and *Angel's Adventure* (1933). He has also written plays, notably, *General John Regan*.

Birnam Village of Perthshire. On the Tay, 15 m. from Perth, it is reached by the L.M.S. Rly. It is visited by tourists, and is chiefly known for its supposed connection with Macbeth.

Birrell **Augustine.** British writer and politician. The son of a Baptist minister, he was born in Liverpool, Jan. 19, 1850. He became a fellow of Trinity Hall, Cambridge, a barrister and professor of law at University College, London. In 1899-1900 he was Liberal M.P. for West Fife, and later sat for N. Bristol, 1906-18. From 1905-07 he was president of the Board of Education, and from 1907-16 secretary for Ireland. As an essayist, however, Birrell was in the front rank. In 1884, and again in 1887 he published his delightful *Obiter Dicta*, which were followed at intervals by other volumes. These include lives of Charlotte Bronte and Andrew Marvell and in 1930 *Et Cetera*, a volume of reflections. He died in Nov., 1933.

Birstall Urban district and market town of Yorkshire (W.R.), 7 m. from Leeds, on the L.M.S. Rly. It is an industrial area with textile mills and coal mines. Pop. (1931), 7205.

Birth Act of bringing forth young. By English law a child is born alive even if it only breathes for a few seconds. This is sometimes a matter of importance as it may affect the right to inherit property under a will or settlement. Midwives must be registered before they can attend cases of childbirth.

In Great Britain all births must be registered by the father or another relative and failing that by the doctor or nurse. This is done at the offices of the registrar of births, marriages and deaths from whom a certificate can be

obtained. These certificates, which are often needed by adults for purposes of insurance, can be obtained at any time from the registrar or at Somerset House, London. A small fee is charged.

Most civilised countries, from figures obtained by the registrars, prepare a birth rate, *i.e.*, a statement of the number of births for every 1000 people. In Great Britain the figures show that over a period of 40 years the birth rate has fallen from nearly 33 per 1000 to about 17. In 1928 it was 17.2 for Great Britain and Northern Ireland. In other countries, notably France, there has been a serious fall, and the tendency continues. In Great Britain its effect on the number of the people has been counteracted by the great decrease in infant mortality, but this cannot operate much longer. The fall in the birth rate is due to late marriages, but much more to prudential considerations which find expression in the teaching of birth control.

BIRTH-CONTROL. Individual control of birth, by artificial means. In recent years, the ideal of quality in population rather than quantity, has become general; and birth-control, usually by artificial contraceptive methods, has been a keenly discussed subject, affecting as it does ethics, biology, medicine, psychology, religion and economics. Dr. Marie Stopes is its chief exponent. A medical committee has recommended that no married person should be hindered from obtaining knowledge of contraceptive methods; while, on the other hand, the Roman Catholic Church denounces all such practices as definitely sinful.

Birthright Benefit or privilege to which one is entitled by birth. It may comprise the right of inheriting an estate or title, or the right of civil liberty under a free constitution. Specifically it denotes the right of the firstborn, primogeniture, the classic example of which is Esau (Gen. xxv., Heb. xii.).

Birtley District of Durham. It is 5 m. from Gateshead, on the L.N.E. Rly., and is a mining centre. During the Great War a huge factory for making ammunition was built here.

Biscay Bay of. European inlet of the Atlantic Ocean. Between Ushant and Cape Ortegal, it curves regularly round the west coast of France and the north coast of Spain. Off the French coast there is a broad, flat shelf 150 m. broad, diminishing to 50 m. off Spain, with a maximum depth of 600 ft. Beyond this a sharp declivity drops to the abyssal floor at 15,600 ft. Conflicts of wind and tide and Atlantic swell often occasion violent storms in the bay.

Bishop High official in several Christian churches. There are bishops in the Anglican, Roman Catholic and Greek churches, as well as in the Methodist Episcopal Church, in fact the presence of bishops is essential to an Episcopal Church. In the Church of England there are diocesan bishops and suffragan bishops. The former are the heads of the various dioceses into which the country is divided; the latter are their assistants. A diocesan bishop takes his title from his cathedral city and uses its name, or its Latin equivalent, as his signature. Of the diocesan bishops 24 sit in the House of Lords and rank between viscounts and barons. A bishop is appointed by the king on the advice of the prime minister, his election by the cathedral chapter being only a formality. After appointment he is consecrated by the archbishop and other bishops. Suffragan bishops have neither cathedrals nor seats in Parliament. They take their names from a place in the diocese in which they serve. Retired bishops are called Bishop before the surname.

In the Roman Catholic Church bishops are also in charge of dioceses and many of them are assisted by coadjutors. The appointment of all bishops must be approved by the Pope.

In non-established episcopal churches in communion with the Church of England, such as those in Wales, Ireland, Canada, Australia, etc., bishops are appointed by synods or other representative bodies. There are also bishops who have charge of missionary dioceses, as in China and Africa. In all episcopal churches bishops alone have the power of conducting confirmations, ordinations and consecrations. *See* ARCHBISHOP.

Bishop Isabella. English traveller. Born, Oct. 15, 1832, her father was a clergyman, Rev. Edward Bird. In 1856 she went to America, but her real adventures only began with her journeys in Asia in 1878. Other journeys into unknown regions followed, and the countries visited included Japan, Tibet and Morocco. In 1881 she married a medical man, John Bishop of Edinburgh, where she died, Oct. 7, 1904. Mrs. Bishop wrote several books on her travels, and was the first woman made a fellow of the Royal Geographical Society.

Bishop Auckland Market town and urban district of Durham. It is on the Wear, 11 m. from Durham on the L.N.E. Rly, and is the centre of a mining district. Here is Auckland Castle, the residence of the Bishops of Durham. It dates mainly from the 17th century and has a beautiful chapel and a fine gateway of earlier date. Pop. (1931) 12,269.

Bishop's Castle Borough and market town of Shropshire. It is 22 m. from Shrewsbury. The Bishops of Hereford had a castle here. Pop. (1931) 1352.

Bishop's Ring Name applied to a halo extending 20° to 30° from the sun. It is caused by diffraction of solar light through minute dust-particles in the air. First observed at Honolulu on Sept. 5, 1883, ten days after the eruption of Krakotoa, it was observable in various localities three years afterward.

Bishop Stortford Market town and urban district of Hertfordshire, on the River Stort, 14 m. from Hertford and 30 from London, on the L.N.E. Rly. There is an agricultural trade and malting is carried on. Pop. (1931) 9509.

Bishop's Waltham Village of Hampshire. It is 9 m. from Winchester, on the S. Rly. The name is due to the fact that the Bishop of Winchester had here a castle, of which some ruins remain. It was once a market town.

Biskra Town and oasis in Algeria. Situated 150 m. S.W. of Constantine, on the Wady Biskra, whose waters flow into the Chott Meghir lagoon, the oasis of 3 sq. m. contains immense gardens with 200,000 date palms, olives, apricots and pomegranates, surrounding a few Saharan villages of mud-built houses.

The town has a European quarter which attracts winter residents from France and

elsewhere. There is a desert railway southward to Touggourt, and a short line westward to Tolga. Pop. 9000.

Bisley Village of Surrey. It is near Brookwood and is famous for its camp reached by the S. Rly. This belongs to the National Rifle Association, and here a meeting is held every year. Prizes are offered for rifle, pistol and revolver shooting, the chief competition being for the King's Prize.

Bismarck **Prince.** German statesman. Born April 1, 1815. Otto Eduard Leopold Bismarck was educated at Gottingen, entered the civil service of Prussia, and in 1852 was sent to Frankfort to represent his country at the diet there. He remained there until 1859, and then went on diplomatic work to St. Petersburg and Paris. In 1862 he was selected as chief minister to the King of Prussia, William I. Together the two were responsible for the policy that led, through the crushing of Austria in 1866 and of France in 1870, to the formation of the German Empire. Of this Bismarck was the first chancellor and he held the position throughout the reigns of William and Frederick. In 1890, soon after the accession of William II., he was replaced by another chancellor. In 1871 Bismarck, till then a count, was made a prince, and in 1890 Duke of Lauenburg. He died July 30, 1898.

Bismarck was a great European figure, especially in 1878, when he presided over the Congress of Berlin. Known as the man of blood and iron, he allowed neither sentiment nor scruple to stand in the way of his aims. At home he was a determined reformer and Germany's industries benefited from his policy of protection. Bismarck's *Reminiscences* appeared in 1919-20.

Bismarck Archipelago Group of Pacific Islands N. and N.E. of Papua (New Guinea). They were named after the Iron Chancellor when a German protectorate was declared in 1894, and included New Pomerania, New Mecklenburg, New Hanover, the Admiralty Islands, and some coastal islands. The names of the first two have been changed to New Britain and New Ireland. The islands were taken from Germany by the Australians in 1914 and are governed by Australia under mandate from the League of Nations. They cover nearly 16,000 sq. m. and have about 143,000 inhabitants. Rabaul is the capital.

Bismuth Metallic element. Its symbol is Bi; atomic weight, 208. It is brittle, reddish-white, having a metallic lustre and almost cubical crystalline texture, melting at 268° C. It is chiefly found native, in metalliferous veins associated with silver and cobalt ores, in Saxony and Czechoslovakia, besides Bolivia and Cornwall. It forms alloys with lead and tin which, as in type metal and fusible metal, melt at low temperatures. A typical solder contains bismuth 1, lead 5, tin 3.

Bison Animal of the ox family. There are two kinds, the European and the American. Its characteristics include a large hump on the shoulders, an enormous mane and a heavy beard. At one time there were enormous herds of bisons in Europe and N. America, but it is now nearly extinct except in Sweden and the United States where it is protected.

Bissextile Term denoting a calendar year containing 366 days, commonly called leap year. It is so called because it contains a day intercalated every fourth year in February by the Julian calendar. This was called bissext, because the sixth day before the March calends, that following Feb. 24, was reckoned twice.

Bissing **Moritz Ferdinand von.** German soldier. Born, Jan. 30, 1844, he entered the army in 1865, and took part in the wars against Austria (1866) and France (1870-71). In Sept. 1914, being then a general, he was appointed governor general of Belgium which the Germans had just overrun. This post he retained until his death, April 18, 1917.

Bite Wound made by the teeth of a living creature. It may be lacerated or punctured, and, as such teeth are often foul, suppuration may ensue. If bacterial infection is present in wolf or dog bite hydrophobia may supervene. The bite of some snakes is innocuous, but certain species, such as vipers and cobras, possess venom-secreting fangs which may cause death. Some invertebrate animals puncture with mouth-parts, as spiders, mosquitoes and fleas.

Treatment.—**Insect Bites** and **Bee and Wasp Stings** are relieved by the application of dilute ammonia or a paste of bicarbonate of soda and sal volatile. **Mosquito Bites** should be washed with weak lysol or iodine and water before applying the ammonia.

Dog Bites should be washed with 1 in 20 solution of carbolic or other disinfectant, or be painted with tincture of iodine and a dressing applied. If any serious swelling occurs, or if the dog is believed to be unhealthy, medical aid must be sought immediately.

Snake Bite has been successfully treated by injection with antivenene.

Bittern Wading bird of the heron family. The common bittern of the Old World, *Botaurus stellaris*, formerly haunted the British fenlands where its guttural boom was heard. It is about 2 ft. long, with mottled plumage. The American bittern, *B. lentiginosus*, is a winter straggler to Britain. The little bittern, *Ardetta minuta*, is rare. The common bittern has been reintroduced into Norfolk and an order made for its protection. This means that it is an offence to kill the bird, which by 1932 was well established.

Bittersweet (*Solanum dulcamara*). Perennial trailing shrub. Common in British hedgerows, its upper leaves are spear shaped, the lower ones oval or heart shaped and dark green in colour. Clusters of small purple flowers are succeeded by green egg shaped berries, which gradually ripen to a brilliant red. The plant has various medicinal uses. It is sometimes called woody nightshade.

Bitumen Term denoting combustible mineral hydrocarbons. They are members of the paraffin and olefine series, ranging from solid to gaseous forms, and include mineral pitch or asphaltum, mineral tar or maltha, petroleum, naphtha and natural gas. The harder forms occur pre-eminently in pitch lakes in Trinidad and Venezuela. Impregnated limestones in France and Switzerland also furnish road asphalt, besides bituminous bases for damp courses and roofing felts. Elaterite, found in Derbyshire, is an elastic bitumen.

Bivalve Term denoting a numerous class of sightless molluscs whose shells have two valves. These, completely or partially enclosing the soft body, are joined by a toothed hinge and held together by an

elastic ligament. The calcified shells are secreted by the mantle surrounding the body, and within some of them pearls are developed. There are marine and freshwater bivalves; the former include many important for human food, such as oysters, scallops, cockles, mussels and clams.

Bizet **Georges.** French musical composer. Born near Paris, Oct. 25, 1838, he studied at the Paris Conservatoire and won the Grand Prix de Rome with his cantata, *Cloris et Clotilde*. His music to Daudet's *L'Arlésienne*, in 1872, was successful, and in 1875 he wrote his masterpiece, *Carmen*. He died June 3rd, 1875.

Bjornson **Bjornstjerne.** Norwegian author. Born, Dec. 8, 1832, his father was a Lutheran minister. He went to the university of Christiania (Oslo), and soon began a carcer as a journalist. Having managed a theatre at Bergen, he was director of the national theatre at Christiania 1865 to 1873. He then became lecturer and journalist, took part in politics, and, owing to his advanced opinions, found it advisable to live in Germany for two years. Having returned to Norway, he was active in securing the separation of his country from Sweden. He died, April 26, 1910, having in 1903 received a Nobel Prize for literature.

Bjornson was famous both as a dramatist and a novelist; his poetry is also notable. His fiction includes stories of peasant life, using the English titles, *A Happy Boy*, *The Fisher Maiden* and others, and the novels with a purpose, *Flags are Flying in Town and Port* and *In God's Way*. His dramas include *Sigurd the Bastard*, *The Editor*, *The Gauntlet*, *Beyond our Powers*, etc.

Black and Tan Name given to a force raised in 1920 by the British Government for service in Ireland. Recruited from men who had served in the Great War, they were sent to put down the disorders then prevalent, but their presence was signalised by increased violence which was answered by reprisals. They were withdrawn when peace was made in 1922. A branch of the Royal Irish Constabulary, the men wore khaki uniforms with a black hat and armband, hence the name black and tan.

Black Bass Genus of spiny-finned fishes of the sea perch and bass family (*Micropterus*). They are dark, freshwater fish weighing up to 5 lbs., much esteemed in N. America, and introduced into French streams. They range from Canada and the great lakes southward, the large-mouthed, *M. salmoides*, to Florida, the small-mouthed, *M. dolomieu*, to Arkansas and S. Carolina.

Black Beetle Popular misnomer for various species of orthopterous insects of the cockroach family. They have long, flat, ovate bodies, with four wings, sometimes rudimentary in females. The common kitchen cockroach came from Asia Minor; the larger American species is a seaport pest; the smaller German one came westward during the Crimean war.

Blackberry Species of prickly shrub of the rosaceous order (*rubus fruticosus*). The leaves have leaflets, dark-green above but paler beneath. There are scores of British sub-species, some of which, such as dewberry, *R. caesius*, sometimes rank as species. The black or red-purple fruit is not a berry, but a group of many succulent seeded drupels on a conical receptacle.

Blackbird Species of thrush (*merula vulgaris*). The male has uniformly black plumage and bright orange bill. The female has rusty-brown plumage and bill. The male has a rich mellow note, of smaller compass than the song thrush, but sometimes imitating other songsters. The five or six red-spotted, pale-green eggs may be repeated two or three times each season. It ranges throughout Europe, and migrates southward to N. Africa.

Blackburn City and county borough of Lancashire. It is 211 m. from London and 24 from Manchester and is served by the L.M.S. Rly., also by the Leeds and Liverpool canal. One of the centres of the cotton manufacture, it has also engineering works. Pop. (1931), 122,695.

Blackburn Rovers Association football club. It was founded in 1874 and was one of the first to adopt professionalism, which it did about 1882. Since then it has been continually in the front rank. Six times, 1884, 1885, 1886, 1890, 1891 and 1928, it has won the Association Cup and twice, 1912 and 1914, the championship of the League.

Blackcap Species of warbler (*sylvia atricapilla*). It has brown-grey plumage and black crown. The female crown is rusty-red. The male is a frequent cage bird in France and Switzerland. Of the five stained-white, end-clouded eggs there are normally two broods in a year. It ranges from Europe to N. Africa.

Blackcock Species of grouse (*tetrao tetrix*). The russet-brown female is called the grey hen, and weighs about 2 lbs. The male is pugnacious and polygamous, and interbreeds with other game birds. They have glossy black plumage and weigh about 4 lbs. The eggs, 6 to 10, are yellowish-white, and red-spotted. The bird inhabits the N. European Highlands, including Scotland.

Black Country Name of a manufacturing district in Staffordshire, Warwickshire and Worcestershire. The presence of coal mines and ironworks gives the landscape a black appearance, hence the name. Birmingham, Wolverhampton, West Bromwich, Dudley, Smethwick, and Walsall are the chief towns.

Black Death Name given to a plague which caused many deaths in the 14th century. It was called black because the rushing of blood under the skin caused it to appear black. The plague was very terrible, death often taking place in a few hours. It appeared in Europe in 1348 and soon invaded England. There is no exact information about the number of victims, but the total in England may have been up to 500,000. The plague was, it is thought, something like the bubonic plague, and the plague of 1665 was of the same kind.

Blackfeet N. American Indian tribe of the Algonkin linguistic stock. The name, native Siksika, probably denotes their black moccasins. There are now in reservations 2300 in Saskatchewan and Alberta, Canada, and 2200 in Montana, U.S.A. The Blackfeet Sioux are a Dakota subtribe.

Black Forest Mountainous district of Germany. Situated in the states of Baden and Württemberg, it flanks the Rhine valley for about 100 m. Its area is 1844 sq. m., and it is mountainous and wooded, with much beautiful scenery. It is a favourite holiday resort—its inhabitants are skilled makers of toys and clocks.

Blackfriars Name given to the friars of the order of S. Dominic, because their habit is a black cloak and hood. The Dominicans had a priory in London, near where is now the western end of Queen Victoria St., and since then the district has been called Blackfriars. In it are Playhouse Yard where James Burbage built his theatre, and Printing House Square with *The Times* office.

Black Friday Name given to Friday, Dec. 6, 1745, and Friday, May 11, 1866. On the former day the Highlanders under Charles Edward were at Derby, and this being known in London caused a financial panic. The second panic was due to the failure of the great banking firm of Overend, Gurney & Co., which had liabilities of £11,200,000. There have been Black Fridays, due also to financial trouble, in the United States.

Blackheath District of London. Partly in the borough of Lewisham and partly in Greenwich, it is 5 m. from London, on the S. Rly. Its common, covering 270 acres, is famous, because, being on the main road from the Kentish coast to London, several historic events have taken place thereon. On it James I. played golf, thus introducing the game into England, and the Royal Blackheath club, which now has its links at Eltham, is the oldest in England. Near the heath is Morden College, a home for decayed Turkey Merchants. It was built by Wren, and was given by Sir John Morden in 1695 for its present purpose. Blackheath has a conservatoire of music, and a school of the Girls' Public Day School Trust.

The **Blackheath Football Club** is one of the oldest Rugby football clubs in England. It was founded in 1860, and after playing on the Heath, acquired the Rectory Field at Charlton in 1883.

Black Hole Prison in Calcutta. Here on Jan. 20, 1756, after Fort William had surrendered, Suraj-ud-Dowlah, ruler of Bengal, threw 146 English captives into a small room only 14 ft. by 18 ft. with two small windows. A terrible night followed, and in the morning only 23 remained alive. A memorial now marks the spot.

Blackie **John Stuart.** Scottish scholar. Born, July 28, 1809, his father was a bank manager in Aberdeen. After a course at Edinburgh, he studied theology at Aberdeen; then, having given up the idea of becoming a minister, he went to Germany. On his return he became an advocate. Literature, however, attracted him and he published a translation of *Faust*. In 1841 he was appointed professor of humanity at Marischal College, Aberdeen, and from 1852 to 1882 was professor of Greek at Edinburgh. A great and stimulating teacher, he did much literary work, including a translation of the *Iliad*. Blackie, who died March 2, 1895, did a good deal to foster the study of the Gaelic language.

Blacklead Another name for plumbago. It contains no lead, being an amorphous form of graphite or pure carbon, sometimes with 5 p.c. of iron oxide and other impurities. When burned it does not fuse but vanishes in smoke, the impurities becoming ash. It is used for making pencils, blacking stoves, and reducing machine friction.

Black Letter Name applied to the angular Gothic minuscule letter prevalent throughout northern Europe about A.D. 1350. A century later it furnished models for the earliest printed types, and is essentially the letter still surviving in German printing. It was used by Caxton, but in England the Roman letter quickly superseded the Old English black letter.

Blackmail Crime of obtaining, or attempting to obtain money by threats. It takes the form of threatening to expose something, whether true or false, in business or domestic life that will be harmful to a person's reputation or happiness. It may also be a threat of violence. In English law it is a felony. The original blackmail was a tribute levied by raiders on the owners of cattle in the north of England. Those who paid were free from the attentions of the raiders.

The word meant originally rent paid in black money, *i.e.*, copper as opposed to white money or silver.

Blackmore **Richard Doddridge.** English novelist. Born at Longworth, Berkshire, June 7, 1825, he went to Blundell's School, Tiverton, and then to Exeter College, Oxford. In 1864 he published a novel *Clara Vaughan*, and in 1869 made a reputation with *Lorna Doone*. His other books include *The Maid of Sker*, *Cripps the Carrier*, *Springhaven*, *Perlycross* and *Dariel*. He died Jan. 20, 1900.

Black Mountains Range of hills in S. Wales. They run through Brecknockshire into Herefordshire and form one of the loneliest parts of England and Wales. The highest point is 2600 ft. high.

Blackpool County borough and watering place of Lancashire. It is 223 m. from London and is served by the L.M.S. Rly. Tramways connect it with Lytham and St. Anne's, and there are motor coach services from all parts. With extensive sands and a bracing climate, it has become one of the most popular pleasure resorts in the country.

The attractions include the pleasure beach on the south shore, the palace, opera house, theatre, winter gardens and tower. There is a fine promenade and numerous hotels and boarding houses. Pop. (1931) 101,543.

Black Prince Name given to Edward, the eldest son of Edward III., doubtless from the colour of his armour. It was also the name of a British cruiser which was sunk by the Germans in the Battle of Jutland.

Blackrock Urban district and watering place of Co. Dublin, Irish Free State. It is 5 m. from the city of Dublin, on the G.S. Rlys. Pop. 9000.

Black Rod Officer of the royal household and of the House of Lords. He is best known as the official who, when Parliament is opened or closed, or the royal assent given to bills, summons members of the House of Commons to the House of Lords. He is also responsible for keeping order in the House of Lords, and is the usher of the Order of the Garter.

Black Scab Disease occurring on potatoes. It produces on the surface of the tuber large irregular warts which become blackish. They are caused by a parasitic fungus (*oedomyces leproides*), introduced into Britain in recent years, which causes much trouble to crops. The fungus spores of diseased potatoes if left underground hibernate and infect succeeding crops. It is a notifiable disease in Great Britain.

Black Sea Inland sea between Europe and Asia. The Russian shores extend from near Odessa to near Trebizond; Rumania and Bulgaria share the W.; the remainder, southward, is Turkish. It is 740 m. long, greatest width 390 m., this area including the Sea of Azov, 168,500 sq. m. The Mediterranean is reached by the Bosphorus, the Sea of Marmora and the Dardanelles. Shallower in the N., it reaches lifeless depths of 6000 ft. near the centre. It receives the Danube and other large rivers.

Blacksod Bay on the western coast of Ireland. It is in Co. Mayo, and makes a very fine harbour. Its length is 10 m.

Blackstone **Sir William.** English lawyer. Born in London, July 10, 1723, he was the son of a silk merchant. He was educated at Charterhouse and Pembroke College, Oxford, became a barrister and a fellow of All Souls College. In 1758 he was appointed first Vinerian professor of English law at Oxford, and from 1761-66 he was principal of New Inn Hall. He sat in Parliament 1761-1769, and was solicitor-general to Queen Charlotte. In 1770 he became a judge, and he died Feb. 14, 1780. Blackstone is known by his *Commentaries on the Laws of England*, long a standard legal text book.

Blackthorn Species of shrub of the rosaceous order (*prunus spinosa*). It may grow to a height of 8 ft. and produces a hard, tough wood, useful for walking sticks and tool handles. Its white blossoms appear in March-April before the leaves; the dark purple fruit is the sloe. It is found throughout Europe and the British Isles.

Blackwall District of London. In the borough of Poplar, it is on the north side of the Thames and is known for its docks, the E. India Dock being here. Here also is one end of the Blackwall Tunnel which leads under the Thames from Poplar to Greenwich. Opened in 1897, it is over a mile long.

Black Watch Popular name of a British regiment, the Royal Highlanders. It was raised in Scotland in 1739 and named because of the dark tartans worn by the men. Later another battalion was raised and the regiment consisted of the 42nd and 73rd of the line. The depot is at Perth.

Blackwater River of Essex. It rises near Saffron Walden and flows into the North Sea by a large estuary near Mersea Island. It is 40 m. long. In Ireland there is a Blackwater in Cork and another in Tyrone. The former, 100 m. long, flows into Youghal Bay; the latter flows, after 40 m., into Lough Neagh.

Blackwater Fever Disease occurring in malarious countries. It affects Europeans resident in W. Equatorial Africa, Madagascar and some Mediterranean localities. Violent pains, yellowish skin, dark-red or black urine, and prostration may be followed by fatal collapse. The cause may be a poison associated with the malarial parasite.

Bladder Elastic membrane sac serving as a temporary reservoir for urine secreted by the kidneys. Its normal adult capacity is one pint. It is liable to cystitis, an inflammation due to bacterial infection, or to the deposition of uric-acid crystals as stone or calculus. A kick or blow may occasion rupture.

Bladder Campion (*Silene cucubalus*). Perennial herbaceous plant. It is found in England in cornfields, hedgerows, and waste places. It is two or three feet in height, of a glaucous tint, with paired leaves on the joints of the stem, which is slim and round. The calyx is bladder-like with five deeply cleft white petals. It is one of a group known as catch-flies. Certain species of these have short sticky hairs which entrap green fly and other minute insects.

Bladderwort Genus of aquatic plants of which there are only four species found in Britain. They are found floating in water in pools and ditches, unattached by any root. The minute leaves hold small bladders with valve-like openings which entrap water insects. When the valve closes they are unable to escape, and the plant is nourished by the decomposed bodies of its victims.

Blaenavon Urban district and market town of Monmouthshire. It is 6 m. from Pontypool, on the G.W. Rly. It is a coal mining centre and has iron and steel works. Pop. (1931) 11,075.

Blair Atholl Village of Perthshire. It is 77 m. from Edinburgh and 35 from Perth, on the L.M.S. Rly. Here the Rivers Tilt and Garry unite and near is the pass of Killiecrankie. The parish contains Blair Castle, the seat of the Duke of Atholl. Pop. 1820.

Blairgowrie Burgh and market town of Perthshire. It stands on the Ericht, 16 m. from Perth, on the L.M.S. Rly. There are jute and linen manufactures in the place. Pop. 3070.

Blake **Robert.** English Admiral. Born at Bridgwater in Aug. 1599, he carried on his father's merchant business and in 1640 was sent to Parliament by his native town. In 1644 he defended Lyme Regis against Charles I., and in 1644-45 won more than local fame by defending Taunton for nearly a year. In 1649 Cromwell made him one of the commanders of the English Fleet, and he cleared the Mediterranean of Royalist ships, and took possession of Jersey and the Scilly Islands. Between 1652 and 1654 he met the Dutch in battle several times. He was beaten by van Tromp off the Goodwin Sands in Nov. 1652. In February, 1653, he gained a decisive victory. In April, 1657, he destroyed a Spanish Fleet off Teneriffe, but died on the homeward voyage, Aug. 7, 1657.

Blake **William.** English engraver and poet. Son of a London hosier, he was born Nov. 28, 1757, and was apprenticed to an engraver. He attained high technical proficiency, as attested by illustrations for the Book of Job, Blair's *Grave*, Dante's *Divinia Commedia* and Gray's *Poems*. He exhibited at the Royal Academy, 1780-1808, and during that period engraved and

coloured by hand most of his other works, including those designated *The Prophetic Books*. His poems include *Songs of Innocence*, 1789, and *Songs of Experience*, 1794, which illustrate his power as poet and mystic. He died in London, Aug. 12, 1827.

Blakeney Village on the Norfolk coast, 5 m. from Holt. At Blakeney Point is a bird sanctuary covering 1100 acres.

Blandford Borough and market town of Dorset, on the Stour, 16 m. from Dorchester, on the G.W. Rly. Bryanston, once the seat of Viscount Portman and now a public school, is near. The town gives the title of marquess to the eldest son of the Duke of Marlborough. Pop. (1931) 3371.

Blanesburgh **Lord.** British lawyer. Born, Sept., 12, 1861, Robert Younger went to Edinburgh Academy and Balliol College, Oxford. He became a barrister and in 1915 was made a judge. In 1919 he joined the court of appeal, and in 1923 was made a lord of appeal and a life peer. He presided over the committee that enquired into the subject of unemployment insurance. Lord Blanesburgh was appointed chief British delegate on the Reparations Commission in Paris in 1925.

Blankenberghe Watering place of Belgium. It is 9 m. from Bruges and is reached by road and railway from Ostend. Facing the North Sea, it has a fine promenade and a casino; also excellent facilities for bathing. It was in the occupation of the Germans from Oct. 1914 to Oct. 1918. Pop. 6500.

Blanketeers Nickname given to some Manchester operatives in 1817. About 5000 men assembled on March 10 in St. Peter's Field, each carrying provisions and a blanket, purposing to walk to London to lay their grievances before the Prince Regent. The gathering caused some consternation and the Habeas Corpus Act was suspended. The leaders were taken and imprisoned, and the project frustrated.

Blankney Village of Lincolnshire. It is 8 m. from Sleaford, on the L.N.E. Rly. The hall was long the seat of Viscount Chaplin and here are the kennels of the Blankney Hunt, one of the most famous in England.

Blank Verse Unrhymed verse in iambic decasyllabic measure. Every even number of the 10 syllables is stressed in early strict examples. It is prevalent in French 10th century literature and occurs in Chaucer's works, but was not prominent in England until Henry VIII's reign when Henry Howard, Earl of Surrey, translated portions of the *Aeneid* into blank verse. It was perfected by Marlowe and Shakespeare as a medium for epic and dramatic poetry, and was revived and transfigured by Milton.

Blantyre District of Lanarkshire. It is near Hamilton on the Lanarkshire coalfield and is served by the L.M.S. Rly. Low Blantyre on the Clyde is famous as the birthplace of David Livingstone and his memory is perpetuated by a church. In 1929 his birthplace became public property.

Blantyre Capital of Nyasaland. It is in the Shire Highlands, 300 m. from Chinde, and has railway connection with Beira. Founded in 1876 as a mission station, it was named after Livingstone's birthplace. Pop. 6000.

Blarney Village of Co. Cork, Irish Free State. It is 7 m. from Cork, on the G.S.Rlys. It is famous for its castle built in the 15th century. Of this the tower remains and in it near the top is the Blarney stone. Tradition says that any one who kisses the stone becomes endowed with eloquence.

Blasco Ibañez **Vicente.** Spanish novelist and politician. Born at Valencia in 1867, his ill-regulated temperament sometimes involved imprisonment and exile, although he was frequently deputy for his native city. Among his books available in English translations are *The Shadow of the Cathedral*, 1909, *Blood and Sand*, 1913, *The Enemies of Women*, 1922, and his novel *The Four Horsemen of the Apocalypse*, 1918, which was a great success on the films. Owing to his advanced political opinions he left Spain and lived for a time in Paris, where he wrote, *Alfonso XIII. Unmasked*. He died at Nice, Jan. 28, 1928. In 1933 preparations were made to re-bury him in Spain with national honours.

Blasphemy Speaking evil of God; or offering an insult in word or writing to God or to religion. In English law it is an offence because it tends to bring about a breach of the peace. A much narrower definition is given to the term than was the case in the past when it included anything directed against the Bible and Prayer Book, or anything intended to arouse contempt for the church or to promote immorality. A proposal made in 1929 to alter the existing law against blasphemy was unsuccessful.

Blavatsky **Helena Petrovna.** Russian theosophist. Born at Ekaterinoslav, July 31, 1831, and married early, after 20 years in N. America and India, she revisited Russia in 1858 as a spiritist medium. During six subsequent years in the United States she planned a combination of spiritist control with Tibetan legends, and in 1875 founded in New York the Theosophical Society. She published, *Isis Unveiled*, 1877, *The Secret Doctrine*, 1888, and *The Key to Theosophy*, 1889. She died in London, May 8, 1891.

Blaydon Urban district and market town of Durham. It is on the Tyne, only 4 m. from Newcastle, by the L.N.E. Rly. The industries include coal mining and the development of the by-products of coal. The town also manufactures machinery, tools, etc., and there are iron foundries. Pop. (1931) 32,259.

Bleaching Depriving materials of their colour. The natural influences of light, air and damp can be speeded by chemical means, involving oxidation or reduction. Oxidising agents are mostly chlorine preparations, chlorinated lime being pre-eminently known as bleaching powder; they include also hydrogen peroxide and potassium permanganate. Reducing agents are mostly sulphur preparations, such as sulphurous acid or a sulphide. Cotton, linen and other vegetable fibres are oxidised; silk, wool and other animal fibres are reduced. Oxidation is more permanent; when straw is treated with sulphurous acid, atmospheric action soon yellows it again.

Bleeding *See* HAEMORRHAGE.

Blende Native zinc sulphide. Its symbol is ZnS.; and it is also called

sphalerite. It is a brittle mineral crystallising in cubes, usually found dark-brown, with a resinous lustre, commonly admixed with iron and associated with galena and copper pyrites. It is the chief source of zinc, and often reduces on the spot to zinc concentrates for economy of transport. It occurs in the United States, especially Missouri, as well as at Broken Hill, New South Wales, Canada, Poland, Belgium, Spain and Great Britain.

Blenheim Village of Bavaria, known also as Blindheim. Near the Danube, it is famous because of the battle fought here, Aug. 13, 1704. The British and Austrians under Marlborough and Prince Eugene respectively, joined forces and hurried to meet the French and their Bavarian allies. The battle began soon after noon and was fiercely contested until, by a stroke of genius, Marlborough, with a rapid alteration of plan, drove the French before him, and by nightfall all was over. Rather more than 50,000 men were engaged on each side, a large proportion being cavalry. The losses of the British and Austrians were about 12,000; their foes lost 28,000 including prisoners.

Blenheim Residence of the Duke of Marlborough. It is near Woodstock in Oxfordshire and stands in a fine park covering nearly 4 sq. m. The house was presented by the nation to the 1st Duke of Marlborough after his victory at Blenheim (1704).

Blenny Extensive family of spiny-finned fishes. They have elongated, cylindrical bodies having long dorsal and anal fins. Mostly marine, there are brackish-water and freshwater forms. The nine British species include the scaleless shanny or smooth blenny, the gunnel, the wolf fish, and the viviparous blenny, whose female bears 300 living young.

Blériot Louis. French aviator and inventor. He was the first to fly across the English Channel, having crossed from Calais to Dover in 31 minutes on July 25, 1909. His monoplane landed on Northfall Meadow, near Dover Castle, and a monument now marks the historic spot. He has been actively concerned in the production of aircraft, among devices associated with his name being the steering pillar and the landing chassis.

Blériot Cup The. International air speed trial for which a challenge trophy is annually awarded. It was instituted by M. Blériot, the French aeroplane constructor, when the Schneider Trophy was won outright by Britain in 1931. In 1933 the Blériot Cup was won by Captain Pietro Scapinelli (Italy), flying at a speed of 372 miles per hour.

Bletchley Village of Buckinghamshire. It is 47 m. from London, and is an important junction on the L.M.S. system.

Blickling Village of Norfolk. It is on the Bure near Aylesham, and is famous for its hall. The property of the Marquis of Lothian, this stands in a fine park. Earlier the estate belonged to the Bolcyn family. In 1932 the fine library was sold in New York.

Blind Term used for persons who have lost their sight. The training of the blind, both children and adults, is an important branch of educational work. They are taught to read by means of the Braille system, and are instructed in certain trades, such as basket-making, weaving and knitting, which are suitable to them. At S. Dunstan's, Regent Park, many blinded soldiers were taught typewriting, massage and other trades.

There are schools and institutions for the blind, the chief being the National Institute at 224 Gt. Portland St., London, W. The blind are trained to take part in sports and games, and some of them have done almost everything that a person with sight can do. One or two fine musicians have been blind. Notable blind men have been Henry Fawcett and Sir C. Arthur Pearson. There is a library for the blind at 35 Gt. Smith St., Westminster, S.W.1. It has 150,000 volumes in Braille and Morse types.

Blind persons are entitled to old age pensions when they reach the age of 45, and can obtain, without fee, a licence for a wireless receiving set. *See* BRAILLE.

Blindness Lack of sight. It may be permanent or temporary, total or partial. Complete sightlessness may arise from atrophy of the optic nerve, or from inflammatory or degenerative changes in any part between it and the cornea. Early in the 20th century it was estimated that of all existing cases two-fifths would certainly and two-fifths probably have been preventable. Infantile purulent inflammation, the chief of these causes, is a gonococcal infection which almost always is certainly curable. A disease due to lack of cleanliness and more difficult to cure is trachoma, or granular lids, accompanied by a contagious discharge, which prevails in the East, and affected nearly all Napoleon's soldiers in Egypt. In advancing years blindness may be brought about by glaucoma, which distends the eyeball with fluid, but this can be arrested by operation if detected early enough. The loss of one eye may induce total blindness by sympathetic ophthalmia.

Blind Spot Optic disc in the retina where the optic nerve enters the eye. It is a circle with raised margins, insensible to light and colours. Its diameter, about 1.8 mm., gives an angle of 6°, determining the apparent size of the blind spot, large enough to conceal a man 7 ft. away.

Blindworm Lizard simulating the shape of a snake because lacking external traces of limbs (*Anguis fragilis*). Found in Britain and Europe, it is an inoffensive, lethargic creature, sometimes called slow-worm. It is from 10 to 15 in. long, and its tiny teeth cannot penetrate the skin, and lack poison fangs. The female produces a dozen living young.

Blister Vesicle on the skin filled with serous fluid. It may arise from injury such as a burn, the friction of rowing, disease, an insect or a vesicatory substance. Blisters are purposely produced as counter-irritants to draw towards the skin deep-seated inflammation. Such vesicants include cantharides, acetic acid, chloroform and ammonia.

Treatment.—When possible leave a blister unbroken until the underlying surface has had time to heal. If broken, treat with boracic lotion or ointment.

Blockade In war the closing of the ports and coasts of a country by preventing ships from reaching or leaving it. It therefore affects neutral shipping, and the rules governing its exercise are the subject-matter of much international law. Ships attempting to avoid a blockade are liable to capture, in which case their fate is decided by a prize court.

At one time it was only necessary to declare

a state of blockade; it was not necessary to enforce it by adequate force. To-day, however, a blockade is not recognised unless it is effective; it must be supported by a force sufficient to make ingress or egress dangerous to blockade runners. In Feb., 1915, Germany declared the coasts of Britain to be in a state of blockade and tried to enforce this by the use of submarines; Great Britain replied in March with a blockade of Germany which, although not absolutely successful, contributed very much to end the war.

Blockship Vessel used to close a harbour by sinking it in the channel. Sometimes they are sunk to protect a country's own harbours, but their most noted use in recent times was to block the harbours of Zeebrugge and Ostend, then in possession of the Germans. Any vessel can be used provided it is filled with concrete or some other heavy material. In olden days a blockship was a storeship.

Bloemfontein Chief town of the Orange Free State. It stands on a tributary of the Modder, 750 m. from Capetown, with which it is connected by railway. There is a university college, and near, owing to the clear air, the University of Harvard has an observatory. Bloemfontein was founded in 1846, and was entered by the British in March, 1900. It is the seat of the supreme court of the Union of S. Africa. Pop. 42,500, about 28,496 being whites.

Blois City of France. It stands on the Loire, 35 m. from Orleans. The chief building is the magnificent chateau, once a royal residence. The cathedral, dedicated to S. Louis, was rebuilt in the 17th century, and the Church of S. Nicholas, once an abbey church, dates from the 12th. Pop. 24,607.

Blomfield **Sir Arthur William.** English architect. Born March 6, 1829, he was a younger son of Charles James Blomfield (1786-1857) who was Bishop of Chester, 1824-28, and Bishop of London, 1828-56. He was educated at Rugby and Trinity College, Cambridge, and became an architect. As an ecclesiastical architect he was in the first rank. His works include the restoration of Southwark Cathedral and the erection of many churches, including S. Barnabas, Oxford, and S. Mary's, Portsea. Knighted in 1897, he died Oct. 30, 1899.

Blomfield's nephew, **Sir Reginald Theodore Blomfield**, also became a noted architect. Born Dec. 20, 1856, he was educated at Haileybury and Exeter College, Oxford. He became A.R.A. in 1905 and R.A. in 1914, and was President of the Royal Institute of British Architects, 1912-14. He has written several works on architecture, chiefly from the historical point of view, and became a specialist in garden design. In 1919 he was knighted.

Blondin **Charles.** Stage-name of Jean François Gravelet, French acrobat. Born at St. Omer, Feb. 24, 1824, he early specialised in tight-rope walking, especially with spectacular incidents. His celebrity was established in 1859 by crossing Niagara Falls on a rope 160 ft. above the water. He performed at the Crystal Palace, 1861, and made occasional reappearances, once from mast to mast on a liner at sea. He died at Ealing, London, Feb. 19, 1897.

Blood Fluid flowing in animal arteries and veins. Its continuous circulation from the heart back again to the heart was demonstrated by Harvey in 1628. It comprises a serous plasma, nine-tenths water, in which foodstuffs—proteins, carbohydrates, and salts—together with waste substances, are dissolved. The serum harbours independent cellular bodies, the haemoglobin containing red corpuscles, the bacteria-destroying white corpuscles, and the fibrin-making platelets, which in man may number per cubic mm. 5,000,000, 12,000 and 800,000 respectively. 1 lb. per 14 lb. of body weight is blood. In vertebrates it is red, in invertebrates other colours or none.

Blood **Thomas.** Irish adventurer, known as Colonel Blood. Born about 1618, he served as a soldier in the parliamentary armies and received some land in Ireland. Deprived of this at the Restoration, he revenged himself by trying to seize Dublin Castle and the person of the lord lieutenant. In this he failed, but on May 9, 1671 he succeeded in his most notable feat, taking the crown jewels from the Tower of London. He was arrested, but Charles II. pardoned him and he received his Irish lands again. Blood died Aug. 24, 1680.

Bloodhound Breed of dog. It is essentially a large black-and-tan hound with long, smooth, drooping ears, wrinkled forehead, red haws to the eye-sockets, deep baying note, gentle disposition and highly developed power of scent. It is derived from the old Talbot breed, and is probably the ancestral stock of all English races of hounds. It is bred to track down game, and sometimes fugitive criminals.

Bloodless Surgery *See* ORTHOPAEDICS.

Bloodroot Name applied to several species of plants whose roots contain red pigment. The common British tormentil, *Potentilla tormentilla*, is a rosaceous herb whose rootstock, rich in tannin, is used also by Lapps to dye their clothing. A poppy-like herb, *Sanguinaria canadense*, in eastern N. America, supplies the Red Indians with paint.

Bloodstone Variety of dark-green chalcedony with red jasper-like splashes. It is a mixture of true quartz with hydrous or opal-quartz, not crystallised but minutely crystalline. It comes from India, being used for seals and signet rings, and also from the Hebridean Islands of Rum and from Iceland.

Blood Transfusion Transferring of the blood of one living animal to another. Blood transfusion was first performed in Florence, 1654. Despite experimentation it did not become a regular operation until the 20th century, but is now widely used in cases of anaemia, haemorrhage, etc. Human blood has been found to be classifiable into four clearly defined groups, and it is important that the blood of the donor should belong to the same group as that of the patient.

Bloody Assizes Name given to the Court of Inquiry, presided over by the notorious Judge Jeffreys, to try culprits after the Monmouth Rebellion, 1685. As a result, hundreds were put to death, or transported to the Colonies.

Bloomsbury District of London. It is bounded by Holborn and New Oxford Street on the S., Tottenham Court Rd. on the W., Euston Rd. on the N., and Southampton Row on the E. It is in the metropolitan boroughs of Holborn and St. Pancras. Many of the streets and squares are named after the Duke of Bedford, once owner of the land,

and his estates, *e.g.*, Bedford Sq., Russell Sq., and Woburn Sq. In the district are the British Museum, University College, and other branches of the University of London, S. Giles Church, and several hospitals. It is also a region of hotels and boarding houses.

Blow John English organist. Born in 1648 in Lincolnshire, he became a chorister in the Chapel Royal, London in 1660. In 1669 he was made organist of Westminster Abbey, and in 1676 organist at the Chapel Royal. He resigned the Abbey in 1680, but remained connected with the Chapel Royal until his death, Oct. 11, 1708. Blow was also a composer, his works including many anthems.

Blowpipe Tube of small bore through which a current of air is projected to direct and concentrate a flame and increase the temperature it produces. Tubes with mouthpieces and fine nozzles were used in early Egypt for glassmaking and soldering; in the 18th century they were used for chemical analysis. Powerful blowpipes for creating hot gases use oxy-hydrogen for steel cutting and oxy-acetylene for welding.

Bloxwich Town of Staffordshire. It is 2 m. from Walsall, on the L.M.S. Rly. In the Black Country, its chief industries are coal-mining and iron working. Pop. 8949.

Blubber Fat of whales and other marine mammals. It develops in dense layers between the skin and the muscles to retain bodily heat. The mass of tissue which holds it together can be removed in spiral strips which, when boiled down in "tryworks," on the whaler or ashore, yield train oil.

Blücher **Marshal von.** German soldier. Gebhard Leberecht von Blucher was born Dec. 16, 1742. As a young man he served in the Swedish and Prussian armies, and then retired to look after his estate in Mecklenburg. He returned to the Prussian army in 1793, and his courage and ability soon attracted attention. He rose in rank and in 1813-14, as commander of an army, fought in the great battles that led to Napoleon's fall. In 1815 he took command of the Prussian forces and, although defeated at Ligny, shared in the final victory of Waterloo. He died Sept. 12, 1819. Blucher's impulsive energy won for him the name of Marshal Vorwärts.

Blue At Oxford and Cambridge the name used for one who represents the university at certain sports and games against the other university. The first blues were those who rowed in the university boat race and were so called because their colours were light and dark blue respectively. Later, those who played for the university at cricket and football, both Rugby and Association, were also called blues. At each university there is a blues committee which decides the games for which blues are awarded. Those who take part in games considered as of secondary importance are given half-blues. At athletics the first representative in each event is a blue and the second a half-blue. For hockey, lawn tennis, racquets, swimming, boxing, etc., half-blues are usual, but in one or two cases full blues are given.

Bluebeard Nickname of the Chevalier Raoul, a character in an imaginary tale by Perrault, 1697. It is the most famous of a cycle of folklore stories making the ogre murder successive wives who have entered a forbidden chamber. France sometimes identifies him with Gilles de Rais, a 15th-century marshal of France, whose one wife survived him, but who apparently murdered young boys. Brittany claims him for Comorre, a 6th-century Breton chief who victimised St. Tryphène.

Bluebell (*Scilla nutans*). Bulbous plant really the wild hyacinth. With long narrow leaves about 12 in. in length, it consists of a number of small bell-shaped flowers borne on one slender stem. In bud the blooms are erect, but they droop as they open. The true Scottish bluebell is the wild campanula, or harebell.

Bluebird Genus of N. American thrushes (*sialia*). The common, or Wilson's bluebird, has a charming note, and ranges from S. Canada to the southern states of the U.S.A.

Blue Book Term popularly denoting a document printed by order of the British Parliament, because usually bound in blue paper covers. In general usage reports of commissions and committees, Foreign Office publications and consular reports are also so called. The official colour for France is yellow, Germany and Portugal white, Italy and U.S.A. green, Spain, red.

Bluebottle Insect related to the ordinary house fly but larger. It is known because of the buzzing noise made by it when in flight. It is an unwholesome visitor to the larder as it lays its eggs in meat.

Bluebottle Species of herb of the composite order (*Centaurea cyanus*). It is an annual or biennial. Its heads are surrounded by large, bright-blue ray florets, from which cornflower blue derives its name. It extends from temperate Europe across to N.W. India and to N. Africa.

Blue Coat School Name given to several schools but especially to Christ's Hospital, West Horsham, Sussex. This was transferred thither in 1902 from buildings in Newgate Street, London, appropriated by Edward VI. in 1553 from the Grey Friars monastery. The traditional dress—blue gown, neckbands, knee breeches, and yellow stockings, is still worn by the boys. Other blue-coat schools are in Westminster, Nottingham, Bristol and Chester. There is a blue-coat school for girls at Hertford, on the same foundation as the boys' preparatory school for Christ's Hospital there.

Blue Cross Badge of an association for aiding wounded and disabled horses. It was inaugurated at the outbreak of the Great War in 1914 by Our Dumb Friends League. The fund was, with the co-operation of the French War Office, devoted in part to French horses, British horses being aided by R.S.P.C.A. funds. The Blue Cross Society now has kennels at Shorter's Hill, Woolwich, London, S.E. where dogs and cats are kept during the absence of their owners or for other reasons.

Blue Ensign Flag composed of a blue field with the union flag in the upper corner next the staff. It distinguishes the Royal Naval Reserve as well as the public, *i.e.*, consular, service. It is authorised also for members of specified yacht clubs and certain merchant vessels under R.N.R. command.

Bluefish Spiny-finned fish of the horse mackerel family (*temnodon saltator*). Of compressed-spindle shape, greenish-blue above and silvery below, it inhabits warm

and temperate regions on both sides of the N. Atlantic, is very voracious, and catching it affords excellent sport.

Blue Peter Rectangular blue flag centred with a white square. It is flown by British seamen as a signal, both to the crew and to the general public, that the time for sailing has come. It also serves to recall boats to the ship, and is usually hoisted at the foreroyal masthead.

Blue Stocking Term humorously denoting a literary woman. It was first applied to a literary coterie meeting about 1760 in the Mayfair house of Mrs. Elizabeth Montagu. She apparently adopted blue stockings in imitation of similar reunions in 17th-century Paris; such stockings were worn by various members of the club, both men and women.

Bluethroat Genus of warblers (*cyanecula*). It has cobalt-blue throat and upper breast. The red-spotted bluethroat (*C. suecica*) breeds in temperate Europe and Asia, and winters in India, Abyssinia and N. Africa. Its mature note distinguishes it as the Swedish nightingale. It visits on migration the east coast of Britain.

Blundellsands Watering place of Lancashire. It stands on the Mersey, 6 m. from Liverpool, of which it is practically a suburb. It is reached by the L.M.S. Rly.

Blundell's School Public school of Devonshire. Just outside Tiverton, it was founded in 1604 by Peter Blundell, a Tiverton tradesman. The present buildings, which hold about 350 boys, were built in 1882; the old building mentioned in *Lorna Doone* was in the town itself.

Blunderbuss Firearm of the pistol type, now obsolete. It had a flintlock and a trigger, and with a large bore held several balls. It was not capable of being fired with any precision.

Blyth Borough and seaport of Northumberland. It stands at the mouth of the little River Blyth, 11 m. from Newcastle, on the L.N.E. Rlv. The chief industry is the export of coal and there is a large modern harbour. The borough includes Cowpen, once a separate urban district. Pop. (1931) 31,808.

Boa Genus of snakes. There are five species in tropical and sub-tropical America, and two in Madagascar. The most familiar, boa constrictor, ranging from Venezuela to the upper Argentine, may attain 12 ft. in length. It feeds normally on small mammals, sometimes on deer and dogs.

Boabdil Last Moorish king of Granada. Boabdil (Abu Abdallâh), became king in 1482. Invading Castile in 1483, he was captured and became vassal to Spain. When he refused to surrender Granada in 1491, the Castilians besieged and took it; Boabdil fled, and subsequently was killed in Africa.

Boadicea British queen. More correctly Boudicca, she was the wife of Prasutagus, king of the tribe of the Iceni. Being under Roman rule, Prasutagus left his property jointly to his daughters and Nero. At his death the Romans seized it, scourged Boadicea and ravished the daughters. Boadicea then incited the Britons to rebellion, burned Camulodunum (Colchester) and defeated the Romans. Eventually overthrown by Suetonius Paulinus, Boadicea poisoned herself A.D. 62. Thomas Thorneycroft's sculpture on the Thames Embankment, London, commemorates Boadicea's rebellion.

Boanerges Descriptive surname given by Jesus to two prominent disciples, explained as meaning sons of thunder (Mk. iii, xvii). These disciples, James and John, the sons of Zebedee, display in the gospel narrative an impetuous and ambitious disposition, which may have suggested the title. In modern usage it sometimes describes vehement orators.

Boar Wild hog. Domestic breeds of pig are derived from the European wild boar (*sus scrofa*), which was hunted in Britain in the 16th century, is still found in France and other parts of Europe. The Indian wild boar (*S. cristatus*) furnishes the sport called pig sticking. In some localities domestic swine turned loose have become wild again.

Boar's Hill District near Oxford. Across the Thames in Berkshire, it is about 4 m. from the city. It has become a favourite residential area. Owing to its beautiful situation, it was decided in 1929 to take steps to protect its amenities. There John Masefield lives, and has his private theatre.

Boat Conveyance for use on water. The earliest boats were of bark or wicker covered with skin, and since then they have developed in every possible way. The word is loosely used for any vessel, but strictly a boat is small and open, a larger vessel being a ship. Boats propelled by oars are still used, but motor boats are popular.

The Oxford and Cambridge Boat Race was first rowed in 1829 and became an annual event in 1856. It is rowed on a course of 4¼ m. from Putney to Mortlake. In 1933 Cambridge had won 44 races and Oxford 40. The record time for the course is Oxford's, 18 m. 29 sec., in 1911.

Boatfly Name for two genera of aquatic bugs, also called water boatman. *Notonecta* swim on the back and use the fringed hind legs as oars, extending them like sculls when at rest. Air is led through a tunnel of overlapping hairs from the tail to the thorax. *Corixa* swim back uppermost.

Boatswain Subordinate ship's officer. In the days of sailing ships he was a petty officer in charge of boats, rigging and anchors, piping the crew to work with a silver whistle. In the merchant navy to-day he is the crew's foreman and sometimes the lowest mate.

Boaz Biblical character. In the book of Ruth he appears as a wealthy Bethlehemite who, by his marriage with Ruth, became the great-grandfather of David.

Bobolink American song bird related to the starling. (*Dolichonyx oryzivorus*). The male is black and buff in the spring; the female is smaller and yellowish-brown. In their northward migration they fill the northern parts of the United States and Canada with melody. On their return they devastate the ricefields, and are then called reed birds or rice birds.

Boccaccio Giovanni. Italian writer. Born in Paris or Florence in 1313, lived a roving life, writing a good deal, and making love to the lady who, as Fiammetta, became the heroine of some of his stories. She was probably a daughter of Robert, King of Naples. He became friendly with Petrarch, who influenced him greatly.

Boccaccio, who had already written many

poems and some romances, finished, in 1358, his *Decamcron*, the work on which his fame rests. This consists of 100 stories, supposed to have been told by ten persons in the beautiful gardens of a country house during the plague in Florence in 1348. In style and matter this work is one of the world's greatest pieces of creative fiction, and many later writers in England and elsewhere are indebted to it. It has several times been translated into English. Boccaccio died Dec. 21, 1375.

Bode **Johann Elert.** German astronomer. Born at Hamburg in Jan., 1747, he became astronomer to the Berlin Academy of Science, and director of the observatory. He prepared star maps and did much to popularise astronomy. He died Nov. 23, 1826.

Bode was the author of **Bode's Law**, an empirical formula for tabulating the distances of the planets from the sun. The number 3 is doubled and then redoubled thus: 0, 3, 6, 12, 24, 48, 96, and so on, and 4 is added to each. The resulting numbers, 4, 7, 10, 16, etc., show the proportionate distances of the planets from the sun.

Bodiam Village of Sussex. It is 6 miles from Battle on the River Rother. Its castle, a perfect example of a medieval fortress, with round towers, gateway and moat, was restored by the Marquess Curzon, who presented it to the nation in 1925.

Bodleian Name of the university library at Oxford. Refounded in 1602 by Sir Thomas Bodley (1545-1613) on the site of an earlier structure, it stands between High Street and Broad Street. Though several times enlarged it is far too small for its purpose and in 1929 plans for a new library were considered and in May, 1932, the Rockefeller Foundation offered to contribute three-fifths of the cost of extension. The library has the right to receive a copy of every book published in Great Britain and its collection of books and manuscripts is one of the most valuable in the world.

Bodmin Borough and market and county town of Cornwall. It stand on the Camel, 30 m. from Plymouth and 234 from London, on the G.W. and Southern Rlys. There is an agricultural trade and china clay works are near. The town has a beam wireless station. Pop. (1931) 5526.

Bodmin Moor is a large and desolate tract of country outside the town. Brown Willy is its highest point.

Body Snatching Secret exhumation of dead bodies for sale as subjects for dissection. This gruesome industry arose in Britain early in the 19th century for supplying subjects to medical students. In 1828 about 200 persons, known as resurrection men, were engaged in it in London alone. The practice was stopped in 1832. Body-snatching gave inspiration to the "Burke and Hare murders" in Edinburgh.

Boece **Hector.** Scottish historian. Born in Dundee about 1465, he became professor of philosophy in the University of Paris where he was a contemporary of Erasmus. He died at Aberdeen in 1536. His chief work is a Latin *History of Scotland* in 17 books, published in 1527, and of which an English translation appeared in 1577.

Boehm **Sir Joseph Edgar.** British sculptor. Born in Vienna, July 6, 1834, he came to England for his education and in 1865 was naturalised. He soon made a reputation, especially by his statue of Thomas Carlyle (1875) and was made A.R.A. in 1878 and R.A. in 1882. In 1889 he was created a baronet and he died Dec. 12, 1890. Boehm's work includes the statue of Wellington at Hyde Park Corner, London, that of Beaconsfield in Westminster Abbey, and the designs for the coins issued in 1887.

Boehme **Jakob.** German mystic. Called Jacob Behmen, he was the son of a peasant. In 1612 he published *Aurora*, a book showing the eternal and all pervading presence of God, a kind of pantheism. This was censured by the clergy and he was forbidden to write any more; but just before his death, Nov. 17, 1624, *The Way to Christ* appeared. Boehme's writings have been translated into English and have influenced English thinkers.

Boer Word meaning a farmer or agriculturalist and given to the Dutch of S. Africa. They settled there about 1650 and later founded the state of the Transvaal and the Orange Free State. They still form the majority of the whites in those districts and are also found in Cape Colony and Natal.

Boer War The Boer War broke out in 1899 with the invasion of Natal by the Boers, and ended with the Peace of Vereeniging, 1902. Its causes were chiefly the Boers' demand for independence, made possible by the removal of the Zulu menace after Lord Chelmsford's victory at Ulundi, and the Boers' growing irritation at the British Government's indecisive policy. After the Jameson Raid, 1896, the Boers began to arm, and in Oct., 1899, laid siege to Ladysmith, Kimberley and Mafeking.

The war began disastrously for Britain, but reinforcements were sent out in 1900 under Lord Kitchener and Lord Roberts. Roberts defeated Cronje, French relieved Kimberley, Buller raised the siege of Ladysmith and a force from Rhodesia relieved Mafeking. President Kruger sued for peace, which Lord Salisbury, the British Premier, granted, on condition that the Orange Free State and the Transvaal came under British rule again.

General Smuts, Botha and De Wet, however, continued hostilities, but Lord Kitchener prosecuted the war with such rigour that peace was made in 1902, when Britain promised to restore independent government. The war's main result was to win unpopularity for Britain, to crush the 19th-century spirit of jingo imperialism and to encourage the other colonies to demand independence.

Boethius Roman statesman and philosopher. Boldly maintaining justice, he was accused of treason and, although declared innocent, was imprisoned, his goods confiscated, and himself put to death. During his year's captivity he wrote *Consolation of Philosophy* (*De Consolatione Philosophiae*), a renowned compendium of moral wisdom. Mediæval schools used also his textbooks on geometry, music and arithmetic. Part of *De Consolatione* was translated into English by King Alfred.

Bog Spongy ground whose soil is composed mainly of decaying and decayed vegetation. This usually comprises mosses intermingled with ligneous stems which, when decomposing, form peat. Bogs occur chiefly in high latitudes. The estimated areas are: England, 1500 sq. m.; Scotland, 3000 sq. m.; Ireland, 4500 sq. m.; Europe, 212,700 sq. m.; Canada, 45,000 sq. m.; and the United

States, 31,250 sq. m. Destructive bog slides sometimes occur.

Bog Asphodel (*Narthecium ossifragum*). Species of herb of the liliaceous order. It has racemes of green-ribbed, golden-yellow flowers. Called the Lancashire asphodel in England, it inhabits boglands throughout Britain, as well as the N. temperate zone southward to the Alps and Pyrenees.

Bog Bean (*Menyanthes trifoliata*). Species of bog plant of the gentian order. Also called buck-bean and marsh trefoil. It has a creeping rootstock, which is a useful food, with long-stalked leaves in three leaflets, and spikes of pink or white flowers. Found throughout the temperate regions of the north, it is used as a febrifuge.

Bog Butter Term denoting a mineral resin. A fatty carbohydrate having the appearance and consistency of spermaceti, it is found in massive lumps in bogland in Scotland and Ireland. It is derived from the decay of vegetable matter.

Bogey Term used by golfers, representing the fixed score for each hole of a golf course. Bogey was jocularly described as a colonel.

Bogie Platform or under-carriage attached to a railway locomotive or car. It is mounted on one or two pairs of wheels and pivoted on the main frame by a vertical swivel to enable sudden curves to be traversed readily. Bogie engines similarly facilitate the making up of trains in a siding.

Bog Moss (*sphagnum*). Genus of cryptogamous plants forming an order of mosses. Growing in greenish or reddish masses on moors or bogs, when submerged in pools it may reach several feet. It is used for surgical dressings. Distributed over the temperate and arctic zones, there are 12 British and 25 N. American species.

Bognor Regis Watering place and urban district of Sussex. It is 10 miles from Chichester and 67 from London on the S. Rly. At Aldwick near here, in 1928-1929, King George V. spent some months during his convalescence and after his departure added the word Regis to the town's name. Pop. (1931) 13,510.

Bog Oak Trunks and branches of oak found embedded in bogs. Their preservation is due to the antiseptic properties of the peaty matrix. Of unknown age, they owe their colour, ranging from dark green to ebony, to being impregnated with iron. Bog oak is turned in the lathe for brooches, bowls and ornamental articles.

Bogota Capital of the Republic of Colombia. It stands on a plateau, about 9000 ft. above sea level, some 200 m. from the coast. The commercial centre of the republic, the town was founded in 1538 as Santa Fe de Bogota and became the capital in 1831. It has railway connection with other cities and with the coast at Buenaventura, also a regular air service. Pop. 235,421.

Bohemia Province of the Republic of Czechoslovakia. It covers 20,100 sq. m. and its population is (1930) 7,106,766, mainly Czechs. Prague is the capital. Pilsen (Plzen) and Budweis are other populous centres. The chief rivers are the Elbe, the Moldau and the Eger. There are large forest areas, but much of the land is cultivated.

From about 900 to 1526 Bohemia was an independent kingdom. In 1526 it came under the same ruler as Austria and Hungary and from then until 1918 it was part of the realm that became the Austro-Hungarian Empire. In 1919 it was the centre round which the state of Czecho-Slovakia was formed. *See* Czechoslovakia,

Bohemianism Phrase used for the unconventional way of living adopted by artists, literary men and students in Paris, London and elsewhere. It comes from the fact that the gypsies who lived this kind of life were believed to have come from Bohemia. Paris was the original home of Bohemianism, and it still flourishes there.

Bohn **Henry George.** English publisher. Son of a German bookbinder. He was born in London, Jan. 4, 1796. He started in business in 1831, issued a guinea catalogue of 23,000 books, and dealt in remainders. He wrote on questions of copyright and the paper duty, compiled handbooks of quotations, games and pottery, and revised Lowndes's *Bibliographer's Manual*, 1857-64. He is best known for his editions of standard works and translations, embracing 750 volumes, the copyrights of which are now the property of J. Bell & Sons. He died Aug. 22, 1884.

Bohun Name of a famous Norman family. Having settled in England, its members became rich and powerful landowners. In 1199 Henry Bohun was made Earl of Hereford and was one of the barons associated with the signing of Magna Carta. Another Bohun opposed Edward I. The male line died out in 1373.

Boil Small, painful swelling on the skin, with redness and suppuration. It becomes a yellowish core of dead tissue, due to a micro-organism, generally a staphylococcus. When this comes away the boil quickly heals. Boils usually start in hair-roots on the back of the neck, or on the limbs; a mass of them becomes a carbuncle. (*q.v.*)

The inflammation caused by a boil can be reduced by hot boric lint poultices. The pus should be evacuated by surgical means and care taken not to spread the infection to the surrounding area. Boils occur in "run-down" conditions, so attention must be paid to the general health as well as to the diet, which should be plain and nourishing and contain plenty of fruit and green vegetables. Exposure to ultra-violet rays is beneficial, and when there is a tendency to recurrence a vaccine may be necessary. (For **Gum boil**, see under ABSCESS.)

Boiler Vessel for heating liquid to boiling point. The term includes such utensils as wash boilers, used for soiled linen, and the structures called steam-boilers, which generate steam for driving engines. These may be simple vertical tanks, or horizontal cylinders containing internal furnace flues, one in the Cornish type and two in Lancashire boilers. Galloway tubes expanding into heads, when fitted, increase the heating surface, further increased—in multitubular boilers—by introducing into the flue space tubular sections. Steam producing efficiency is also increased by conducting the water-mass through systems of water tubes, as in modern types of locomotive, and in stationary and marine engines.

Boiling Point Temperature at which, when liquid is converted into vapour, the tension of the latter equals the atmospheric pressure. It varies

for each liquid, and for the same liquid is lower when the pressure lessens, as when ascending a mountain or in a balloon. Under normal pressure water boils at 212° F. or 100° C.; at the summit of Mont Blanc it boils at 185° F. The boiling point of spirit of wine is 78° C., ether 35° C., mercury 357° C.

Bois de Boulogne Park in Paris. To the west of the city, it covers some 2200 acres and is bordered by the Seine. In it are the race courses of Auteuil and Longchamps, grounds for polo and other sports, zoological gardens, an aquarium and other attractions. It was enclosed about 1800, and in 1853 was given to Paris by Napoleon III.

Bokhara Province of Asiatic Russia. Bordering on Afghanistan, and occupying 85,000 sq. m., it was formerly a protected emirate. In 1924 it became, with Khiva, the independent Soviet Republic of Uzbekistan. The low W. plains rise eastwardly through fertile plateau-valleys to lofty glacier-fed mountains. Nomad Moslem Uzbeks breed horses and cattle; rice, wheat, cotton and fruit are raised.

The old town of Bokhara was once central Asia's chief mart. The new town is a Russian outgrowth. Pop. 75,000.

Bolan District of British Baluchistan. Between the upper Sind plains and the Quetta highlands, it is traversed for 60 m. by the Bolan Pass, with a narrow gorge between lofty cliffs at a point where the British army was plundered in 1839. Marauders long kept it unsafe, until, after 1879, a railway was constructed.

Bole Clay-like mineral. It is a hydrous silicate of alumina with some red iron oxide. Although soft and unctuous, it is more like fuller's earth than a plastic clay, being chiefly used as an astringent and pigment. It supplied the red letters in old MSS., and comes from Italy, Silesia and Armenia.

Bolero Spanish dance. It is usually danced by two persons to the accompaniment of the castanets.

Boleyn Anne. Queen of Henry VIII. of England. The daughter of Sir Thomas and Elizabeth Boleyn, and mother of Queen Elizabeth, she was born about 1507. Her reign was short; Henry, growing tired of her and her failure to produce a son, ordered her execution, in 1536, on an unproven charge of incest.

Bolingbroke Viscount. English statesman. Henry St. John was born at Battersea in Oct. 1678, and educated at Eton. In 1701 he entered Parliament as a Tory and was Secretary for War from 1704 to 1708. In 1710 he became a Secretary of State and helped to make the peace of Utrecht. For his share in the Treaty of Utrecht he was impeached and attainted, but he saved his life by fleeing to France. He went to the court of the Stuarts and was Secretary of State to James Edward. In 1723 Bolingbroke was pardoned and returned to England, where for many years he was one of Walpole's chief opponents, attacking that minister by speech and in *The Craftsman*. He died Dec. 12, 1751. Bolingbroke wrote *The Idea of a Patriotic King*, and *Letters on the Study and Use of History*.

Bolingbroke's father, Sir Henry St. John, was made Viscount St. John in 1716. This title passed to the statesman's younger son, Francis, whose son Frederick inherited both his father's and his uncle's titles and became Viscount Bolingbroke and St. John. The titles are still held by a descendant.

Bolivar Standard monetary unit of Venezuela. Silver coins of 5, 2.5, 2, 1, and .5 bolivar are current. It is composed of 100 centavos, and at par is worth about 9½d.

Bolivar Simon. Spanish statesman, called the liberator owing to his work in S. America. Born at Caracas, Venezuela, July 24, 1783, he was educated in Spain and inherited much wealth. Having returned to Venezuela, he became active among those who were working to free the continent from Spanish rule, and he was a leader in a rising at Caracas in 1810. In 1813, after a victory over the Spaniards, he was proclaimed dictator of Venezuela, but was soon driven away and took refuge in the West Indies. He returned, however, to the struggle and proclaimed a larger republic which he called Colombia. The independence of this was recognised in 1821 and of it Bolivar was the first president. He then turned to Peru, which also he freed from Spanish dominion, and when its southern provinces formed themselves into a separate state this was called Bolivia, and Bolivar was named perpetual protector. His authority in Peru was overthrown, but in Colombia, after a brief retirement, he returned to power and remained president until his death, Dec. 17, 1830.

Bolivia Republic of S. America. Entirely inland, it is surrounded by Brazil, Paraguay, Argentina, Chile and Peru. The boundaries are not all exactly defined. Area about 514,155 sq. miles, much of it mountainous. The rivers include the Mamore and the Beni, and in it is Lake Titicaca. Pop. (1931) 3,014,069, over half of whom are Indian. There are two capitals, La Paz and Sucre. Only a small proportion of land is cultivated.

Much tin is produced and exported, antimony and rubber are other exports. The country is governed by a president elected for four years, and a cabinet, which is responsible to a parliament of two houses. All males who can read and write have the vote. There are a few lines of railway, one going to Antofagasta on the Pacific coast in Chile. The standard of currency is the boliviano. Having been part of Spain, Bolivia became independent in 1824, and took its name from Simon Bolivar. There have been several boundary disputes, one with Paraguay over the Gran Chaco boundary causing hostilities in 1932, and in 1933 war was declared. This continued with a brief armistice (1933) till agreement was finally reached in June, 1935. Bolivia belongs to the League of Nations.

Bollington Urban district and market town of Cheshire. It is 3 m. from Macclesfield on the L.N.E. Rly. Silk is manufactured. Pop. (1931) 5027.

Boll Worm Caterpillar which pierces the flower buds and pods or bolls of the cotton plant. It is the larva of the owl moth, *heliothis armigera*, and is a destructive American pest. In India cotton is attacked not by this but by the caterpillar of another genus, *earias*, which also supplies the Egyptian boll worm.

Bologna City of Italy. It stands on two little rivers, Reno and Savena, 50 m. by road from Milan, but 134 by rail. One of the oldest cities in Italy it is, in the older parts, full of churches and other buildings of interest. In the centre of the city are two

plazzas with two palaces built in the Middle Ages for civic purposes. The city has two leaning towers and several palaces of historic value. It has many manufactures and printing works and is an important railway junction.

Bologna University is one of the oldest in Europe. Founded in the 11th century, it was then famous as a school of law. Later it was a European centre for medical teaching. The main building dates from the 16th century and there is a valuable library. Pop. 246,280.

Bolometer Instrument for measuring radiant heat. Devised by the American physicist Langley in 1881, it absorbs the radiations on blackened metal strips and the change in temperature of these can be estimated from the change in electrical resistance to $_{100000}$° C.

Bolshevism Social and political movement that arose in Russia during the Great War. The word means great, and was given to those who formed the majority in the Communist Party. After 1917, under Lenin and Trotsky, its principles were carried out ruthlessly. They included nationalisation of the means of production, disestablishment of the church, and in general the abolition of the capitalist system. The organisation that replaced the old order proved extremely efficient, but economic laws were too strong for it in several directions.

The leaders set up an organisation for conducting propaganda in foreign countries; but, except for a short time in Hungary, the results were not very tangible. What is called the Five Year Plan was launched in 1928 with the object of rivalling the industrial and agricultural output of other nations. In 1929 a Bolshevik calendar was introduced. The system of parliamentary representation is now to be introduced into the Soviet autonomies within the framework of Bolshevism.

Bolsover Urban district of Derbyshire. It is 6 m. from Chesterfield on the L.M.S. and L.N.E. Rlys. The chief industry is coal mining. Its castle ruins are of interest. Pop. (1931) 11,811.

Bolt Head Cape of Devonshire. It is on the S. coast, just west of the estuary of the Salcombe river. A fine natural feature, over 400 ft. high, it was acquired in 1928 by the National Trust.

Bolton County borough and market town of Lancashire. It stands on the L.M.S. Rly., 196 m. from London and 11 from Manchester and is also served by motor omnibuses and canals. Bolton is a centre of the cotton industry; it has also chemical works and paper mills. Pop. (1931) 177,253.

Bolton Abbey Village of Yorkshire (W.R.). It is 22 miles from Leeds on the River Wharfe, on the L.M.S. Rly. There are ruins of a priory, the church of which is now the parish church. Here is a modern residence of the Duke of Devonshire.

Bolton-on-Dearne Urban district of Yorkshire (W.R.). It is a coal mining centre on the Dearne, 7 miles from Rotherham, and stands on the L.M.S. Rly. Pop. (1931) 14,242.

Bomb Hollow explosive vessel. That comprising a cast-iron ball filled with bursting charge, fired from a mortar, and exploded by fuse, is now called a shell. Bombs include explosive vessels actuated by trip-mechanism or clockwork and incendiary grenades. Hand-throwing bombs, such as the Mills, are time-grenades, and can be adapted for discharging from rifles. In 1918 bouncing bombs, by a supplementary charge in the head, rebounded and burst in the air. Bombs dropped by aircraft are either high-explosive or those with light bursting charges filled with lethal, irritant or incendiary substances, discharged as gas, liquid drops or fine dust.

Bombay Presidency of India. It extends along the west coast from Baluchistan to Mysore and covers 123,621 sq. m., in addition to 28,562 sq. m. occupied by native states. It includes the provinces of Bombay and Sind. The gulf of Cutch and the Bay of Cambay are the chief openings. Bombay and Karachi are the chief ports and Bombay, Ahmedabad, Poona and Karachi are the largest towns. The bulk of the people live by agriculture, but the cotton industry is important and irrigation schemes, including the Lloyd barrage at Sukkur, have brought much land into cultivation. The presidency is governed by a governor and two executive councils. There is also a legislative council, mostly of elected members. Pop. 21,000,000, of whom 4,000,000 are in the native states. The majority are Hindus.

Bombay City and seaport of India. It is at the south end of the island of Bombay, and connected with the mainland by bridges and a causeway. It is the terminus of the Gt. Indian Peninsula Rly. and is served by other lines. The harbour, which lies between the island and the mainland, is an excellent one and there are some miles of docks. Under the Port Trust great improvements have been made in recent years. Great quantities of cotton are shipped from here and there are steamer services to every part of the world.

The public buildings embrace a group for the use of the government round the old Fort and include the courts of justice. Nearby are the cathedral, the museum, and Elphinstone College. In the north is the native city, the Jama mosque and other features of interest The city has a large and rich Parsee element, who have here their towers of silence where they expose their dead. Pop. (1931), 1,161,383.

Bonaparte Surname of the family made famous by the great Napoleon. It was originally Italian and spelled Buonaparte, but in the 16th century Francesco Bonaparte settled in Corsica. His descendant, Carlo Bonaparte, a public official at Ajaccio, married a lady named Ramolino and had five sons. These were Napoleon; Joseph (1768-1844), for a short time king of Naples and then king of Spain; Lucien (1775-1840); Louis (1778-1846), king of Holland; and Jerome (1784-1860), king of Westphalia.

Napoleon's family became extinct when his only son died in 1832. Joseph left no sons. Lucien had a large family, and one of his sons, Louis Lucien, lived until 1891. Some of its branches sank into obscurity, but possibly members of it are still alive. Louis was the father of Napoleon III. and his male line became extinct when the Prince Imperial was killed in 1879. The male representatives of the Bonapartes are therefore the descendants of Jerome. In 1926, on the death of his elder brother, Jerome's grandson, Louis Napoleon, became the head of the family. The American Bonapartes are descended from Jerome's first marriage with Elizabeth Patterson of Baltimore.

Bonar Horatius. Scottish minister. Born in Edinburgh, Dec. 19, 1808, he

was educated there and in 1837 became a minister of the Church of Scotland at Kelso. In 1843 he followed Chalmers and became one of the founders of the Free Church. He remained in Kelso until 1866 and from then until his death he was minister of the Chalmers Memorial Church in Edinburgh. In 1883 he was moderator of the assembly. He died July 31, 1889.

Bonchurch Village of the Isle of Wight. About a mile from Ventnor, it stands beneath S. Boniface's Down and is a famous beauty spot. It has an interesting old church and farther up the hill is a new one with the tomb of A. C. Swinburne in the churchyard.

Bond Document by which a person agrees to pay a sum of money in a certain time. It must be signed and sealed, but it does not necessarily require valuable consideration. Public companies often raise money by means of mortgage bonds and Governments issue bonds as security for money borrowed. The British Government issued National War Bonds during the Great War. Gold bonds are bonds which must be repaid in gold or the value of gold. Some bonds are repaid by drawings, a certain number being paid off each year. In Great Britain bonds are liable to stamp duties.

Bondfield **Margaret Grace.** English politician. Born Mar. 17, 1873, in Somerset, she spent some years as a shop assistant. In 1898 she became assistant secretary to the shop assistants union and was soon a prominent trade unionist; also lecturing and writing for the Labour Party. In 1923 she was elected M.P. for Northampton. She lost her seat in 1924 but in 1926 was returned for Wallsend. In 1924 she was secretary to the Ministry of Labour and in 1929 was made Minister for Labour, being the first woman to sit in a British cabinet. In Aug., 1931 she resigned office and in Oct. lost her seat in Parliament.

Bond Street London street, famous as a shopping centre. It runs from Piccadilly to Oxford St. and is divided into Old Bond St. at the Piccadilly end and New Bond St. It is named after Sir John Bond, a member of the household of Queen Henrietta Maria.

Bone Hard substance forming the skeleton in nearly all vertebrate animals. It comprises one-third of organic matter and two-thirds of earthy salts, mostly lime phosphate. There are more than 200 bones in the human body. Cavities in tubular bones hold yellow marrow; in spongy bones, such as ribs and vertebrae, marrow is red. All except the smaller contain a network of tiny canals, with blood vessels, nerves and lymphatics.

BROKEN BONES. *Symptoms*—Inability to move, severe pain, swelling; in a compound fracture the bone is sticking through the skin.

Treatment—An amateur must interfere as little as possible. Place the limb in a position as near the normal as can be, protect the patient from exposure and shock (*q.v.*) and summon skilled assistance immediately.

Bone Implements appeared first in the Stone Age. Awls, eyed needles, harpoons, and engraved spear throwers were followed by combs, spoons and axe-handles. They still abound among primitive peoples.

Bone **Muirhead.** British artist. Born in Glasgow in 1876, he studied art there and soon began to draw for the press. In 1901 he settled in London where his etchings attracted attention. They were mainly scenes of commercial life and activity, but during the Great War he was equally successful in his etchings of the battlefields. He was an official artist on the western front and with the Fleet.

Bonheur **Rosa.** French artist. Born March 22, 1822, at Bordeaux, her baptismal name was Marie Rosalie. She studied art and soon won fame by her pictures of animals, which were specially popular in England. Perhaps the best known of them are "The Horse Fair" and "Returning to Pasture." She was the first woman officer of the Legion of Honour. She died May 26, 1899.

Bo'ness *See* BORROWSTOUNNESS.

Boniface English saint, called the apostle of the Germans. Born in Devon about 680, his name was Winfrith. He entered a monastery and became a priest in 710, after which he went to Germany as a missionary. There he did a great work in converting the heathen to Christianity. In 723 he was made a bishop and from 746-54 he was archbishop of Mainz. Boniface, as he called himself, was murdered June 5, 755. He was buried at Fulda, where he had founded an abbey. His festival is kept on June 5.

Boniface Name of nine popes. Boniface I. reigned 418-22; Boniface II. 530-32; Boniface III. in 606 and Boniface IV. 608-15. Boniface V. was pope from 619-25; Boniface VI. for only a few days in 896 and Boniface VII. was an antipope who died in 985. Boniface VIII, pope from 1294 to 1303, is noted for his insistence on the rights of the papacy throughout Europe. He ordered the clergy to pay no taxes without his consent, and this led to serious quarrels with Edward I. of England and Philip IV. of France. He died Oct. 4, 1303. Boniface IX. was pope from 1389 to 1404. He was set up in opposition to Clement VII. who was reigning at Avignon.

Bonn Town of Prussia. It stands on the Rhine, about 15 m. from Cologne. It is chiefly famous for its university, founded in 1818. The nucleus of this is the palace, once the residence of the electors of Cologne; it has also a library, observatory and laboratories and all modern accessories. Other buildings include the minster, with a great central tower, and the church of the Kreuzberg, a place of pilgrimage. There are some industries, chiefly in the suburbs across the Rhine. Pop. 90,250.

Bonner **Edmund.** English bishop. Born about 1500, he was educated at Oxford, and was ordained. He became chaplain to Wolsey, who sent him abroad on matters connected with the divorce of Catherine of Aragon and other public concerns. In 1538 he was made Bishop of Hereford and in 1539 Bishop of London. A stout opponent of the Reformation, he was in prison from 1549 to 1553. Mary restored him to his bishopric and during her reign he and his friends held the upper hand. Bonner refused to take the oath of supremacy required by Elizabeth and was in prison when he died, Sept. 5, 1569.

Bonnet Covering for the head. It is without a brim, thus being different from the hat. The word was first used for a cap worn by men. It is still used for the woollen caps until recently worn by men in Scotland and the caps called Glengarries worn by men of the Highland regiments.

A bonnet laird was a laird who wore one of the woollen bonnets. In revolutionary France the red bonnet, or bonnet rouge, was the emblem of the republicans. A **bonnet piece** is a coin issued in Scotland about 1530. It bears on it the king's head with a bonnet, not a crown.

Bonnie Dundee *See* DUNDEE, Viscount.

Bonus Word used for an addition to wages or salaries, or a payment to shareholders given as an act of grace. During the Great War, bonuses were paid to most workers to meet the increased cost of living; and in the civil and municipal services these payments were continued after the war. In the Civil Service the bonus varies according to the official figures of the cost of living. Bonuses to shareholders in companies may take the form of a payment in addition to the dividend, but more usually it is in the form of shares, sometimes given, but more frequently paid for at a price less than their market value. Insurance companies give bonuses to holders of life policies.

Booby Name applied to several species of small gannets (*Sula*). Fearless in man's presence, they breed prolifically on many southern islands, notably Booby Island off N. Queensland and S. Paul's Rocks off Brazil. They make slight nests or hollows on the cliffs. The commonest are the white-bellied, the blue-eyed and the red-footed.

Book Name now commonly applied to any literary work larger than a pamphlet. It may denote an organic whole in one or more volumes, one of the volumes, or one of the author's divisions, even when not separately bound, such as the nine books of the *History* of Herodotus. Some early printed books, such as the first printed Bible of 1455, were printed on folio sheets folded once, but quarto, folded twice, soon arrived, and octavo books of thrice-folded sheets were popularised in Venice by 1501. Wood-cut illustrations were introduced about 1461, and title-pages, headlines and pagination by 1470.

The invention of printing, and especially the improved machinery in recent years, coincident with the spread of education, made for an enormously increased output. The trades of publisher and bookseller, once united, became distinct, and each flourished. At the end of the 19th century mass production of books was introduced and cloth-bound books were sold in millions for 6d. and 7d. The British public prefers books in this form, but elsewhere in Europe, paper backed books are preferred.

In Great Britain about 14,000 books are published every year, but many are reprints or translations. Collections of books are called libraries, and their contents are protected by the law of copyright.

Bookselling is now a large and flourishing business, with its own trade organisations, trade papers, benevolent funds, etc. The selling of books, usually in sets, direct to the public on the hire purchase system is a separate branch. An associated industry is that of bookbinding.

Book collecting is a popular hobby, and enormous prices have been paid for certain old books, *e.g.*, first folios of Shakespeare. First editions of other writers, including some modern ones, also fetch high prices. The world's chief saleroom for books is Sotheby's in London. One of the finest collections outside the British Museum and other national libraries, is that possessed by J. Pierpont Morgan.

Book Keeping Making the entries in the books which record the financial transactions of a business house. They differ according to the nature of the business, but usually include cash-book, day book and ledgers. They are kept on the principle known as double entry, by which each transaction is entered twice, once as a credit and once as a debit. Thus a sale of lamps will be credited to the lamp department and debited to the customer. When the account is paid, the money will be credited to the customer and debited to the cash account. In this way the books should always balance. They are regularly audited by accountants. There is an Institute of Book-keepers at 133 Moorgate, London, E.C., and instruction in the subject is given in all colleges where business methods are taught.

Bookmaker Name given to a man through whom betting is done. Bookmakers are found on racecourses, including greyhound racing tracks, and also in their offices, where they call themselves turf accountants. By taking bets on the various horses in a race they make a book on that race; hence the name.

Before 1926 in Great Britain betting was illegal and bookmakers were liable to prosecution. In that year a licensing scheme was introduced, the licence costing £10 a year. When in 1929 the betting tax was abolished, a charge of £40 a year for each telephone was made, but this and the licence were abolished in 1930.

Book of the Dead Ancient Egyptian work. It is a collection of exorcisms, funerary texts and directions for the soul's journey through the underworld. Based upon a predynastic nucleus it grew by the Ptolemaic Age into a substantial work in at least 165 chapters. It was frequently inscribed on papyrus, sometimes with magnificent illustrations.

Book Plate Label placed inside a book cover to indicate ownership. Following on the practice of stamping armorial devices upon the outside cover, it appeared first in Germany, as a gift-plate to a monastery, about 1480; in France, which introduced the alternative name *ex-libris*, in 1529, and in England in 1574. Armorial emblems tended to pass into the pictorial.

Bookworm Term denoting the larval form of several species of small beetles (*anobium* and *ptinus*) which injure old books. They gnaw the bindings and riddle the leaves. Other wingless insects resembling neuroptera (*atropos*), which infest old, damp books, are preferably called book lice.

Boom Spar for stretching the foot of a sail. If there be more than one, that for the mainsail is the main-boom; that for the foresail, projecting beyond the bowsprit, is the jib-boom; and beyond that the flying-jib-boom. Should the mizzen or after-sail have one, it is a spanker boom.

Boomerang Hardwood missile, chiefly of the Australian aborigines. It is a hunting weapon, 2-3 ft. long,

slightly skewed in its own plane, making an aeroplane flight, and returning to the thrower. The war boomerang is non-returnable.

Booster Electrical device for supplying extra voltage when required to outgoing currents on long lines subject to variable loads. Reversible boosters enable the relative duty of dynamo and battery to be adjusted so as to give a constant load. Boosters are used also where continuous currents operate cars at great distances from the generating stations. Boosters are also used in broadcasting. Similar devices, attachable to a carrying axle, enable locomotive engines to start with running loads otherwise impossible, by utilising the adhesive weight on that axle.

Boot Instrument of torture. It was used to extort confessions from suspects or evidence from unwilling witnesses. In 17th-century Scotland it was a framework of iron, or wood and iron, strapped round the leg; wedges were driven by repeated mallet blows so as to crush the muscle and shin-bone. It was used under Charles II. and James II. on rebellious Covenanters. A milder form consisted in drawing a wet boot upon the leg and shrinking it by fire.

Booth William. Founder of the Salvation Army. Born in Nottingham, April 10, 1829, he became a local preacher, and was for a few years a Methodist minister. Soon, however, he became an evangelistic preacher, and in 1865 began work in the east end of London. There he founded an organisation which spread over England. It was called the Christian Mission, but in 1878, after Booth had organised his followers on military lines, it was named the Salvation Army. Booth became the first general, and remained its head until he died, Aug. 20, 1912. His success was due very largely to the help of his wife, Catherine Mumford (1829-90), whom he married in 1855.

Booth's eldest son, William Bramwell Booth, chief of staff from 1880, succeeded his father, but in 1928 was deposed. He died, June 16, 1929, the year in which he was made a Companion of Honour.

Boothia Peninsula of N. Canada. Called after Sir Felix Booth, who financed the expedition which discovered it, 1829-33, it lies on the W. of the Gulf of Boothia, adjoining Baffin Land. It has an area of 13,000 sq. m.

Bootle County borough of Lancashire. It stands on the Mersey, close to Liverpool, which lies to the south, and is 204 m. from London. It is served by the L.M.S. Rly. One of its chief industries is the smelting of tin and other metals, and there are engineering works. The docks, which are part of the system controlled by the Mersey Docks and Harbour Board, are very extensive. Pop. (1931) 76,799.

Bootlegger Man who sells intoxicating liquor in countries where the sale is prohibited. It came from the practice adopted by traders in remote districts of carrying bottles of liquor in the tops or legs of their boots. After the introduction of prohibition in 1919, bootlegging flourished in the United States on an enormous scale.

Boracic (Boric) Acid Hydrated sesquioxide of boron (H_3BO_3). It is a whitish, crystalline solid, with sweetish alkaline taste. Occurring in hot springs and lagoons in volcanic regions, such as the Lipari Islands, the Tuscan Maremma, and the Andean region of Atacama, it is largely made artificially from other boracic minerals. It is widely used as an antiseptic.

Borah William Edgar. American politician. Born June 29, 1865, he was sent to the Senate in 1906 as representative of Illinois. There he became prominent as the leading advocate of the policy of keeping clear of all European alliances, opposing any connection with the League of Nations and the World Court. He was equally insistent that the debts owing to the United States by European nations should be paid in full.

Borax Hydrated sodium biborate ($Na_2B_4O_7.10H_2O$). It is a whitish crystalline salt, formerly derived from Tibet in the crude form of tincal. Nowadays it comes chiefly from Californian borax lakes, Canada and Peru, or prepared from the boracic acid of Tuscan lagoons. It is used as a flux in soldering, in glass and enamel manufacture and as an antiseptic food preservative. For mouth irritation it is a useful gargle.

Bordeaux City and seaport of France. It is situated on the Garonne, 360 m. from Paris, and owes its importance to its position. It is about 60 m. from the sea (the Bay of Biscay), and the Canal du Midi connects it with the Mediterranean. The cathedral is a fine Gothic pile. Parts of the old fortifications still stand, and the towers in the principal square serve as lighthouses. There are a university and an observatory; also remains of an amphitheatre. Bordeaux possesses a fine natural harbour with modern equipment. Its chief industry is the export of wine; apart from this the port does a very large trade, and the city has also some manufactures and shipbuilding yards. Pop. 262,990.

The name Bordeaux is given to wines grown near the city. They are both white and red, and include Sauterne and Graves.

Borden Village of Kent. It is 2 m. from Sittingbourne. Here is a farm institute, opened in 1930, and controlled by the Kent County Council.

Borden Mary. Anglo-American novelist. Daughter of William Borden of Chicago, she was married in 1918 to Brig.-Gen. Edward Louis Spears. Her first book, *Jane, Our Stranger*, gained immediate popularity, and her later works established her name as a writer. They include *The Romantic Woman, Four O'Clock, Jericho Sands, The Forbidden Zone, Flamingo, A Woman with White Eyes*, in 1933, *Mary of Nazareth*, and in 1934 *King of the Jews*.

Borden Sir Robert Laird. Canadian politician. Born in Nova Scotia, June 26, 1854, he became a lawyer at Halifax. In 1896 he entered the Dominion House of Commons as M.P. for Halifax, and in 1901 was chosen leader of the Conservative Party. In 1911 he became premier, and in 1917 formed a coalition ministry to carry on the war. Knighted in 1914, he represented Canada at the peace conference in Paris in 1919 and on the Council of the League of Nations, and was chairman of the Sixth Committee of the Assembly, 1930.

Borders Name given to any district between two countries, but especially to that between England and Scotland. In England, Northumberland, Cumberland and sometimes Durham were the border counties; in Scotland they were the

shires of Berwick, Dumfries and Roxburgh. For many years the borders were a scene of almost continuous warfare. On the English side they were divided into three marches each under a warden, for purposes of defence, and the Scots had a like organisation.

The literature of border warfare is virile and attractive. Much of it is in Scott's *Minstrelsy of the Scottish Border* and J. M. Wilson's *Tales of the Borders*. The Welsh borders were referred to usually as the marches.

The **Border Regiment** consists of the old 34th and 55th of the line. Its depôt is at Carlisle.

Bordighera Pleasure resort on the Riviera. It is in Italy, 6 m. from San Remo, with which it is connected by railway. The old town is on a hill and the newer town, which is attractively laid out, is below. It is famous for its palaces. For over a century before the French Revolution, Bordighera was the capital of a tiny republic. Pop. 4230.

Bordon Military camp in Hampshire. It is 47 m. from London, on the S. Rly. In the Aldershot area, it is chiefly an artillery camp.

Bordone Paris. Italian painter. Born in 1500, he was a pupil of Titian. His great painting is "The Fisherman presenting the Ring of S. Mark to the Doge," in the Academy at Venice. There are two works of his in the National Gallery, London. He died in Venice in 1571.

Bore Cylindrical cavity in the barrel of a firearm. The weapon may be smooth-bore, choke-bore, when the cavity is slightly constricted near the muzzle, or rifled, when spiral grooves are formed internally with a revolving cutting tool. In small-arms the pitch may vary one turn in 17 in. to one in 7 ft.; in ordnance it is greater. The term also denotes the internal diameter of a gun-barrel. Sporting guns are usually 12-bore, 16-bore or 20-bore. *See* CALIBRE.

Bore Tidal wave of great height and force which appears in certain rivers at the period of high, or spring tides. Rushing from the estuary along the gradually narrowing channel of the river, the impelling force resolves the water into a huge wall or wave which carries everything before it.

The bore, or aegre, appears in the Severn, the Trent and other English rivers, and is also periodically observed in the Solway Firth, the Bay of Fundy, the Amazon and many rivers in the East.

Boreas Name for the north wind. In Greek mythology he personified the north wind, the coldest wind in Greece. He was the brother of Hesperus, Notus and Zephyrus, and had his habitation with them in a cave on Mount Haemus in Thrace.

Borecole Open-leaved variety of cabbage, also called winter greens. Its lower leaves are stripped for use in Scotch broth. The leaves are wrinkled and curled, and may be tall or dwarf. Cottager's kale is a hybrid with brussels sprouts, nearly 4 ft. high. There are also purple and variegated borecoles.

Borghese Name of a famous Italian family. Its early members lived in Siena, but having become wealthy, some of them settled in Rome. One, Camillo, was chosen Pope as Paul V. in 1605. A later Camillo married Pauline, a sister of Napoleon Bonaparte. The family still exists and holds the title of prince given to it by Paul V.

The Borghese Palace, built between 1590 and 1607 is one of the most magnificent in Rome, and contains valuable works of art. The family's summer residence, the Villa Borghese, stands in beautiful grounds to the north of Rome. It, too, contains some wonderful treasures. Since 1902 it has been the property of the State.

Borgia Famous Italian family. Originally Spanish, the name was spelled Borja. Alonso de Borja, Bishop of Valencia, was chosen pope as Calixtus III. in 1455, and Rome became the headquarters of the family. The pope's sister was the mother of Rodrigo Borgia who became Pope Alexander VI. His son and daughter, Cesare and Lucrezia, were the most noted members of the family.

Borgia Cesare. Italian soldier. The son of Rodrigo Borgia, he was born in 1476. In 1492 his father was elected pope as Alexander VI., and Cesare was made an archbishop and a cardinal. He was allowed, however, to marry, and his life throughout was that of a layman. As captain general of the papal forces, he showed great ability in bringing the States of the Church into submission and ability of another kind in ruling them, but his refined cruelties and his utter lack of pity or principle have made his name a synonym for evil. Those who opposed him were murdered without remorse or scruple. He received many honours, including at least two dukedoms, and collected together vast wealth. In 1503 his father died and Cesare passed the rest of his days in struggling against the many enemies the Borgias had made. At one time he was a prisoner, and for some years he was in Spain, where he was killed in battle, March 12, 1507.

His sister Lucrezia (1480-1519), who, after two previous marriages became Duchess of Ferrara, left behind a reputation for learning and beauty.

Borgia Francesco. General of the Jesuits. Born in Spain, Oct. 10, 1510, he was a son of the Duke of Gandia, whose title he inherited in 1543, and a member of the noted family of Borgia. For a time he lived at the Spanish Court, but after the death of his wife in 1546 he joined the Jesuits. He worked for the order in Spain and Portugal, and in 1565 was appointed general. He died Sept. 30, 1572, and was canonised in 1671. His feast is kept on Nov. 10.

Boris King of Bulgaria. A son of King Ferdinand, he was born at Sofia, Jan. 30, 1894. When his father abdicated in Oct. 1918, he succeeded to the throne, and after he came of age proved himself a good ruler. In Oct., 1930, he married Giovanna, a daughter of the King of Italy.

Borneo Second largest island in the Malay archipelago. Situated between Cochin China, and W. Australia, it is 850 m. long and 600 m. broad. The area is 290,000 sq. m., almost bisected by the equator. The main mountain system parallels the N.W. coast, with Kinabalu, 13,500 ft., in the northernmost corner. The population is chiefly Dyak, Malay, Negrito, Bugi and Chinese. It produces rubber, tobacco and jungle crops. Besides extensive oilfields it yields coal, diamonds and gold. Two-thirds of the island, 213,000 sq. m., are included in the Netherlands East Indies. The remainder

is British, comprising British North Borneo, Brunei and Sarawak. Pop., British, 890,000; Dutch, 1,700,000.

Boron Non-metallic element. Its symbol is B., atomic weight 15. It does not occur free in nature. When fused boracic acid is heated with sodium, boron appears as a chestnut-coloured amorphous powder, slightly soluble in water. If this be heated with aluminium it separates out in hard, colourless, octahedral crystals, of specific gravity 2.68.

Borotra **Jean.** French tennis player. Born in 1898, Borotra, a very versatile tennis player, noted for the speed of his game, first came into prominence in 1921. He has twice won the men's singles at Wimbledon, and has won many Hard and Covered Court championships.

Borough Originally a fortified place, but now a town. The Scottish form is burgh. In the Middle Ages a borough was a place that had received a charter from a king or lord, allowing its inhabitants certain privileges, one being the right or duty of sending members to Parliament. These privileges varied very much, and until 1835 there was little uniformity in the English boroughs. In 1835 an Act of Parliament reformed their government. Each has a mayor and elected council.

To-day there are in England and Wales over 300 boroughs, divided into several classes. A **county borough**, which must have at least 50,000 people, has the same privileges as a county, and is independent of the county in which it is situated. In future no place will be made a county borough unless it has at least 75,000 inhabitants. A **non-county borough** is for certain purposes part of a county. A **metropolitan borough** is one of the 28 boroughs in the County of London. A **parliamentary borough** is one that sends one or more members to Parliament.

Boroughbridge Market town of Yorkshire (W.R.). It is on the Ure, 17 m. from York and 209 from London, on the L.N.E. Rly. Near are the Devil's Arrows, three stones nearly 20 ft. high. Pop. (1931), 807.

Borromeo **Carlo.** Italian Saint. Born Oct. 2, 1538, he was a nephew of Pope Pius IV. In 1564 he was made Archbishop of Milan, where he died Nov. 3, 1584. He was canonised in 1610, and his feast day is Nov. 4. A great reformer, Borromeo was noted for his generosity to the poor. His cousin, Federigo Borromeo (1564-1631), was also Archbishop of Milan and a cardinal.

The **Borromean Islands** in Lake Maggiore are so named because they were long the property of the Borromeo family, who had a beautiful residence on Isola Bella.

Borrow **George Henry.** English writer. Born near East Dereham, Norfolk, July 5, 1803, son of Thomas Borrow, a soldier, his boyhood was passed in moving from place to place. For a time he was at school in Edinburgh, but he is most closely associated with Norwich, where he was articled to a solicitor. In 1824 he went to London, and for some years interspersed hack work for publishers with travels through the country, during which he associated much with gypsies. In 1832 he became an agent for the Bible Society, and spent some years in Russia and Spain. Returning to England in 1840, he passed the rest of his life at Oulton in Suffolk or in London. He died July 26, 1881.

Borrow's chief writings are *The Bible in Spain*, dealing with his adventures in that country; *Lavengro* and *The Romany Rye*; also more or less autobiographical, and *Wild Wales*. He lives by the vividness of his descriptions and the charm of his unique personality.

Borrowstounness Burgh and seaport of Linlithgowshire, known usually as Bo'ness. It stands on the Firth of Forth, 24 m. from Edinburgh, on the L.N.E. Rly. It has a good harbour, and does a coasting trade. There are some manufactures, and coal mines are near. Pop. (1931) 10,095.

Borstal Village of Kent. It is near Chatham, and gives its name to a system by which offenders, between the ages of 16 and 21, instead of being sent to prison, go to a **Borstal Institution**, where they are trained to earn an honest living. The system was introduced in 1902, and there is a Borstal Association to further it, but it only became possible in its present form after the passing of the Prevention of Crimes Act, 1908. Males are sent to Borstal and females to Aylesbury, where they are looked after by the Aylesbury Association.

Borzoi Russian wolfhound. It is used for hunting wolves. It ranks as a long-haired greyhound, slower but more powerful than the English type, with longish jaws, narrow but deep chest, and silky, white coat.

Boscastle Village of Cornwall. It is 6 m. from Camelford, and has a small harbour. The magnificent scenery in the neighbourhood has made it a centre for holiday makers.

Boscawen **Edward.** English sailor. A younger son of the first Viscount Falmouth, he was born Aug. 19, 1711, and entered the navy in 1726. He won a reputation in several encounters with the French, including the one off Cape Finisterre in May, 1747, when he was wounded. In 1747 he was made commander of the fleet in the E. Indies and later of that in the Mediterranean. His crowning feat was the destruction of a French fleet in Lagos Bay on Aug. 18, 1759. When he died, Jan. 10, 1761, he was holding the post of general of marines. Boscawen was called "Old Dreadnought."

Boscobel Village of Shropshire. It is 6 m. from Shifnal. In its manor house, the seat of the Penderels, which still stands, Charles II. took refuge after his defeat at Worcester, and here he found shelter in an oak tree.

Boscombe District of Bournemouth. To the east of the town, and on the S. Rly, it is noted for its beautiful chine and woods. *See* BOURNEMOUTH.

Bose **Sir Jagadis Chandra.** Indian physicist. Born Nov. 30, 1858, he was educated at Calcutta and Cambridge, and in 1885 became professor of physics in Calcutta. In 1896 he devised a coherer of the type since developed in wireless communication, together with delicate instruments for generating and studying electrical waves. After laborious researches with his crescograph, which multiplies the incidents of plant growth ten million times, he demonstrated the essential identity

of the vital mechanism of animals and plants. Knighted in 1917, he became F.R.S. 1920.

Bosnia District of Europe, now part of Yugoslavia. The Save and the Drina form its northern and eastern boundaries, and it covers 16,200 sq. m. Serajevo is the capital. In 1463 it was conquered by the Turks, and it remained under Turkish rule until 1878 when, with Herzegovina, it was annexed by Austria-Hungary. In 1919 it was given to Yugoslavia.

Bosphorus Strait connecting the Black Sea with the Sea of Marmara, also spelled Bosporus, meaning ox ford. The channel is 18 m. long, ranging from 800 yds. to 2¾ m. broad. Treaties in 1841 and 1878 guaranteed to Turkey the guardianship of the strait, which is now controlled by a League of Nations commission.

Boss Projecting mass or block. In architecture it is used as an ornament, for instance at the intersection of the ribs in Gothic vaulting. It is also used as a projecting ornament on a shield or buckler. In mechanics there are several kinds of boss, but all with the same idea, something that stands out. The enlarged part of the shaft on which a wheel is keyed is called a boss.

Bossuet **Jacques Bénigne.** French ecclesiastic and orator. Born at Dijon, the son of a lawyer, Sept. 27, 1627, he was ordained priest in 1652, and after spending some years at Metz went in 1660 to Paris, where he made a great reputation as a preacher, his funeral orations being especially famous. He was made tutor to the dauphin, son of Louis XIV., and was Bishop of Meaux from 1681 until his death, April 12, 1704. Bossuet ranks as one of the great preachers of the world. In addition to his published sermons there exist his *Discourse upon Universal History*, written for his royal pupil, and other writings.

Boston Borough, seaport and market town of Lincolnshire. Near the mouth of the Witham it is 107 m. from London, on the L.N.E. Rly. The chief buildings are the large church of S. Botolph, with a high tower known as Boston stump, and the guildhall. In 1931-32 the tower was restored at the expense of American friends. In the 13th century Boston was a flourishing port, but gradually the river was barred by silt. In the 19th century a new channel to the Wash was cut and new docks were made. The port has now a coasting trade and engineering and other works. Pop. (1931) 16,597.

Boston City and seaport of the United States; the capital of Massachusetts. It stands on an opening of Massachusetts Bay. There are docks and many miles of quays. Boston now covers nearly 45 sq. m., and includes Dorchester, Charleston and other districts, once independent areas. Many buildings are built on land reclaimed from the water. There is an underground electric railway.

A great educational centre, it has two universities, and in the city are some of the buildings of Harvard. The headquarters of several learned societies, it is also a musical and literary centre.

Boston is one of the largest ports in the country, and from it steamers go to nearly every part of the world. It is also one of the bases of the U.S.A. navy which has large docks, workshops, storehouses and repairing yards here. Pop. (1930), 781,188.

Boswell **James.** Scottish writer. Born in Edinburgh, Oct. 29, 1740, he was the eldest son of Lord Auchinleck, a Scottish judge. He himself studied law and travelled a good deal. In 1763 he made the acquaintance of Samuel Johnson, and henceforward his main occupation was recording the sayings of that great man, whom he visited on his frequent journeys to London, and with whom he made a famous tour in Scotland. On his father's death he became Laird of Auchinleck in Ayrshire and he died, a drunkard, May 19, 1795. A man apparently of no great ability, but with an insatiable interest in men and things, Boswell wrote in his *Life of Samuel Johnson* a supreme biography. He also wrote *Journal of a Tour to the Hebrides* and *An Account of Corsica*.

Bosworth Short name for the market town of Leicestershire known as Market Bosworth. The Battle of Bosworth was fought near here on Aug. 22, 1485, between Richard III. and Henry, Earl of Richmond. Lord Stanley led his men to the support of Henry, and Richard was defeated and slain, Henry becoming king as Henry VII. Dr. Johnson was usher at the grammar school.

Botanic Garden Garden in which plants are grown for purposes of study and research. One was opened at Oxford in 1621, and the Society of Apothecaries started one at Chelsea later in the century. Botanic gardens were established in Edinburgh and Dublin, and by the authorities of Cambridge and Trinity College, Dublin. They already existed in Paris and elsewhere.

The Royal Botanic Gardens at Kew, which began as the private garden of the royal family, are world famous for their collection of plants; till 1932 the Royal Botanic Society of London had a garden in Regent's Park, founded in 1839.

Botany Study of plant life and one of the two subdivisions of the science of biology. Plant morphology deals with plant structures, physiology with the functions and living activities, ecology or plant geography with a plant's relations to its environment, while the study of fossil plants forms a section of palaeontology.

Early botanical science was concerned chiefly with the classification of plants and the study of external morphology, but with the advent of the compound microscope the minute structure of cells and tissues became revealed, and the study of microscopic plant life was rendered possible. Gradually the physiology of plants grew in importance owing to the increasing elaboration of technique and the aid of the sister sciences, chemistry and physics. In the classification of plants (systematic botany) the earliest attempts were very artificial. Linnaeus then introduced a more natural scheme which in turn has become superseded by systems based upon more recent research. The past history of plants has emerged since about 1880 from a chaotic state into a defined science of palaeobotany, and the relation of plants to economic uses forms the important subject of economic botany.

Botany Bay Inlet on the coast of New South Wales. First sighted by James Cook in 1770; Arthur Phillip went there in 1787-8 to found a penal colony but proceeded 13 m. farther north to

Port Jackson (Sydney Harbour). It is now a seaside resort.

Bot-fly Family of two-winged insects resembling large-headed house-flies (oestridae). The maggots or bots of some species infest farm-stock. The horse-bot-fly lays eggs on the skin which are licked off and become bots in the intestines. The ox-bot forms tumour-like warbles in the skin. The sheep bot-fly lays eggs in the nostrils.

Botha Louis. Boer statesman and soldier. Born in Natal, Sept. 27, 1862, the son of a farmer, he settled in the Transvaal and served against the Zulus. In 1899, being then a member of the legislature, he took up arms against the British, and was in command of the troops that defended the Tugela. Later he became commander-in-chief of the Boers, and remained so until peace was made.

A prominent figure in the Transvaal, Botha accepted British sovereignty and in 1907 became first premier of the Transvaal and a privy councillor. In 1910 he became the first premier of the new Union of S. Africa, a position he held until his death. His loyalty to Britain was of the uttermost value when war broke out in 1914, and a strong section of the Boers revolted. He crushed this rebellion and then led the S. African forces into German S.-W. Africa, which was conquered. He signed the treaty of peace in Paris and died in Pretoria, Aug. 27, 1919.

Bothnia Gulf of. Northern part of the Baltic Sea. It is shallow and difficult of navigation, due to the deposit of the many rivers which flow into it. The name comes from the old country of Bothnia, now swallowed up partly by Sweden, partly by Finland.

Bothwell Earl of. Scottish title. It dates from 1489, and in 1559 came to James Hepburn as the 4th earl. Born in 1536, in 1566 he married a member of the Gordon family, but he had already made in Paris the acquaintance of Mary, Queen of Scots, and the fortunes of the two were closely linked during the exciting years of 1566-67. After the murder of Rizzio the two were constantly together. Bothwell had a large share in the murder of Darnley, after which he carried the queen to Dunbar, divorced his wife and in May, having just been made Duke of Orkney, married Mary. The defeat at Carberry Hill put an end to the association. Bothwell sailed away to Norway and remained a prisoner, chiefly in Denmark, until his death, April 14, 1578.

There is a Lanarkshire colliery centre of this name, where the Battle of Bothwell Brig was fought in 1679 and where, on the banks of the Clyde, are the ruins of Bothwell Castle.

Botley Hill Hill of Surrey. It is near Tatsfield, close to the main road from Croydon to Westerham, and is 850 ft. high, being, next to Leith Hill, the highest point in the county. In 1929 the B.B.C. decided to erect a receiving and research station here.

Botolph English saint. Little is known of his life beyond the fact that he became a monk and founded a monastery somewhere in England. His festival is kept on June 17 in England, and on June 25 in Scotland.

Bo Tree Sacred fig tree or pipal (*ficus religiosa*). One at Buddh Gaya, 91 m. south of Patna, Bengal, is that beneath whose shade Sakyamuni became Buddha, "the enlightened." A branch taken in the 3rd century B.C. to Anuradhapura, Ceylon, still stands.

Botticelli Sandro. Italian painter. Born in Florence in 1444, he was a son of a tanner, Mariano di Vanni dei Filipepi. He worked in the studio of Fra Filippo Lippi and soon showed signs of extraordinary gifts. The result was a series of paintings which rank among the first in the world. Mainly in Florence, they include "The Adoration of the Magi"; "The Birth of Venus"; "Primavera" and "The Virgin with the Pomegranate." There are several in the National Gallery, London, Munich and Milan. Botticelli did some frescoes for the Sistine Chapel and some illustrations for Dante's poems. He died May 17, 1510.

Bottomley Horatio William. English journalist. Born March 23, 1860, after some business experiences he became a journalist and founded *The Financial Times*. Later he established *John Bull*, which, under his direction, had an enormous circulation. He was the defendant in many libel actions, usually conducting his own defence, and was a popular speaker and writer during the war period. From 1906-12 and again 1918-22, he was M.P. for S. Hackney, being a Liberal, but with independent tendencies. In May 1922, he was sentenced to penal servitude for fraud. He was released in 1927, and died in 1933.

Bottomry Legal term used in shipping. A bottomry bond is a bond given for money borrowed. The money is borrowed on the security of the ship and perhaps its cargo, so if the ship is lost the lender cannot recover it from the borrower. He usually covers this risk by insurance. Bottomry bonds must be stamped, the cost of the stamp varying with the amount of the bond.

Botulism Disease caused by eating sausages and preserved foods in which there is a poison-producing germ called the *bacillus botulinus*. Botulism causes severe nervous trouble and bodily weakness, frequently leading to a rapid death. Botulus is the Latin for sausage.

Bougainville Louis Antoine. French explorer. Born in Paris, Nov. 11, 1729, he became a soldier and served in Canada and Germany. In 1763 he was sent to found a colony on the Falkland Islands, and his voyage round the world made him famous, as it was the first made by a Frenchman. He wrote an account of it which has been translated into English. He died Aug. 31, 1811.

Bougainville, the largest of the Solomon Islands, was named after him, as was a strait in that region.

Boughton Village of Northamptonshire. It is 2 m. from Kettering, Boughton Park, a seat of the Duke of Buccleuch, was built by a duke of Montagu and stands in a large park. The gardens are notable. Another Boughton is 3 m. from Northampton.

Boughton George Henry. English artist. Born in Norfolk, Nov. 4, 1833, he passed his youth in New York. He studied art in Paris and about 1863 his pictures became known in London, where he had settled. In 1879 he was made A.R.A. and in 1898 R.A. He died Jan. 19, 1905.

Boughton's paintings are mainly subject pictures such as "The Return of the Mayflower" and those dealing with country life in Holland, New England and Brittany. He is represented in the Tate Gallery.

Boulanger **Georges Ernest Jean Marie.** French soldier. Born at Rennes, April 29, 1835, he entered the army and fought against the Germans in 1870. In 1884 he was made commander of the forces in Tunis and in 1886 minister of war. His fiery speeches made him the idol of the mob and he soon began to think of making himself a dictator. No longer Minister for War, he was sent to command an army corps away from Paris, but the mob called for him in a song that was on all lips. The government dismissed him from his command for disobedience, but he was elected to the Chamber of Deputies. For about a year he was in the centre of the stage, but then his popularity suddenly disappeared. To avoid arrest he fled from the country and was convicted of treason in his absence. He committed suicide in Brussels, Sept. 30, 1891.

Boulder Town of Western Australia. It is 350 m. from Perth, just outside Kalgoorlie, which is its railway station. Around are the goldfields and mining is the main industry. Pop. (1931), 5913.

Boulogne City and seaport of France. It is on the English Channel, 157 m. from Paris. The old town is on a hill and in it are the Cathedral of Notre Dame, the castle, and the Hotel de Ville. It still possesses its walls and gates. The new town has a fine sea front, a casino and other attractions. Boulogne has a good harbour and there is a regular service of steamers between it and Folkestone and other ports. It is also a fishing centre. During the Great War Boulogne was an important British base. Pop. 51,854.

Boult **Adrian Cedric.** English musician. Born at Chester, April 8, 1889, he was educated at Westminster School and Christ Church, Oxford. Afterwards he studied music at Leipzig and after the World War became known as a conductor, not only in London and Liverpool, but also in New York, Vienna, and elsewhere abroad. From 1924-30 he was in Birmingham as director of the city orchestra and in 1930 he became musical director to the B.B.C.

Boulton **Matthew.** English manufacturer. Born in Birmingham, Sept. 3, 1728, he joined his father in the business of manufacturing metal goods. In 1762 he opened larger works at Soho, then outside the city. There he made money and became associated with James Watt. He lent money to Watt and it was owing to his help that the steam engine was successful. The two entered into partnership in 1775. Later, Boulton set up a plant for manufacturing coins for foreign countries. He retired in 1800 and died Aug. 18, 1809.

Bounty Reward or gift, especially anything given as an act of generosity. The king's bounty is a gift of £3 made to a mother of triplets and the royal bounty is exercised in other ways. Bounties, usually called gratuities, are given at times to soldiers, sailors and airmen. At one time a man was given a bounty on enlisting.

In a commercial sense a bounty is a premium offered to producers of certain commodities to encourage them to produce. In England there were bounties on corn until 1814 and since the Great War there has been a bounty on sugar beet. The system has been adopted by many civilised countries, including Canada and Australia.

Bounty **Mutiny of the.** On April 28, 1789, owing to the harsh and tyrannical conduct of their commander (Lieut. Wm. Bligh), the crew of H.M.S. *Bounty* mutinied when a few days out from Tahiti. Bligh and the loyal members of the ship's company were turned adrift in the launch, but succeeded in reaching Batavia.

The mutineers put back into Tahiti, where most of them settled. Nine, however, sailed for Pitcairn Island, accompanied by some native women. Next year, Captain Edwards of H.M.S. *Pandora* captured twelve of the mutineers at Tahiti and hanged three of them. The fate of those who sailed for Pitcairn Island remained unknown until 1808, when an American vessel touching there found the island inhabited by a half-caste community, the children of the *Bounty* mutineers and, their native wives, ruled by John Adams, the last surviving British sailor. Adams lived until 1829. Pitcairn Island is still inhabited by descendants of the *Bounty* mutineers.

Bourdaloue **Louis.** French preacher. Born at Bourges, Aug. 20, 1632, he entered, in 1647, the Society of Jesus. He was appointed professor in their college at Bourges, but, although a fine scholar, his reputation was made as a preacher. He went to Paris in 1669 and succeeded Bossuet (*q.v.*) as the foremost pulpit orator of the age. In 1686, after the revocation of the edict of Nantes, he was sent to Languedoc to preach to the Huguenots. He died May 13, 1704.

Bourbon European family that gave kings to France and Spain. The name is taken from Bourbon l'Archambault not far from Vichy in the centre of France, of which place the family were lords and counts from the 10th century. These lands came by marriage to a son of S. Louis (Louis IX.), and his son was made Duke of Bourbon. Antony, a later duke, was the father of Henry who, in 1589, became the first Bourbon king of France. He and his descendants ruled until 1789 and again from 1814 to 1848. From 1830 to 1848 the king belonged to the Orleans branch of the Bourbons. The Bourbons were also kings of Spain from 1700 to 1930.

Bourgeois Name given, usually in contempt, to the middle classes, especially those in retail trade. A French word, it meant at first simply an inhabitant of a bourg, later a disparaging meaning was given to it, this being popularised by Molière's *Bourgeois Gentilhomme*. Bourgeois is also the name of a size of printing type.

Bourgeois **Leon Victor Auguste.** French politician. Born, May 21, 1851, he entered the public service in 1877 and in 1887 became prefect of police. In 1888 he was elected to the Chamber of Deputies as a radical and he was in several cabinets between 1890 and 1893. In 1895 he was for a short time premier, and in 1898 was again a cabinet minister. He was President of the Chamber and, having been made a senator in 1905, became president of that body. In 1906 he was Minister for Foreign Affairs; he was in the cabinet 1912-14 and during the War served under Briand. Having represented France at the Hague Conference in 1899 he became a permanent member of the tribunal there in

1903. One of the founders of the League of Nations, Bourgeois represented France both on the council and the assembly. In 1920 he was given the Nobel peace prize and he died Sept. 29, 1925.

Bourges City of France. It is 44 m. from Paris where the Rivers Auron and Yèvre meet. The city's glory is the magnificent Gothic cathedral, which contains some wonderful stained glass. There are remains of the old walls. Bourges was a Roman settlement and later the chief town of the Province of Berri. Its industries include engineering and munition making and it is also an agricultural centre. Pop. 45,067.

Bourget Lake of France. Near Aix les Bains, it is 11 m. long and about 2 broad and, with the mountains in the background, it is famed for its beauty. Its waters are carried to the Rhône.

Bourget, Le Village of France, really a suburb of Paris. It is 6 m. to the N.E. of the city, and the site of the aerodrome at which travellers to and from Paris alight and depart.

Bourne Urban district and market town of Lincolnshire. It is 10 m. from Spalding and 95 from London and is served by the L.N.E. and L.M.S. Rlys. The Old Red Hall has associations with the Gunpowder Plot. There is an agricultural trade. Pop. (1931) 4889.

Bourne **Francis.** English cardinal. Born in London, March 23, 1861, he was educated for the church at Ushaw and abroad. Ordained in 1884, he worked in the London area for some years and in 1889 he became rector of the diocesan seminary at Southwark. In 1897 he was chosen bishop of Southwark and in 1903 he became archbishop of Westminster. He was made a cardinal in 1911. *Occasional Sermons* appeared in 1930. He died in Jan., 1935.

Bournemouth County borough and watering place of Hampshire. It stands on a little river, the Bourne, 103¼ m. from London on the S. Rly. A combination of attractions, climate, sands, scenery and pine woods, have made it one of the most popular watering places in England.

Bournemouth is famous for its gardens. The buildings, all modern, include the winter gardens with a pavilion opened in 1929, the art gallery presented by Sir M. Russell-Cotes and the Municipal College. There are a broadcasting station, an aerodrome outside the borough, two piers and several golf links. Pop. (1931) 116,780.

Bourneville Model village near Birmingham. It was founded in 1895 for the employees of Cadbury Bros., whose extensive cocoa and chocolate works are here. It contains about 1000 houses built in a garden city with ample facilities for recreation. It is owned by a trust, and its affairs are managed by a council.

Bourse French word for a stock exchange. The Paris Bourse is a fine building erected early in the 19th century. It is divided into the parquet for official members and the coulisse for unofficial ones. The word (Lat. *bursa*) originally meant a purse.

Bouvines Village of France. Not far from Lille it was formerly in Flanders and is famous for the battle fought here July 27, 1214, when the French under Philip Augustus defeated the forces of John of England and the Emperor Otto IV.

Bovey Tracey Village of Devon. It is 6 m. from Moreton Hampstead on the G.W. Rly., and stands amid beautiful scenery on the edge of Dartmoor. The church, dedicated to S. Thomas á Becket, was built by one of his murderers, William de Tracey. Pottery is made here as a suitable clay is found in the **Bovey Tracey beds.** These are geological formations in the valley of the Teign which contain sand, clay and lignite.

Bow Suburb of London. To the east of the city, it is in the borough of Poplar. It is named because at one time a bowed bridge crossed the river here, and is mentioned by Chaucer as Stratford-atte-Bowe. A famous decorated earthenware was produced here in the 18th century.

Bow Church, London, is in Cheapside, and is in full the Church of S. Mary-le-Bow. It was built by Wren and possesses famous bells.

Bowdler **Thomas.** English author. Born near Bath, July 11, 1754, he was educated at Scottish universities and became a doctor. He practised in London, but is known for an edition of Shakespeare which he prepared. Called *The Family Shakespeare*, this appeared in 1818, all phrases which might be considered coarse or indecent having been removed. Bowdler also issued an expurgated edition of Gibbon's *Decline and Fall*, and his method gave rise to the verb " to bowdlerise," meaning to alter. He died Feb. 24, 1825.

Bowel An animal's intestines. In man it consists of the small and large intestine. The small one is about 20 feet long and the large one only about 5 feet long but much wider. It is also called the colon and is subject to a severe inflammatory complaint called colitis. The failure of the bowel to function is called constipation. The bowels serve to complete the digestion of food and to allow of its absorption into the blood-stream. The useless food remains are gradually moved onwards, remaining in a liquid state until they reach the large bowel, but then they become, except in time of illness, a semi-solid mass and ready to be voided.

Bowen **Lord.** English lawyer. Born at Woolaston, Mon., Jan. 1, 1835, a son of a clergyman, Charles Synge Christopher Bowen, was educated at Rugby and Balliol College, Oxford. He became a barrister in 1861 and after some very successful years was made a judge in 1879. In 1893 he became a Lord of Appeal and a life peer. A great classical scholar and translator of Virgil's *Aeneid*, he died April 10, 1894.

Bower Bird Bird of the Paradisidae family, so-called from its remarkable habit of building bowers or runs. There are several species, all confined to Australia. The bowers are apparently places for social intercourse and recreation.

Bowie Knife Large knife formerly much used in the more lawless parts of the United States. It is named from a James Bowie, who, in 1827, near Natchez, killed a man with a weapon of this kind.

Bowland Forest area in Lancashire. It is a hilly and moorland district on the borders of Yorkshire, between Blackburn and Lancaster. Part of the Pennine region, it covers some 300 sq. m. A proposal has been made to make it a national park.

Bow Leg Malformation of the legs of a human being. It means

that the legs, instead of being straight are bowed or bandy. It is often the result of rickets, and can be cured by wearing splints or in other ways, if the child is treated early.

Bowls Outdoor game. It is usually played on a bowling green 42 yds. square with six rinks and a ditch about 6 in wide all round, but it may be played on a smaller space.

The requirements of the game are a jack and a few sets of bowls, together with an india-rubber mat. The jack should not exceed 2½ in. in diameter, nor more than 10 oz. in weight. It serves as the tee and must be at least 25 yds. away from the mat on which the player stands. The bowls are of lignum vitae, or other hard wood, or in some cases of composition; they must not exceed 16½ in. in circumference and 3½ lb. in weight, and are made with a bias so that the bowl tends to run in a curve.

Any number of players up to four may oppose each other in a game.

There are many bowling clubs in Great Britain and championship matches are played. International matches are also played. The game is controlled by the English Bowling Association.

Bowness Village of Westmorland. It stands on the east side of Lake Windermere, 1½ m. from Windermere Station, and is a popular centre of the Lake District.

Bow Street Street in London. It runs from Russell St. to Long Acre. Here is the chief police court for the London district. A court has stood here since 1749, the present building dating from 1881. The Bow Street runners, who had their headquarters here, were men employed on detective work until abolished in 1829.

Box Shrub of the order *euphorbiaceae*. It is found in many parts of the world and grows freely in Britain, where there are two main varieties. One is a tree which may reach a height of 20 ft., the other is a dwarf tree which is very popular as an edging in gardens. Owing to the nature of its growth and its leaves, the tree will keep any shape into which it is pruned.

The wood of the box is remarkable for its hardness and weight, and is used for making musical and mathematical intruments, tools and other articles in which great durability is desirable.

Box Day In Scotland a day when, the courts of law being closed, lawyers and litigants can hand in papers.

Box Elder (*negundium*). Ornamental plant of the order *Aceraceae* (maple). It resembles the ordinary maple, but has pinnate leaves.

Boxers Name given to an organisation that existed in China about 1900. Its aim was to drive foreigners from the country. In 1900 the boxers marched on Peking, and the foreign legations were assailed and much damage was done. Britain and other powers took measures to protect their nationals, but the first attempt at relief failed. On Aug. 14, however, a relieving force entered Peking and the Boxer Rising was soon put down. A treaty was signed in Sept. by which China agreed to pay £64,000,000 as an indemnity. Britain's share of this, it was decided, should be devoted to purchasing in Great Britain material for railway and other public works in China.

Box Hill Beauty spot in Surrey. It is nearly 600 ft. high and about a mile from Dorking. Its name is due to its many box trees. Since 1914 the hill has been the property of the National Trust. At the foot is Burford Bridge, and the house once occupied by George Meredith.

Boxing Art of fighting with gloves on the fists. It is usually distinguished from prize fighting, or pugilism, in which no gloves are worn. Pugilism is now illegal in Great Britain, but boxing is permitted by law, although in case of death the principals and seconds are both liable to be tried for manslaughter.

Boxing superseded pugilism soon after 1860 and contests are fought under the rules of the National Sporting Club, London, which is the headquarters of the sport. These are based on those drawn up by the 8th Marquess of Queensberry. This provides that the ring shall be of a certain size. The rounds are of 3 min. each, with one minute's interval between them. If a combatant is knocked down he must rise within 10 secs. or he loses the fight. Usually a fight is limited to 20 rounds, while amateurs usually fight three rounds. It is won on points if neither combatant is knocked out. The gloves must weigh at least 4 oz.

Professionalism is recognised in boxing, and there are contests for world, British and other championships. In these boxers fight according to their weight—fly, bantam, feather, light, welter, middle, light-heavy, and heavy weight. Money prizes as well as belts are awarded. In addition to these and many other professional contests, there are boxing matches for amateurs from the army, the public schools and elsewhere. There are also boxing contests between representatives of Oxford and Cambridge. An Amateur Boxing Association was founded in 1884.

French boxing includes kicking, wrestling and butting with the head.

Boxmoor Residential district in Hertfordshire. It is 24 m. from London and 2½ from Hemel Hempstead on the L.M.S. Rly.

Box Thorn (*lycium*). Shrub of the genus *Solanaceae*. It has tubular flowers, two-celled berries, and usually, but not invariably, spiny branches. *L. europaeum* is a native of Southern Europe, and is largely used as an ornamental shrub in Italy.

Boycotting Refusal of a community to have dealings with an individual or group of individuals. Something of this kind has been done from early times, and it resembles what is known as "sending to Coventry." Its modern associations, however, are chiefly with Ireland. In 1880 **Charles Cunningham Boycott**, agent to the Earl of Erne, in Mayo, carried out some evictions and made himself very unpopular. The Land League, then dominant, ordered the people to have no dealings with him. He could buy nothing and get nothing from them. The example was followed and boycotting became a feature of the campaign against the landlords.

Boyd ' **Andrew Kennedy Hutchison.** Scottish writer. He was born Nov 3, 1825, at Auchinleck, Ayrshire, went to King's College, London, became a student of the Middle Temple, and later a minister of the Church of Scotland. He was successively minister of Newton-on-Ayr, Kirkpatrick-Irongray, St. Bernard's (Edinburgh), and the first charge at St. Andrews. Early in his career

he became a regular contributor to *Fraser's Magazine* under his initials A.K.H.B., and in 1859 published the first of his three volumes of papers entitled *Recreations of a Country Parson*, which enjoyed wide popularity. Another series, *Graver Thoughts of a Country Parson*, appeared between 1862 and 1875. He was moderator of the General Assembly in 1890, and died March 1, 1899.

Boyle Robert. English scientist. The seventh son of the 1st Earl of Cork, he was born Jan. 25, 1627. He was educated at Eton and after some years of foreign travel, lived first at Stalbridge, Dorset, but later removed to Oxford. There he carried out the series of experiments on the properties of air which resulted in his improved air pump, and his formulation of the celebrated law now known by his name. Boyle's law is that "the volume of a given mass of gas at a given temperature is inversely proportional to its pressure." He belonged to the group of natural philosophers who, in 1663, became known as the Royal Society; in 1680 he was chosen president, but he declined the honour. Boyle was the first to recognise the true nature of an element and to distinguish between a compound and a mixture. He died Dec. 30, 1691.

The Boyle Lectures delivered in the church of S. Mary-le-Bow, London, are a course of eight sermons delivered each year in defence of Christianity. The money for them was left by Boyle.

Boyne River of Ireland. It rises in Co. Kildare and enters the Irish Sea just below Drogheda. It is about 80 m. long, and on its banks are Trim and Navan.

In a famous battle fought here on July 1, 1690, William III. defeated James II. and his French allies. The battle decided the struggle between the two kings, and since that the day has been kept as a holiday in the N. of Ireland. An obelisk marks the site of the battle, which took place about 2 m. from Drogheda.

Boys' Brigade Organisation for training boys. It was founded in Glasgow in 1883 by Sir William Smith. A religious organisation, it consists of companies formed in connection with churches and other Christian societies. The boys are drilled, but the brigade is not a military organisation. The Boys' Life Brigade, founded in 1899, is now united with it. The strength is over 100,000. The junior organisation, which has about 50,000 members, is known as the Life Boys. The headquarters are at Abbey House, Westminster, London, S.W.

Boy Scouts Organisation for boys. It was founded by Sir Robert (later Lord) Baden-Powell in 1908. The boys wear a distinctive dress and their motto is *Be Prepared*. Scouts are graded in three classes—wolf cubs, aged 8 to 11; scouts, aged 11 and upwards; and rover scouts, aged 17 and upwards. Each boy belongs to a patrol, and a number of patrols form a troop. Scoutmasters are in command of the boys. Badges are given for proficiency in various handicrafts and other useful activities. The movement has spread all over the world and there are over 2,000,000 scouts. In 1929 a world jamboree was held at Birkenhead. The headquarters are at 25 Buckingham Palace Road, London, S.W.1.

Boz Pen-name adopted by Charles Dickens. Under it he wrote a series of literary sketches for the *Morning Chronicle* (London), published afterwards in book form, as *Sketches by Boz*, in 1836. *The Pickwick Papers* first appeared under this pseudonym, which is a corruption of Moses, a name jocularly given to the novelist's youngest brother.

Brabant Name of a province in Belgium and one in the Netherlands. Both were once part of a duchy which existed from about 1200 to 1430, when it became part of Burgundy. Later it was Spanish and it was divided when the Netherlands revolted against Spain in the 16th century. The northern part then became part of the Dutch Republic, but the southern part remained Spanish. It later became Austrian, and in 1830 was included in the new kingdom of Belgium. It is the district around Brussels. The eldest son of the King of the Belgians is called the Duke of Brabant. *See* LEOPOLD III.

Bracegirdle Anne. English actress. She was born about 1674 and introduced to London by the Bettertons. In 1688 she played Lucia in Shadwell's *Squire of Alsatia*, and was later successful in Congreve's plays. Her Shakespearean favourites were Isabella, Cordelia and Portia. A rivalry between her and Mrs. Oldfield led to her leaving the stage in 1707. She died in Sept., 1748, and was buried in Westminster Abbey.

Brachiopoda Group of marine animals. They resemble the ordinary bivalve mollusc in having two shelly valves which are, however, always unequal. From their resemblance to ancient lamps, they have been termed lamp shells. The lower valve is the larger and is provided with a beak and an opening through which passes a stalk for attachment. Apart from living brachiopods, a large number of extinct species are found as fossils.

Bracken Species of fern (*pteris aquilina*). Common in Britain, it is characterised by a creeping rootstock from which arise two ranks of leaves bearing on their margins linear groups of spore cases. When dried bracken is used as bedding material for cattle, and as a packing for storage of potatoes and other root crops.

Bract Term used in botany. The name is given to a point on a plant at which a flower or floral axil is produced instead of an ordinary leaf bud or branch. It is used to describe the bract proper, leading to a single flower.

Bracton Henry de (or Bratton). English lawyer, called "the father of English jurisprudence." He took orders, was for many years a clerk in the royal service, and from 1245 until his death was regularly employed as a judge. He held various benefices and was successively Archdeacon of Barnstaple and Chancellor of the Diocese of Exeter. His *Treatise on the Laws and Customs of England*, though never finished, is one of the most valuable sources for the history of English legal institutions. He died in 1268.

Bradbury Colloquial name for the treasury notes for £1 and 10s., first issued in 1914. They were so called because they were signed by Sir John Bradbury (afterwards Lord Bradbury), then permanent Secretary to the Treasury.

Braddon Mary Elizabeth. English novelist. She was born in London in 1837 and published her first novel *The Trail of the Serpent* at the age of 24. A year later appeared her most famous work, *Lady Audley's Secret*. Her next, *Aurora Floyd*, was hardly less successful. During the rest of

her life she continued to produce novels with remarkable facility and success, though none attained the popularity of *Lady Audley's Secret* and *Aurora Floyd*. She married in 1874 John Maxwell, a publisher, and their son, W. B. Maxwell, is a novelist. She died Feb. 4, 1915.

Bradfield Village of Berkshire. It is 8 m. from Reading and is known for its public school, which owes much to the inspired work of Dr. H. B. Gray, who was head master from 1880-1910. In the grounds is a theatre on the Greek model, in which Greek plays are given. Another Bradfield is a village 7 m. from Sheffield.

Bradford City and county borough of Yorkshire. It stands on the Aire 9 m. from Leeds and 191 from London, on the L.M.S. and L.N.E. Rlys. It is also served by canals. The Church of S. Peter was made the cathedral when, in 1919, the city became the seat of a bishop. Bradford is the great centre of the woollen and worsted industry and in its industrial suburbs, such as Manningham, are large mills, dyeworks and other centres of activity. It has also engineering works. Pop. (1931) 298,041.

Bradford **William.** Leader of the Pilgrim Fathers. Of Yorkshire birth, he was born in 1589. Embracing Puritan opinions, he migrated to Holland and carried on business as a weaver at Leyden for some years. When the emigration of the English refugees to America was projected, he became one of its most active promoters and was one of the party that sailed in the *Mayflower*. From 1621 until his death, with only a few short intervals, he served as Governor of Plymouth Colony. He wrote a valuable *History of Plymouth Colony*. Bradford died May 9, 1657.

Bradford-on-Avon Urban district of Wiltshire. It stands on the Avon, 9 m. from Bath and 97 from London, on the G.W. Rly. It is famous for its church, one of the oldest Saxon churches in England. Pop. (1931) 4735.

Brading Village of the Isle of Wight. It is 4 m. from Ryde on the S. Rly. A Roman villa has been unearthed here. The village stocks and bull ring can still be seen. Pop. 1696.

Bradlaugh **Charles.** English free-thinker and politician. The son of a London solicitor's clerk, he was born Sept. 26, 1833. While working as a clerk, he came under the influence of a free-thought group and, owing to his opinions, was dismissed from his situation. Later he founded a free-thought journal, *The National Reformer*, which involved him in several conflicts with the law on account of its outspoken opinions. In carrying on *The National Reformer* he was associated with Annie Besant. Their publication of an American pamphlet on birth control entitled *The Fruits of Philosophy* resulted in a prosecution, and they were sentenced to a heavy fine and imprisonment, but the conviction was quashed on technical grounds.

At the general election of 1880 Bradlaugh was elected as a radical M.P. for Northampton. Thereupon followed a long and violent parliamentary struggle over his capacity as a professed atheist to take the oath and his seat; this lasted until 1886 when Bradlaugh triumphed. He remained M.P. for Northampton until his death Jan. 30, 1891.

Bradley **James.** English astronomer. He was born at Sherborne, Glos., in March, 1693, and was educated at Balliol College, Oxford, where he specialised in astronomical and physical studies. He took orders and was for a short time vicar of Bridstow, but resigned his living on being appointed Savilian Professor of Astronomy at Oxford in 1721. In 1742 he succeeded Halley as Astronomer Royal. His great contributions to science are his discoveries of the aberration of light. He died July 13, 1762.

Bradman **Donald George.** Australian cricketer. Born at Cortamundra, New South Wales, Aug. 27, 1908, he was educated there and became famous as a cricketer. Having played for the state, he was chosen to play for Australia in 1928 against the English team. His scoring powers placed him in the front rank of batsmen, and he more than maintained his high reputation when he visited England in 1930 as a member of the Australian team. In the test match at Leeds he scored 334 runs, a record for these matches, and he finished the tour with the remarkable average of 98.66.

Bradshaw **George.** English printer and publisher, and founder of *Bradshaw's Railway Guide*. He was born at Pendleton, Lancashire, July 29, 1801, of Quaker parentage, and carried on business in Manchester as an engraver and printer. The publication that has converted his name into a household word was first issued as *Bradshaw's Railway Time-Tables* in 1839. Next year the title was changed to *Bradshaw's Railway Companion*, and in 1840 it began to be issued at regular monthly intervals as *Bradshaw's Railway Guide*. The *Continental Bradshaw* was established in 1847. He died Sept. 6, 1853.

Bradshaw **John.** English lawyer. A native of Cheshire, he became a barrister in 1627. In 1647 he was appointed Chief Justice of Chester, and in 1649 was chosen to preside over the court that tried Charles I. His services were rewarded by his appointment as Attorney General of Chester and N. Wales, and Chancellor of the Duchy of Lancaster. He was President of the Council of State, 1649-52, but soon became estranged from Cromwell, whom he suspected of aiming at the crown. He was M.P. for Stafford in 1654, was again in Parliament in 1659, and died Oct. 31, 1659. In 1660, having been attainted, his body was hanged at Tyburn.

Braemar Village and pleasure resort of Aberdeenshire. It is 18 m. from Ballater, on the Dee. The district round the village is also called Braemar. It is famed for its scenery and is in a region of deer forests. Balmoral and Abergeldie castles, Mar Lodge, and other residences are in the neighbourhood. A Highland gathering is held here every year.

Braganza Name of the family that, with short intervals, ruled in Portugal from 1640 to 1911 and in Brazil from 1822 to 1889. Braganza is a small city near the Spanish frontier, and in 1442 Alphonso, a natural son of John I., King of Portugal, was made its duke. In 1580 one of his descendants claimed the throne, and in 1640 another became king. Members of the family retained the crown which in 1834 passed to a woman, Maria. She married a German prince, Ferdinand of Saxe-Coburg, so the descendants of this union, who include Manuel, king until 1911, are only Braganzas in the female line. A member of the family, Pedro, was made Emperor of Brazil in 1822, but his successor was driven out in 1889.

Bragg **Sir William Henry.** English scientist. Born at Wigton, Cumberland, July 2, 1862, he was educated at King William's College, Isle of Man, and Trinity College, Cambridge. Having been third wrangler, he was Professor of Physics at Adelaide, 1886-1908; at Leeds 1909-15, and in London 1915-23. In 1923 he was appointed Fullerian Professor of Chemistry at the Royal Institution, and Director of the Davy-Faraday Research Laboratory. His work in physical chemistry has been concerned with the study of the minute structure of crystals, radio-activity and X-rays. In this he has been assisted by his son, William Lawrence Bragg, a Fellow of Trinity College, Cambridge, who in 1919 was appointed Professor of Physics at Manchester. Both have received many honours, including the F.R.S., and in 1915 jointly a Nobel prize. Sir W. H. Bragg was knighted in 1920, awarded the Order of Merit in 1931 and the Faraday Medal in 1936.

Brahe **Tycho.** Danish astronomer. Born of good family, Dec. 14, 1546, he studied first at Copenhagen and then successively at Wittenberg, Rostock and Augsburg. After a period of astronomical observation in Denmark, he travelled abroad and intended to settle at Basel. At the invitation of Frederick II., however, he returned to Denmark to establish an observatory on the Island of Hveen in the Sound, and the royal favour secured him an ample income. Frederick's successor, Christian IV., was less well disposed to Tycho and withdrew his pension.

A new patron was soon forthcoming in the Emperor Rudolf II., who, in 1599, induced him to migrate to Prague, where he had as colleague the celebrated Kepler. It was Kepler who edited Tycho's principal work, *Astronomiae Instauratae Mechanica*, published posthumously in 1602. Tycho propounded a scheme of the solar system which was an attempt to compromise between the Ptolemaic and Copernican systems. His chief services to astronomy were his improvements in the art of observation and his compilation of a catalogue of fixed stars, later extended and corrected by Kepler. He died at Prague, Oct. 24, 1601. In 1931 a museum to commemorate Brahe was opened on the Swedish island of Ven.

Brahma Showy, fluffy domestic fowl. It was produced in America by crossing two Asiatic breeds and won popularity as a table bird, and a good layer, but over-cultivation of its decorative appearance caused its deterioration for practical purposes.

Brahma Hindu deity. He is the supreme soul, all-embracing divine essence, source and goal of existence, self-created from his own thought. To make Brahma more comprehensible sages invented myths of his generation from a golden egg or a lotus. In art he is represented as four-headed, and four-armed, riding a goose or swan.

Brahmanism Hindu religion. It is a modification of Vedism which arose about 1000 B.C. Its scriptures comprise four sacred inspired books, viz.: the *Rigveda*, *Sāmaveda*, *Yajurveda* and *Atharvaveda*. Each has attached to it prose writings called *Brāhmanas*, explaining ceremonial application of sacred texts. To these are appended discourses, called *Arenyakas* and *Upanishads*, on the nature of Brahma and the Cosmos.

In the Upanishads Brahma is variously declared to be: (1) An absolute impersonal being. (2) A divine all-pervading essence. (3) A personal God, creator of life. The uninspired books contain the code of Manu, regulating the way of holiness for believers. Brahmanism, by its insistence on faultless ceremonial, exalted the priesthood almost to divinity; by its doctrine of re-birth and desire for progress it encouraged caste distinction. It aimed, in individuals, at the extinction of carnal desire, so that the soul might more swiftly be reabsorbed in the infinite spirit.

Brahmaputra River of India. Its main source is in a glacier in Tibet, 16,000 ft. high. It flows east for 1000 m. then, called the Dihong, traverses the Assam valley for 450 m. After passing through the Rangpur district, it flows south until it reaches the main Ganges stream at Goalanda and enters the sea through the Meghná estuary. It is partly navigable, but its chief value is for irrigating the plains where rice, jute and mustard grow. Its total length is 1800 m.

Brahms **Johannes.** German composer. He was born in Hamburg, May 7, 1833, and in 1853, on tour as a pianist, impressed both Joachim and Schumann with his genius. Steady devotion to his gift was repaid in creative ability, which, combining philosophy with romanticism, produced masterpieces worthy to succeed those of Beethoven. Brahms never attempted opera, but excelled in all other forms of music. He died April 3, 1897, in Vienna.

Braila Town and river port of Rumania. It stands on the left bank of the Danube, just over 100 m. from its mouth in the Black Sea. With a good harbour and extensive docks, the port can be used by large vessels. It is also connected with Bucharest, 100 m. away, and other places by rail. The town has some manufactures, but its chief industry is shipping, as much of the merchandise of Rumania including great quantities of grain, pass through it. The pop. of 68,310 includes many Greeks.

Braille System System of embossed characters for enabling the blind to read by touch. Something of the kind has been in use since the 16th century. The earlier types were for the most part simplified forms of roman capitals, but in 1834 **Louis Braille**, a professor at the Institution Nationale des Jeunes Aveugles in Paris, perfected the "point" system which bears his name and is now the most generally used. The Braille system is based on six points arranged in an oblong containing two horizontal and three vertical lines, thus ⁚. Each letter of the alphabet is represented by a combination of dots embossed on one or more of the points.

Brain Chief centre of the nervous system of the higher animals. It is contained within the skull or cranium. The brain substance, like the spinal cord, consists of grey and white matter, the grey matter forming a thin, superficial layer or cortex, the whole organ being covered by three membranes, an inner *pia mater*, a middle *arachnoid* layer and an outer tough *dura mater*. The brain of the mammals is divided into the cerebral hemispheres, or cerebrum, in front, and on top the pons, cerebellum and *medulla oblongata*, the last being continuous with the spinal cord, and from these arise twelve pairs of nerves to the head and body.

The weight of the brain of an average man is 49¼ oz.; that of a woman is 44 oz.

Braintree Market town and urban district of Essex, on the Blackwater, 45 m. from London, on the L.N.E. Rly. The chief industry is the making of artificial silk at the mills of Messrs. Courtauld. Brewing is carried on. Pop. (1931) 8912.

Brake Mechanism for slowing down or stopping a machine or vehicle. This is done by the action of a block, or shoe, held in close contact with the rim of a wheel by means of levers, or by the action of a flexible band upon a wheel or driving shaft. In some forms the band is pressed against the inner surface of a drum upon the shaft. Vacuum brakes are used for railway carriages, this type being continuous in action and under the control of the guard or engine driver. While a vacuum is maintained the brakes are free, but upon lowering the vacuum the brake shoes are brought into contact with the wheels.

Bramah **Joseph.** English inventor. He was born at Stainborough, Yorkshire, April 2, 1749. While a young man he went to London and worked as a cabinet maker, but soon showed a marked genius for mechanical invention. In 1784 he patented the famous **Bramah Lock**, and in 1795 invented the hydraulic press. Among his other inventions is the beer engine for drawing beer, and he appears to have been the first to suggest the idea of screw propulsion for steamships. He died in London, Dec. 9, 1814.

Bramante **Donato.** Italian artist. Born in 1444 he lived for some years at Milan, where he studied the arts, especially architecture. About 1500 he went to Rome where his work brought him to the notice of Pope Alexander VI. He designed some buildings at the Vatican for Julius II. and was commissioned to prepare the plan for S. Peter's, on the rebuilding of which he was working when he died, March 11, 1514.

Bramble (*Rubus fruticosa*). Plant of the rose family of which there are many species. The stems are thick and fleshy and covered with thorns, prickles and hairy bristles. The bushes are of partially erect growth but the long stems frequently bend and re-root themselves in the soil, thus producing fresh plants. The commonest British variety is the blackberry (*q.v.*)

Brambling Small bird allied to the chaffinch. A native of Scandinavia, Lapland and Siberia, it is only a visitor to Great Britain in winter. It is sometimes called the mountain finch.

Bramley **Frank.** English artist. Born in Lincolnshire, May 6, 1857, he studied in Antwerp and Paris. In 1884 his first painting was accepted by the Academy. In 1894 he was elected A.R.A. and in 1911 R.A. He died Aug. 10, 1915. Bramley's most famous picture is "The Hopeless Dawn" in the Tate Gallery, London.

Brampton **Baron.** English judge. Born Sept. 14, 1817, Henry Hawkins was the son of a solicitor at Hitchin. Educated at Bedford, and in 1843 called to the bar, he rapidly obtained a good junior practice and in 1859 took silk. He was a masterly advocate, excelling in the art of cross-examination. Among the many *causes célèbres* in which he was employed was the Tichborne case. Made a judge in 1876 he gained the reputation of being a hanging judge of the old school, but his knowledge of the criminal law and the ability with which he administered it were beyond question great. He retired in 1898 and was raised to the peerage as Baron Brampton. All his life Lord Brampton was a keen sportsman and was, for many years, standing counsel to the Jockey Club. He died Oct. 6, 1907, when his title became extinct.

Bran By-product of grain. It is obtained from the outer husk of the corn when it is ground, and is used in making brown bread. It is also a valuable feeding stuff for cattle and poultry and, besides being used in medicine, is employed in some manufacturing processes for clearing liquids.

Brand **Sir Jan Hendrik.** President of the Orange Free State. The son of Sir H. C. Brand, Speaker of the Cape House of Assembly, he was born Dec. 6, 1823. He studied law and practised at the Cape bar until 1863, when he was elected President of the Orange Free State, an office which he held until his death. Under his administration the Free State twice engaged in war with the Basutos. He was invited to become President of the Transvaal and thus unite the two Dutch republics, but declined to be a party to a manœuvre which he regarded as hostile to Great Britain. He was knighted in 1882 and died July 14, 1888.

Brandenburg District of Germany. It is the region around Berlin and is in a sense the nucleus of the republic. It became a separate state about 1130 and in 1356 its ruler, then a margrave, was made an elector. In 1415 a member of the Hohenzollern family became elector, and under his descendants the land grew steadily in size and importance. In 1701 the elector was made King of Prussia and since then Brandenburg has been a Prussian province, covering about 15,072 sq. m. *See* PRUSSIA.

The city of Brandenburg is on the Havel, about 36 m. from Berlin. It has some old buildings, including the cathedral and the town hall, and also some fine modern structures. The cathedral town, one of its three parts, is on an island in the Havel. Pop. 59,297.

Brandes **Georg Morris Cohen.** Danish writer. Born Feb. 4, 1842, he studied at the University of Copenhagen and in 1862 won the university gold medal for an essay on "The Nemesis Idea among the Ancients." His first important work was a volume of essays on the Danish poets entitled *Aesthetic Studies* (1868), and within the next few years he established his reputation as one of the leading critics of Europe. His greatest book is *Main Currents of Nineteenth Century Literature*. Later works include monographs on *Disraeli* (1878), *Ibsen* (1899), and his great *Study of Shakespeare* (1897-98), which was translated into English by William Archer. His later works, like others translated into English, include *The Life of Goëthe* and *The Jesus Myth*. He died Feb. 19, 1927.

Brandon Market town of Suffolk. It is on the Little Ouse, 7 m. from Thetford, on the L.N.E. Rly. It is the one place in England where the old industry of flint knapping is carried on. Pop. 2462.

Near is Brandon Park, a seat of the Duchess of Montrose and formerly of the Dukes of Hamilton. The title Duke of Brandon was given in 1711 to the 4th Duke of Hamilton and has since been held by his successors in the title.

Brandy Distilled wine, or distilled and fermented fresh grape juice

Brandy, originally colourless, becomes brown and golden from caramel and storage in oak casks. The average alcoholic proportion is 53 per cent. Old brandy, containing less alcohol, is better as medicine. The best comes from Cognac, in Charente, France. Liqueur brandy is first-class brandy, old and well-matured. In Great Britain there is a duty of £3 15s. 4d. per proof gallon on all brandy imported.

Brandywine Tributary of the Delaware River. It is celebrated as the scene of the victory of Sir William Howe over the American colonists under Washington on Sept. 11, 1777.

Brangwyn Frank. English painter. Born May 12, 1867, his earliest artistic experience was gained in Bruges and in his father's establishment for making church embroideries and decoration. Work in England with William Morris stimulated his craftsmanship and a visit to the East imbued him with the love of rich colour which distinguishes his painting. He was elected A.R.A. in 1904 and R.A. in 1919. Examples of his work are in many of the museums of Europe, and his frescoes in the Royal Exchange, London.

Branksome District of Poole. On the S. Rly., it is famous for its chine, said to be the finest on the south coast.

Brantford City of Ontario. It stands on the Grand River, about 55 m. from Toronto. It is on the main line of the C.N.R, and has important manufactures. A canal connects it with Lake Erie, 30 m. distant. The city is named after **Joseph Brant** (1742-1807), the Mohawk chief. Pop. 30,107.

Brantôme **Pièrre de Bourdeilles.** French author. Born about 1540, a younger son of the Baron de Bourdeilles, he was intended for the church and held several benefices, but preferred a soldier's life, and saw a good deal of active service. He was in the suite of Mary Stuart when she left France for Scotland. He also visited England, Spain, Portugal and Morocco. In 1589 he retired into private life and amused himself by composing his memoirs of *Hommes Illustres* and *Dames Galantes*. Brantôme's adventurous life and distinguished social connections render his work one of the most important sources for the secret history of the 16th century. He died July 15, 1614.

Brasenose College of Oxford University. Founded in 1509 by the Bishop of Lincoln and Sir Richard Sutton, it has a direct connection with Brasenose Hall, which existed prior to 1260. The name is said to derive from an old brass knocker, in the shape of a nose.

Brass Yellow alloy of copper and zinc in varying proportions, with sometimes small quantities of lead, tin or iron added for special purposes. An excess of zinc renders the alloy less ductile and tenacious, while iron increases its hardness and tenacity. Brass is very malleable, fusible, ductile and readily cast and machined.

Muntz or yellow metal is a variety of brass containing 60 per cent. of copper; it is stronger than ordinary brass and can be worked and rolled while hot. As it resists corrosion well, it has been employed for sheathing ships, but now is used largely for propellers, bows and trays. The hardest of the brass alloys is Sterro metal, an alloy containing in addition to copper and zinc, both iron and tin.

Brass Memorial to the dead. Early in the 13th century engraved metal began to take the place of carved stone in sepulchral memorials and continued in general use for over 300 years. They were made of sheet brass (*latten*) let into the church pavement, and thus had the advantage of causing no obstruction. In addition to their high artistic merit, monumental brasses are of great value to the historian as family records and for the details of contemporary costume and armour.

Brassey **Thomas.** English contractor. Born in Cheshire, Nov. 7, 1805, he became a surveyor and was in business in Birkenhead. Soon he undertook a contract for railway work and in a few years was at the head of a great undertaking which carried out contracts in all parts of the world. He died Dec. 8, 1870.

Brassey's eldest son, **Thomas Brassey,** was born Feb. 11, 1836, and educated at Oxford. He is known as the founder of *The Naval Annual*, and the owner of the yacht *Sunbeam*. He also wrote *Work and Wages* and other books. From 1865 to 1886 he was a Liberal M.P. and took a special interest in naval questions. He was Governor of Victoria, 1895-1900, and he died Feb. 23, 1918. In 1880 Brassey was made a knight, in 1886 a baron, and in 1911 an earl. In 1860 he married Anna Allnutt (d. 1887), author of *A Voyage in the Sunbeam*, and in 1890 Sybil de Vere, daughter of Viscount Malden. His titles passed to his only son, Thomas Allnutt Brassey, but became extinct when he died Nov. 11, 1919.

Bratislava City and river port of Czechoslovakia. It was formerly in Hungary and was called Pressburg; the Magyars called it Pozsony. It stands on the Danube, about 50 m. from Vienna, and is the centre of a considerable trade by rail and river. There are also some manufactures. The cathedral is a Gothic edifice. The castle on the Schlossberg is in ruins. Pressburg was the capital of Hungary from 1541 to 1784. In 1919 it was given to Czechoslovakia. Here is a Slovak university founded in 1919, and the city has an important broadcasting station. Pop. (1930), 123,852.

Braxy Disease of sheep. The victims are usually about a year old and contract the ailment in the autumn. Very few recover. It is believed that the disease is caused by alteration from a poor to a very rich diet. Whilst cure is almost hopeless, braxy can be prevented by careful regulation of diet.

Bray Seaport and watering place in Co. Wicklow, Irish Free State. It is 12 m. S.E. of Dublin and has a few small industries, but depends mainly on its attractions as a holiday resort for the inhabitants of Dublin. Pop. (1926), 8639.

Bray Town of Berkshire. On the right bank of the Thames, near Maidenhead, its name is celebrated owing to the ballad of *The Vicar of Bray*. The identity of the accommodating vicar is uncertain. The dates of the song indicate Francis Carswell vicar from 1667 to 1709, but there appears to have been an earlier incumbent, Simon Aleyn, vicar from 1540 to 1588, whose principles were equally elastic. Pop. 3400.

Brazil Republic of S. America, the largest country of the continent.

Covering 3,275,510 sq. m. it is bounded on two sides by the Atlantic Ocean and elsewhere by other republics. On the whole it is a level and fertile area, but has vast forests and tracts as yet almost unknown. The Amazon is the chief river; others are the Madeira and the Parana. Rio de Janeiro is the capital and the largest place. Other cities are Sao Paulo, Sao Salvador (Bahia), Recife, Belem and Porto Alegre. The population is estimated at (1931), 41,477,827, mostly in the coastal provinces. There are about 100,000 Indians, and colonies of Italians, Portuguese and Spaniards.

The chief products are coffee and rubber. Maize, wheat and other foodstuffs are grown, as well as cotton, tobacco and other tropical products. There are some manufactures. The forests are an important source of wealth and the country is rich in minerals, especially manganese, gold and iron.

HISTORY.—Since 1889 Brazil has been a republic. Previously it was an empire from 1822, and before that date a possession of Portugal, a Portuguese sailor having discovered it in 1500. It is a federal republic with a constitution not unlike that of the United States. There is a president elected for four years and a national congress of two houses. The chamber of deputies consists of 212 members elected for three years; the senate of 63 members, three for each of the 20 provinces and three for the federal district. There is a federal court of justice at Rio. The country has an army recruited by compulsory service and a small navy. In 1926 the currency was reformed, a new unit, the cruzeiro, being introduced. The milreis, which had fallen heavily, was stabilised at nearly 6d. The metric system of weights and measures is used. Until 1926 Brazil was a member of the League of Nations.

In 1930 there was serious trouble in the republic and a dictatorship was established. This lasted until 1932 when there was a return to normal forms of government. An economic crisis, caused by the poor prices paid for the coffee crop, followed and in 1931 the country suspended payment of the interest on its foreign loans.

Brazil Nut Seed of *Bertholletia excelsa*, a tree of the order *Lecythidaceae*. This flourishes in tropical America. Each fruit yields about 20 seeds, triangular in form and with a hard woody cover. Brazil nuts are not only edible in their natural state, but yield a fine cooking oil, which is also used by painters and watchmakers.

Brazil Wood Term applied to several woods of the order *Leguminosae*. The colouring matter extracted from it is called brazilin. It yields various tints of deep red. It is used to some extent in calico printing, but chiefly to form lakes for tinting papers.

Breach of Promise Failure to fulfil an engagement of marriage. By the common law of England an action in contract lies for the refusal or failure of either party to fulfil a promise of marriage. For obvious reasons it is usually the woman who is plaintiff, but cases of male plaintiffs are on record. It is the only action in contract where *exemplary* damages may be awarded, and then only when the breach of promise has been aggravated by seduction. A promise to marry given by a person who, to the knowledge of the other party, is married is void as against public policy, and no action will lie if, on becoming free to marry, the promiser refuses to fulfil it.

Bread One of man's chief foods. Any cereal ground to a flour, made into a paste or dough with water, and then baked, is in the broadest sense bread, but the term is particularly applied to a wheaten flour product of the kind which has been subject to fermentation by means of an enzyme, such as yeast. As bread is a basic food its manufacture and sale are strictly regulated by law. In Great Britain the Sale of Food and Drugs Acts prescribe the materials which may be lawfully employed in its manufacture and prohibit its sale otherwise than by avoirdupois weight. Formerly baked in almost every household, bread is now produced on a large scale by bakers, the processes, including paper packing, being carried out by machinery. *See* BAKEHOUSE.

Breadalbane District of Perthshire. It includes some of the Grampians, the lochs of Tay, Rannoch, and others, and part of the course of the Tay.

The title of **Earl of Breadalbane** was given to Sir John Campbell in 1677. In 1831 a later earl was made a marquess. This title became extinct in 1862, but the earldom passed to a kinsman, Gavin Campbell, who, in 1885, was made a marquess. He died in 1923. The earl's eldest son is called Lord Glenorchy.

Bread Fruit Tropical fruit used as an article of food in Polynesia. It is the product of *artocarpus incisa*, a tree allied to the fig. The fruit is of the size of a melon, and has a whitish pulp of the texture of new bread. It is roasted before being eaten.

Bread Tree Small evergreen tree, a native of Guiana. It is of the natural order *cinchonaceae*. Its flowers, which are cream coloured and tubular, grow out from the ends of its branches. It has opposite oblong leaves and bears edible fruits.

Breakspear, Nicholas *See* ADRIAN.

Breakwater Engineering device for creating an artificial harbour, or improving an imperfect natural harbour. It consists of a solid stone structure, sometimes called a mole, driven out from the land into the sea and shaped in such a manner as to protect the harbourage from the main beat of the waves during the worst storms to which the particular coast is exposed. Hence for the construction of an efficient breakwater prolonged and careful study of the tides and prevailing winds is an essential preliminary.

Bream Fresh water fish. It is found in slow-running streams, canals and ponds. There are two British species, the common bream (*abramis brama*) and the white bream (*abramis blicca*). The former is often of considerable size, specimens of 12 lb. weight being not uncommon.

Breast In man and other animals the fore part of the body between the neck and the abdomen. Cuts of meat from this part of the sheep or the calf are called the breast. The breast bone, called the sternum, is in the front of the chest in man and other vertebrate animals. It is in three parts. If sometimes, owing to disease (usually rickets), it is unduly prominent, the person is said to be pigeon breasted.

In woman the mammary glands are called the breasts. These, which secrete the milk, vary in size and shape, according to age and

race; among civilised peoples the breast is very subject to cancer.

Brechin Burgh and market town of Angus (Forfarshire). It is 9 m. from Montrose, on the L.M.S. Rly., and has some manufactures. It has a cathedral and its bishop is the Primus of Scotland. There is also a round tower. Brechin Castle is a seat of the Earl of Dalhousie. Pop. (1931) 6838.

Breckland District near Thetford, Norfolk. After the Great War the land was bought by the state and trees were planted, thus making it into a large forest which is supervised by the Forestry Commission.

Brecknockshire Inland county of South Wales. It covers 732 sq. m., and is a mountainous area with some beautiful scenery. The highest point is Pen-y-Fawr (nearly 3000 ft.). The chief rivers are the Wye and the Usk. Brecon is the county town, others are Builth Wells and Crickhowell. The L.M.S. and G.W. Rlys. serve the county, also the Brecon and Abergavenny canal. With Radnorshire it sends a member to Parliament. The form Breconshire is sometimes used. It is an agricultural area. Pop. (1931) 57,771.

Brecon City and market town of Brecknockshire, also the county town. Sometimes called Brecknock, it stands on the Usk, 35 m. from Cardiff and 162¼ m. from London, on the G. W. Rly. The chief building is the church of St. John, now the cathedral of the diocese of Swansea and Brecon. There is an old bridge over the Usk, also remains of the castle. Christ's College, a public school for boys, dates from 1541, and has a 13th century chapel. Pop. (1931) 5334.

Breda Town of the Netherlands. In North Brabant, it is situated at the confluence of the Merk and the Aa and is 59 m. from Flushing. Breda is a railway junction and has some manufacturing industries. The town figured prominently in the struggle of the Dutch against the domination of Spain. It was here that Charles II. resided during his exile and conducted the negotiations that led up to the Restoration.

The statement of the terms on which Charles accepted the crown of England in 1660 is known as the **Declaration of Breda.** In 1667 a peace treaty between Great Britain and the Netherlands was signed at Breda. Pop. (1932) 45,464.

Breechloader Gun fired from the breech end. Until well into the 19th century all firearms, both cannon and small arms, were loaded with powder and ball from the muzzle, a process which made rapid fire impossible. As early as the 17th century various attempts were made to devise a musket that could be loaded from the breech of the barrel, but not until 1836 was a satisfactory breechloader invented by the French gunmaker, Lefaucheux. The problem of a breechloading piece of ordnance or big gun was more complicated, the difficulty being to devise a breech fermature, or shutter, strong enough to resist the explosion of the charge. The first big gun on the breech-loading principle was made in 1858.

Breeding Rearing of cattle or livestock by crossing different varieties or strains so as to improve existing breeds or produce new varieties. An instance of scientific breeding is seen in the crossing of various breeds of sheep to improve the quality of the wool. In Australia a number of varieties of the merino sheep have been produced, suited for different soils and climatic conditions, each variety having its own characteristic type of wool. Further, by crossing the merino with various British breeds in New Zealand not only an improved fleece has been obtained, but also varieties suitable for producing mutton as well as wool. Just attention is paid to the breeding of racehorses and sporting dogs. The breeding of human beings is part of the science of eugenics (*q.v.*).

Bremen State of Germany. It includes the city of Bremen, the port of Bremerhaven and some other districts, altogether covering 100 sq. m. It belongs to the German republic, and before 1918 was a state of the German Empire. Its affairs are managed by a senate of 12 members, two of whom are burgomasters. They are chosen by the house of burgesses, which has 120 members elected by all citizens. Pop. 338,850.

Bremen City and seaport of Germany. It stands on the Weser, about 41 m. from its mouth and 80 m. from Hamburg. On the right bank of the river is the old town with buildings dating from the time when the city was one of Europe's greatest markets and ports. The cathedral is the chief of several old churches and the town hall has some remarkable features. Bremen has an extensive and varied trade and from here vessels go to all parts of the world. As a port it is the largest in Germany, save only Hamburg. There are three good harbours and the river has been deepened so that the largest vessels can traverse it. Shipbuilding is a large industry and there are some manufactures. Pop. 295,000.

Bremen Name of a German liner. Launched in 1928 by the North German Lloyd Co., the vessel made in July, 1929, a record passage across the Atlantic, Europe to New York, which stood as a record until beaten by the Europa in 1930. The ship displaces 49,800 tons. Another Bremen was a German cruiser that was sunk in the Baltic by a British submarine in Dec., 1915.

Brendon Hills Range of limestone hills in Somerset. They are about 6 m. south of Watchet and attain a height of about 1400 ft.

Brentford County and market town of Middlesex. Since 1927 part of the urban district of Brentford and Chiswick, it stands where the Brent flows into the Thames, 7 m. from London, on the G.W. and S. Rlys. A handsome stone bridge and a ferry connect it with Kew. It is also served by the Grand Union Canal. Brewing is a leading industry. Brentford was once capital of the kingdom of the middle Saxons. Pop. (1931) 62,617.

Brentford **Viscount.** English politician. William Hicks, a son of Henry Hicks, was born in Kent, June 23, 1865. He became a solicitor and, having married the daughter of R. H. Joynson of Bowdon, took the name of Joynson-Hicks. After two unsuccessful efforts to enter Parliament as a Conservative he defeated Mr. Winston Churchill at N.-W. Manchester in 1908, lost his seat in 1910, was returned for Brentford in 1911, and represented Twickenham from 1918 till his elevation to the peerage.

Joynson-Hicks was Parliamentary Secretary to the Overseas Trade Dept. in the Lloyd-

George administration (1918-20), and was created a baronet in 1919. In the first Baldwin administration (1922-23) he was successively Postmaster-General, Financial Secretary to the Treasury and Minister of Health. Throughout the second Baldwin ministry (1924-1929) he was Home Secretary, and on going out of office was raised to the peerage as Viscount Brentford of Newick. As a recognised lay leader of the evangelical party in the Church of England he was instrumental in procuring the rejection by Parliament of the revised Prayer Book. He died June 8, 1932.

Brent Goose (*Bernicla brenta*). Variety of barnacle goose (*q.v.*). Except that it feeds by day, it is practically indistinguishable from the ordinary barnacle goose (*B. leucopsis*).

Brentwood Urban district of Essex. It is 11 m. from Chelmsford and 18 m. from London, on the L.N.E. Rly. Its grammar school was founded in 1537. The county lunatic asylum is here. Pop. (1931) 7209.

Breslau City and river port of Germany, and capital of Silesia. It stands on the Oder, 224 m. from Berlin and is a great railway centre. It is also served by a network of canals, while there is much traffic along the Oder. The city stands on both sides of the river, the old town being on the left bank. The chief buildings are the cathedral, the town hall, both restored in the 19th century, and the modern palace, once a residence of the Kaiser. Notable churches are S. Mary Magdalene, the Holy Cross and the Minster. The city has a university and an observatory.

Breslau stands in a district of coal and ironstone mines and its manufactures are chiefly machinery, railway stock and other iron and steel goods. There is much trade in coal, iron, timber and other commodities, and the city is the commercial and intellectual centre of a populous area. Pop. 599,770.

Brest Seaport of France. It is on the coast of Brittany, 155 m. from Rennes, and is an important naval station. The harbour is formed by the river Penfeld. There are shipbuilding yards, barracks, workshops, store rooms and other buildings for naval work, and a naval school of the Ministry of Marine. There is a separate harbour for the mercantile shipping and fishing craft, and there are some manufactures. The chief building is the old castle. Pop. 69,841.

Brest Roads is a bay off the port. About 14 m. long, a channel called the Goult connects it with the Atlantic.

Brest-Litovsk City of Poland. Situated on the Bug at its confluence with the Muchavetz, it is an industrial centre, a railway junction and served by canals. The buildings include the cathedral. Pop. 29,100.

Brest-Litovsk was formerly an important fortress of Russian Poland and a key position in the Russo-German conflict of the World War. It was the objective of the third phase of Mackensen's great offensive in 1915, which, though partially successful, failed in its purpose of enveloping and destroying the Russian forces.

After the second (or Bolshevik) Russian Revolution of 1917, Brest-Litovsk was the scene of the protracted peace negotiations between the Central Powers, Soviet Russia and the Ukrainian Republic. A peace treaty with the latter was signed on Feb. 9, 1918. The peace with Soviet Russia was signed on March 3, 1918, but its terms were not carried out owing to the defeat of Germany and Turkey at the end of the year.

Breton Language of Lower Brittany. A Celtic language, allied to Cornish and Welsh, it is one of the Indo-European group. Since its grammar and idiomatic structure are regular, it is not a patois. Breton literature is best exemplified in the old ballads of the story-tellers, as, until comparatively recent times, French was the aristocratic and Breton the popular language. The recent growth of national feeling has, however, done much to arouse a literary interest in Breton.

Breve Longest note in modern music. It equals two semi-breves, but is rarely found outside church music. The name is derived from Latin, *brevis*, short, the breve being only a short note in ancient notation.

Brevet Originally a papal indulgence. It is most generally known, however, as the commission by which an officer of the British Army is granted an honorary rank higher than his substantive rank. Thus a captain may be given the brevet rank of major, a major may become brevet lieutenant-colonel, and a lieutenant-colonel a brevet colonel.

Breviary Book containing the daily office of the Roman Catholic church. It includes lessons, psalms and hymns for every day of the year. The English Book of Common Prayer is based on the Roman breviary. The latter, however, does not include the eucharistic and other sacramental and special services.

Brewing Process by which various substances are fermented to produce an alcoholic liquor. The term is especially applied to the production of beer from an extract of malted barley and hops. The barley is prepared by allowing soaked grains to germinate under controlled conditions, the result being that the starch present is converted into sugar; the product is termed malt. An infusion of malt, known as wort, is boiled with hops and the mixture, when cool, is fermented with yeast. The resulting liquor, or beer, contains from 3 to 8 per cent. of alcohol, also sugar, dextrine and nitrogenous substances. *See* BEER.

Brewster **Sir David.** Scottish scientist. He was born Dec. 11, 1781, at Jedburgh, where his father was rector of the high school. He graduated in arts and theology at the University of Edinburgh, and was licensed for the ministry of the Church of Scotland, but at the instance of Brougham, who was his fellow student, he began the researches in the diffraction of light upon which his fame chiefly rests. From 1801, when at the age of twenty he became editor of *The Edinburgh Magazine*, he was a prolific writer on scientific subjects. In 1807 he was appointed editor of *The Edinburgh Encyclopædia*. Later, with Robert Jameson, he conducted *The Edinburgh Philosophical Journal*; he also edited *The Edinburgh Journal of Science*. His chief literary work is his *Life of Sir Isaac Newton* (1855).

The most important of the practical applications of Brewster's discoveries was the dioptric apparatus for lighthouses, in which he anticipated Fresnel. He also invented the lenticular stereoscope. He was a founder of the British Association, and on the occasion of its first

meeting in 1831 he was knighted. In 1838 he was appointed Principal of the University of S. Andrews and ten years later Principal of the University of Edinburgh, a position he held until his death, Feb. 10, 1868.

Brewster Sessions Special statutory sessions of the justices. They are held annually in August and September for the granting of new licences for the sale of excisable liquor.

Brialmont Henri Alexis. Belgian military engineer. Born May 25, 1821, he passed out of the Brussels Military School into the Engineers in 1843 and became a staff officer in 1855. In 1874 he reached the rank of major-general and was appointed inspector-general of fortifications; in this capacity he carried out the system of fortresses by which Belgium was defended at the outbreak of the World War. In 1883 he spent some time in Rumania advising on a scheme for fortifying Bucharest. He died July 21, 1903.

Brian Boru King of Ireland. Born about 926, the son of a king, he became King of Thomond and then, in 978, of the larger area of Munster, with seats at Tara and Cashel. In 1002 he was recognised as the overlord of Ireland, and was henceforward engaged in fighting the Danes. Successful in many battles against them, he was killed in one at Clontarf, April, 23, 1014.

Briand Aristide. French statesman. Born at Nantes, March 28, 1862, he became a lawyer. He gained a livelihood as a journalist and was editor of the Socialist paper *La Lanterne*. In 1902 he was elected to the Chamber of Deputies and next year began his long public career as Minister of Education. The Socialists disowned him, but his advanced opinions remained. In 1908 he became Minister of Justice and in July, 1909, Premier. He was Premier again in 1913, and from 1915 to March, 1917, a most critical time.

After a spell of political inactivity, Briand became Premier in 1921 and for the next ten years he was, next to Poincaré, France's leading figure. Either as Premier or Foreign Secretary, he was in office during most of that time. The last of several spells as Premier began in 1929 when he took that office for the twelfth time. From 1926 to 1930, except for a short interval, he was Foreign Minister. He resigned the premiership on account of ill-health early in 1932 and died March 7, 1932.

Outstanding events in Briand's earlier career were his share in the separation of Church and State, and his action in fighting the great strike of 1910. After the Great War he signed the Treaty of Locarno and the Peace Pact of 1928, and took part in the European negotiations of those years. In 1930 he put forward the idea of a United States of Europe.

Bribe Term originally implying anything in the way of alms given to a sturdy beggar. It has been extended to mean any gift made with the corrupt object of inducing the recipient to show favour to the donor.

The political bribery and corruption rampant in 18th century England was stamped out by a series of severe enactments. In the United States, on the other hand, the wealth and ambition of the great business interests are still potent incentives to corruption or graft.

Bribery at elections in Great Britain is forbidden under heavy penalties by the Corrupt Practices Act of 1883, and by an act passed in 1900 the giving of secret commissions to induce business is illegal.

Brick Rectangular block of burned clay used for building purposes. The clay employed varies greatly, the commonest being a sandy or marly clay or "malm," a mixture of clay and chalk. A heavy hard blue brick is made in Staffordshire from clay containing about 10 per cent. of iron, while firebricks for furnaces are made from Stourbridge fireclay containing a high percentage of alumina and iron oxide, but no free alkalis, thus giving a highly refractive character.

In the manufacture of bricks the clay, after being freed from stones, is washed in a mill, then ground in a pug mill and finally formed into the required shape of bricks in a moulding machine. After being dried in the air the "green bricks" are finally burnt in a special form of kiln or by the older method of forming the bricks themselves into a kind of kiln in which a fire is kept burning.

Bride Irish saint, also called Brigid or Bridget. Born about 452 at Faughart, near Dundalk, she was the daughter of an Ulster prince. Her desire for seclusion led her to make her cell under an oak at the place afterwards called Kildare and there she was buried after her death in 523. Her feast day is February 1.

Bridewell Area in the City of London between Fleet Street and the Thames and immediately west of the Fleet ditch. It derives its name from a holy well of S. Bride (Bridget). Formerly the site of a royal palace, which Edward VI. presented to the city to be used as a refuge for the homeless, it became a house of correction for vagrant women and idle apprentices. Bridewell consequently became a generic term for a reformatory. With the exception of the hall and some offices, Bridewell house of correction was demolished in 1864.

Bridge Card game. It is played by four players with the full pack of cards. Each player has 13 cards and the aim of each pair is to make the highest possible number of tricks. Trumps are used as in whist, but it is also possible to play a hand of no trumps.

The dealer, having examined his hand, either declares the trump suit or no trumps himself or leaves it to his partner. The partner's hand is then laid on the table exposed, and the dealer plays both hands. There is an elaborate system of scoring both for tricks and honours. Tricks in no trumps have the highest value; then follow in order hearts, diamonds, clubs and spades. Tricks only count towards the game; honours are scored above the line. From this simple form of bridge, which was introduced into London in 1894, *auction* and *contract* bridge have evolved, and these have completely supplanted ordinary bridge. A national Bridge Association of Great Britain was formed in 1933. *See* AUCTION BRIDGE; CONTRACT BRIDGE.

Bridge Structure consisting of an arch, or series of arches or spans, to carry a roadway across a river or other roads. A bridge in its simpler form may consist of an arch, or several arches of stone, brickwork or ferro-concrete, the two end supports being known as abutments, while the intermediate supports are termed piers, the masonry being held together by the keystone of the arch. In modern bridges iron girders are generally used, the lattice girder being the usual type for

moderate spans, but for wider spaces the cantilever is more suitable. In this latter type two or more cantilevers meet in the centre of the span. The Forth Bridge with three double cantilevers is an example of this form of bridge. In a suspension bridge the roadway is supported by vertical rods attached to cables or chains connected with towers on each bank or on piers. Another kind of bridge is the "transporter." The longest bridge in the world is the San Francisco-Oakland Bay bridge in California. Others, however, exceed it in certain particulars. Among them are the Brooklyn Bridge, New York, the Quebec Bridge across the St. Lawrence, the bridge over Sydney Harbour opened in 1932, and the bridge over the Golden Gate also in California.

Bridge **Sir John Frederick.** English organist. He was born at Oldbury, Dec. 5, 1844, becoming a chorister at Rochester Cathedral when a boy. Study and success in two minor posts led to his appointment as organist of Manchester Cathedral in 1869. In 1875 he became deputy, and in 1882 chief organist at Westminster Abbey. He officiated at two coronations and retired in 1918. Knighted in 1897, Bridge was professor at the London University, the Royal College of Music, and Gresham College. He wrote cantatas, oratorios and other kinds of church music as well as a book, *A Westminster Pilgrim*. Bridge died March 18, 1924.

Bridgehead Fortifications at the head or end of a bridge. Owing to the strategic importance of these places they are usually carefully defended in time of war. The Armistice of 1918 arranged that the Allies should occupy for a time the bridgeheads of the Rhine.

Bridgeman **Viscount.** English politician. Born Dec. 31, 1864, William Clive Bridgeman was a grandson of the Earl of Bradford. He had a brilliant career at Eton and Trinity College, Cambridge, was elected to the L.C.C. in 1904, and in 1906 became M.P. for the Oswestry division. In 1915 he was made a Lord of the Treasury, and he remained a member of the coalition ministry as Secretary to the Ministry of Labour and then to the Board of Trade. From 1920-22 he was Secretary for Mines, 1922-24 Home Secretary in the Unionist Cabinet, and from 1924-29 he was First Lord of the Admiralty. On his retirement he was made a viscount. He was made Chairman of the B.B.C. in 1935 and died in Aug. of the same year.

Bridgend Market town and urban district of Glamorganshire. It stands on the River Ogmore, 20 m. from Cardiff, on the G.W. Rly. Its industries are concerned with the coal mines near. Pop. (1931) 10,033.

Bridge of Allan Burgh and watering place of Stirlingshire. It is 3 m. from Stirling, on the L.M.S. Rly. There are some small industries, but it is chiefly known for its mineral springs, which have made it a spa and a pleasure resort. It stands on Allan Water, the banks of which are celebrated in the old song. Pop. (1931) 2897.

Bridgeport City and seaport of Connecticut, U.S.A. It is 58 m. from New York, and is on one of the branches of Long Island Sound at the mouth of the River Pequonnock. It is both a shipping and a manufacturing centre, and has a good harbour. The manufactures include sewing machines, gramophones, typewriters and motor cars. Pop. (1930), 146,716.

Bridges **Robert Seymour.** English poet. Born in Kent, Oct. 23, 1844, he was educated at Eton and Corpus Christi College, Oxford. He qualified as a doctor and practised for a time, but retired in 1882. In 1890 he published a volume of poems, and in 1891 an oratorio of his was performed. Gradually he became known as a poet, and in 1913 he was appointed Poet Laureate. Later he received the Order of Merit, and he died at Boar's Hill, Oxford, where he had long made his home, April 21, 1930. His anthology, *The Spirit of Man*, was his contribution to the war years. *October and other Poems*, 1920, and *New Verses*, 1921 and 1925, reveal the purity of his thought and style, and his mastery of language. His masterpiece is *The Testament of Beauty*, 1929.

Bridgetown Capital and seaport of Barbadoes. It stands on Carlisle Bay, a fine roadstead, which serves as the harbour. There is railway connection with the interior of the island. The trading centre of the island, its exports include sugar and molasses. Pop. 13,486.

Bridgewater **Duke of.** English title borne by the family of Egerton from 1720 to 1803. In 1617 John Egerton, a son of the Lord Chancellor, Thomas Egerton, Viscount Brackley, was made Earl of Bridgewater. The 4th earl was made a duke in 1720. His younger son, Francis (1726-1803), who became the 3rd duke on his brother's death in 1738, was responsible for the Bridgewater Canal which he built to convey the coal found on his property near Manchester. He died March 8, 1803, and his property passed to the Earl of Ellesmere, a nephew. He built Bridgewater House, London, which also became the property of the earl. When the duke died, the dukedom became extinct, but a nephew became Earl of Bridgewater. Francis Henry Egerton, the 8th and last earl (1756-1829), was a writer, and he left money to the Royal Society for the Bridgewater Treatises and left the Egerton MSS. to the British Museum.

The **Bridgewater Canal** runs from Worsley to Mersey at Runcorn, passing by Manchester. Its length is 42 m. It was bought by the Manchester Ship Canal in 1887.

Bridgnorth Borough and market town of Shropshire. It stands on the Severn, 20¼ m. from Shrewsbury and 133¾ from London, on the G.W. Rly. It is divided by the river into an upper and lower town. There are some half-timbered houses, and on a hill the ruins of the castle. Pop. (1931) 5151.

Bridgwater Borough, river port and market town of Somerset. It stands on the River Parret, 12 m. from its mouth in the Bristol Channel, 142¾ m. from London, and 33 m. from Bristol. It is served by the G.W. Rly and by a canal to Taunton. The chief industries are the shipping along the river and the making of bathbrick. There are remains of a castle. Pop. (1931) 17,139.

Bridlington Borough, watering place and market town of Yorkshire (E.R.). It is 33 m. from Hull and 217 from London, on the L.N.E. Rly. The old town lies a little inland where there is the stately old Priory Church. On the coast is Bridlington Quay with a good harbour. The sands are good and there are attractions for visitors. Pop. (1931) 19,704.

Bridport Borough, seaport and market town of Dorset. It is on the

little River Brit, 18 m. from Dorchester, and 149 from London, on the G.W. Rly. The old town is about a mile from the sea, but it has a suburb on the coast called West Bay which attracts visitors. There is a small harbour and the industries are connected mainly with the sea. Pop. (1931) 5917.

Bridport Viscount. English admiral. The son of a clergyman, Alexander Hood was born in 1727, and entered the navy in 1741. He served with distinction under Hawke at Quiberon and under Keppel at Ushant. He was promoted rear-admiral of the white in 1780 and vice-admiral in 1787, in which year he was also knighted. In 1793 he served as Howe's second-in-command on the "Glorious First of June," and for his services was created Baron Bridport in the peerage of Ireland. In 1795 he fought the action off Belle-Ile, which, though indecisive, made him a popular hero. He was given a British peerage and appointed vice-admiral of England. For some time he was practically supreme in the direction of the naval operations against France, and personally conducted the blockade of Brest from 1798 until 1800. On his retirement he was created viscount. He died May 2, 1814.

Brier or Briar Common name for the wild or dog rose. It is also used for other varieties including the sweet brier or any shrub with wooded stems bearing thorns or prickles. It is also the name for the white heath, a French shrub used in the manufacture of pipes. *See* BRIAR ROOT.

Brierley Hill Market town and urban district of Staffordshire. It stands on the Stour and the G.W. Rly. in the Black Country. The industries are the making of various kinds of hardware. It is 124 m. from London and canals pass through the district. Pop. (1931) 14,344.

Brig Two-masted sailing vessel, both masts being square-rigged. A brigantine is a cross between a brig and a schooner, the foremast only being square-rigged, and the mainmast being rigged fore-and-aft.

Brigade Military unit. It consists of four battalions of infantry, or two or more regiments of cavalry, with supply and other units. The commander of a brigade is a major-general or a colonel with the acting rank of brigadier-general. An artillery brigade consists of two or three batteries under a lieutenant-colonel.

Brigadier-General In the British army a temporary rank, the lowest for a general officer. As the name suggests he commands a brigade of infantry or cavalry. The rank was abolished in 1920, in favour of that of colonel commandant, but was revived in 1928. The equivalent rank in the navy is commodore.

Brighouse Borough and market town of Yorkshire (W.R.). It stand on the Calder, 6 m. from Huddersfield, 188 m. from London, on the L.M.S. Rly. It is a centre of the woollen industry and has other manufactures. There are stone quarries in the neighbourhood. Pop. (1931) 19,756.

Bright John. English statesman and orator. The second son of Jacob Bright, a millowner of Rochdale, and a member of the Society of Friends, he was born Nov. 16, 1811. In 1836 he became acquainted with Richard Cobden, who induced him to take an active part in the agitation against the Corn Laws, and thenceforth he and Cobden were the leading spirits in the Anti-Corn Law League. Their labours were crowned with success in 1845 when Sir Robert Peel decided in favour of the repeal of the Corn Laws. In 1843 he was elected to Parliament as M.P. for Durham, and in 1847 he was returned for Manchester. He opposed the Crimean War and in that connection delivered the most famous of his speeches in the House of Commons (Feb. 23, 1855). At the general election of 1857 he was defeated at Manchester, but shortly afterwards was returned unopposed for Birmingham.

In 1868, on the formation of the Gladstone administration, Bright accepted office as President of the Board of Trade, but in the following year he resigned owing to ill-health. On the reconstruction of the ministry in 1873 he came back to office as Chancellor of the Duchy of Lancaster. On Mr. Gladstone's return to power in 1880 he again was Chancellor of the Duchy, but, disagreeing with the Egyptian policy, which culminated in the bombardment of Alexandria, he resigned and never held office again. When Mr. Gladstone announced his conversion to Home Rule, Bright aligned himself with the Liberal Unionists, and his defection undoubtedly contributed heavily to the defeat of the Home Rule Bill of 1886. He died at Rochdale on March 27, 1889.

Brightlingsea Urban district and watering place of Essex. It is on the estuary of the Colne, 8 m. from Colchester, 61 m. from London, on the L.N.E. Rly. Boat building is carried on and there are oyster beds, but it is chiefly known for its yachting interests. Pop. (1931) 4145.

Brighton County borough and watering place of Sussex. It is 51 m. from London and is reached by the S. Rly; there are also regular road services. It extends from Hove, a separate borough, past Kemp Town, included in Brighton, to Rottingdean, and has a fine parade along its extensive front. There are two piers, theatres and other places of amusement, several public parks, Preston and Hollingbury among them, and the council has bought Devil's Dyke and other land on the Downs. Brighton has railway shops and other industries, including some fishing. There is a racecourse at Kemp Town and several golf links. Pop. (1931) 147,427.

Another **Brighton**, also a watering place, is in New South Wales. It is 8 m. from Sydney.

Bright's Disease Term applied to various inflammatory conditions of the kidneys (nephritis acute and chronic) which were first described by Dr. Richard Bright (1789-1858). It is characterised by the presence of albumen in the urine, and the symptoms are pain in the back, sickness, a certain degree of fever, and dropsy. The acute condition is more amenable to treatment than the chronic.

Brill Village of Buckinghamshire. It is 50 m. from London, on the L.N.E. Rly. It is famous for its windmill, one of the few existing examples of a mill revolving on a central post. Pop. 1019.

Brill Flat fish of the genus *rhombus*. It is closely allied to the turbot, but is smaller and smooth-skinned. It is a popular table fish, but much inferior to the turbot in flavour. It is found around the coasts of Great Britain.

Brindisi City and seaport of Italy. Standing at the Mediterranean

end of the Adriatic Sea, its position makes it important. As Brundisium it was a Roman port and it had a considerable trade in the Middle Ages. After a period of decline, it recovered its prosperity owing to the opening of the Suez Canal, as goods and passengers for the East were put on ship here. There is a large and safe harbour and railway connection with the great European lines. Pop. 48,400.

Brindley James. English engineer. Born in 1716 at Thornsett, Derbyshire, of humble parentage, he was apprenticed to a millwright. On setting up in business for himself at Leek, he soon became known for his skill in repairing machinery. In 1759 he was employed by the Duke of Bridgewater to direct the construction of the Bridgewater Canal between Worsley and Manchester. For the rest of his life Brindley was engaged mainly on inland navigation works, and in all laid out over 360 m. of canal. He died Sept. 30, 1772.

Brioni Small group of islands in the Adriatic, off the coast of Istria and north-west of Pola. The largest of them, Brioni Maggiore, is a favourite holiday resort.

Brisbane City and river port of Australia, also the capital of Queensland. It stands on both sides of the Brisbane river, 45 m. from the sea, and covers 385 sq. miles. A commercial and banking centre, Brisbane has a large export and import trade, for which there are docks and wharves along the iver, and there are also some manufactures.

The city is laid on modern lines with wide streets and handsome squares. The buildings include two cathedrals, Anglican and Roman Catholic, parliament house, law courts, custom house, and the University of Queensland. The city was named after Sir Thomas Brisbane who founded it. Pop. 313,251.

Bristol City and seaport of Gloucestershire. It stands on the Avon, 9 m. from the Bristol Channel and 118 m. from London, and can be reached by both L.M.S. and G.W. Rlys. The city proper is in Gloucestershire, but some of its suburbs are in Somerset. There is a harbour on the Avon, with quays and warehouses, but for larger vessels the docks are at Avonmouth, the city's port, and Portishead. The industries, apart from shipping, include the manufacture of tobacco, chocolate, etc. The buildings of the city include the cathedral and the beautiful church of S. Mary Redcliffe. A site on College Green has been selected for new municipal buildings. Clifton and Durdham Downs and Leigh Woods are some of the city's open spaces.

Bristol has a university opened in 1909. Connected with it is the old Merchant Venturers' College. Clifton College is a notable public school. The municipal aerodrome is at Whitchurch. Pop. (1931) 396,918.

The title **Earl of Bristol** was borne by the family of Digby from 1622, when John Digby was made an earl, until 1698 when the 3rd earl died.

The title of **Marquess of Bristol** has been borne by the family of Hervey since 1826. In 1714 John Hervey was made an earl, and in 1826 the 5th earl was made a marquess. The title is still held by the family and their seat is Ickworth Park, Bury St. Edmunds.

The *Bristol* is the nameship of a class of British cruisers. Launched in 1910, she displaced 4800 tons and took part in some fighting during the Great War. The name has been in the navy since 1666.

Bristol Channel Arm of the sea separating South Wales from Somerset and Devon, and forming an extension of the estuary of the Severn. It is about 80 m. in length and receives in addition to the Severn the waters of the Towy, Taff, Usk, Wye, Avon, Parret, Tone, Taw and Torridge. Lundy Islands stands at the entrance to the Channel off Hartland Point. The Channel, being funnel-shaped, is remarkable for its high and rapid tides, which at the Severn estuary form the famous Severn bore.

Britain Name given to England and Scotland from the earliest times to the coming of the Angles and Saxons in the 5th century. It comes probably from the Brythons, a Celtic people, and in the form Britannia was given to the land by the Romans. The Britons fought against the invading Romans, but were subdued by them and lived under Roman rule for nearly 400 years, or until about 400. Caesar gives an account of Britain and the Britons. They had their own manners and customs and they knew a little about building and the use of metals. They grew corn and kept animals. They had kings and warriors with chariots, priests called Druids and a religion in which human sacrifices were made.

Britannia Roman name for Britain. It is used to-day for the female figure representing Britain that appears on some of the British coins, and is used in other ways as an emblem, for instance on medals. The figure of Britannia on the copper coins was introduced in the time of Charles II., the Duchess of Richmond serving as the artist's model.

Britannia Formerly a training ship for officers of the British Navy. The early naval cadets were trained on warships, one of which was the Britannia, which was put to this service in 1859. It was replaced by another vessel, also named Britannia which was stationed at Portsmouth and then at Dartmouth. In 1903 the cadets were transferred to a college at Dartmouth.

Britannia Metal Name given to an alloy. To produce this metal tin, zinc, antimony, bismuth and copper are used in varying proportions. It is an exceedingly ductile material, and lends itself admirably to the manufacture of articles that have highly ornamented surfaces. It was first made in Sheffield about 1770.

British Association Society for the advancement of science. It was founded in 1831 and holds a meeting every year at which an address is given by the president, an eminent scientist, and sectional meetings are held for the discussion of matters of interest. The meetings are usually held in an English town or city, but at least three times the Association has gone over seas, to Australia, Canada and S. Africa. The 1931 meeting, the centenary one, was held in London. The headquarters are at Burlington House, London, W.1.

British Broadcasting Corporation *See* BROADCASTING.

British Columbia One of the nine provinces of the dominion of Canada. In the west of the country it has a long coastline on the Pacific. It covers 372,630 sq. m., and includes Vancouver and other islands. Victoria is the capital, but

Vancouver City is the largest place. The province produces fish and fruit, silver, copper, lead, coal and other minerals; lumber and furs. British Columbia is governed by a ministry responsible to a legislative assembly of 48 members, elected by all adults for five years. It sends six senators and 14 representatives to the Parliament of the Dominion. It joined the Dominion in 1871, on the condition that a railway should be built across the continent. Pop. (1931) 694,263.

British East Africa Term used to denote all territories under British rule in East Central Africa. It covers Uganda, Kenya, Tanganyika, Zanzibar, Nyasaland and Northern Rhodesia. *See* EAST AFRICA.

British Empire Lands under the rule of the sovereign of the United Kingdom and sometimes called the British Commonwealth of Nations. The area of the Empire is 14,000,000 sq. m., and its pop. is about 450,000,000. This is divided between the continents thus:

	Area (sq. m.)	Population.
Europe	121,500 ..	48,000,000
Asia	1,824,500 ..	333,000,000
Africa	4,652,000 ..	50,000,000
America .	4,111,800	11,000,000
Australasia and Oceania	3,300,000	6,000,000

The states of the Empire may be divided into six groups: (1) Great Britain and Northern Ireland; (2) The six Dominions, Canada, Australia, Newfoundland, South Africa, New Zealand and the Irish Free State; (3) India; (4) Colonies; (5) Protectorates; (6) Mandated territories.

The Dominions are autonomous communities within the Empire, equal in status with Great Britain and with one another. India as an Empire occupies an exceptional position, which is being gradually altered in the direction of dominion status. Colonies include Southern Rhodesia and other parts of the Empire which are self-governing, as well as islands and districts such as Ceylon and Sierra Leone over which the British Government has legislative powers, more in some and less in others. Protectorates are chiefly states such as Uganda and Somaliland in which native rulers are left to manage their own internal affairs. Mandated territories are areas governed under mandate from the League of Nations. Such include Palestine, Tanganyika and Samoa.

To deal with the relations between Great Britain and the rest of the Empire, there are departments of state in London. The Dominions Office is responsible for the affairs of the Dominions and the Colonial Office for those of the colonies, protectorates and mandated territories. For India there is a separate office. The king is represented in each Dominion and colony by a governor-general or governor. The Dominions and India have each a high commissioner in London, and for the colonies there are agents general, or the crown agents.

Theoretically the Parliament at Westminster can legislate for the whole Empire; but in practice it has nothing to do with the internal affairs of the Dominions, and their independent position was fully recognised by the Statute of Westminster passed in 1932. Their legislation, however, requires the sanction of the king, but this is never refused. To discuss the affairs of the Empire an Imperial Conference meets in London every five years and ministers from the Dominions sometimes attend the meetings of the Committee of Imperial Defence. The Judicial Committee of the Privy Council, on which are representatives from the Dominions, is the supreme court of appeal from the courts of the various parts of the Empire. In 1932 representatives from the whole Empire met at Ottawa for an economic conference.

British Empire Order of the British order founded in 1917. It is given for services rendered to the Empire, and to men and women alike. There are two divisions, military and civil, and five classes in each. These are knight grand cross (G.B.E.), knight commander (K.B.E.), commander (C.B.E.), officer (O.B.E.) and member (M.B.E.). Women use the same letters except D.B.E. instead of K.B.E. Those in the first two classes are entitled to call themselves dame. The motto is *For God and the Empire.*

British Isles Name sometimes given to Great Britain, Ireland, and the adjacent islands. Its divisions are, England, Wales, Scotland, Northern Ireland, Irish Free State, Isle of Man and the Channel Islands. They cover 120,489 sq. m., and have a pop. estimated at 48,000,000.

British Legion Association of men who served in the Great War. It was founded in 1921, and its objects are to help service men and their dependants. The legion has a factory at Petersham where the poppies sold on Armistice Day are made. In 1930 there was an enquiry into the working and finances of the legion. The offices are at 29 Eccleston Square, London, S.W.1. Earl Haig, the first president, was succeeded by Earl Jellicoe.

British Museum National museum of Great Britain. It owes its origin to Sir Hans Sloane who died in 1753 and by his will gave an option to Parliament to purchase for £20,000 his library, MSS., and collection of natural history specimens and other curiosities. The Act of Parliament by which the offer was accepted provided also for the purchase of the MSS. collected by Robert and Edward Harley, Earls of Oxford, and for the proper custody of the Cotton MSS., already the property of the nation. To these three collections George II. added the royal library begun by Henry VII., and continued by successive sovereigns down to the reign of Charles II.

To house the collections, Montague House, Bloomsbury, was purchased and was opened in 1759 as the British Museum, and in 1881 the natural history collections were removed to a building in South Kensington.

The development of the library and public reading room of the Museum was the work of Anthony Panizzi, an Italian refugee, who was appointed keeper of printed books in 1837. The famous rotunda which now forms the reading room was built according to his plan and opened in 1857. Under the Copyright Act a copy of every book printed in the United Kingdom must be delivered to the British Museum Library within a month of publication. The library is the largest in the world, and is estimated to contain nearly 3,000,000 volumes. It has a building at Colindale near Hendon where newspapers are stored.

Briton Ferry Seaport of Glamorganshire. It stands at the mouth of the River Neath, on the G.W. Rly., 2 m. from the town of Neath of which it is a

port. There are large docks and other industries include coal mines and iron works.

Brittany (Fr. *Bretagne*). Former province of France. It comprises the modern departments of Côtes-du-Nord, Ille-et-Vilaine, Loire-Inférieure, Morbihan and Finistère. It was anciently known as Armorica, but during the 5th and 6th centuries, owing to the pressure of the Anglo-Saxon invasion of England, it was colonised by British immigrants and came to be known as Britannia Minor.

To this day Brittany maintains a character as distinct from the rest of France as Wales is from England. The Bretons speak a variant of the ancient British tongue closely allied to Welsh, and in their physical and moral characteristics closely resemble the South Welsh, the Cornish, and the Highlanders of Scotland. They are devoted to the Roman Catholic faith and have distinctive popular religious festivals known as pardons. They excel as fishermen and sailors and provide the bulk of the seamen of the French Navy. The soil of Brittany, except in Ille-et-Vilaine, is poor. The chief towns are Rennes, Nantes and the naval ports Lorient and Brest. Quimper is famous for its earthenware, and St. Malo, Dinard and other places are favourite holiday resorts.

Brixham Watering place and urban district of Devon. It stands on Torbay, on the G.W. Rly., 32 m. from Exeter. There is a good harbour for the fishing and coasting trade. Here William III. landed in 1688. Pop. (1931) 8147.

Brixton District of London. In the borough of Lambeth, it is 4 m. to the south-west of the city. Brixton prison is here. Other buildings are the Lambeth town hall and the Tate library.

Brno City of Czechoslovakia, also called Brunn. It is 89 m. from Vienna at the junction of two rivers, and is well served by railways. On the Spielberg, a hill overlooking the city, is the citadel, long used as a prison. There is a university founded in 1918. A thriving industrial city, Brno is the second largest place in Czechoslovakia. Before 1919 it was in Austria, being the capital of the province of Moravia. Pop. (1930) 263,616.

Broadcasting Word meaning to send out news to all men everywhere, but to-day used especially for the sending out by wireless of information, entertainment, etc., to persons who possess receiving sets. This began in Great Britain in 1921, and the first transmission was made from a station at Chelmsford. In 1921 the British Broadcasting Company was formed and in 1926 this became a Corporation under the control of the Government. It has a monopoly of broadcasting in Great Britain and obtains an income from a certain proportion of the fees paid for receiving licences. The headquarters are in Portland Place, London, W.C., a building erected in 1930-31 and equipped specially for the purpose. Before 1932 the headquarters were on Savoy Hill.

The national programmes are sent out from London and Droitwich. For regional programmes there are stations at Brookman's Park for the London area, Droitwich for the midland, Moorside Edge, near Huddersfield, for the northern, Westerglen, near Falkirk, for the Scottish, Washford Cross for the western and Lisburne for Northern Ireland. Of these the London, Northern, Scottish and West Regional are dual transmitting stations. There is also an Empire transmitting station at Daventry which operates on a short wave. Then for more limited areas there are stations at Bournemouth, Newcastle, Plymouth and Aberdeen, and there are relay stations at Liverpool, Bradford, Sheffield, Hull and Stoke-on-Trent. Most large foreign cities have broadcasting stations.

Broadcasting has extended to every civilised country, but the arrangements for controlling it vary to a considerable extent between one and another. There is an international board at Geneva to discuss matters of common interest. In 1932 arrangements were made for broadcasting programmes between the United States and Great Britain. On June 30, 1935, there were in Great Britain and Northern Ireland 7,077,095 licences in force.

Broadmoor Asylum for criminal lunatics. It is in Berkshire, on the S. Rly., and was opened in 1863.

Broads The. District of East Anglia, mainly in Norfolk but partly in Suffolk. It is so called from its numerous broads, or large shallow lakes. The district is intersected by the lower reaches of the Rivers Yare, Bure, Ant and Wavency which are connected with the broads by watercourses called dykes.

The Broads are perhaps the most popular sporting holiday resort of England. Fish and wild fowl are abundant and the lakes are navigable by small sailing craft. The chief broads are, Oulton, Ormesby, Hickling, Wroxham, Rollesby, Horning and Salhouse.

Broadsheet Single sheet of paper printed on one side only and also called a broadside. The earliest use of broadsheets was for the publication of proclamations and other official notices, but from the 16th century onwards they appear as a method of circulating popular literature—ballads, dying speeches of criminals, political squibs, etc. Several important poems by Dryden and Butler were first published in broadsheet form.

Broadside Simultaneous discharge of all the guns on one side of a war vessel. In modern battleships the guns can be swung to fire on either side, thus adding to the power of a broadside. The term, however, is not now much used, having been replaced by salvo, though technically there is a slight difference between a broadside and a salvo.

Broadstairs Watering place of Kent. It is on the Isle of Thanet, 2 m. from Ramsgate and 73 from London, on the S. Rly. There is a fine parade and the attractions include golf links and sea fishing. Broadstairs owes some of its popularity to Charles Dickens, who lived here from 1837 to 1851. With S. Peters it forms an urban district. Pop. (1931) 12,748.

Broadway Village of Worcestershire. It is 5 m. from Evesham and 107 from London, on the G.W. Rly. Beautifully situated, it is a good centre for visitors to the Cotswolds. Pop. 1800.

Brobdingnag Imaginary land described in *Gulliver's Travels*. In his first voyage Gulliver visits Lilliput, where he is a giant among pigmies. In his second voyage he visits Brobdingnag, where he is a pigmy among giants.

Broccoli Vegetable of the natural order *cruciferae*. It grows easily in Great Britain, and can be obtained nearly all the year round. The seeds can be sown in March and kept under glass until June when they should be planted out. The broccoli resembles the cauliflower and is a useful green vegetable for the table.

Brochure (Fr. *brocher*, to strike). Small treatise or article. Originally printed on a few leaves stitched together, or enclosed in a paper cover, it is practically the same as a pamphlet.

Brock **Sir Thomas.** English sculptor. A native of Worcester, he was born in 1847, and settled in London in 1866. His work soon won for him a great reputation, and two magnificent pieces of statuary, *Eve* and *The Moment of Peril*, which he wrought, are in the Tate Gallery, London. He designed the memorial to Queen Victoria, near Buckingham Palace, and was responsible for the designs on the coinage first issued in 1893. In 1891 he was elected R.A., and he was knighted in 1911. He died on Aug. 22, 1922.

Brocken Highest mountain of the Harz. In Prussian Saxony, it figures prominently in German folklore as the scene of the witches' sabbath supposed to be held annually on Walpurgis Night (May 1). The legend is probably due to the fact that pagan rites lingered longer in the Harz than in any other part of Germany. The most famous literary reference is the Brocken scene in Goethe's *Faust*. On the night of June 17, 1932, certain of the rites of black magic were accurately reproduced on the Brocken, under the direction of the (British) National Psychical Research Council, without, however, producing the supposed results. The **Spectre of the Brocken,** so called from the phenomenon having been first observed on the Brocken, is the gigantic shadow of an observer cast upon a bank of cloud in mountain regions when the sun is low. The mountain is 3733 ft. high.

Brocklesby Village of Lincolnshire. It is 9 m. from Grimsby, on the L.N.E. Rly. Brocklesby Hall, the seat of the Earl of Yarborough, is a fine house standing in a large park. The village gives its name to the Brocklesby Hunt.

Brockville Town of Ontario. It stands on the St. Lawrence, 125 m. from Montreal, on the C.P. and C.N. Rlys. It is also a river port and has some manufactures. Brockville was named after **Sir Isaac Brock,** who was killed fighting against the Americans, Oct. 13, 1812. Pop. 10,000.

Brodick Village of Arran. It stands on Brodick Bay and is a calling place for steamers and a centre for visitors to the island. Here is Brodick Castle, for many years a seat of the Duke of Hamilton. It is now a residence of the Duchess of Montrose, a daughter of the 12th Duke of Hamilton.

Brogue (Gaelic *brog*). Rough shoe of undressed cowhide or deerskin formerly worn by the Gaels of the Scottish Highlands and Ireland. It is now applied to a make of stout shoe worn with Highland sporting dress. As the brogue was regarded as the distinctive mark of the Gael, the term came to be applied to the dialectic and accentual peculiarities of English-speaking Gaels, more particularly the Irish.

Broken Hill Town of New South Wales, Australia. It is on the railway, 925 m. from Sydney, and is famous for its silver mines. From these an enormous quantity of silver has been won, but they are less productive than formerly. Copper, tin and other minerals are found. Broken Hill is also the centre of an agricultural area. Pop. (1931) 22,950.

Another **Broken Hill** is in Northern Rhodesia. It is 655 m. from Bulawayo on the main railway line. A mining centre, there are immense reserves of lead and zinc ores in the neighbourhood and these are mined on a large scale.

Broker Middleman or agent, one who acts as intermediary between buyer and seller. There are many kinds of brokers, stock brokers, bill brokers, metal brokers and others. Their relations with their clients are governed by the law of agency. Their fees, called brokerage, are generally on a percentage basis. Those of stock brokers are according to the scale fixed by the London Stock Exchange. Men who deal in second-hand furniture are called brokers. Pawnbrokers (*q.v.*) trade under special conditions.

Bromborough District of Cheshire. It stands on the Mersey, 5 m. from Birkenhead, and is served by the G.W. and L.M.S. Rlys. There are extensive docks and some other industries. With Bebington it forms an urban district. Pop. of urban district (1931) 26,742.

Brome **Richard.** English dramatist. He learned his art from Ben Jonson, whose servant he was. His first successful play was *The Northern Lass* (1632). He wrote in all 15 plays by himself and collaborated with Thomas Heywood in *The Late Lancashire Witches* (1634). He died in 1652.

Bromide Term given to salts of hydrobromic acid, the commonest examples being the bromides of potassium and silver. Potassium bromide, a white crystalline compound, is used largely in medicine as a nervous sedative in epilepsy and other diseases. Silver bromide, being sensitive to the action of light, is used in photographic printing in the form of a gelatine emulsion, which is applied to paper to form bromide paper. Prints made with this emulsion are in tones of sepia to black.

Bromine Non-metallic element. Its atomic weight is 79.96, and its chemical symbol is Br. It exists as a heavy volatile liquid of a deep reddish-brown colour and has a suffocating irritant odour. It occurs in mother liquors from sea water, but the chief source of bromine and its compounds is the mineral carnallite from Stassfurt in Saxony. Bromine resembles chlorine in many of its characters and its compounds are used in medicine, photography and in the manufacture of aniline dyes. Ethylene bromide enters into the preparation of lead tetraethyl for incorporation in petrol.

Bromley Borough and market town of Kent. It is 11 m. from London on the S. Rly. The little River Ravensbourne flows through it. The palace occupies the site of the old palace of the Bishops of Rochester. Pop. (1931) 45,348.

Brompton District of London. To the south-west, it is mainly in the borough of Chelsea. The buildings include the Brompton Oratory, an edifice in the Italian Renaissance style opened in 1884, the hospital for consumptives, the Imperial Institute and S. Kensington Museums.

Bromsgrove Urban district and market town of Worcestershire. It is 12 m. from Worcester, on the L.M.S. Rly. Bromsgrove School, founded in 1553, is a public school, with accommodation for 330 boys. In the Birmingham area, Bromsgrove has manufactures of nails and other forms of hardware. Pop. (1931) 9520.

Bronchitis Catarrhal inflammation of the bronchial tubes, producing a feeling of tightness of the chest and a dry, hard cough, is usually caused by cold and damp or by irritating vapours, or is a complication of some other disease.

Treatment.—The patient should be kept in bed in a room of uniform temperature and put on a diet of milk foods until his temperature is normal. Linseed or mustard poultices, inhalations of Friar's balsam (2 teaspoonfuls to 1 pint of boiling water) and cough medicines to promote expectoration will give considerable relief.

The patient should allow himself a thorough convalescence or **Chronic Bronchitis** may develop. The condition is specially serious in infancy and old age.

Brondesbury District of London. It is 8 m. from the city, on the Metropolitan and L.M.S. Rlys. It forms part of the urban district of Willesden.

Brontë **Charlotte.** English novelist. A daughter of Rev. Patrick Brontë, she was born at Thornton, Bradford, April 21, 1816. She was educated at Cowan Bridge, Kirkby Lonsdale, at home and at Roe Head, Mirfield, a school kept by Miss Wooler, where later she was a teacher. She was a governess in private houses and in 1842-44 spent some time in a pension in Brussels. In 1844 she returned home to Haworth where her father was perpetual curate, and there she lived for ten further years. In Jan., 1854, she married Rev. A. B. Nicholls, and, on March 31, 1855, she died at Haworth.

Charlotte Brontë is known as the writer of three vivid and powerful novels, *Jane Eyre* and *Villette*, both largely autobiographical, and *Shirley*. She also wrote *The Professor*, her earliest book, but only published after her death.

The Brontës were a gifted family. The father was an Irishman who worked his way to Cambridge and lived at Haworth until his death in 1861. His only son, Patrick Branwell, passed a desultory life until his untimely death, Sept. 24, 1848. Of the five daughters two died young. Emily, born July 30, 1818, wrote an immortal novel, *Wuthering Heights*, and some poems. Anne, less gifted, wrote *Agnes Grey* and *The Tenant of Wildfell Hall*. Both died of consumption; Emily on Dec. 19, 1848, and Anne on May 28, 1849. The three sisters' first efforts were *Poems by Currer, Ellis and Acton Bell*, these being the pseudonyms respectively of Charlotte, Emily and Anne.

There is an immense literature on the Brontës, and in 1884 a Brontë Society was founded. In 1928 the parsonage at Haworth was opened as a Brontë Museum.

Brontosaurus Extinct reptile. Belonging to the herbivorous lizard-footed type of dinosaurs, it is known from its fossil remains in the Upper Jurassic beds of Wyoming, U.S.A. It was about 60 ft. long and 10 ft. in height, and was characterised by having a small head at the end of a long tapering neck and a short body ending in a very long tail. It is probable that the brontosaurus lived on the seashore, feeding upon sea weeds.

Bronx Part of the city of New York. It is to the north of Manhattan from which it is separated by the Bronx River. Since 1897 it has been one of the boroughs which comprise New York City, and has grown enormously. Here are the buildings of the University of New York. Pop. 800,000.

Bronze General name for copper-tin alloys, which include gun metal, bell metal and speculum metal. The colour and properties vary according to the proportions of the constituents, but ordinary bronze is harder and stronger than brass and is easily worked when quickly cooled after heating to redness. **Phosphor bronze** containing a small percentage of phosphorus is very hard and tenacious, and is used therefore for machine bearings, etc. **Silicon bronze** is a good conductor of electricity. **Manganese bronze** resists corrosion well and is suitable for propeller blades; **aluminium bronze**, a gold coloured alloy, is used for making cheap jewellery.

Bronze Age Name given to the period when pristine man used bronze for his tools and weapons, this superseding the use of stone. Its date differs in various areas. In the East it began probably about 5000 B.C., and in the West perhaps 2000 B.C., and continued until about 1000 B.C. It is sometimes divided into three periods; early, middle and late, and it was superseded by the iron age.

Bronze Powder Powder composed of finely ground aluminium bronze, an alloy containing copper and tin with 2 to 12 per cent. of aluminium. It is employed as a basis for gold and bronze paints. In the trade, however, the term bronze powder also includes aluminium powder used for making aluminium paint.

Bronzing Process by which brass or other metals, also plaster casts and ceramic ware, are given a bronze colour to impart an artistic or antique appearance. For metals this is done by applying various chemical solutions such as platinum chloride to give a black colour, or a mixture of acetic acid, sal ammoniac, salt, cream of tartar and copper acetate, to produce a green or antique bronze.

Brooke **Rupert Chawner.** English poet. Born April 3, 1888, he was the son of a master at Rugby where he was educated before going to King's College, Cambridge. In 1911 he published a volume of poems and after his death other volumes, prose and verse, appeared. In 1914 Brooke joined the R.N.D. In 1915, when with the expeditionary force in the Mediterranean, he died at Scyros, April 23, 1915. Brooke's personality made a great impression on all who met him, and his poetry contains passages of great beauty. A memorial to him has been erected at Scyros.

Brooke **Sir James.** Rajah of Sarawak. Born at Benares, April 29, 1803, he was educated in England and entered the army of the E. India Co. In 1826 he was wounded and sent home, but he was soon in the East again. In 1839 he went to Borneo and offered to help the Sultan of Sarawak in his wars, the result being that he was made rajah and governor of Sarawak by that potentate. He put down head hunting and piracy, and was equally successful in Labuan where

the British Government made him governor. He was knighted in 1847, and died Jan. 11, 1868. His nephew, Charles Johnson Brooke (1829-1917), succeeded him as rajah and then followed the latter's son, Sir Charles Vyner Brooke.

Brooklands Motor racing track. It is near Weybridge, 20 m. from London. It was opened in 1907 and is the chief English centre for motor racing. The track has a maximum length of 3½ m.

Brooklyn Part of New York City. It is on Long Island, from which it is separated by the East River. It was made a city in 1834 and remained so until 1897, when it was incorporated with New York, as one of its five boroughs. The borough has many industries, some connected with the shipping along the river where there are docks and wharves. Brooklyn Bridge across the East River was opened in 1883.

Brookman's Park District near Hatfield in Hertfordshire, on the L.N.E. Rly. Here the B.B.C. has a twin-wave station which transmits the London programmes. National (261 M.; 50 kW.), and the Regional (356 M.; 50 kW.)

Brooks Charles William Shirley. English writer. Born in London, April 29, 1816, he was trained as a lawyer at Daventry. However, he became a journalist in London and after varied experiences on *The Morning Chronicle* and *The Illustrated London News*, he became a member of the *Punch* staff in 1851. He is known as the first writer of its *Essence of Parliament* and as its editor 1870-74. He died Feb. 23, 1874.

Brookwood District of Surrey. It is on the S. Rly., 28 m. from London and is known for its cemetery or necropolis. Here the first crematorium was opened in England.

Broom Leguminous shrub (*cytisus scoparius*). It is indigenous to Europe and northern Asia, growing on heaths and moors. The branches are green and furrowed, bearing compound leaves and yellow flowers resembling those of the gorse.

Broom Rape Group of parasitic plants belonging to the natural order *scrophulariaceae*. The broom rape has a stout, fleshy purplish-brown stem bearing scale-leaves and a spike of purple and yellow lipped flowers. From the underground rootstock arise roots which attach themselves to the roots of broom, gorse, hemp, clover and other plants.

Brose Oatmeal or pease meal mixed with boiling milk and stirred to the consistency of broth. A Scottish dish, water and meat liquor are also used to prepare it.

Brother Jonathan Name sometimes used for an American, just as John Bull is for a Britisher. It probably comes from Jonathan Trumball, Governor of Connecticut about 1770, who was called Brother Jonathan by Washington and others.

Brougham Village of Westmorland. It is just outside Penrith and is famous for its ruined castle and its magnificent modern hall. The former, once a seat of the Cliffords, is in ruins; in 1928 it was presented to the nation. The hall is one of the finest houses in the north of England, and was the seat of Lord Brougham until it was sold in 1932. Brougham was a Roman station.

Brougham Closed carriage formerly popular in England. It was named after Lord Brougham, who designed the first one. It has four wheels and can seat four persons in comfort inside, the driver being on the box seat outside. It is driven by one or sometimes a pair of horses. A doctor's brougham has no second seat inside and can only seat two persons apart from the box where the driver sits.

Brougham Lord. English lawyer and politician. Henry Peter Brougham was born of English parents in Edinburgh, Sept. 19, 1778, and was there educated. He became a Scottish advocate and later an English barrister, in the meantime helping to found *The Edinburgh Review*. He sat in the House of Commons from 1810-12 and again from 1816-30 and during these years became known as one of the leading orators of the day, both at the bar and in Parliament. He defended Queen Caroline and advocated legal and other reforms. In 1830 he was made lord chancellor and a peer and as a leading Whig he helped to pass the Reform Act of 1832. He left office in 1835 and died May 7, 1868.

Brougham's extraordinary energy was responsible for important legal reforms, such as the establishment of the judicial committee and the central criminal court, and for the promotion of schemes for educating the people. He wrote many books, made Cannes a watering place, and designed the carriage named after him. The barony, Brougham and Vaux, is now held by a descendant of his brother.

Broughton Castle Oxfordshire seat of Lord Saye and Sele. It is 3 m. from Banbury and one of the noblest buildings of its kind. The oldest part was erected by Sir Thomas Broughton about 1300, but most of it is Elizabethan. Much of the decorative work is extraordinarily fine and there are some valuable pictures and other treasures.

Broughty Ferry District of Dundee. On the Tay, it was a separate burgh until 1914 when it was included in Dundee. A port and a pleasure resort, it can be reached by L.N.E. Rly. The word Broughty is a corruption of "burgh Tay," as the castle that once stood here was built to defend the Tay.

Broussa City of Turkey, also called Brusa. It is 60 m. from Constantinople (Stambul) and about 30 from Mudania, its port on the Black Sea, to which there is a railway. From 1327 to 1361 Broussa was the capital of the Ottoman Empire and the tombs of some of the sultans are here. The city has some manufactures and a trade in silk and other produce. Pop. 61,500.

Brown Ford Madox. British artist. Born April 16, 1821, in Calais, he was a grandson of the Scottish physician, John Brown, the founder of the Brunonian system of medicine. Having studied art in Paris and elsewhere, he painted his first important picture in 1841. D. G. Rossetti worked under him and he was associated with the Pre-Raphaelites, writing for their paper *The Gem*. He died, Oct. 6, 1893, in London, leaving two daughters, who married respectively W. M. Rossetti and F. Hueffer. His son, Oliver an artist, had died in 1874. Brown's

works include "The Last of England" and frescoes in the Manchester town hall.

Brown **John.** Scottish physician. Born in Berwickshire in 1735, he became a teacher, but later studied divinity at Edinburgh. Next, he turned to medicine and, having graduated late in life, moved to London in 1786. He died Oct. 17, 1788. Brown is known for his advocacy of a system of medicine called the Brunonian, which at one time was very popular. He expounded this in lectures and in his *Elementa Medicinae*, which was an attack on the existing systems.

Brown **John.** Scottish author. Born in Lanarkshire, Sept. 22, 1810, his father was a minister. He himself went to the university of Edinburgh and became a doctor. He practised as a medical man, but his fame is due to his books, especially *Rab and his Friends*, Rab being a dog. His volumes of essays called *Horae Subsecivae*, are of interest. He died May 11, 1882.

Brown **John.** American soldier. Born in Connecticut, May 9, 1800, he became prominent when the question of slavery was troubling the country. On Oct. 16, 1859, with a few associates he seized the arsenal at Harper's Ferry. During the fighting he was wounded and captured. Tried, he was found guilty and was hanged at Charleston, Dec. 2, 1859. The opponents of slavery thought of him as a martyr and a song about him, *John Brown's Body*, became their battle chant.

Brown **Lancelot.** English gardener. Born in Northumberland in 1718, he became a gardener at the Duke of Buckingham's seat, Stowe. There he laid out the gardens in a style that attracted attention, and he was employed to design gardens for various great houses. He did this at Blenheim, Bowood and other places; also at Kew. Afterwards he turned his attention to the planning of several houses. Capability Brown, as he was called, died Feb. 6, 1783.

Browne **Charles Farrar.** American author, who wrote under the name of Artemus Ward (*q.v.*).

Browne **Sir Thomas.** English writer and physician. Born in London, Oct. 19, 1605, he was educated at Winchester and Oxford, and studied medicine at Leyden and Padua. He practised as a doctor in Norwich for many years and in 1671 was knighted. He died, Oct. 19, 1682, and was buried in the Norwich church of S. Peter Mancroft.

Browne lives as a writer and especially as one of the great masters of English prose. His chief book is *Religio Medici*, the religion of a doctor. He also wrote *Hydriotaphia*, a treatise on funeral customs, also called *Urn Burial*, and *The Garden of Cyrus*, both full of strange and curious lore.

Browning **Elizabeth Barrett.** English poetess. Born March 6, 1806, the daughter of a wealthy man, Edward Moulton Barrett, she lived in youth chiefly in Herefordshire. Of studious nature she began to write when quite young and, as a riding accident debarred her for some years from an active life, she gave her whole time to reading and writing. In 1844 she published *Verses*, a volume including *The Cry of the Children* which made her name known, and in Sept., 1846, she made a runaway marriage with Robert Browning which was ideally happy. In 1850 her *Sonnets from the Portuguese*, her best work, appeared, and later, *Aurora Leigh*. Leaving one son, Mrs. Browning died June 29, 1861, at Florence, and here she is buried.

Browning **Robert.** English poet. Born at Camberwell, May 7, 1812, he was the son of another Robert Browning, a clerk in the Bank of England. He was educated at a private school and at home, and as a young man travelled a good deal in Europe. He never took up a trade or profession, but devoted his whole life to his poetry. In 1846 he married Elizabeth Barrett, and he lived mainly in Florence until her death in 1861. From then until his own death he lived partly in London, where he was a society figure, and partly in Italy. He died in Venice, Dec. 12, 1889, leaving an only child, Robert Barrett Browning, an artist. He is buried in Westminster Abbey.

Some of his verse is of the very highest quality, full of thought and expressed in exquisite language. Some of his lyrics are as fine as any in the language, and his love poetry, for instance, *Any Wife to any Husband*, is of the noblest kind. In other poems, notably *Sordello*, he is obscure in thought and in some he is formless in style. *Pauline*, 1833, was his first work; *The Ring and the Book*, 1868-69, his longest; *Pippa Passes*, *Christmas Eve* and *Easter Day* perhaps the most popular. Collections are *Men and Women*, and *Dramatis Personae*. Notable single poems are *Saul* and *Rabbi Ben Ezra*. He wrote a number of plays, *Strafford*, *A Blot on the Scutcheon* and *Colomb's Birthday* among them.

Brown Willy Mountain of Cornwall. Situated on Bodmin Moor in the north of the county, it is about 10 m. from Bodmin, and is nearly 1400 ft. high.

Broxbourne Village in Hertfordshire, a residential district for Londoners. It has a station, Broxbourne and Hoddesdon, 17 m. from London on the L.N.E. Rly.

Broxburn District of West Lothian, Scotland. It is 11 m. from Edinburgh and has works for the recovery of oil from shale.

Bruce **James.** Scottish explorer. The eldest son of the laird of Kinnaird, Stirlingshire, he was born in 1730. After some years of travel, during which he applied himself to the study of Oriental languages, he succeeded to the estate in 1758. Some years later he was sent as British consul to Algiers with a special commission to study the antiquities of Barbary. In pursuance of his researches he travelled from Algeria through Tunis to Tripoli, and thence to Crete and Syria. In 1768 he set out from Alexandria to discover the sources of the Nile, which he believed to be in Abyssinia. He traced the Blue Nile to its source, regarding it as the main stream. The incredulity with which his account of his experiences was received on his return to England caused him to retire in disgust to his Scottish estate, and it was not until 1790 that he published his *Travels to the Sources of the Nile*. He died April 27, 1794.

Bruce **Robert.** King of Scotland. Born July 11, 1274, he belonged to a Norman family that had settled in Scotland, where its members became prominent and powerful. One Robert Bruce claimed the throne in 1290. When Earl of Carrick, Robert Bruce took part in the war of independence,

and in 1306 he was crowned king. For many years, however, he was king only in name, but a change came when Edward II. invaded Scotland and Bruce, now an experienced soldier, won his great victory at Bannockburn (1314). This made his position more secure, and in 1328 the treaty of Northampton recognised Scotland as an independent realm. Bruce died of leprosy, June 7, 1329, and was buried at Dunfermline. He ranks as King Robert I. He was succeeded by his son, David II., and from his daughter and her husband the Stewart family is descended.

Bruce **Stanley Melbourne.** Australian politician. Born at Melbourne, April 15, 1883, he was educated at the grammar school there and at Trinity Hall, Cambridge. He rowed in the boat race of 1904 and returning home became managing director of the firm of Paterson, Laing & Bruce. He served in Europe during the Great War, won the M.C., and was twice wounded. In 1918 Bruce entered the House of Representatives, and in 1921 was made treasurer of the Commonwealth in the nationalist ministry. In 1923 he succeeded Mr. Hughes as prime minister, became also minister for external affairs and attended the Imperial Conferences of 1923 and 1926. In Sept., 1929 his government was defeated and he left office. In 1932 he joined the coalition ministry under Mr. Lyons, and represented Australia in London, as resident minister. In 1936 he became President of the League of Nations.

Bruce **William Spiers.** Scottish explorer and scientist. He was born in Edinburgh, Aug. 1, 1867, and had a brilliant career in natural science at Edinburgh University. In 1892 he made his first voyage to polar regions as naturalist to the Scottish Antarctic Expedition. In that capacity he subsequently took part in the Jackson-Harmsworth Arctic Expedition (1896-7); the Coats Nova Zembla Expedition (1898) and the Prince of Monaco's Spitsbergen Expeditions of 1898 and 1899. As leader of the Scottish National Antarctic Expedition (1902-4) he discovered 150 m. of the coast line of Antarctica. Later he made several further visits to Spitsbergen, the last in the year before his death, which occurred on Oct. 28, 1921.

Bruges City of Belgium. It stands a few miles from the coast, but a ship canal connects it with the sea at Zeebrugge. On the Grande Place are the markets or halles with the belfry noted for its carillon. Near are the town hall and the chapel of the Holy Blood. Other churches are the cathedral, S. Gilles, S. Sepulchre and S. Anne. Other famous buildings are the Beguinage, two guild houses and the weigh house. The city, which is traversed by canals, retains some of its old gates.

The cloth trade made Bruges one of the richest cities of Europe in the Middle Ages when its merchants traded with every part of the known world. It was part of the duchy of Burgundy and here the order of the Golden Fleece was founded and held its meetings. From 1914 to 1918 it was in possession of the Germans. Pop. (1931), 51,795.

Bruise Injury to the body. It is caused by a violent blow resulting in the rupture of the smaller blood vessels and usually a swelling of the parts affected. The swelling is caused by the exudation of blood and effusion of lymph into the tissues. In some cases the bruise shows at some distance from the place where the blow was received, owing to the effused blood having flowed through the tissues before reaching the skin. Severe bruises may be relieved by applying lint soaked in cold water or a mixture of equal parts methylated spirits and water. If the skin is broken, bathe with warm water containing tincture of iodine (½ teaspoonful to 1 pint) and apply lint spread with boracic ointment.

Brummell **George Bryan.** English dandy called Beau Brummell. Born in London, June 7, 1778, he was educated at Eton and entered the army. On friendly terms with the Prince Regent, the possessor of a fortune and something of a wit, he soon became prominent in fashionable circles and was for some years the recognised arbiter of fashion. In 1816, having quarrelled with the Prince and spent his patrimony, he went to France to escape his creditors. He lived there in poverty and died March 30, 1840.

Brunei British protectorate. In the island of Borneo, it is on the north-west coast and covers about 2500 sq. m. The state has a sultan, but since 1906 its government has been in the hands of a British resident. The chief town, also called Brunei, is on the Brunei river. Pop. 25,000.

Brunel **Isambard Kingdom.** British engineer. The only son of Sir Marc Isambard Brunel, he was born at Portsmouth, April 9, 1806, and was educated in Paris. He entered his father's office as assistant engineer in 1823 and was resident engineer for the construction of the Thames tunnel. He designed the Clifton Suspension Bridge, which, however, owing to various delays, was not completed until after his death. When the G.W. Rly was projected Brunel was appointed engineer, a position he held until 1846. He also played an important part in the development of ocean steam navigation. He designed the *Great Western*, the first steamship to make regular transatlantic voyages; the *Great Britain*, the first steamship driven by a screw propeller; and the celebrated *Great Eastern*. He also designed several docks and the towers at the Crystal Palace. He died Sept. 15, 1859.

Brunel **Sir Marc Isambard.** French engineer and inventor. Born in Normandy, April 25, 1769, he served for some years as an officer in the French navy. On the outbreak of the Revolution, owing to his royalist opinions, he emigrated to New York, where he started in practice as an architect and civil engineer. In 1799 he came to England with a plan for manufacturing ships' blocks by machinery, which after some delay was perfected, and, having been accepted by the British Admiralty, brought Brunel an award of £17,000. In 1824 his scheme for a Thames tunnel was accepted, and the work was carried out under the supervision of his son Isambard. He became a British subject and was knighted in 1841. He died Dec. 12, 1849.

Brunelleschi **Filippo.** Italian artist. He was born in 1377 in Florence, where most of his life was passed. He visited Rome and, from his study of the classical remains there, applied the principles of ancient art and geometry to architecture. He designed and erected the magnificent dome of the cathedral at Florence, and among other buildings which he designed were the church of San Lorenzo and the Pitti Palace. The first great architect of the Renaissance, he died in Florence, April 16, 1446.

Brunhilda In Norse mythology, the chief of the Valkyries, or warrior maidens. She is best known through Wagner's opera cycle, *The Ring of the Nibelungs*, as she is the heroine of the second opera, *The Valkyrie*.

Bruno **Giordano.** Italian philosopher. He was in his youth a Dominican monk, but in 1576, having developed heretical opinions, he fled to Geneva, and afterwards to Paris where he lectured on philosophy, attacking the teaching of the schoolmen. Next he visited England, where he became a close friend of Sir Philip Sidney. For some years he was a professor at Wittenberg. Returning to Italy in 1592 he fell into the hands of the Inquisition, and was thrown into prison. Refusing to recant his heresies, he was burned in Rome, Feb. 17, 1600.

Bruno was one of the most original thinkers of his own or any time. His philosophic system, expounded in his two principal works, *Della Causa Principio ed Uno* and *Del Infinito Universo e Mondi*, was pantheistic.

Brunswick Constituent state of the German republic. It consists of nine detached portions of territory, the largest and most important of which is situated between Hanover and Saxony. The Harz Mountains lie partly in Brunswick and partly in Prussia. The northern portion, which includes the capital city of Brunswick, is mainly agricultural. The Harz region is rich in minerals, silver, lead and copper having been mined there from a very early date, while in recent times bituminous coal, sulphur, etc., have been extensively worked. The Harz is also a valuable forest country. The population of the state (1925) is 501,875, mainly Protestant, though there is a considerable Roman Catholic community in the Hildesheim neighbourhood. Its area is 1424 sq. m.

Brunswick City of Germany, capital of the republic of Brunswick. It is 32 m. from Hanover and stands on the Oker, a tributary of the Weser. It is a railway centre and a busy manufacturing town, especially of machinery and chemicals. It is also the headquarters of large publishing firms. The cathedral, like the churches of S. Catherine and S. Martin, was built in the 12th century; the town hall and the hall of the cloth merchants are a little later in date. A prominent building is the palace, once the residence of the dukes, and it contains a fine collection of pictures and other works of art, now public property. Pop. 146,725.

Brunswick **Duke of.** Title borne by many rulers of the Duchy of Brunswick. The best known are Charles William and his son Frederick William. The former married Augusta, a sister of George III., and served in several campaigns. In 1780 he became duke on his father's death, and in 1792 he led the Austrian and Prussian army that was defeated by the French at Valmy. He held a high command in the Allied armies until, commanding the Prussians, he was wounded at Auerstadt. He died of his wounds, Nov. 10, 1806. His son, Ferdinand William, was killed at the battle of Quatre Bras, June 16, 1815, when in command of the Brunswick contingent.

Brush **Charles Francis.** American inventor. Born March 17, 1849, he studied chemistry and began his business life as a consulting chemist in Cleveland, near his birthplace in Ohio. He became known by his inventions, the chief of which were an arc lamp and a storage battery for electricity, then just coming into use. To manufacture these and other electrical apparatus he founded the Brush Electric Co., which soon became one of the largest of its kind. Brush died June 15, 1929.

Brussels Capital of Belgium. It stands on the Senne, a tributary of the Schelde, and is connected by railway and canal with Antwerp and also with the commercial areas of France and Germany. The Gothic church of S. Gudule, one of the finest in Europe, has some remarkable features. The town hall, with its lofty spire, adorns the historic Grand Place. The magnificent law courts were erected in the 19th century, as was the palace in which the King of the Belgians lives. Brussels is famous for its art collections, and has some beautiful squares and public parks. It is a busy commercial centre and has some fine modern buildings. A number of manufactures, gloves and fancy goods among them, are carried on.

In 1831 Brussels was made the capital of Belgium. From Aug., 1914, to Nov., 1918, it was in the possession of the Germans. The city consists of Brussels proper and 12 communes each with its own council. Pop. (1931), 834,522.

Brussels has been the seat of several important international conferences. In 1874 one met here and agreed to certain conventions to make warfare somewhat more humane. Others in 1876 and 1899 discussed questions connected with Africa.

Brussels Sprouts Vegetable grown in Great Britain. Belonging to the genus *brocvia*, it is distinguished because it produces the leaves in small compact heads upon the stem. These are the edible part of the plant and are much eaten in Britain, where they can be obtained almost all the year round.

Brutus Name of several figures in Roman history. The word means fool, and was given to Lucius Junius because he pretended to be mad in order to save his life. Related to the last king, Tarquin the Proud, he was the leader of those who drove the Tarquins from Rome and became in 509 B.C. one of the first two consuls of the republic. He sentenced his own sons to death for conspiring to restore the Tarquins, and was himself killed when fighting a member of that family in battle.

A later Brutus was one of the murderers of Julius Caesar. When civil war broke out he sided with Pompey. However, he was soon in Caesar's favour and became governor of Cisalpine Gaul. Induced by Cassius to join in the plot against the dictator, he helped in the murder, being reprimanded, it is said, with the words *Et tu Brute* (You also, Brutus). He was one of the leaders of the force defeated by Caesar's friends at Philippi, and he committed suicide after the battle (42 B.C.).

Bryan **William Jennings.** American politician. Born at Salem, Illinois, March 19, 1860, he became a lawyer. His talent as a speaker made him prominent in the Democrat Party, and in 1891 he was elected to the House of Representatives. On three occasions in 1896, 1900, and 1908, Bryan was the Democrat candidate for president, but he never secured election. From 1913 to 1915 he was Secretary of State. He died July 26, 1925.

Bryant **William Cullen.** American poet, He was born at Cummington, Mass., where his father practised as a physician,

Nov. 3, 1794. He studied law and was admitted to the Bar, but after a few years of practice without much success he abandoned law for literary work. In 1829 he became editor and principal proprietor of *The New York Evening Post*, a position in which he continued until his death. *Thanatopsis*, his first published poem, and perhaps his greatest, was written in his eighteenth year. His first volume of poems was issued in 1821. Other volumes followed from time to time, and in 1876 a collected edition of his *Poetical Works* was published. He also made translations of the *Iliad* and the *Odyssey*. He died June 12, 1878.

Bryce Viscount. British statesman and politician. Born in Belfast, May 10, 1838, James Bryce was educated at Oxford where he had an exceptionally brilliant career. He was made Fellow of Oriel College and was regius professor of civil law, 1870-93. In 1880 he entered Parliament as Liberal M.P. for the Tower Hamlets, and from 1885 to 1907 he represented S. Aberdeen. In 1886 he was Under-Secretary for Foreign Affairs; from 1892-95 Chancellor of the Duchy, and then President of the Board of Trade; and from 1905-1907 Secretary for Ireland. From 1907 to 1914 he was British ambassador at Washington. In 1914 he was made a viscount, and he died Jan. 22, 1922. Of Bryce's many writings two are standard works: *The Holy Roman Empire* and *The American Commonwealth*. In 1907 he received the coveted Order of Merit.

Brynmawr Urban district and market town of Brecknockshire. It is 8 m. from Abergavenny, on the G.W. Rly. The chief industry is the ironworks, but owing to depression it was proposed, in 1930, to make the place into a pleasure resort, and improvements were carried out, largely by voluntary labour. Pop. (1931) 7247.

At **Bryn Mawr**, Pennsylvania, there is a large college for women.

Bryony Name of two British plants, quite unrelated to one another. The white bryony (*bryonia dirica*), belonging to the cucumber family, is common in hedgerows, its bristly trailing stems bearing compound leaves clinging to the bushes by spiral tendrils. The black bryony (*tamus communis*), a member of the yam family, has a twining stem and heart-shaped leaves.

Brython Variant of Briton. Modern anthropologists have adopted the terms Brythonic and Goidelic, in preference to British and Gaelic, to distinguish respectively the southern and northern branches of the Celtic race in the British Isles. The term Brython includes the Welsh, the Cornish and also the Bretons of France. The Goidels include the Scottish and Irish Gaels and the Manx.

Bubonic Plague Virulent infectious disease of bacterial origin. It affects the lymphatic glands and causes swellings or buboes, accompanied by feverish conditions and disturbance of all the functions. The Black Death in the 14th century was a form of this disease and various outbreaks of bubonic plague have occurred from time to time in many parts of the world. In recent years India has suffered from this disease, and antitoxin treatment has been found to be successful.

Buccaneer Maritime adventurer. The early buccaneers were chiefly British, French and Dutch seamen who, tacitly encouraged by their respective governments, harassed and plundered the Spaniards in the 16th and 17th centuries.

Buccleuch Village of Selkirkshire. From here the family of Montagu-Douglas-Scott take the title of earl and duke. A member of the Scott family was made **Earl of Buccleuch** in 1619. His granddaughter married the Duke of Monmouth in 1663 and he was made Duke of Buccleuch.

Henry, the 3rd duke, inherited the titles and estates of the Duke of Queensberry in 1810 and his wife, a daughter of the Duke of Montagu, inherited the property of that family. His chief seats are Drumlanrig Castle in Dumfriesshire and Dalkeith Palace near Edinburgh, and he has large estates in the south of Scotland. His eldest son is called the Earl of Dalkeith.

The 7th duke died Oct., 1935, shortly before the marriage of his daughter, Lady Alice Scott, to the Duke of Gloucester.

Bucephalus Favourite warhorse of Alexander the Great. As a boy he broke in the horse in order to fulfil an oracle. It died 326 B.C. by the River Hydaspes (now Jhelum) in the Punjab. There Alexander built a city called Bucephala as a memorial to it.

Buchan District of Aberdeenshire. It lies between the Rivers Devern and Ythan, being in the N.-E. part of the county. Buchan Ness on the coast is the most easterly point of Scotland. On it is a lighthouse.

The title of **Earl of Buchan** is one of the oldest in Scotland. In the Middle Ages it was held by the families of Comyn and Stewart. In 1617 it was given to an Erskine and it has since remained in that family.

Buchan **Alexander.** Scottish meteorologist. Born April 11, 1829, of humble parents, he was educated at Edinburgh. He studied science and in 1860 was appointed Secretary of the Scottish Meteorological Society. He devoted his time to observing weather conditions from the Society's observatory on Ben Nevis and made certain forecasts about the weather, known as Buchan's periods, three warm and six cold in the year. These attracted renewed attention about 1925 and were found remarkably correct in succeeding years. Buchan died May 13, 1907.

Buchan **John.** Scottish novelist. Born in Perth, Aug. 26, 1875, the son of a minister, he had a brilliant career at Glasgow and Oxford Universities. He became a barrister and was for a time in South Africa under Lord Milner. He then joined the publishing firm of Thos. Nelson & Sons and wrote a number of stories, and one or two other works. Perhaps the best of his many romances are *Prester John*, *The Thirty Nine Steps*, *Greenmantle*, *Huntingtower*, *The Dancing Floor* and *Witch Wood*. He wrote a *History of the War* and *Lives* of Montrose and Raleigh. In 1932 he published the centenary *Life* of Sir Walter Scott, and in 1933 *Glencoe* and *A Prince of the Captivity*. *The King's Grace* appeared in 1935. During the Great War he went to the front for *The Times* and served in the Ministry of Information. In 1927 Buchan was elected Unionist M.P. for the Scottish Universities. In 1931 he was made a Companion of Honour, and in 1935 he was appointed Governor-General of Canada and was raised to the peerage as Lord Tweedsmuir.

"O. Douglas," Buchan's sister **Anna**, is the authoress of *The Setons*, *Penny Plain*, etc.

Buchanan George. Scottish humanist and historian. He was born at Killearn, Dumbartonshire, in 1506, and graduated at the Universities of St. Andrews and Paris. Having published some caustic satires on the Scottish clergy, he was imprisoned in the castle of St. Andrews, but escaped and fled to France. From 1539 to 1542 he was Professor of Latin at Bordeaux, where he had Montaigne as one of his pupils, and from 1542 to 1547 professor at Paris. He was Moderator of the General Assembly in 1567. Buchanan was a prolific and versatile writer both in the vernacular and in Latin, and a vigorous pamphleteer. His Latin poems and plays have merit, but he is chiefly remembered by his *De Jure Regni apud Scotos* (1579) and his *Rerum Scoticarum Historia* (1582), a history of Scotland. He died in Edinburgh, Sept. 28, 1582.

Buchanan James. American president. Born in Pennsylvania, April 23, 1781, he became a lawyer. In 1856 he was the Democratic candidate for the Presidency and was elected. Soon after the end of his term in 1861 the Civil War began. Buchanan died June 8, 1868.

Buchanan Robert Williams. Scottish writer. Born in Staffordshire, Aug. 18, 1841, he was educated in Glasgow. He wrote several volumes of poems and then a series of novels which were popular, especially *The Shadow of the Sword*, *A Child of Nature* and *God and the Man*. He also wrote some plays. Buchanan was known because of his attacks on what he called the fleshly school of poetry. He died June 10, 1901.

Bucharest City and capital of Rumania, also called Bukarest. It stands on the Dimbovitza, a tributary of the Danube, and is in the main a modern city. With some fine squares and parks, it is called the Paris of the East. Bucharest is an important railway centre and through it much of the country's trade passes. It was occupied by the Germans from Dec., 1916, to Nov., 1918. In 1861 it became the capital of Rumania, previously it had been the chief town of Wallachia. Pop. (1930), 631,288.

Two important treaties have been signed at Bucharest. One of Aug. 10, 1913, ended the second Balkan War. By it Bulgaria gave up to the victors Rumania, Serbia, Greece and Montenegro, territory taken during the two wars. The other signed May 7, 1918, gave to Bulgaria the territory which Rumania had acquired in 1913. It was annulled later in the year when the Allies had beaten Germany.

Bucket-shop Term used for the business of a sham stockbroker. The term, supposed to have been coined in Chicago, is applied to the offices of stockbrokers, unconnected with a recognised stock exchange, whose business does not consist of the buying and selling of securities, but in dishonest gambling with clients, speculating upon the rise and fall of share prices.

Buckfastleigh Urban district of Devonshire, 7 m. from Totnes, on the G.W. Rly. Here was a famous Cistercian abbey, now in ruins, and a new abbey has been erected by the Benedictines. They settled here about 1890 and, except for a little expert assistance at the start, they did the entire work themselves. The buildings include a fine church. Pop. (1931), 2406.

Buckhaven Burgh and seaport of Fifeshire. It stands on the north side of the Firth of Forth, 7 m. from Kirkcaldy, on the L.N.E. Rly. There is a good harbour. It is a fishing centre and has some other industries. There are coal mines near. The burgh includes Methil. Pop. (1931), 17,643.

Buckhound Breed of dog. It is a variety of staghound and was used for hunting the buck deer. For many years the English sovereigns maintained a pack of buckhounds and the master of the buckhounds was a court official until the office was abolished in 1901.

Buckhurst Hill Urban district of Essex. It is about 10 m. from London, on the L.N.E. Rly. Near Epping Forest, it is a favourite residential area. Pop. (1931) 5486.

Buckie Burgh and fishing port of Banffshire. It is 14 m. from Keith, on the L.N.E. Rly. It is chiefly a fishing centre and has a harbour. There are also some industries. Pop. (1931) 8688.

Buckingham Borough of Buckinghamshire. It stands on the Ouse, 61 m. from London, on the L.M.S. Rly. The Grand Union Canal also passes it. Once the county town and a centre of the wool trade, it is less prosperous than formerly. Near is Stowe, now a public school, once the residence of the Dukes of Buckingham. Pop. (1931) 3082.

Buckingham Duke of. English title. The first holder was Humphrey Stafford, a descendant of Edward III., who was killed at the Battle of Northampton in 1460. It became extinct when the 3rd duke was executed by Henry VIII. in 1521. From 1623 to 1687 it was held by George Villiers and his son George. From 1703-35 John Sheffield and his son were Dukes of Buckinghamshire and Normanby.

In 1784 George Grenville, Earl Temple, was made Marquess of Buckingham, and in 1822 his son Richard was made a duke. He was called Buckingham and Chandos because he married the heiress of the last Duke of Chandos. Richard, the 2nd duke (1797-1861), was a politician and the author of some interesting *Memoirs*. His successor, Richard, the 3rd duke (1823-99), was Colonial Secretary 1866-68. When he died in 1889 the dukedom became extinct. His titles of Earl Temple and Viscount Cobham passed to relatives, and his daughter became Baroness Kinloss. The family seat was Stowe, near Buckingham.

Buckingham George Villiers, 1st Duke of. English politician. A son of Sir G. Villiers, he was born in Leicestershire, Aug. 28, 1592. He went to the court of James I. and was soon on very friendly terms with the king and his son Charles. In 1617 he was made an earl, and in 1623 a duke. In 1623 he became Lord High Admiral, and led fruitless expeditions to France and Spain. He was killed by John Felton at Portsmouth, Aug. 23, 1628.

Buckingham George Villiers, 2nd Duke of. English politician. A son of the 1st duke, he was born Jan. 30, 1628, and was only a few months old when he became duke. He was educated with the children of Charles I. and at Cambridge, took part in the Civil War and was with Charles II. at Worcester. In 1657 he returned from exile and married a daughter of Lord Fairfax, who had received the estates taken from him in

1649. He engineered Clarendon's fall and for six years, 1667 to 1673, was a leading member of the Cabal. He then associated with the Whigs and with the opposition to the government generally, not disdaining Titus Oates. He died April 16, 1687. A man of ability, as his plays, especially *The Rehearsal*, prove, Buckingham was licentious and unscrupulous beyond his fellows. He is portrayed by Dryden as Zimri in *Absalom and Achitophel*.

Buckingham Palace Royal residence in London. It is so called after John Sheffield, 1st Duke of Buckinghamshire and Normanby, for whom, in 1703, it was built by a Dutch architect. In 1761 George III. bought it for £21,000. In 1825 its reconstruction, following designs by John Nash, was begun, and in 1846 and 1856 respectively were added a new wing and the ballroom 111 by 60 ft. Sir Aston Webb in 1913 designed a new front.

Buckinghamshire County of England. In the south of the country, it has the Thames as its southern boundary and covers 842 sq. m. Aylesbury is the county town; other places are Slough, High Wycombe, Wolverton, Buckingham, Chesham, Newport Pagnell and Amersham. Here too are Eton and Olney. The Ouse, Colne and Thames are the chief rivers. The Chiltern Hills are in the south, and its beech woods are famous. The district known as Chiltern Hundreds (*q.v.*) is in the county. In the Vale of Aylesbury and elsewhere is some of the richest land in England, Aylesbury butter and Aylesbury ducks being noted. The historic associations of the county, such as Hampden, Hughenden, Dropmore and Jordans, are many and varied. The southern part of Buckinghamshire has become almost part of Greater London, which is reached by the L.M.S., G.W. and Metropolitan Rlys. It sends three members to Parliament. Pop. (1931) 271,565.

Buckle **Henry Thomas.** English historian. He was born at Lee, Kent, Nov. 24, 1821, and devoted himself to collecting materials for a history of civilisation. The first volume was published in 1857 and a second in 1861. The work was never completed, for shortly after the publication of the second volume the author died at Damascus, May 29, 1862.

Buckmaster **Lord.** Stanley Owen Buckmaster was born 1861. Educated at Christ Church, Oxford, he read for the Bar, being called to the Inner Temple in 1884. He became Liberal M.P. for Cambridge in 1906, but lost his seat in 1910; he was re-elected for Keighley in 1911. He became Solicitor-General and a Knight, 1913; Lord Chancellor and a Peer, 1915. After losing office in 1916, he acted in a judicial capacity in the Lords, and is a zealous supporter of divorce law reform.

Buckram Coarse linen or cotton fabric stiffened with glue or size. It is used for making shapes for ladies' hats; also for stiff coat linings and in book-binding. Once buckram signified fine linen, and in the 15th century material for church vestments.

Buckskin Soft leather for gloves, breeches, etc. Once it was made from deerskin, *i.e.*, buck's skin, but now chiefly from sheep skin. A strong twilled woollen cloth is also called buckskin. Buckskin breeches are frequently made from this.

Buckthorn Tall British shrub (*rhamnus carthanticus*), with branches ending in sharp thorn-like points. The dense clusters of yellowish-green flowers are followed by small shining black fruits, which, having purgative properties, have been used in medicine. A foreign species yields the dyestuff, Persian or yellow berries.

Buckwheat Plant of the dock and knotgrass family, with red stems, pinkish flowers and heart-shaped leaves. The fruit resembles a beech nut. It is a native of Asia, will grow almost anywhere, and is a food for sheep and pheasants, while the shelled fruit serves for cattle and pigs. Buck wheat cakes are popular in the United States.

Budapest City and capital of Hungary. It stands on the Danube, Buda being to the west, and Pest to the east, 163 m. from Vienna. It is an important railway centre, and is also a river port. With suburbs it covers nearly 80 sq. m.

The city has many manufactures and is also the commercial and banking centre of the kingdom, as well as being its literary and social capital. Along the river there are extensive quays and across it are some fine bridges. Until 1526 the kings of Hungary lived in Buda and in 1867 it again became a capital city. Pest, now the business quarter, is of less historic interest. The two were formally united in 1873. In 1919 Budapest was occupied by the Rumanians. Pop. (1930), 1,006,184.

Buddha Name popularly applied to Siddhatha Gotama, also called Sakyamuni, the founder of Buddhism. Strictly speaking it is a generic title, for according to the Buddhist doctrine there have been many Buddhas, or enlightened ones, of whom Gotama was the latest, but not necessarily the last.

Gotama was the son of the Chief of the Sakyas, an Aryan tribe settled about 100 m. north of Benares. He was born in 568 B.C. At the age of 28 he experienced a profound religious change which caused him to leave his wife and child, and devote himself to poverty and wandering. After several years of contemplation, he began to teach the doctrines he had elaborated, and soon gained disciples. Most of his life was spent in the neighbourhood of Benares. He died about 488 B.C.

Buddhism Religious system of Buddha. The two fundamentals of Buddhism are indicated by the words *Karma* and *Nirvana*. *Karma* is commonly taken to mean transmigration of the soul continuing through repeated incarnations until the attainment of the supreme bliss of *Nirvana*, which again is erroneously supposed to mean annihilation.

By the elevation of its morality, its rejection of caste and proclamation of the brotherhood of man, Buddhism made rapid progress and reached the height of its influence under the Emperor Asoka (272-232 B.C.), but later Hinduism regained its ascendancy, and Buddhism now hardly exists in the peninsula. It has retained its hold in Ceylon, Farther India and Japan, and also has numerous adherents in China. In Tibet it has developed into the remarkable system of Lamaism, which is highly sacerdotal and ritualistic.

Bude Watering place and seaport of Cornwall. It is 228 m. from London and 18 from Launceston, on the S. Rly. It is beautifully situated at the mouth of the River Bude. At one time it did a considerable

trade, especially after 1819 when the Bude Canal was opened, connecting it with Launceston and the Tamar. Pop. 3140.

Budget Statement made once a year usually in April and May by the Chancellor of the Exchequer about the nation's finances. It is, in fact, the national balance sheet. In other countries a similar statement is made by the Minister of Finance. The budget consists of two parts. One is a statement of the actual revenue and expenditure for the past year; the other is an estimate of the revenue and expenditure for the coming year. This includes details of how the revenue is to be provided and whether there will be any increase or decrease in taxation.

Budleigh Salterton Urban district and seaside resort of Devonshire. It is 4 m. from Exmouth at the mouth of the River Otter, and on the S. Rly. Pop. (1931) 3162.

Buenos Aires City, seaport and capital of Argentina. It stands on the River Plate, 150 m. from its mouth, being on the south side of the river which is here 30 m. wide. It is a railway and aviation centre and has two large modern harbours, with docks among the largest in the world. The city covers an area of 70 sq. m. Pop. (1931), 2,195,200.

Buenos Aires is a modern city and a feature is the number of handsome squares, called plazas. The chief streets are wide and straight and there are beautiful parks. Many fine buildings serve the city's commercial interests, and there is a university. The city has an enormous trade, especially in cattle, meat and grain, and has large abattoirs and markets. Founded in 1535, it was only a small place until 1853 when it was made the capital of Argentina.

Buffalo City of New York. It stands just where the Niagara River leaves Lake Erie, at the eastern end of the lake, 420 m. from New York. Its position has made it a great industrial centre. Served by many railway lines, it is also a lake port with a large harbour and miles of wharves, and a terminus of the Erie Canal. In addition to an enormous distributing trade, the city has many manufactures. Electric power is obtained from Niagara. The original name of Buffalo was New Amsterdam. Pop. (1930), 573,076.

Buffalo Large animal belonging to the *bovidae* or ox family. It is distinguished by its somewhat three-sided horns which arise close together from very flat bases low on the skull. The Indian water buffalo is a heavy black-haired animal with long, curved horns set on a straight head bearing small ears. The African species is not so heavy, and has a short neck, large ears and reddish hair. It lives in swamps and is a fierce, untameable animal. The American bison belonging to a different genus and distinguished by its humped body and small horns is often termed a buffalo. *See* BISON.

Buffer Shock-absorbing object interposed between two bodies about to come into contact. Station buffers are attached to solid masonry and consist of hydraulic cylinders and projecting rams against the buffer heads of which the train pushes. Rolling stock is fitted with buffers consisting of alternating rubber springs and steel plates.

Buffon Count. French scholar. Born Sept. 17, 1707, Georges Louis Leclerc Buffon was educated by the Jesuits at Dijon. In 1739, having won a reputation for learning, he was appointed director of the royal garden and museum in Paris, and he remained there until his death, April 16, 1788. Buffon is remembered by the *Natural History* of which he was one of the authors. He was also a mathematician and the author of a *Discourse on Style*, which brought him much fame.

Bug Noxious insect found in most parts of the world. Bugs belong to the order *heteroptera* and there are about 8000 varieties that live on land, besides many that live in the water. Some of them feed on plants and are therefore harmful to vegetation. Bugs are very common in hot countries. They have four wings and the mouth is so arranged that it can pierce the skin of the victim, and draw the blood or sap into a chamber in the insect's head.

The bed bug, frequent in dirty houses, produces irritating bites. Insecticides are used to kill it, but cleanliness is its most potent enemy.

Buggy Light carriage, formerly much used in America. They had four wheels and were drawn by two horses or sometimes by one. Another type of buggy, less popular, had two wheels only.

Bugle Wind instrument used for military purposes. A kind of trumpet, it is usually of brass or copper and is employed for giving signals in barracks and camps. The key bugle, which has side holes, is a development of the bugle. A large bead, worn as an ornament on women's dress, is called a bugle.

Bugloss Plant (*lycopsis arvensis*) belonging to the borage family. It grows wild in fields to a height of about a foot, bearing clusters of blue flowers. The whole of the plant except the corolla of the flower is covered with sharp bristles.

Buhl Style of decoration for furniture, perfected by André Charles Boulé, a wood carver in Paris in the 17th century, who inlaid pieces of furniture with thin sheets of tortoiseshell and metals, silver among them. In this way he formed thereon scrolls, cartouches, and other ornaments. Buhl furniture is heavy, with curved lines and often decorated with ormulu (*q.v.*).

Building Society Association for enabling persons to buy or build houses. Each society consists of members who purchase shares, sometimes by payments at monthly or other regular intervals. These and other funds are used to enable them to buy houses. The societies also receive money on deposit from persons who are not members. Provided they are incorporated, they can own land and raise money very much as a limited company can.

In Great Britain building societies are regulated by law, several measures having been framed for this purpose. Their accounts are supervised by the registrar of friendly societies. Some of the societies have become very large and prosperous indeed. In 1931 there were in Great Britain 1013 societies with over 1,400,000 members and investors. Their total funds were over £420,000,000. There is a national union of building societies, and in their interests a paper, *The Building Societies Gazette*, is published.

Buildwas Village of Shropshire. It is on the Severn, 11 m. from Shrewsbury, and is famous for its ruined abbey. This was a Cistercian house and its remains include much of the church and the chapter house. A modern house near is called Buildwas Abbey.

Builth Wells Urban district, market town and watering place of Breconshire. There are baths for the waters which have curative properties. The town is beautifully situated where the River Irfon falls into the Wye. Pop. (1931) 1663.

Bukovina Mountainous district of Rumania. It is largely covered with forests and has rich salt mines. Czernowitz is the capital. Its area is 4000 sq. m. and pop. about 800,000. There was a good deal of fighting in Bukovina in 1914-1916 between the Austrians and the Russians.

Bulawayo City of Rhodesia. It is 1360 m. by rail from Capetown and is connected by rail with other cities of S. Africa. The town was formerly the capital of the Matabele. Pop. 31,000.

Bulb Term popularly used to include, not only the true bulbs, *e.g.*, tulip or onion, but also any form of underground stores of plant nutriment which develops roots, stems and leaves when placed in suitable conditions *e.g.*, crocus, dahlia, anemone. The corm of the crocus consists of the swollen base of the stem, whereas the true bulb is made up of overlapping membranous sheaths which are structurally leaves. The culture of garden bulbs has been carried to perfection in Holland.

Bulford Village of Wiltshire. It is on Salisbury Plain, 81 m. from London, on the S. Rly. There is a large military camp.

Bulgaria Country of Europe. On the east it is bounded by the Black Sea and elsewhere by Rumania, Yugoslavia and Greece. Its area is 39,814 sq. m. Sofia is the capital and the largest town. Other centres of population are Philippopolis (Plovdiv) and Ruschuk. The chief ports are Varna and Burgas. Bulgaria is mountainous, but possesses a good deal of fertile land. The chief rivers are the Struma and the Maritza. The prevailing religion is the Greek Church. The people are mainly engaged in agricultural occupations. The chief crops are wheat, maize, barley and rye; a good deal of fruit is grown and some wine is produced.

The country is ruled by a king and a cabinet which is responsible to a national assembly or Sobranye of 227 members, who are elected by all adult males. The chief coin is the lev, equal to the franc, which is also in circulation, as is paper money issued by the national bank. The metric system is used. The country has an army, but no navy.

Bulgaria was made a principality in 1878, till then having been part of Turkey. In 1885 Eastern Rumelia was added to it. In 1908 Prince Ferdinand declared himself king and reigned until 1918, when he abdicated and was succeeded by his son Boris.

Bulkhead Name given to the partitions in a ship which divide it into watertight compartments. They are found especially in battleships, when they are numbered. The word is also used for similar partitions in tunnelling operations.

Bull Male animal of the ox family. It is used for breeding beef or dairy cattle and for fattening. In the breeding of cattle a bull is selected according to the end in view. For dairy purposes the bull should be bred from a cow which is a good milker, but for beef cattle the animal is chosen for its own particular merits. The bull was worshipped in Egypt, which had a sacred bull Buchis. Armant was the centre of this worship.

Bull Baiting is a sport formerly popular in England. A bull was tied to a stake, and then attacked by dogs, usually bulldogs or mastiffs. Many towns had bull rings for this purpose, and the name is retained in Birmingham and elsewhere. **Bull Running** consisted in irritating a bull by blowing pepper into its eyes and nostrils, turning it loose, and then hunting it through the streets. Both were forbidden by a law passed in 1835.

Bull Term used for a pronouncement made by a Pope. Famous bulls are the one of Pope Alexander VI. which divided the New World between Spain and Portugal in 1493, and the one of 1870 which asserted the infallibility of the Pope. Formerly the word was used for pronouncements made by emperors and kings, such as the Golden Bull of the emperor, Charles IV. (1356). The name is due to the fact that the documents were stamped with a seal. (Lat. *bulla.*)

Bulldog Breed of dog formerly used for bull baiting. Since about 1880 the breed again has come into favour owing to the formation of several bulldog clubs. The bulldog is characterised by its massive body and short legs, short muscular neck, broad, square head with large wide nostrils, small ears and square jaws, the lower jaw projecting beyond the upper. Two other varieties are the miniature bulldog and the French bulldog.

Bull-frog Name of a large N. American frog (*rana catesbiana*), from 7-8 in. in length, which bellows like a bull; hence the name, which has been incorrectly applied to other large species.

Buller **Sir Redvers Henry.** English soldier. Born in Devonshire, Dec. 7, 1839, he was educated at Eton and entered the army. He saw a good deal of active service, being in China, Canada, Ashanti and the Sudan, as well as in the Zulu War, where he won the V.C. He rose to be a general and commander at Aldershot, and in 1899 went out as commander of the forces sent against the Boers. Although he relieved Ladysmith, his recall in 1900 was necessary and Lord Roberts took his place. He returned to Aldershot, but, in 1901, after a speech he was superseded. He died June 2, 1908.

Bullet Small missile. The earliest bullets were made of lead, cast into balls, but with the inception of rifled barrels a change took place in design. Modern bullets are almost all cylindrical in shape, with a pointed or rounded nose, and those used in war are generally coated with nickel. Hollow-headed bullets are used for shooting big game, such as elephants, but their use is forbidden in war.

Bull Fighting National sport of Spain. The fights are held in large rings and are attended by thousands, Sunday being the usual day for them. The typical fight is divided into three parts. The first is a ceremonial, ending with the loosing of the bull which is goaded by the short spears of the picadores. In the second the banderilleros further irritate the animal by piercing it with darts. In the third the matador stabs the bull to death. Red and other bright colours are worn, and various devices employed to enrage the bull.

Bullfinch European bird. It is small, black and bluish-grey, red or chocolate-breasted according to sex, and a native of woods. Its wild song is negligible, but in captivity it can be taught in the moulting

season to memorise and whistle tunes heard on a whistle. It nests in May, laying five eggs.

Bullion Refined precious metal not yet made into money. The word once meant melting house or mint, and its first recorded mention is in 1451. Stores of bullion, both gold and silver, are kept at the Bank of England and the Mint.

Bull Terrier Breed of dog formerly bred for fighting and rat killing. The bull terrier has a long wedge-shaped head with strong level jaws, small dark eyes and semi-erect ears. Its short body is of a white colour, and it has a broad chest, legs of medium length, and weighs from 15 to 50 lb. A small variety, the toy bull terrier, weighs under 15 lb. The bull terrier is courageous, seldom bad-tempered and is not quarrelsome.

Bully Beef Preserved meat, usually canned in America. It is issued as rations to soldiers on active service.

Bülow Prince von. German statesman. Bernhard Heinrich Martin Karl Bülow was born in Holstein, May 3, 1840. He became a soldier and served in the Franco-German War, but soon afterwards (1873) he entered the diplomatic service. As a junior member of the service he gained experience in various capitals, and in 1893 was made Minister at Bucharest. From 1893-97 he was Ambassador in Rome, and from 1897-1900 was Foreign Secretary. In Oct., 1900, he was made Imperial Chancellor, a post he held until 1909. In Dec., 1914, he left his retirement to become Ambassador in Rome. Made a prince in 1905, Bülow wrote a book, translated into English as *Imperial Germany*, in which he tried to justify his country's policy. He died Oct. 28, 1929.

Bulwark Rampart of protection. This word is applied to walls and similar structures raised for defence, and is specially applied to the plating of a ship above the upper deck. It is figuratively used to denote anything that wards off danger.

The *Bulwark* was the name of a battleship of 15,000 tons completed in 1902. On Nov. 26, 1914, she was blown up when at anchor in the Medway, only 12 men being saved out of a crew of nearly 800. An earlier *Bulwark* is now used as a training ship.

Bumboat Broad, clumsy boat used for conveying provisions, fruit, and other wares to vessels lying in port or off shore. A scavenger's boat used to convey refuse from ships is sometimes called a bumboat.

Bunbury Borough, seaport and watering place of Western Australia. It stands on Koombanah Bay, 112 m. from Perth. There is a good harbour, from which coal and other produce of the state is exported. Pop. 5570.

Buncombe County in N. Carolina, U.S.A. In 1880, during a debate in Congress, the member for the constituency in which Buncombe was situated admitted that his long speech was made simply to please his constituents. Buncombe, or Bunkum, thus came to mean insincerity or humbug.

Bundaberg Town and river port of Queensland. It is on the River Burnett, about 10 m. from the sea, and exports timber and sugar, which is grown in the neighbourhood. Distilling, brewing, and brick-making are carried on. It is connected by railway with Brisbane, which is about 200 m. to the south. Pop. (1931) 11,250.

Bungalow House with one story, surrounded by a veranda. It originated in India and other hot countries, and in the 19th century became popular in the country and seaside parts of England.

Bungay Market town and urban district of Suffolk. It is on the Waveney, 7 m. from Beccles and 114 from London, on the L.N.E. Rly. The industries include large printing works and flour mills, and there is a trade along the river. Pop. (1931) 3098.

Bunhill Fields Cemetery and public garden in Finsbury, London. It is in City Road, opposite Wesley's Chapel, and covers about six acres. It was used as a burial ground in the 17th century, especially for Nonconformists, and here are the graves of John Bunyan, Daniel Defoe, Isaac Watts and others. It was made a public garden in 1869.

Bunion Inflamed swelling of the liquid-containing sac over the metatarsal joint of the big toe. It is caused by pressure of badly fitting shoes and can be relieved by the removal of its cause, and by hot fomentations. Seriously inflamed bunions require a surgical operation.

Bunker Hill Height outside Boston, Mass. On a neighbouring hill, Breed's Hill, a battle was fought during the American War of Independence, on June 17, 1775. The Americans fortified the hill which was attacked by the British. Twice they were driven back, but the third assault was successful The British lost 1000 men.

Bunsen Robert Wilhelm von. German chemist. Born at Göttingen, March 31, 1811, he became Professor of Chemistry at Cassel, in 1837, and later (1852) at Heidelberg. He made many important discoveries, among which were the isolation of the metal barium, the discovery of caesium and rubidium, and the first accurate study of the absorption of gases. He devised the **Bunsen burner** in which an odourless, colourless flame with great heat is obtained by burning a mixture of air and gas, the air being admitted at the base of the gas burner. From this type of burner have been evolved the burners used in cooking and heating stoves, and with gas mantles. Bunsen died Aug. 16, 1899.

Bunt Fungoid pest which attacks maize, barley and wheat rendering them foul and black. Its innumerable microscopic spores cause widespread infection. Bunt may be prevented by pickling the seed corn.

Bunter Beds Name given to the long series of the Triassic systems of rocks in Britain. These beds consist of fine-grained, mottled sandstones and pebbly conglomerates attaining a thickness of about 1500 feet in the midland counties of England, in which area they serve as the chief source of the water supply for the large towns.

Bunting Name of a group of small birds comprising the genus *emberiza*. It includes the common or corn bunting, the yellow-hammer and the ortolan-bunting.

Buntingford Market town of Hertfordshire. It stands on the little River Rib, 17 m. from Hertford and 34 from London. Pop. 4926.

Bunyan John. English writer. Born in Nov., 1628, in a hamlet near Elstow, he became, like his father, a tinker. In 1645 he took part, on the side of the parliament, in the Civil War, and in 1648 he married. Soon,

having read some books of a religious nature, he became a converted man. He began to preach, and continued to do so until put in gaol for so doing in 1660. He remained there, writing a good deal, until 1672 when he was released. The rest of his days were spent in Bedford in preaching and writing; he also preached in London. He died Aug. 31, 1688, and was buried in Bunhill Fields, London. There are several memorials to him in Bedford. Bunyan wrote many books, but one, *The Pilgrim's Progress*, stands out. A masterpiece of English prose, it was begun in prison and finished in 1678. Others are *The Holy War*, *Grace Abounding*, his earliest effort, and *The Life and Death of Mr. Badman*.

Buoy Floating body anchored at sea, in coastal waters, rivers and estuaries for the guidance of navigators. Buoys have been used in the Thames since 1540. In 1822 a system was evolved whereby the shapes and colouring of buoys should indicate fairways, hidden dangers, navigable limits, etc. In Great Britain the control of buoys is undertaken by Trinity House.

Burbage Richard. English actor. Born in 1567 he became an actor when a boy and was a member of several companies. He had made a reputation when, owing to his father's death in 1597, he inherited a share in the Blackfriars Theatre, London. With his brother, Cuthbert, he built the Globe Theatre, but his great claim to fame is his association with Shakespeare. He played some of the greatest of Shakespeare's characters, Hamlet, Othello, Lear and others, and also tragic parts in plays by Ben Jonson and Webster. He died March 13, 1619, and was buried in Shoreditch. His father, James Burbage, who was a joiner before he became an actor, built theatres at Shoreditch and Blackfriars.

Burdett-Coutts Baroness. English philanthropist. Angela Georgina Burdett was born April 21, 1814. She inherited money from her parents and also a large fortune from the actress, Harriet Mellon, her father's second wife. She devoted large sums to charities of all kinds and became the leading philanthropist of her time. She was also a prominent figure in the social life of London. In 1871 she was made a peeress and she died Dec. 28, 1906.

Burdock Common plant (*arctium lappa*) of the order compositae. Found wild in waste places, it grows to about four feet in height, and, on account of its large wavy leaves, is often introduced by artists into the foreground of a picture. The purple flower heads are succeeded by burrs covered with hooked scales.

Bureaucracy Form of government in which paid officials exercise the controlling influence. It is generally used as a term of reproach, the idea being that such officials pay excessive attention to detail and routine work to the neglect of the general good.

The word bureau is very generally used for an office, *e.g.*, a *bureau de change*, or an inquiry office. It is also a piece of furniture, usually a combination of a chest of drawers and a writing desk.

Burford Market town of Oxfordshire. It stands on the Windrush, 13 m. from Oxford. The town is chiefly visited for its picturesque houses. Pop. 1050.

Burford Bridge is a hamlet on the Mole, near Box Hill, in Surrey.

Burgee Small pennant used by yachts and pointed or swallow-tailed, according to the owner's status. Club flags are always pointed; those of a commodore or vice-commodore are swallow-tailed. Only the Royal Yacht Squadron may fly the white ensign, but other royal clubs may bear a crown on the burgee.

Burgess Form of burgher, one who lives in a borough. It is sometimes used for the men sent to Parliament by the boroughs and universities, although its early meaning was for the voters. In some of the American colonies, *e.g.*, Virginia, the elected representatives were known as the House of Burgesses, and the term is still in use.

Burgess Hill Urban district of Sussex. It is 9 m. from Brighton and 41 from London, on the S. Rly. There are some industries, but it is mainly a residential area. Pop. (1931) 5975.

Burgh Scottish word for a chartered town or borough. Each has its council presided over by a provost or lord provost, and consisting of councillors and bailies. Burghs are of several kinds. The older ones are the royal burghs that obtained their charters from a king, and burghs of barony that obtained them from a lord or bishop. In addition there are parliamentary burghs and police burghs; the former are separately represented in Parliament. Police burghs are places which have been made burghs in modern times; they look after their own lighting, drainage, etc. Each year representatives of the burghs meet in a convention in Edinburgh.

Burgh Hubert de. English statesman. Born about 1175, he was chamberlain and then justiciar under King John. When Henry III. became king he continued as justiciar, but his position was really that of regent. In 1217 he won a naval battle with the French and he kept himself in power until 1232. He died May 12, 1243.

Burghley Baron. English statesman. William Cecil was born at Bourne, Sept. 13, 1520, the son of Robert Cecil of Burghley. He went to Cambridge, S. John's College, and in 1547 entered the House of Commons, becoming a secretary of state in 1550. During Mary's reign (1553-58) he was not very prominent, but he won the confidence of the Princess Elizabeth who made him her secretary when she became queen in 1558. From then until his death he was her chief adviser and with her was responsible for England's foreign policy. He was made a baron in 1571 and died April 4, 1598. His son, Thomas, was made Earl of Exeter and another son, Robert, Earl of Salisbury.

Burghley House Residence of the Marquess of Exeter. It stands in a large park just outside Stamford. The house was built towards 1600 by the great Lord Burghley. It contains some beautiful decorations and valuable works of art.

The eldest son of the Marquess of Exeter bears the title of Viscount Burghley. The present holder of that title is a famous athlete. Born in 1905, he has performed some remarkable feats as a hurdler at which he has represented Cambridge and England at the Olympic Games. In 1931 he was elected M.P. for the Peterborough division.

Burgomaster In Germany the mayor or chief official of a

city or town. It is also used in the same sense in Belgium and the Netherlands. Burgomasters are usually paid.

Burgos City of Spain, 220 m. from Madrid with which it is connected by railway. It has some industries, but is chiefly known for its cathedral, one of the finest and largest in Spain. A Gothic building, it was 300 years in building and is remarkable for its altars and statues. The citadel is much older and of almost equal interest. At one time Burgos was the capital of Castile. In the Peninsular War it was besieged and finally taken by the British. Pop. (1931) 40,161.

Burgundy Name of a district chiefly in France, but partly in Switzerland. It lies around the rivers Rhône and Saone, its chief towns being Dijon, Arles, Besançon and Vienne. There was a kingdom of Burgundy in the Middle Ages, from about 900 to 1032, when it became part of Germany. Its capital was Arles. Franche Comte was another Burgundy, as it was really the free county of Burgundy. Its capital was Besançon and it became part of France in 1679.

The most important Burgundy was the duchy which lasted from 1032 to 1482. It was really part of France, but its dukes, being also rulers of Flanders, became so strong that they acted as independent sovereigns. This was especially true of Charles the Bold, but after he was killed in 1477 the King of France found it possible to annex most of Burgundy and from then until 1789 it was a province of France. A grandson of Louis XIV. was called Duke of Burgundy.

The wines grown in the district are called Burgundy. They are both red and white and are among the most popular of those drunk in Britain. Beaune and Chablis are among them.

Burke **Edmund.** Irish writer and statesman. Born Jan. 12, 1729, was educated at a private school at Ballitore and Trinity College, Dublin. Going to London he earned a livelihood by writing for *The Annual Register* and in other ways. In 1765 he became private secretary to Lord Rockingham and entered the House of Commons as M.P. for Wendover. From 1774 to 1780 he sat for Bristol and from 1781-94 for Malton. He acted for years with the Whigs and was paymaster-general in 1782-83, but never held higher office. He had a strong political attachment to Fox, but in later life he broke this friendship and the excesses of the French Revolution made him bitterly opposed to all ideas of change. Outside Parliament he was a member of the circle that gathered round Johnson. He died July 8, 1797.

Burke was a constant speaker in Parliament and some of his writings were originally speeches. These reveal him as a political philosopher of the first rank, but he was more than that. A wealth of learning was stored in a mind of unusual strength and fertility; wide reading and natural gifts enabled him to express himself in a rich and stately prose. His works began with a *Vindication of Natural Society*, but more important are his *Thoughts on the Present Discontents*. In a group of speeches he examined with his usual power the relations between the American colonists and the mother country and in him the former found their most powerful champion. With these may be placed the immortal *Letter to the Sheriffs of Bristol*, another lucid statement of fundamental principles.

A further group of writings deals with India. He was largely responsible for **Fox's India Bill** and he was one of those who **impeached** Warren Hastings, his speech on that occasion being one of his greatest efforts. The last writings from his pen dealt with the **French** Revolution which he denounced bitterly. They include the *Appeal from the New to the Old Whigs* and *Letter on a Regicide Peace*.

Burke **Robert O'Hara.** Australian explorer, born in Galway in 1820. After some years first in the Austrian army and then in the Royal Irish Constabulary, he emigrated to Australia in 1853 and became an inspector of police at Melbourne. In 1860 he was appointed leader of an expedition that was to cross the Australian continent from south to north. Very early in the expedition dissensions broke out and several members left. Burke and the rest went on to Cooper's Creek, Queensland, where they waited for fresh supplies. The relief party being delayed, Burke and three companions pushed on. After great privations they succeeded in reaching the estuary of the Flinders river on the Gulf of Carpentaria, but on the return journey three of the four, including Burke, died of starvation. The survivor was saved by natives. The date of Burke's death was June 28, 1861.

Burke **Sir John Bernard.** British scholar. Born in London, Jan. 5, 1814, his father, John Burke (1787-1848) was the founder of the *Peerage and Baronetage* and the *Landed Gentry* which still bears the family name. The son took over the work of editing these volumes in 1847 and did other work of a similar kind. In 1853 he was made Ulster king-at-arms and in 1854 he was knighted. He died Dec. 12, 1892.

Burley -in-Wharfedale. Urban district of Yorkshire (W.R.). It is on the Wharfe, 3 m. from Ilkley, and is served by the L.M.S. and the L.N.E. Rlys. The chief industry is the manufacture of woollen goods. Pop. (1931) 3960.

Another Burley is in Rutland, 2 m. from Oakham. Here is Burley Hall, a beautiful house in a large park, once the seat of the Earl of Winchelsea.

Burlington House Public building in Piccadilly, London. It is the headquarters of several learned societies and here each year the Royal Academy holds its annual exhibition of pictures. It consists of Old Burlington House, built by the Earl of Burlington and bought by the state in 1854 and New Burlington House built after that date. The societies here include the Royal Society, the British Academy, the British Association, the Chemical Society and others.

The title of **Earl of Burlington** is borne by the Duke of Devonshire. It was given to a member of the Cavendish family in 1831 and in 1858 William, the 2nd earl, succeeded his cousin as 7th Duke of Devonshire.

Burma Province of British India. On the east side of the Bay of Bengal, it extends from Manipur in the north to Siam in the south, and is bounded on the east by China, Annum and Siam. The total area is about 233,492 sq. miles and the population (1931) 14,667,146.

The province is divided into Upper and Lower Burma. The latter passed into the possession of the British crown in 1852 as the result of the second Burmese war. The former remained an independent kingdom for over 30 years longer, but in 1885 the misrule and

barbarity of King Theebaw led to British intervention. Theebaw was deposed and his country was annexed to British India in Jan., 1886, and in the same year the Shan states were added to the province. For administrative purposes the division into Upper and Lower Burma has been retained, the capital of the former being Mandalay and of the latter Rangoon, which is also the chief seaport. The principal rivers are the Irawadi and the Salwin. The Burmese are an Indo-Chinese race, closely akin to the Tibetans, highly intelligent and amiable, but not conspicuously industrious. They are Buddhists. There are large and growing communities of Hindu and Chinese immigrants, the latter forming the bulk of the shopkeeping and business classes. The principal industry is agriculture, but the mineral wealth of the country is considerable, including petroleum. Rice is one of the principal exports. The Burmese are famous for their silk weaving and dyeing.

BURMESE WARS. There have been three wars between the British and the Burmese. The first lasted from 1824 to 1826 and ended in the cession of some territory by Burma. The second in 1852 resulted, after the capture of Rangoon, in the annexation of Lower Burma by the British. The third war was against King Theebaw in 1885. He and his capital, Mandalay, were seized and Upper Burma was annexed.

The royal commission on the government of India that sat in 1928-30 advised the separation of Burma from India if such a course was approved by the people. In 1932, therefore, it was decided to submit the matter to the vote and arrangements were made for providing the country with a new constitution in 1934 if the voters decided for separation.

Burnaby **Frederick Gustavus.** English traveller. Born at Bedford, March 3, 1842, he was educated at Harrow and entered the army. In 1875 he rode across Central Asia in the winter and his account of this, *A Ride to Khiva*, made him famous. *On Horseback through Asia Minor* describes other adventures, and he crossed the Channel in a balloon in 1882. On Jan. 17, 1885, he was killed in the fight at Abu Klea.

Burnand **Sir Francis Cowley.** English journalist. Born in London, Nov. 29, 1836, he was educated at Eton and Trinity College, Cambridge. Having given up the idea of taking orders, he became a barrister. In 1863 he joined the staff of *Punch* of which he became editor in 1880. He resigned in 1906 and died April 21, 1917.

Burnand wrote many plays, chiefly comedies and burlesques, of which *Black-Eyed Susan* and *The Colonel* were among his best. His series of *Happy Thoughts*, first published in *Punch*, were issued afterwards in book form, and a number of other books of light or burlesque character came from his pen.

Burne-Jones **Sir Edward Coley.** English artist, born in Birmingham, Aug. 28, 1833, and educated there and at Exeter College, Oxford, where he became associated with William Morris and Rossetti in their aesthetic movement. His best works are cartoons for stained glass, but he also painted in oil and water colours. Burne-Jones' picture of "King Cophetua and the Beggar Maid" was purchased for the Tate Gallery in 1910, and other of his paintings are "The Golden Stairs," "Merlin and Vivien," "The Merciful Knight" and "The Wheel of Fortune." Burne-Jones was one of the founders of the Pre-Raphaelite brotherhood. He was made a baronet in 1894 and died June 17, 1898.

Burne-Jones's son and successor, **Philip** (1861-1926), was also an artist. When he died the baronetcy became extinct.

Burnes **Sir Alexander.** Scottish traveller. A kinsman of Robert Burns, the poet, he was born at Montrose, May 16, 1805. He entered the Indian army in 1821, and, owing to his aptitude for Indian languages, was soon employed in political work in the north-west, which gave him the opportunity of making important journeys of exploration. Between 1831 and 1833 he travelled through Afghanistan to Bokhara and Persia, and on his return to England in 1834 published an account of his journey. In 1836 he was sent on a mission to Dost Mohammed at Kabul. As a result he advised the Indian Government to support Dost Mohammed against Shah Shufa, but his advice was rejected with disastrous results. In 1839 he was appointed as resident political agent at Kabul, where he was murdered by the mob during an insurrection, Nov. 2, 1841.

Burnet **Gilbert.** English prelate and historian. He was born in Edinburgh, Sept. 18, 1643, studied at Marischal College, Aberdeen, and entered the Presbyterian ministry, but afterwards took episcopal orders. In 1664 he became Rector of Saltoun, East Lothian, and in 1669, Professor of Divinity in the University of Glasgow.

In 1674 Burnet went to London, and was appointed chaplain of the Rolls Chapel. In 1677 he published his continuation of Spottiswoode's *History*, his first important work. His strong anti-Roman opinions having alienated him from the court on the accession of James II., he retired to the Continent and settled at the Hague where he obtained the favour of William of Orange. At the Revolution he returned to England with William and Mary, and was rewarded for his services with the bishopric of Salisbury. He remained bishop there and an influential figure at court until his death, March 7, 1715. His remarkable *History of His Own Time*, published in 1724, is of great value to historians.

Burnett **Frances Eliza Hodgson.** English authoress. Born in Manchester, Nov. 24, 1849, she passed her early days in the United States. In 1877 she made a reputation with *That Lass o' Lowrie's*, and this was greatly enhanced when *Little Lord Fauntleroy* appeared in 1886. She wrote other novels, including *A Fair Barbarian*, and several plays including *His Grace of Ormonde* and *Esmeralda*. Miss Hodgson married first L. M. Burnett of New York and secondly Stephen Townesend. She died Oct. 29, 1921.

Burney **Frances.** English writer called usually Madame d'Arblay or Fanny Burney. Born at King's Lynn, June 13, 1752, she was a daughter of Charles Burney (1726-1814), author of a *History of Music*. In 1760 the Burneys moved to London and their home became a social centre, Johnson and Garrick being among its many visitors. In 1778 Fanny published anonymously a novel called *Evelina*. This was a distinct success and soon its authorship became generally known. It was followed by *Cecilia*, 1782. In 1786 Miss Burney became second keeper of the robes to Queen Charlotte and in 1793 she married an exiled French general, Alexandre d'Arblay. After this event she published

Camilla, 1796, and *The Wanderer*, 1814. Her *Diary and Letters* appeared in seven volumes in 1842-46. She died in London, Jan. 6, 1840.

Burney **Sir Charles Dennistoun.** English sailor. Born, Dec. 28, 1888, he was a son of Sir Cecil Burney (1858-1929) who was second in command of the Grand Fleet at the battle of Jutland and who, having been made a baronet, died, Jan. 5, 1929.

Charles Burney entered the navy in 1905 and served through the Great War. He is known as the inventor of the paravane and a builder of airships, being the head of the firm that built the R100 at Howden. From 1922-29 he was Unionist M.P. for the Uxbridge division.

Burnham **Baron.** English journalist. Edward Levy Lawson was born in London, Dec. 28, 1833, a son of J. M. Levy, one of the founders of *The Daily Telegraph*. In 1855 he became the principal owner of that paper and under his direction it became a very valuable property. Having taken the name of Lawson, he was made a baronet in 1892 and Baron Burnham in 1903. He died Jan. 9, 1916.

Burnham's elder son, **Harry Lawson Webster Lawson**, who became the 2nd baron, was born Dec. 18, 1862. He was educated at Balliol College, Oxford, and was the head of *The Daily Telegraph* from his father's retirement in 1904 until he sold it in 1927. He was a Unionist M.P., 1885-92, 1893-95, 1905-06 and 1910-16. In 1919 he was made a viscount. He served on a number of commissions, including the one that, in 1928-30, reported on the future status of India, and was chairman of the committee that fixed the Burnham scale of salaries for teachers. Died 1933.

Burnham Beeches Beauty spot in Buckinghamshire. It is 425 acres in extent, and is the remaining part of an ancient forest. It was purchased by the corporation of the City of London in 1879 for the use of the people. It is reached by omnibus from Slough.

Burnham-on-Crouch Urban district and seaport of Essex. It stands on the north side of the Crouch estuary, 43 m. from London, on the L.N.E. Rly. It is known for its oyster beds, but perhaps more as a yachting centre, one of the most popular in England. A yachting week is held every September. Pop. (1931) 3395.

There are several other Burnhams in England. Burnham in Somerset is a small watering place on the Bristol Channel. It is 146 m. from London and is served by both the G.W. and the S. Rlys. Burnham Thorpe in Norfolk, the birthplace of Nelson, has an interesting old church. Burnham market, also in Norfolk, was once a market town.

Burnham Scale Scale of salaries for teachers in England and Wales. The scale was drawn up in 1919 by a committee over which Viscount Burnham presided and came into force in 1920. It dealt separately with teachers in elementary schools, secondary schools and technical schools; for each of these maximum and minimum salaries were laid down with the amount of the annual increment in each case. There were separate scales for head teachers, and assistant teachers, men teachers, and women teachers.

The scales were accepted by most of the education authorities and remained in force for five years as arranged. At the end of that period (1925) it was found impossible for the education authorities and the teachers to agree upon a new scale, and the matter was again referred to a committee presided over by Lord Burnham. The result was another set of scales in which, on the whole, the salaries were somewhat lower than those of the 1920 scales.

Burnley Borough and market town of Lancashire. It stands on the little river Brun, just where it joins the Calder, 27 miles from Manchester and 212 from London, on the L.M.S. Rly. Burnley is a centre of the cotton trade and has also machinery works. In the neighbourhood are coal mines.

The town has a famous Association football club. This was founded in 1881 and won the Association Cup in 1914, and the championship of the League in 1921. Pop. (1931) 98,259.

Burnous Arab garment. It is a kind of high crowned cape, or cloak and hood, woven in one piece and worn by Arabs and Moors of both sexes.

Burns **John.** English politician. Born in London, Oct. 20, 1858, he worked in a candle factory at Battersea and then as an engineer. Soon he became known as a forceful speaker at socialist and trade union meetings and in 1885, as a social democrat, he stood for Parliament (W. Nottingham). In 1886 he was sent to prison for his share in a riot of the London unemployed. In 1889, the year in which he took a prominent part in the strike of the dock labourers, he was elected to the L.C.C. In 1892 he entered Parliament as M.P. for Battersea. Gradually his opinions became less extreme and in 1905, as president of the Local Government Board, he entered the Liberal Cabinet. In 1914 he was transferred to the Board of Trade, but on the outbreak of the Great War he resigned. He kept his seat in Parliament until 1918.

Burns **Robert.** Scottish poet. Born at Alloway, Ayrshire, Jan. 25, 1759, he was the son of a man who farmed a little land, but was also something of a student. He received a fair education. He worked on the farm for some years, then carried on an unsuccessful business at Irvine and in 1784, his father being dead, settled on a farm at Mossgiel, Mauchline. In 1786 he went to Edinburgh and in 1788 he took a farm in Dumfriesshire; in 1789 he became an exciseman. Like his other occupations this work was uncongenial, but his unhappiness was due partly to his own imprudences. He died at Dumfries, July 21, 1796, being 37 years old only.

Burns had many love affairs, notably with Jean Armour, whom he married in 1786, and Mary Campbell. He is recognised as the national poet of Scotland and his birthday is celebrated with increasing fervour by Scotsmen all over the world.

The poetry of Burns is notable for its simplicity, which appealed strongly to an age in which verse of a very different kind was prevalent. Some of his shorter poems and his songs are amazingly musical; others are masterpieces of satire, *e.g. Holy Willie's Prayer*. The best known is *The Cotter's Saturday Night*. The publication of a volume of these at Kilmarnock in 1786 was a literary event of the first importance. Burns is the subject of an immense literature.

Burns **Treatment of.** Slight burns are relieved by applying boracic or eucalyptus ointment, or, failing these, olive oil. If more serious, the air must be excluded by

covering the part with clean linen or lint soaked in a weak solution of picric acid (or bicarbonate of soda if this is not available), on top of which a pad of cotton wool is placed, then a piece of oiled silk and lastly a bandage.

In serious cases, and especially with children, shock (*q.v.*) must be guarded against, as this may prove fatal when the injury would not.

Burntisland Burgh and seaport of Fifeshire. It is on the Firth of Forth, 20 m. from Edinburgh, on the L.N.E. Rly. There are some industries, chiefly connected with shipping for which there is a good harbour. Pop. (1931) 5389.

Burr Botanical name for the prickly covering of some fruits, such as the horse chestnut. The heads of the burdock and the rough minute fruits of the goose grass are other examples.

In Geology, burr stone is a siliceous rock used for millstones. The rough edge left on metal after cutting with a tool is termed a burr, and it is also the name of a small circular saw.

Burr Aaron. American statesman. He was born at Newark, New Jersey, Feb. 6, 1756, served with distinction in the War of Independence, and afterwards practised law in New York. He was attorney general for New York State from 1789 to 1790 and a senator from 1791 to 1797. In 1801 he stood for president and in the electoral college tied with Jefferson, but on a vote of the House of Representatives Jefferson was elected and Burr had to be content with the vice-presidency. Throughout his career he was bitterly opposed by Alexander Hamilton, who, in 1804, succeeded in bringing about his defeat for the governorship of New York. The personal animosity of the two men resulted in a duel in which Hamilton was killed; Burr was indicted for murder, but acquitted. He later attempted a filibustering expedition to Texas, was tried for treason, but acquitted, and never recovered his place in public life. He spent some years in Europe trying to gain support for new filibustering schemes, but without success. He died Sept. 14, 1836.

Burry Port Urban district and seaport of Carmarthenshire. It stands on Burry Inlet, four miles from Llanelly, on the G.W. Rly. The chief industry is the export of coal. Pop. (1931) 5752.

Burry Inlet is the estuary of the river Loughor. It is 12 m. long and about 4 wide.

Bursar Term used at the colleges of Oxford and Cambridge for an official who looks after the college accounts. It is also used in the same sense in the public schools, and in 1932 an association of these officials was founded. His office is called the bursary. The word bursary is used in Scotland for a grant of money made to a student, which in England is called a scholarship or exhibition.

Burslem District of Staffordshire, part of the county borough of Stoke-on-Trent. It is 20 m. from Stafford on the L.M.S. Rly. The chief industry is the manufacture of pottery, which was begun here in 1644. In 1878 Burslem was made a borough and in 1908 it became part of Stoke-on-Trent (*q.v.*).

Burton Robert. English writer. He was born Feb. 8, 1577 at Lindley, Leicestershire, and educated at Oxford. He became vicar of S. Thomas's, Oxford, and rector of Segrave, Leicestershire, but lived most of his life at Christ Church, Oxford. He was a keen student of many branches of learning, and at his death in 1640, many of the books of his fine library were bequeathed to the Bodleian Library. His fame rests upon his *Anatomy of Melancholy*, a work of singular charm. He died Jan. 25, 1640.

Burton Sir Richard Francis. British explorer and orientalist. Of mixed Anglo-Irish and Scottish descent, the son of an officer, he was born March 19, 1821. In 1842 he went to India as a subaltern in the Bombay native infantry, and for several years worked on the Sind survey, often disguising himself as a native and obtaining an intimate knowledge of Oriental life and manners. On his return to England he published several books on India, and in 1853 set out on his famous journey to Mecca and Medina, disguised as a Pathan Moslem. His account of his exploit, *The Pilgrimage to Al-Medinah and Meccah* created a great sensation when it appeared in 1855.

In 1854 he undertook an even more remarkable and far more dangerous expedition into Somaliland, which he accomplished successfully, though his life was in constant peril. Two years later he was sent by the British Government to search for the sources of the Nile and, accompanied by Speke, discovered Lake Tanganyika and the Victoria Nyanza. In 1861 he entered the permanent service of the Foreign Office and was consul successively at Fernando Po (1861), Santos (1865), Damascus (1869) and Trieste from 1871 until his death, Oct. 20, 1890. It was at Trieste that he made his celebrated translation of *The Arabian Nights* in 16 volumes.

Burton-upon-Trent County borough of Staffordshire. It stands on the Trent, 127 miles from London, and is served by the L.M.S. Railway system, and the Trent and Mersey Canal. The chief industry is brewing and here are breweries belonging to the great firms of Bass, Allsopp, Worthington and others. The industry has been carried on here over 300 years, chiefly because the water is peculiarly suitable. There are other industries, including engineering works. The river is remarkable for a fine bridge which leads into Derbyshire. Pop. (1931) 49,485.

Bury County borough of Lancashire. It is on the Irwell, 196 miles from London and 9 miles from Manchester, by the L.M.S. Railway. Bury is one of the centres of the cotton industry, other manufactures are paper and machinery.

Bury Football Club won the Association Cup in 1900 and 1903. Pop. (1931), 56,086.

Bury John Bagnell. British historian. Born Oct. 16, 1861, at Clogher, the son of a clergyman, he was educated at Trinity College, Dublin, where in 1893 he was elected professor of modern history. In 1898 he became also professor of Greek. In 1902 he was appointed regius professor of modern history at Cambridge, and there he remained until his death, June 1, 1927. Bury's special field of study was the later Roman Empire, and his best works are his *History of the Later Roman Empire*, 1889, and his edition of Gibbon's *Decline and Fall*. He also wrote a *History of Greece* and a *History of Freedom of Thought*.

Bury St. Edmunds City and market town of Suffolk. It is on the Lark, 85 m. from

London, and is served by the L.N.E. Rly. The church of S. James is the cathedral of the diocese of S. Edmondsbury and Ipswich. Of the great abbey that once stood here only the tower and gateway remain. Part of the grounds form a park. Bury is an agricultural centre and is the capital of West Suffolk. Pop. (1931) 16,708.

Bushey Urban district of Hertfordshire. It adjoins Watford, and is 16 m. from London, on the L.M.S. Rly. Pop. (1931) 11,243.

Bushey Park Park in Middlesex. It is at Teddington, 14 m. from London, near the Thames and adjacent to Hampton Court. The park, which covers 1100 acres, is crown property. In it is the National Physical Laboratory, and it is famous for its avenue of limes and horse chestnuts.

Bushire Seaport of Persia. It is on the northern shore of the Persian Gulf, and does a considerable trade with Arabia, India, and Java. The principal exports are opium, gum, carpets, hides and skins, horses, tobacco, etc., and the principal imports cotton and woollen goods, tea, coffee, spices and metal. The climate is unhealthy. There is a good harbour. Pop. about 18,000.

Bushmen Remnants of the aboriginal race of South Africa. Confined virtually to the Kalahari Desert, they are yellow-skinned and of low stature. They are nomads, without social or religious institutions, but they are not unintelligent, and in their rock pictures show considerable artistic skill.

Bushranger Australian bandit. They infested the remoter settlements until late in the 19th century. They operated in large gangs, of which the most celebrated was that of the Kelly brothers, who terrorised districts of New South Wales and Victoria as late as 1880.

Business Word meaning much the same as trade or commerce. In English law certain statutes make it illegal to carry on certain businesses, such as pawnbroking and moneylending, without licence or registration.

By law it is necessary for all persons who trade in names that are not their own to register such names at Somerset House, London. These names must be shown on the firm's note-paper.

Business day is a term used in the Bills of Exchange Act, 1882. Every day is a business day except Sunday, Christmas day, Good Fridays and days set apart as public holidays under the Bank Holidays Act, 1878, and days appointed by royal proclamation as days of fast or thanksgiving.

BUSINESS AS A CAREER. The first necessity for success in business is what is known as a "business sense." This implies acumen, initiative, balance, firmness and self-reliance, and, added to these, experience and knowledge of the world.

In the industrial world there are many important and remunerative positions such as that of **Company Secretary**, and those aiming at any such responsible post in commerce should be equipped with a definite professional qualification such as Fellowship of the Incorporated Secretaries Association or the Chartered Institute of Secretaries.

Particulars of the examinations may be obtained from the office of the Association, Secretaries House, 21 Bedford Square, London, W.C. 1, in the first case, and from the Institute, 59a London Wall, London, E.C. in the second. The salary of the secretary of a company ranges between £500 and £2000 or more, according to the size of the company and the executive responsibility required.

A **Cost Accountant's** position is comparatively a recent development, and the demand for qualified and experienced men is great. Professional status is obtained through the Examinations of the Institute of Cost and Works Accountants, 6 Duke Street, London, S.W. 1.

Industrial Management is a profession which has been created by the divorce of ownership and management. Many of the larger concerns to-day are owned by a limited liability company with many shareholders instead of by an individual, and the need for a "professional" manager is therefore created. To obtain this post technical knowledge of the details of manufacture of the particular product are essential, while a university training is helpful in certain cases. Most firms undertake the training of their own candidates for managership, and advancement lies through various assistant positions covering a large range of salaries. The highest salaries attainable depend upon the size of the concern and the responsibilities attached, and frequently reach as much as £10,000 a year.

In the commercial world **Merchants and Brokers** hold an important position. They supply the manufacturer with his raw material and then buy his finished product. A Merchant firm usually pays a junior £50 per annum on beginning. The maximum salary it is possible to earn is very high.

See also SALESMANSHIP, COMMERCIAL, AND ACCOUNTANCY.

Buskin Kind of boot. Greek and other early tragic actors wore a peculiar sort of half-boots, laced to the leg, which were known as buskins. Sometimes thick soles were added, so that the actor's height might seem to be greater.

Bustard Large game bird found in Europe, Asia and Australia. It is of the same family as the crane and the plover. The chief species is the great bustard which may measure as much as 8 ft. from tip to tip of the wings and weigh over 30 lb. This is the largest land bird in Europe. Other species are the little bustard and the Australian bustard, sometimes called the turkey. Bustards feed on corn, vegetables and small animals. The great bustard was common in England until the early part of the 19th century.

Butane Term applied to two organic substances belonging to the paraffin series of hydrocarbons. Normal butane is present in petroleum, but can be prepared by the action of sodium amalgam upon ethyl iodide. Isobutane or trimethylmethane is prepared from butyl iodide by the action of nascent hydrogen.

Butcher Bird Name given to the shrike. This is a family of strong-beaked birds which have the curious habit of impaling their prey, which consists of small birds, insects or animals, upon the thorns of bushes. Several species occur in Europe, the largest being the great grey shrike (*lanius excubitor*), which is about the size of a thrush.

Bute Island of Scotland. Part of the County of Buteshire, it is off the coast of Argyllshire and covers 47 sq. m. The soil is fairly fertile and the climate exceptionally mild. The scenery is varied by lochs, but the highest point is under 1000 ft. Rothesay is the chief place.

Bute Earl of. Title borne since 1703 by the family of Stuart. Its most famous holder was the 3rd earl. Born May 25, 1713, he became earl in 1723. He was secretary of state in 1761 and prime minister in 1762, but became unpopular and was forced to resign in 1763. He died March 10, 1792.

Buteshire County of Scotland. It consists of the islands of Bute and Arran and several smaller ones—Great and Little Cumbrae, Inchmarnoch and Pladda. Its area is 218 sq. m. Pop. (1931) 18,822.

Butler Joseph. English philosopher and bishop. Born at Wantage, Berkshire, May 18, 1692, he went to Oriel College, Oxford, where he graduated and took orders in 1718. He was appointed preacher at the Rolls Chapel, London, prebendary of Salisbury and rector of Stanhope, Durham; and he became successively clerk of the closet to Queen Caroline (1733), Bishop of Bristol (1738), Dean of S. Paul's (1740) and clerk of the closet to George II. (1746). In 1748 he declined the Archbishopric of Canterbury, but three years later he accepted See of Durham, which he held until his death, June 16, 1752.

By virtue of his great work *The Analogy of Religion, Natural and Revealed to the Course and Constitution of Nature*, Butler ranks high both as philospher and divine.

Butler Josephine Elizabeth. English social reformer. Born on April 12, 1828, she was a zealous promoter of the higher education of women and of the Married Women's Property Act of 1882. Her name is chiefly associated with her leadership of the agitation for the repeal of the Contagious Diseases Acts, and her courageous attack on the evils of prostitution. She died Dec. 30, 1906.

Butler Lady. English painter. A daughter of J. T. Thompson, she was born in Switzerland in 1850, and studied art in Rome. In 1874 she made a reputation with a battle picture, "The Roll Call." This was the first of several military scenes, including "Floreat Etona" and "The Dawn of Waterloo." Engravings of these and others of her pictures became very popular.

In 1877 Miss Thompson married an Irish soldier, who afterwards became **Sir W. F. Butler** (1838-1910). She died in 1933.

Butler Samuel. English author. He was born at Strensham, Worcestershire, in 1612, his father being a farmer there. After some years as clerk to a justice of the peace, he entered the service, first of the Countess of Kent and then of Sir Samuel Luke, a colonel in the Parliamentary army. At the Restoration he became secretary to the Lord President of Wales, and for a short time steward of Ludlow Castle. In 1663 he published the first part of *Hudibras*, which, chiming with the anti-puritan sentiment of the moment, obtained wide popularity. Part II (1664), was even more successful. A third part was published in 1678. Sept. 25, 1680, is given as the date of his death.

Butler Samuel. English author. A son of Rev. Thomas Butler and grandson of Samuel Butler, headmaster of Shrewsbury School and Bishop of Lichfield, he was born Dec. 4, 1835. He went to Shrewsbury and Cambridge with the intention of taking orders, but developed opinions which made that impossible. Instead he settled in New Zealand where he was so successful as a sheep farmer that he was able to retire and return to England. In 1872 he published his first book *Erewhon*, in which he satirised alike conventional religion and the Darwinian theory. He renewed the attack on Darwinism in *Life and Habit* (1877), *Evolution, Old and New* (1879), *Unconscious Memory* (1880), and *Luck or Cunning* (1886). He was also a fine, if erratic, Homeric scholar, and in 1897 published *The Authoress of the Odeyssey*. His later works include *Erewhon Revisited* (1901), and *The Way of all Flesh*. He died June 18, 1902.

Butt Dame Clara. English vocalist. Born in Sussex, Feb. 1, 1873, she studied at the Royal College of Music, London. She first appeared on the concert platform in 1892, and from that time was one of the leading singers in the country. In 1920 she was made a Dame of the Order of the British Empire. In private life she was the wife of Kennerley Rumford, whom she married in 1900. She died in Jan. 1936.

Butter Article of food made from the fat of milk by churning. Butter contains from 82 to 87 per cent. of milk fat, about 13 per cent. of water and small proportions of casein, milk sugar and mineral matter. The fat consists of stearine and other compounds of the fatty acids, and the presence of butyric and caproic acids give the peculiar taste and smell. In the ripening process of butter pure cultures of lactic acid forming bacteria are used. The colour of butter is affected by the food of the cow yielding the milk, but often annatto or other colouring matter is added.

In Great Britain the inspectors of food must see that the butter offered for sale is unadulterated, and persons selling butter which is not up to the standard can be fined. The importation of butter into Great Britain was not affected by the tariffs introduced in 1931-32.

Butterfield William. English architect, born in London, Sept. 7, 1824. He made bold use of red and other coloured brick, and his buildings are quite distinctive. They include, among London churches, All Saints, Margaret St. and S. Alban's, Holborn; Keble College, part of Merton College, and other buildings at Oxford; and school buildings at Rugby and Oxenham. He died Feb. 23, 1900.

Butterfly One of two great divisions of *lepidoptera*, the other being moths. They are distinguished from moths chiefly by the shape of the posterior wings and the characteristic club-shaped antennae whence they derive their scientific name, *rhopalocera* or club-horns.

There are six families, *nymphalidae*, *erycinidae*, *lycaenidae*, *pieridae*, *papilionidae* and *hesperiidae*. Of these *nymphalidae* are most numerous, comprising over 4000 species, including such well-known British butterflies as the red admiral, the peacock, the tortoise shell, the purple emperor and the fritillaries. To *pieridae* belong the common cabbage butterflies or garden whites. The *papilionidae*, or swallow tails, include the

most beautiful forms. The *hesperiidae* or skippers, so called from their peculiar jerky flight, differ considerably from other families, both in structure and habit.

Buttermere Lake of Cumberland. In the south of the Lake District, it is about 1¼ miles long. There is a village of this name, 9 m. from Keswick.

Buttermilk Dairy product. After cream has been churned into butter there remains a rich, slightly acid, liquor which is called buttermilk. It is used as a medicine because of its nourishing qualities and easy digestibility.

Butterwort (*pinguicula vulgaris*). One of the few insectivorous plants found in the British Isles. It belongs to the order *lentibulariaceae*, grows on wet ground and is stemless. It consists of a number of fleshy leaves which exude a sticky surface that serves to capture small insects, while from the centre rises a tall stalk bearing a blue flower.

Buttress In architecture a support. Various kinds of buttresses are employed in building to give strength to walls. Each kind of architecture has its own style, and this serves in great measure to identify the period of the building. Flying **Buttresses** are graceful half-arches thrown against the upper part of a vaulted structure to withstand the pressure of the roof arches.

Butyric Acid ($CH_3 CH_2 CH_2 COOH$). Fatty acid occurring in butter fat and various vegetable fats and oils. It is an oily liquid with a disagreeable smell and is readily soluble in water. It is usually prepared by the fermentation of sugar or starch by means of putrefying cheese.

Buxton Watering place, borough and market town of Derbyshire. It stands on high ground, 22 m. from Manchester and 164 from London, on the L.M.S. Rly. It is chiefly known for its waters, which are very suitable for rheumatism and kindred complaints. The town has beautiful gardens, a pump room and baths. Pop. (1931) 15,353.

Buxton **Earl.** English politician. Sydney Charles Buxton was born Oct. 25, 1853, and educated at Clifton and Trinity Colleges, Cambridge. In 1886, having been M.P. for Peterborough, 1883-85, he was elected M.P. for Poplar, and for 30 years was an active Liberal politician. From 1892-95 he was under-secretary for the colonies; from 1906-10, postmaster-general; and from 1910-14, president of the Board of Trade. In 1914 he was made Governor-general of S. Africa and a viscount. On his retirement in 1920 he was made an earl. His books include a *Life* of Louis Botha.

Buxton **Sir Thomas Fowell.** English politician. Born April 1, 1786, he went to Trinity College, Dublin, and then joined the firm of brewers which became Truman, Hanbury, Buxton & Co. From 1818 to 1837 he was in Parliament as M.P. for Weymouth; there and outside his main interests were in schemes for improving the condition of the people at home and abroad, including the abolition of the slave trade. He died Feb. 19, 1845.

Buzzard Bird of prey, somewhat resembling an eagle, but smaller and weaker. There are about 20 species and they are found in most parts of the world, excluding Australasia, and Oceania. The common buzzard is seen in Great Britain and frequently in other parts of Europe. It is black or brown in colour, measures about 4 ft., feeds chiefly on mice and small snakes and lives in mountainous and woody districts. Other varieties of buzzard are found in Africa, Asia and America. In America the turkey buzzard, or turkey vulture, is called a buzzard.

Byfleet Town of Surrey. It stands near the Wey, 8 m. from Guildford and 21 from London, on the S. Rly. Its manor house was once a royal residence. Pop. 4200.

Byland Abbey in Yorkshire (N.R.). It was founded in 1177 by Baron Mowbray for the Cistercians and existed until the Reformation. In 1920 the ruins became the property of the nation, and restoration work was undertaken. Byland is 18 m. to the north of York.

By-law Rule or law made by a corporation, council or company. County, city and district councils have power under various Acts of Parliament, to make by-laws on matters affecting the areas for which they are responsible. Railway companies and some other bodies possess the same power. If a by-law is contrary to the law of the land it is invalid.

Byng **Viscount.** English soldier. Julian Hedworth George Byng, a younger son of the Earl of Strafford, was born Sept. 11, 1862, and entered the army in 1883. A cavalry officer, he served under Kitchener in the Sudan and S. Africa, where he commanded the S. African Light Horse. Promotion came quickly, and in 1912 he was sent to Egypt as commander-in-chief. In Oct. 1914, he went at the head of the 3rd cavalry division to Belgium, and early in 1915 was put in command of the cavalry corps. Later he commanded the 9th corps in Gallipoli, the Canadian Corps on the western front and finally the Third Army. He increased his reputation as a capable soldier by his generalship in the Battle of Cambrai in Nov., 1917, and took an active part in the final movements on the western front. In 1915 Byng was knighted, and at the end of the war, being a full general, he was made a peer. From 1921-26 he was Governor-General of Canada, being made a viscount on his retirement. In 1928, at a critical time, he was appointed head of the metropolitan police, and retired in Sept., 1931. He died June, 1935.

By-product Something produced incidentally to the production of something else. The commercial value of so-called waste products was not recognised until comparatively late in industrial history. It may be said to date from the discovery of aniline dyes by W. H. Perkin in 1856, which was the first intimation of the extraordinary richness of coal tar. Since then the utilisation of the waste of a principal product for the manufacture of by-products has progressed to a remarkable degree.

Though aniline dyes were the discovery of an English chemist, it was German industrial chemists who perfected them and discovered that coal tar also yielded sweetening agents like saccharine and valuable therapeutic agents like antipyrin, phenacetin, salvarsan, etc. Gas works and blast furnaces, in addition to producing coal tar, give ammonia as a by-product. Copper is extracted from burnt pyrites that are waste in the manufacture of sulphuric acid; glycerine is a by-product of

soap; and candle works and wool scouring yields the wool grease that is used for the manufacture of lanoline and certain lubricants.

Byrd Richard Evelyn. American explorer. Born at Winchester, Virginia, Oct. 24, 1888, he entered the navy in 1912. During the Great War he was head of the American flying station at Halifax. In 1925 he went with an expedition to Greenland, doing a great deal of flying, and in May, 1926, in a Fokker monoplane, he flew over the pole, doing the flight from Amsterdam Island and back, 1600 m. in 15½ hours. In 1927 Byrd flew from New York to France; in 1928 he led an expedition to the Antarctic; and in 1929 he flew over the south pole. In 1933 he set out from Boston on yet another Antarctic expedition.

Byrd William. English composer. Born in London about 1542, he studied music under Thomas Tallis. In 1563 he became organist of Lincoln Cathedral, and in 1569 a member of the choir of the Chapel Royal. He died July 4, 1623. Byrd is chiefly remembered by his madrigals, but he also wrote choral music which is used to-day.

Byron Lord. English poet. Born in London, Jan. 12, 1788, George Gordon Byron was a son of John Byron, a sailor who was a grandson of the 4th Lord Byron. He died young (1791), and left a daughter, Augusta, by his first wife and the future poet by his second, a Gordon. Byron's childhood was unhappy, partly owing to his mother's temper, partly to his lameness, and partly to the conditions under which the two lived. After schooling in Aberdeen and Dulwich, he went to Harrow and Trinity College, Cambridge. In spite of his infirmity he was something of an athlete, and to the end was a superb swimmer. In 1808 he succeeded his uncle in the title becoming the 6th baron and with his mother passed some time at Newstead, the ancestral home.

In 1807, after alteration and consideration, Byron published *Hours of Idleness*. Then followed in 1809 the satires, *English Bards and Scotch Reviewers*. He made an extensive tour in Europe, and in 1812 published the first part of *Childe Harold's Pilgrimage*, much of it his own adventures. This made him famous, and in less than a year seven editions appeared. In 1813 came *The Bride of Abydos* and in 1814 *The Corsair*, while for a time the poet was a figure in London society. He continued to write and travel; *Childe Harold* was finished; *Manfred* and later *Cain* and *Sardanapalus* appeared. His last work, and perhaps his greatest, was the unfinished *Don Juan*. *The Prisoner of Chillon* and the fine *Hebrew Melodies* are among his minor pieces, and he also wrote eight plays.

The poet's last years were spent abroad, chiefly in Switzerland, Italy and Greece, and he saw much of Shelley. In 1823 he set out to help the Greeks in their fight for independence, and on April 19, 1824, he died of fever at Missolonghi. He was buried at Hucknall Torkard near Newstead.

In Jan., 1815, Byron married Anne Milbanke, who bore him a daughter, later the wife of the Earl of Lovelace. The pair soon separated, leaving Byron to a succession of mistresses, of whom the most notable was the Italian countess, Teresa Gamba.

Byron left a large body of poetry, all strongly marked with his own strange individuality, but it is a little difficult to find in it the justification for regarding him as the greatest poet of his age, as many of his contemporaries certainly did. No other English poet, however, has ever been so lauded in foreign lands.

Byron Lord. English title. The family of Byron had a long association with Nottinghamshire, where Sir John Byron, on the dissolution of the monasteries, obtained the abbey of Newstead. A later Sir John Byron, and several other Byrons, fought for Charles I. in the civil war, and was made a baron in 1643. William, the 5th baron, was succeeded by his nephew, the poet, and from him the title passed to a cousin, George. It is still held by the Byrons, but Newstead has been sold. The family seat is Thrumpton Hall, near Derby.

Byzantium Ancient city on the Bosporus which formed the nucleus of Constantine's new capital of the Roman Empire. On the death of Theodosius the Great in A.D. 395, the Roman Empire was divided between his sons, Arcadius and Honorius. Arcadius took the eastern portion, Asia Minor, Egypt, Thrace, Mocsia, Macedonia and Greece. His capital was naturally Byzantium, hence the term Byzantine, by which the East Roman Empire is generally known.

The Byzantine Empire lasted over a thousand years, and after a long decline the last remnant of it vanished with the capture of Constantinople by the Turks in 1453. The more memorable names in the long list of Byzantine emperors are Justinian (527-565), the famous legislator; Maurice (582-602); Heraclius (610-641); Leo, the Isaurian (716-741); Basil, the Macedonian (867-886); Isaac Comnenus, the founder of a dynasty which ruled from 1057 to 1185; and Michael Palaeologus, whose family retained the sceptre from 1261 until the end.

The interval between Comneni and the Palaeologi dynasties witnessed the remarkable usurpation of the Byzantine throne by Baldwin, Count of Flanders, an adventurer of the fourth crusade, who was succeeded by his nephew of the same name. Baldwin and his nephew, and successor of the same name, are known as the Latin emperors of the East. Baldwin II. was expelled by Michael Palaeologus. The last emperor of the East, Constantine Palaeologus, after an heroic defence of the capital, perished during the victorious assault of the Turks on the city in 1453.

The Byzantine Empire made rich contributions to art, especially in architecture and letters. Its art, which is a blend of oriental with classic, reached its highest development in the reign of Justinian to which the celebrated church of S. Sophia belongs, but between the 10th and the 12th centuries there was another efflorescence hardly inferior. Byzantine literature is more remarkable for scholarship than originality. It has the merit of being the medium through which classical Greek literature has been preserved to modern times. The capture of Constantinople by the Turks, and the consequent flight of Byzantine scholars was the cause of the Renaissance or revival of learning, which changed the whole course of culture in Europe.

CAB (Fr. *cabriolet*). Vehicle for public hire. Originally a two-wheeled gig with a hood, drawn by a horse, it carried two persons. It was introduced into Great Britain from Paris early in the 19th century. The two-wheeled hansom cab was designed and patented in 1834 by Hansom, a Birmingham architect. With the advent of the motor car early in the 20th century, the taxicab came into being, and only a small number of horse-drawn cabs are now in use. All cabs must be licensed, and in London all fares are regulated by a scale authorised by the Home Secretary.

Cabal Name given to a body of men who work secretly and mainly for their own ends. It comes from the Hebrew word *cabbala* or *kabbala*, and was used in England because the chief ministers of Charles II. (Clifford, Arlington, Buckingham, Ashley and Lauderdale) made this word with the first letter of their five names.

Cabbage Cultivated vegetable of the cruciferous order. It is a native of Britain and other parts of Europe. In S.W. England and Wales it grows wild, with leaves up to 2 ft. high. Cultivated since the 13th century for its anti-scorbutic properties, its varieties comprise borecale, Brussels sprouts, drumhead cabbage and savoy, cauliflower, sprouting broccoli, the turnip-rooted kohl-rabi, and red cabbage, grown for pickling.

Cabbala System of medieval Jewish theosophy which influenced contemporary Christian thought. Obviously affected by Gnosticism, it postulated a world of emanations from an inscrutable first cause, and used numbers to extract recondite meanings from the Scriptures.

Cabinet Council of ministers responsible for the government of a country. The first English cabinet came into existence in the time of Charles II., but cabinets in the modern sense did not appear until about 1720. Usually the members belong to one political party—except when, as in 1915-22, and in 1931, a coalition of parties is formed—and that party must be able to rely on a majority of the House of Commons. If this support ceases the Cabinet must resign. The members are the heads of the departments of state, and each must be a member of one of the Houses of Parliament. The Prime Minister selects them, with the approval of the King, and presides over their meetings, at which all important matters of state are discussed and decided. The Cabinet, therefore, corresponds to a board of directors. In theory it is a committee of the privy council.

Cabinet government is also the rule in other parts of the British Empire, in France and other countries.

Cable Substantial linear appliance used for holding objects or transmitting signals, light or power. For mooring ships, cables comprise twisted strands of hemp, coir or jute, wire hawsers, or iron chains of consecutive links, 12½ or 15 fathoms long, fastened together by joining shackles. Towing and elevator cables are of hemp or wire. Cables are made at Greenwich, Woolwich and other parts of riverside London.

Electric cables, used in submarine telegraphy since 1851, comprise cores of one or more copper wires embedded in insulating materials. They serve also for the land transmission of electric light and power.

As a measure the cable is 600 ft. long and 10 cables make a nautical mile.

Cabot John. Italian explorer. Born in Genoa, he became a Venetian citizen. In 1486 he settled in England and was sent out by Henry VII. on a voyage of discovery. He made two voyages from Bristol across the Atlantic, and on the second landed on Greenland and learned something about the lands, then unknown, of N. America. He died in 1498.

Cabot's son, **Sebastian**, went with his father on one or both of his voyages, afterwards serving the King of Spain. In 1547 he returned to England and became the head of the Merchant Venturers who sent out expeditions from Bristol, where he probably died in 1557. **Cabot Strait**, between Newfoundland and Cape Breton Isle, is named after him. **Cabot Tower**, on Brandon Hill, Bristol, commemorates him and his sons.

Ca' Canny Or "Go Canny," is a Scottish phrase meaning to go warily, cautiously, or slow. It is now a term used in industrial disputes, when to "ca' canny" is to work slowly in order to call attention to the grievances of the workshop employees. It was first used in a Glasgow dock strike in 1889.

Cachalot Toothed whale (*Physeter macrocephalus*), also called the sperm whale. It eats mostly squids and cuttle fish. Sometimes as much as 50 ft. long, one-fourth comprises the massive head, with a cavity filled with spermaceti. The sperm oil from the blubber is the finest whale oil. Ambergris, an intestinal secretion, usually appears afloat or cast ashore.

Cactus Group of succulent, fleshy-stemmed, prickly, and mostly leafless plants. Almost all the thousand species are natives of tropical America. The prickly pear, the most important economically, has become widespread in the Canary Islands, the Mediterranean basin and Palestine. They grow in grotesque shapes and resemble Turk's caps, globes, hedgehogs and columns sometimes 50 ft. high. Many contain reserves of moisture which are utilised in deserts by man and beast.

Cacus Mythical character. He was a giant, son of Vulcan, and lived on the Aventine Hill at Rome. When Hercules carried off cattle from Geryon, in Spain, Cacus stole some of them and drove them to his cave. The lowing of the animals betrayed him and he was slain by Hercules.

Cadbury Name of an English family of chocolate manufacturers. The business dates from 1794, when it was started in Birmingham by a Somerset man, Richard Tapper Cadbury. Under his grandsons, Richard (1835-99) and George (1839-1922), the business grew enormously, and a garden city called Bourneville was built for the works and workers. In 1901 George Cadbury became chief proprietor of the *Daily News*, which was later amalgamated with the *Daily Chronicle* as the *News Chronicle*.

Caddis Fly Hairy winged insect belonging to the *trichoptera*. It lays its eggs in a jelly-like mass on water weeds or ponds. The larva (grub) lives in silk-lined tubes made of wood, leaves, shell or other substance, which are open at the ends. When the chrysalis stage approaches, the grub closes these ends with silk or stones, and rests. Later the pupa emerges and walks in the water; on arrival at the surface it becomes a perfect insect. The larvae are used by anglers.

Cade **Jack.** English rebel. An Irishman by birth and a soldier and adventurer by choice, Cade was a man of position in Kent in 1450, when the country was suffering from the bad government of Henry VI. and his friends. Calling himself Mortimer and Captain of Kent, he collected together the rebels and marched into London. He was declared a traitor and killed near Heathfield, Sussex, while trying to escape, July 13, 1450.

Cader Idris Mountain in Wales. It is 4 m. south-west of Dolgelly in Merionethshire, and above Lake Tal-y-Lyn. The summit, Pen-y-gader, is 2914 ft. high.

Cadet Person who is training for a position in the navy, army or air force. Originally it meant a younger son. Cadets for the British navy are trained at Dartmouth and Greenwich; for the army at Woolwich and Sandhurst, and for the air force at Cranwell. Cadets for the U.S.A. army are trained at West Point.

Most of the public schools have a **cadet corps** which trains the older boys on military lines. Religious organisations, such as the Boys' Brigade and Church Lads' Brigade, are also recognised as cadet corps. In 1930 the British Government stopped the grant hitherto made to these corps; but under certain conditions cadet units may be affiliated to local Territorial units for instruction and training.

Cadi Arabic title for a judge. Cadis still officiate in Mohammedan countries. A cadi is required to be of exemplary character and intelligence; to be disinterested, accessible, learned in the Koran and in local custom and tradition.

Cadiz City and seaport of Spain. It stands on a narrow tongue of land on the Bay of Cadiz, 95 m. from Seville. It has a fine harbour and is still a seaport and naval station. There are two cathedrals, an observatory, a watch tower, museum, art gallery, etc., as well as public gardens and promenades, a botanical garden and a bull ring.

One of the oldest seaports in the world, Cadiz was founded by the Phoenicians and was rich and flourishing under the Romans, who called it Gabes. It declined until the discovery of America gave it a new lease of life, but later its prosperity waned owing to the loss of Spanish power in America. Its wealth and position as Spain's chief naval base attracted the attention of English seamen. In 1587 Drake burned some warships in its harbour; in 1596 it was taken and plundered by an English force; in 1625 it was again attacked, but with less success. Pop. (1931) 75,675.

Cadmium Metallic element. Bluish-white, malleable and ductile, it enables fusible alloys of bismuth, tin and lead, such as Rose's metal, to fuse at still lower temperatures; such a cadmium alloy is Wood's metal. Not found native, it constantly accompanies zinc blende, and is also derived from greenockite. A cadmium sulphide is prepared artificially as the artist's pigment cadmium yellow, and is used also for colouring soap and porcelain. The iodide is employed in photography. The symbol is Cd, and the atomic weight 112.4. Its specific gravity is 8.6. It melts at 322° C., and boils at 778° C.,

Cadmus Greek hero. A son of Agenor, King of Phoenicia, Cadmus went to find his sister Europa who had been carried away by Zeus. He consulted the Delphic oracle which told him to follow a cow and build a city where the cow lay down. There he killed a monster and sowed its teeth in the ground. From the teeth armed men sprang up and, after most of them had been killed, Cadmus was able to build the city of Thebes.

Cadogan **Earl.** English title borne by the family of Cadogan. **William Cadogan** (1675-1726), an Irishman, served under Marlborough and William III. He was an M.P., 1705-16, and helped to crush the Jacobite rising in 1715. In 1716 he was made a baron and in 1718 an earl. His brother, **Charles Cadogan** (1691-1776), became the 2nd baron, but did not inherit the earldom. He married the daughter of Sir Hans Sloane and thus the Cadogans inherited the Chelsea property which includes Sloane Street, Cadogan Square and the neighbourhood. The 3rd baron was made an earl in 1800. **George Henry Cadogan,** the 5th earl (1840-1915), was a Conservative politician, being Lord Privy Seal, 1886-92, and Lord Lieutenant of Ireland, 1895-1902.

Cadorna **Luigi, Count.** Italian soldier. Born Sept. 4, 1850, he entered the army in 1868. He saw service in 1870, when, under his father's leadership, the Italian forces entered the papal states. He subsequently became Chief of the General Staff (1914). In 1915 he was made Commander-in-Chief, and directed the Italian operations against Austria. In 1917, after Caporetto (*q.v.*), he was superseded. He represented Italy on the Versailles council in 1918, and died Dec. 21, 1928.

Cadoxton Town of Glamorganshire. It is 7 m. from Cardiff, on the G.W. Rly., and the junction of a branch line from Barry to Pontypridd. It is a coal-mining area. Pop. 7000.

Cadre Military term meaning the nucleus or skeleton of a regiment or other unit. A cadre keeps the regiment in existence, so that when need arises it can be raised to the required strength without new organisation.

Caduceus Magic wand. Twined with snakes and surmounted by wings, it was given by Apollo to Mercury, whose emblem as the messenger of the gods it became. It could confer wealth and happiness and had power over sleeping and waking.

Caedmon Anglo-Saxon poet. Apparently he was a herdsman employed by Hilda, Abbess of Whitby. One day when looking after sheep or cattle he had a vision in which he was told to sing of the Creation. He became a monk, devoting his time to the compilation of verses on Biblical subjects. He died about 675 at Whitby. The actual poems written by Caedmon are lost. The paraphrase said to be his work, which has been translated into English, was written by another hand.

Caen City of France. In Normandy, it is on the River Orne, 9 m. from the English Channel. Ships can reach it by river and canal. It is famous for its connection with William the Conqueror, who founded an abbey

here, another being founded by his wife, Matilda. Some fine churches still stand, including S. Etienne, where William was buried.

The city has a university founded by Henry VI., when it was an English possession, while the town hall and law courts are noteworthy. It is famous for the building stone found in the neighbourhood. Pop. (1931) 57,528.

Caerlaverock Village of Dumfriesshire. It is 6 m. from Dumfries and is famous for its castle. Near the mouth of the Nidd and overlooking the Solway, this was long a seat of the Maxwells. Edward I. took it in 1300, and it is now a ruin. Pop. 800.

Caerleon Urban district of Monmouthshire. It is on the Usk, 2 m. from Newport, on the G.W. Rly. It was an important Roman city, and many Roman remains have been discovered. Many of these are in the museum, which is a branch of the National Museum of Wales. It is connected in legend with King Arthur. Pop. (1931) 2326.

Caernarvon Borough and market town of Caernarvonshire, also the county town. It stands on the Menai Strait, 69 m. from Chester and 247 m. from London, on the L.M.S. Rly. The chief building is the magnificent castle built in the 13th century. The parish church is a fine old building. There are the remains of the town walls and some relics of a Roman settlement. The town has a small harbour. Pop. (1931) 8469.

Caernarvon Bay is part of the Irish Sea, between the counties of Anglesea and Carnarvon. It is 30 m. across.

Caernarvonshire County of Wales. In the north of the country, it is almost surrounded by the sea, except where it joins Denbighshire. The Menai Strait separates it from Anglesea. In it are the highest mountains—the Snowdon Range—and some of the grandest scenery in Wales. In the south is the peninsula of Lleyn where the climate is extraordinarily mild. The county covers 572 sq. m.

The chief town is Caernarvon; others are Bangor, Llandudno, Bethesda, Conway and Pwllheli. The L.M.S. and G.W. Rlys. serve the county. The rivers include the Conway and the Ogwen. Caernarvonshire is famous for its slate quarries. In 1930 the official spelling of the name of the county was altered from Carnarvonshire to the present form. Pop. (1931) 120,810.

Caerphilly Market town and urban district of Glamorganshire, Wales, seven m. from Cardiff, on the G.W. Rly., formerly the Rhymney Railway. Near are extensive collieries and ironworks. Its chief interest lies in the ruins of the great castle, supposed once to have been the finest in Wales. Pop. (1931) 35,760.

Caesar Famous Roman family. It traced its origin to Iulus, son of Aeneas, and its most famous member was Julius Caesar. Later it became a title used by the Roman emperors. From it come the words kaiser and tsar, or czar, both meaning emperor.

Caesar **Gaius Julius.** Roman statesman, soldier and writer. He was born July 12, 102 B.C., of influential parents, and became a soldier. He served with the army in the East, after which he became prominent in Rome. He filled several public offices, and was consul in 59 B.C. when with Pompey and Crassus he formed the first triumvirate. Made governor of Gaul, he remained 10 years and won his great military successes, conquering most of Gaul and twice invading Britain.

Caesar's successes created enemies, one being Pompey, and, an attempt at pacification having failed, Caesar left Gaul and crossed the Rubicon into Italy. This meant civil war. Again elected consul, he followed Pompey into Greece and crushed his army (48 B.C.) at Pharsalus. During this expedition he was in Egypt, where he was the lover of Cleopatra. Returning to Rome in triumph, Caesar was made dictator for 10 years and then for life. As the result of a conspiracy, he was assassinated in the senate house at Rome on the ides (15th) of March, 44 B.C.

Like Napoleon, Caesar was not only a great soldier, but a great administrator. He carried out many reforms, including the revision of the calendar, and prepared the way for the great empire of his nephew, Augustus. He was three times married, but left no lawful children. Of his writings only the *Commentaries* remain.

Caesarea Two ancient cities of Palestine. (1) **Caesarea Sebaste,** 31 m. N. of Joppa, was a seaport built by Herod the Great in honour of Augustus. About 13 B.C. Peter and Paul went there (Acts x., xxi., xxxiii.). The modern village is called Kaisariyeh.

(2) **Caesarea Philippi** is 95 m. N. of Jerusalem. It was built by Herod's son, Philip, in honour of Tiberias and himself, and visited by Christ (Mt. xvi.). The modern village is called Banias.

Caesium Metallic element. Its symbol is Cs, and atomic weight 132.8. Silver-white, it bursts into flame when heated, melts at 80° F. and is interesting as the first metal discovered by spectrum analysis, although it long defied separation from its salts. It appears in mineral springs near Redruth, Cornwall, and in Central Europe, and is procurable from such a widespread mineral as lepidolite, associated with rubidium. The most electropositive of metals, its power of displacing others in salt solutions is supreme.

Caffeine Vegetable alkaloid: $(C_8H_{10}N_4O_2 . H_2O)$. It is the active principle of coffee and tea, and is found in cocoa and kola-nut. Coffee contains from ½ to 2½ per cent. and tea 3½ per cent. It stimulates heart action without subsequent depression.

Cagliari Capital of Sardinia. Situated on the S. coast, it crowns a hill 290 ft. high. The chief buildings are the cathedral and two towers. There is a rock-cut Roman amphitheatre. The city has a harbour, and is the commercial centre of the island. Pop. (1931) 101,878.

Cagliostro **Alessandro di.** Italian impostor. Born at Palermo, June 8, 1743, his real name was Giuseppe Balsamo, but later he took his other name and with it the title of count. Educated in a monastery, he learned a little chemistry and travelled over a good part of Europe. He posed as a physician and sold great quantities of his elixir of youth. The founding of lodges of Egyptian freemasons was another of his many impostures. He was imprisoned for a share in the affair of the Diamond Necklace in 1787. Soon after his release he was arrested at Rome. The sentence of death was not carried out, but he died in prison Aug. 28, 1795.

Cahir Market town of Tipperary, Irish Free State. It stands on the Suir, 11 m. from Clonmel, on the G.S. Rly, and has a castle. Pop. 1700.

Caiaphas Joseph. Jewish high-priest under Tiberius, appointed by the procurator, Valerius Gratus. He took a leading part in the trial and condemnation of Jesus, and advised the Sanhedrin concerning His arrest.

Caicos Group of coral and sand islands in the British West Indies, called in full Caicos and Turks Islands. Geographically the S.E. prolongation of the Bahamas, they lie 100 m. N. of Haiti and 420 m. N.E. of Jamaica, by which they are administered. Of about 30 small cays, aggregating 165½ sq. m., eight are inhabited. Grand Caicos, 25 m. long, is the largest, and Grand Turk, 10 sq. m., the seat of government. Sponge curing is the chief industry; salt, fish, turtle and sisal hemp are exported. Pop. (1931) 5,300.

Caillaux Joseph Pièrre Marie. French politician. Born at Le Mans, March 30, 1863, he entered the public service and was for some years an inspector of finances. In 1898 he was elected to the Chamber of Deputies. He was Finance Minister, 1899-1902, 1906-08 and 1911. In 1911-12 he was Prime Minister, and in 1912-14 again Finance Minister. Early in 1914 Caillaux was attacked in *Le Figaro* by G. Calmette, the result being the murder of the journalist by Madame Caillaux. Soon after war broke out Caillaux was made Paymaster to the army, and in 1918 he was arrested and was kept in prison until 1920 when he was charged before the Senate with treason. He was acquitted on the major charge, but sentenced to three years' imprisonment for dealing with the enemy. In 1925-26 he was again Finance Minister.

Cain Eldest son of Adam and Eve. He killed his brother Abel, and became a wanderer with a curse on him. He is said to have founded the first city and to have called it after his son Enoch.

Caine Sir Thomas Henry Hall. British novelist. Born at Runcorn, May 14, 1853, he was of Manx parentage and went to the island for his education. He became an architect and then a journalist in Liverpool. Moving to London, he was secretary to D. G. Rossetti. In 1887 Caine's novel, *The Deemster* brought him fame. This was followed by other books in which Manx life was portrayed: *The Bondman*, 1890; *The Scapegoat*, 1891 and *The Manxman*, 1894. Later came *The Christian*, 1897; *The Eternal City*, 1901; *The Prodigal Son*, 1904; *The White Prophet*, 1909, and *The Master of Man*, 1921. Knighted in 1918, he published his *Recollections of Rossetti* in 1928, and died Aug. 31, 1931. His son, Gordon R. Hall Caine, was elected M.P. for E. Dorset in 1922 and 1931. Another son, Derwent Hall Caine, was Labour M.P. for the Everton division of Liverpool in 1929-31.

Cairngorm Group of mountains in Scotland, part of the Grampian range. They are on the border of the counties of Inverness and Banff. Cairngorm itself is 4084 ft. high, and Cairntoul is 4241 ft. In 1929 it was suggested that the Cairngorms should be made into a national park.

The mountains produce the stones called cairngorms, which are also found in Arran as well as in the United States and Switzerland. Their value depends on their colour.

Cairns Town and seaport of Queensland. It stands on Trinity Bay, about 890 m. from Brisbane. It has a good harbour with appliances for dealing with the sugar and timber that are shipped thence. There is also a cold storage plant. A railway goes to the mining district of Chilagoe. Pop. (1931) 10,500.

Cairns Earl. British lawyer. Hugh McCalmont Cairns was born in Ireland in Dec. 1819, and educated at Trinity College, Dublin. He became an English barrister in 1844 and M.P. for Belfast in 1852. He was Solicitor-General (1858) and Attorney-General (1866) in Conservative ministries before being made a peer in 1867. In 1868, and again from 1874-80, Cairns was Lord Chancellor In 1878 he was made an earl, and he died April 21, 1885.

Cairn Terrier Small dog of the terrier breed. It is a good house dog and also useful in sport. In colour it varies from grey to black, or sandy or brindled. The hair is wiry and the tail and legs short.

Cairo Capital of Egypt. It stands on the right or east bank of the Nile, 128 m. from Alexandria, and 148 by rail from Port Said. It is a tourist and commercial centre, the administrative and military headquarters of the country, and a railway and air station. The city proper is divided into two parts: the modern quarter, Ismailia, and, nearer the river, the native quarter. Bulak to the north is the river harbour; to the south is Old Cairo.

Cairo is the largest city in Africa and has a considerable European population. Of the old buildings the citadel built by Saladin and the cathedral of S. Mark may be mentioned. The chief sights are the mosques, some of them remarkable specimens of Oriental architecture. They include El Hakim, Amru, Hasan, El Maayyad and Al Sunkur.

Of modern buildings there are the museum of Egyptian antiquities with a priceless collection, the British consulate, the exchange, and the central railway station. The palace of Ismail, now a hotel, stands on the Gezireh, or island. Some fine buildings have been erected for government purposes. The university is in the rebuilt mosque of El Azhar. The Nile bridge and the Eskelia gardens are notable. The city has a service of electric trams, a good water supply, and a racecourse. There are some native industries, but Cairo is chiefly a commercial centre. Pop. 1,064,500.

Caisson Chamber of sheet iron, timber or concrete, with watertight walls. It is used for laying foundations under water or in water-bearing strata. It is sometimes bottomless, with cutting edges penetrating the soil, from which water is pumped out and the ground excavated by workmen under compressed air. These men are liable to be affected by **caisson disease**. This is best circumvented by preparing for the immersion gradually, and leaving gradually.

Caister Village of Norfolk. It is 3 m. from Yarmouth, on the L.M.S. and L.N.E. Joint Rly. There are ruins of a castle that once belonged to Sir John Falstaff and then to the Pastons.

It must be distinguished from **Caistor**, a village 3 m. from Norwich which was once a Roman camp. Extensive Roman remains were unearthed here in 1930-31. Another Caistor, which also was a Roman station, is in Lincolnshire, 8 m. from Brigg.

Caithness County of Scotland. In the extreme north-east of the country, it is three-parts surrounded by the sea. The land is fairly level except on the Sutherlandshire border where there are hills

of over 2000 ft., but owing to the bleak climate the soil is not very fertile. The fisheries are important. Wick is the county town; other places are Lybster and Thurso. The Thurso is the chief river. In the county are John o' Groats and Duncansby Head. It covers 690 sq. m., and is served by the L.M.S. Rly. Pop. 1931) 25,656.

The Earldom of Caithness has been held since 1355 by the family of Sinclair. The 14th earl was made a baron of the U.K. in 1866. The 18th earl took the surname of Buchan.

Caius John. English physician. Born at Norwich, Oct. 6, 1510, he was educated at Gonville Hall, Cambridge, which in 1557 he refounded, making it Gonville and Caius College. He left his property to the college when he died, July 29, 1573. Caius is pronounced *Keys*.

Cajeput (*Melaleuca leucadendron*). Evergreen myrtle-like shrub. A native of Celebes and other parts of the E. Indies, it bears spikes of odourless flowers and aromatic, lance-shaped leaves, from which distils a pungent volatile green oil smelling like camphor, a closely allied hydrocarbon. This is used for rubbing painful joints; the spirit is prescribed for severe colic.

Calabar Town of Nigeria. Situated on the Calabar River, 5 m. above its estuary in the Gulf of Biafra, it is the capital of the Calabar province. Its harbour has repairing shops, and exports palm kernels, oil, rubber and ivory. **New Calabar** is a modern port 100 m. to the westward.

Calabash (*Crescentia cujete*). Evergreen tree of the order *Bignoniaceae*. It is found in W. Africa, the W. Indies, and tropical America. The globular gourdlike fruit has a hard rind, or shell, which is made into water bottles, cups, bowls, tobacco pipes, etc.

Calabria Southernmost province of Italy. Separated from Sicily by the Strait of Messina, it occupies 5819 sq. m. The coastal strips produce olives, wheat, rice, cotton, tobacco and fruits. Marble, graphite and metallic ores are quarried. Settled by early Greek colonists, Calabria became Roman in the 3rd century B.C.

Calais Seaport of France. It stands on the Strait of Dover, 26 m. from that town and 185 from Paris, and is the chief port for traffic between England and France. In addition to the shipping, the town is a fishing centre and famous for its lace manufacture. The old town is on an island. The chief buildings are the old hotel de ville, the church of Notre Dame and the new hotel de ville in S. Pièrre de Calais, a suburb. Calais belonged to England 1347-1558. Pop. (1931) 70,213.

Calamander (*Diospyros hirsuta*). Timber of an ebonaceous tree, native to Ceylon. The colour is a beautiful brown, shaded with black and soft fawn. It is used in fine cabinet-making.

Calamine Name denoting, in Britain, the important mineral called zinc spar. This zinc carbonate comes from the Mendips and Pennines, the Vieille Montagne mines in Belgium, from Spain and Missouri. In America the name denotes hemimorphite, a mineral of similar appearance, which is actually a hydrated zinc silicate.

Calceolaria Genus of herbs and shrubs of the snapdragon order. They are native on the Pacific coast of S. America. Several species have been developed in Britain. Some present by hybridisation showy blooms with enormous pouched lips. Bedding sorts are propagated by cuttings.

Calchas Greek soothsayer and high priest. He professed to have powers of divination given by Apollo. Accompanying the Greeks to the Trojan war, he foretold the war's length, and declared that only the sacrifice of Iphigenia in Aulis and the restoration of Chryseis to her father could enable the Greek fleet to sail and the plague to cease in the army. He died of grief on finding Mopsus his superior in divination.

Calcination Expulsion from a substance of its volatile constituents by burning. Thus limestone or chalk is reduced to lime by calcination, the combined carbonic acid being expelled. Calcining furnaces are used for roasting zinc blende, copper pyrites, tin ore, and some Swedish iron ores. The term nowadays applies also to the burning of waste matters to incombustible ash.

Calcite Native carbonate of lime. It is a white or colourless vitreous mineral which can be scratched with a knife, and crystallises in many diverse forms, notably the double-refracting prisms of Iceland spar used in polariscopes.

Calcium Metallic element. Its symbol is Ca, and its atomic weight 40. Yellowish-white, lustrous and ductile, it is easily cut. Although not found native, it is more abundant in the earth's crust than any metal except aluminium, entering into the composition of all limestones, marbles, corals and molluscous shells. Its sulphate forms gypsum; its phosphate is the main earthy constituent of animal bones and phosphatic manures. Combined with carbon it yields the carbide which generates acetylene; with nitrogen it forms artificial fertilisers.

Calculus Inorganic concretion round a central core formed in any part of the body. Such formations, when made by the urine, cause stone in the kidneys or bladder; when in the gall-bladder they are gall stones. Under gouty conditions they are found at the joints.

Calcutta City and seaport of India, capital of Bengal and once capital of the country. It stands on the left bank of the Hoogli, 90 m. from the sea, and covers 42 sq. m. On the right bank is Howrah, an industrial area. There are a residential quarter for Europeans and a native city. Garden Beach is a suburb to the south.

The centre of the city is the Maidan, a large open space, where are the chief public buildings including Government House, the town hall, S. Paul's Cathedral and the law courts. On one side is the fort, rebuilt in 1773, with its six gates. Other buildings include the Roman Catholic cathedral, the imperial and economic museums, the Victoria memorial hall and the mint. There are many temples and mosques, including the magnificent Jain temple called Badri Das. The city has a university and several colleges. There are zoological and botanical gardens.

Calcutta is a manufacturing centre with jute, rice and cotton mills, as well as native workers in brass and pottery. It is a commercial centre with banks and markets, and through it a great amount of India's trade passes. It is served by several lines of railway and has

spacious docks; the finest of these is the King George dock, opened in 1929. The city was founded as an E. India Co. settlement in 1690, and was first called Fort William Pop., including Howrah, 1,485,582 (1931).

The **Calcutta Sweepstake** is so called because it is arranged by the Turf Club of Calcutta. The **Calcutta Cup** is a trophy given to the victor in the annual Rugby football match between England and Scotland.

Calder River of England. It rises near Burnley and flows into Yorkshire to join the Aire near Castleford. Its length is 45 m., and with the Aire it forms the important Aire and Calder navigation system.

Calder **Sir Robert.** British sailor. Born at Elgin, July 2, 1745, he entered the navy in 1759. He won his reputation at the battle of St. Vincent (1797), being then knighted. In 1804 he blockaded the Spanish port of Ferrol and watched for the return of the Franco-Spanish fleet, which he met and damaged off Cape Finistère. He was court-martialled for not following up his success, and retired, dying Aug. 31, 1818.

Calderon **Pedro.** Spanish poet, in full Calderon de la Barca. Born in Madrid, Jan. 17, 1600, he was educated at Salamanca. After ten years' soldiering in the Netherlands, he was made superintendent of amusements to King Philip IV. In 1650 he joined the Franciscan order and became a priest, but he remained at court until his death, March 25, 1681. Beginning in 1636, Calderon wrote about 120 plays and 70 religious pieces (*cantos sacramentales*).

Calderon **Philip Hermogenes.** British artist. Born at Poitiers, May 3, 1833, his parents were Spanish, but he passed most of his life in England and became a British subject. In 1861 he was elected A.R.A., and in 1867 R.A. He was keeper of the Academy from 1887 until his death, April 30, 1898. Among his most important works are "The Gaoler's Daughter"; "Broken Vows"; "Her Most High, Noble and Puissant Grace"; "After the Battle"; and "The Renunciation" now in the Tate Gallery, London.

Caldey Island off the coast of Pembrokeshire. It is 3 m. from Tenby and is about ¾ sq. m. in extent. On it is a modern abbey, now a Cistercian house. It was founded by Benedictines, who left the island in 1928. Then the Cistercians took their place. The island has a lighthouse.

Caleb Biblical character. A son of Jephunneh, he was sent by Moses as Joshua's companion to spy out the land of Canaan. Hebron was given to him. (Num. xiii. xiv.; Deut. i.; Josh. xiv.).

Caledon Town of Cape Province, S. Africa. It stands on the Zwartberg, 87 m. from Capetown by railway. It has mineral springs and is a trading centre. Pop. 3750.

Caledonia Roman name for north Britain. First used for the district north of the Forth and Clyde, it is now used for Scotland as a whole.

The **Caledonian Canal** is the greatest waterway in Scotland. It extends from the Moray Firth on the east to Loch Linnhe on the west. It is 60 m. long. Lochs Ness, Oich, Lochy, and Dochfour were used for its course. The canal can be used by steamers up to 600 tons. It was made between 1803 and 1822.

Caledonian Market London market. Situated in Caledonian Road, Islington, it is primarily a cattle market and is owned by the corporation of the City of London. The buildings and yards cover about 50 acres. The market was opened in 1855. The L.M.S. and L.N.E. Rlys. serve it and there are abattoirs and accommodation for a vast number of cattle. Monday and Thursday are market days; on Tuesday and Friday a market for household and miscellaneous articles is held.

Calendar Systematic division of the year into months and days. Assuming a 365¼ day year, Julius Caesar introduced the Julian calendar in 45 B.C., distributing 365 days as at present, and inserting an additional day every fourth year. The solar year is actually short of this by 11¼ minutes; in 1582, therefore, the Old Style was ten days out. Gregory XIII. then suppressed the surplus days and ordained that no closing year of a century should be bissextile unless divisible by 400. Thus 1900 was not a leap year. This Gregorian or New Style was adopted by Great Britain in 1752.

Other calendars are the one introduced during the French Revolution and one introduced in 1929 into Russia. The former divided the year into 12 months of 30 days each with five days for holidays. Each month was divided into three weeks of ten days each. In Russia the week consists of five days and the month of six weeks, also giving five days as holidays.

Calender Machine comprising cylindrical compression-rollers operating like the domestic mangle. It is used for expressing moisture and imparting a smooth finish to paper or textile fabrics, sometimes utilising heat inside the cylinders. Some cotton goods demand a superficial glaze, the moiré effect of watered silk, or a silken sheen. Sheet rubber also is calendered.

Calends, or Kalends In the Roman calendar the first day of the month. It coincided with the new moon and was announced by the Pontifex Maximus. In the Greek calendar there were no calends, so the term "Greek calends" was used in the sense of never.

Calgary City of Alberta, Canada. It stands at the union of the Rivers Bow and Elbow, and is an important station on both the C.P.R. and C.N.R. Rlys. being 840 m. from Winnipeg in one direction, and 760 from Vancouver in the other. It is a centre for the agricultural produce of a vast district and for the mining area of the neighbouring Rocky mts. The industries include railway shops. Pop. (1931) 83,761.

Calibre Diameter of a firearm barrel. English-speaking practice expresses small-arms calibres in decimal parts of an inch; thus the British military rifle-barrel calibre since 1888 has been .303 in. In metric-using countries the calibre is expressed in millimetres.

Calico Plain white cotton cloth. It is so named after Calicut. In 1640 calico was listed with linen and described as calico lawn. In 1773 it was made with linen warp and there was a dispute between tax collectors and payers as to whether calico was linen or cotton.

Calicut Seaport on the Malabar coast, British India. Situated 6 m. N. of Beypur, it was greatly enlarged by the

7th century Arabian immigration of the Moplas. It was the first spot in India visited by Europeans, being discovered by Pedro de Covilhao in 1487, and Vasco da Gama in 1498. Destroyed by Tippu in 1789, it was recaptured and ceded to Britain in 1792. There are coir pressing, coffee cleaning and timber cutting industries. Pop. 82,000.

California Western state of the United States. It has a coast line of about 1000 m. on the Pacific Ocean, and covers 158,300 sq. m. It is famous for its climate, scenery and products. Here are the highest mountains in the country rising in Mt. Whitney to 14,500 ft., the Yosemite valley and other beautiful regions. Fruit is grown on an enormous scale; wheat, barley and maize are also raised. Gold, silver and other minerals are mined and the production of petroleum is vast. The fisheries are another source of wealth. Sacramento is the capital, but Los Angeles, San Francisco and Oakland are much larger.

California was part of Mexico until 1846, when it was taken by the U.S.A. It became a state in 1850, and sends 2 senators and 20 representatives to Congress. Pop. (1930) 5,677,251.

Lower California is a province of Mexico. It covers about 5800 sq. m. and La Paz is the capital. It is separated from the mainland of Mexico by the Gulf of California.

Californian Poppy (*Eschscholtzia californica*). Perennial herb of the poppy order from the Californian coast. Cultivated in Great Britain as an annual, this delicate plant has finely cut leaves and bright yellow, saffron-eyed four-petalled blooms.

Caligula Gaius Caesar. Roman emperor. Born at Antium, his parents being Germanicus and the elder Agrippina, he spent his boyhood in his father's camp, wearing the army boots (*caligae*), which gave him his nickname. Adopted by Tiberius as co-heir with his grandson, he succeeded to the throne in A.D. 37. After an illness he developed a megalomania which led to an orgy of cruelty and debauchery. He was killed by a tribune in A.D. 41.

Calipers Metal instrument for measuring diameters. Usually resembling compasses with legs bent inward for external or outward for internal measurement, it may have screw and spring adjustments, quadrants with pointers for self-registration, and micrometer or vernier fittings.

Caliph Title applied first to Mahomet's successor Abu Bekr, as head of the Islamic state and defender of the faith, A.D. 632. After him came four Medina caliphs, 13 Ommiads at Damascus, 661-750, and 37 Abbasids at Bagdad, 750-1258. Meanwhile, Ommiad rulers in Spain, 755-1031, and Fatimide rulers in Egypt, 909-1171, called themselves caliphs. The title passed to Turkey in 1362 if not before, and was retained by its sultans until 1922. In 1924 it was abolished by the national assembly at Angora (Ankara).

Calisthenics Physical exercises designed and practised to give grace and strength to the body. The term is usually employed to describe systems of physical culture for girls and women.

Calixtines Name of a religious sect in Bohemia. They were followers of John Hus who demanded that the laity should receive the cup as well as the bread of the Holy Communion. The Calixtines died out in the 17th century.

Calixtus Name of three popes. **Calixtus I.** was a slave who was condemned to work in the mines of Sardinia; later he was released and was given charge of a Christian cemetery in Rome. In 218 he became pope and in 223 was martyred. He was canonised and his festival is kept on Oct. 14.

Calixtus II., pope from 1119 to 1124, gained a victory over the Emperor Henry V., and by the concordat of Worms ended the investiture controversy.

Calixtus III., a member of the Borgia family, was pope from 1455 to 1458. Another Calixtus III. was an anti-pope elected in 1168 to oppose Alexander III.

Callander Burgh and market town of Perthshire. On the river Teith, it is 16 m. from Stirling, on the L.M.S. Rly. Near the Trossachs it is in the midst of beautiful scenery. Pop. (1931) 1572.

Callao Seaport of Peru. It is 6 m. from Lima and has good facilities for shipping. The buildings include churches and the custom house. The old city was destroyed by an earthquake in 1746. A new one was built on a site near. Through the port, nitrate, guano, silver and other products pass. Pop. (1931) 70,141.

Callernish District in Lewis, Outer Hebrides, Scotland. Here, about 13 m. W. of Stornoway, is a neolithic stone circle. A central 17-ft. pillar is surrounded by twelve unhewn monoliths in a circle 42 ft. across. A stone avenue extends N., and single rows E., S. and W., the whole delineating a cross 381 ft. by 123 ft.

Callimachus Greek poet and critic. Born at Cyrene, he opened a school at Alexandria. Ptolemy Philadelphus entrusted the Alexandrian library to him; his catalogue, in 120 volumes, was prefatory to all Greek literary criticism. Six hymns, 64 epigrams and some fragments are extant. He died 240 B.C.

Calliope Muse of epic poetry. Calliope was the mother of Orpheus by Apollo. In art she is represented with wax tablets and a stilus.

Calne Borough and market town of Wiltshire. It is 6 m. from Chippenham and 87½ from London, on the G.W. Rly. The little River Marlan flows through it. The chief buildings are S. Mary's church, the town hall and the grammar school. Bacon is cured here. Pop. (1931) 3463.

Calomel Subchloride of mercury (Hg_2Cl_2). It is the whitish-grey mineral horn-quicksilver and forms four-sided crystals. It is found native in Spain, Bavaria and Czechoslovakia, and is usually prepared artificially as a white, odourless powder insoluble in water. The most widely used of mercurial preparations, it should be carefully distinguished from the perchloride or corrosive sublimate. Calomel is prescribed as a purgative in 2-5 gr. doses, or for absorption into the skin by vaporisation under a blanket covering

Calorescence Luminous phenomenon involving the conversion of heat rays into light rays. The non-luminous rays from the electric arc comprising nine-tenths of the whole, are brought to a focus by means of a lens or mirror. The light rays are absorbed by an iodine solution, and the concentrated heat rays display themselves to

the eye by making charcoal incandescent and bursting black paper into flame.

Calorie Metric unit of heat. The large calorie is the heat required to raise the temperature of a kilogram of water through 1°C. The small calorie measures on a gram; 1000 small calories equal one large calorie. A large calorie equals four (3.968) British thermal units.

Calorimeter Apparatus for determining in thermal units the heat liberated or absorbed by physical or chemical processes. Since Black's 18th century ice calorimeter many complex instruments have appeared, including Favre and Silbermann's mercury, Dewar's hydrogen, and Berthelot's heat-of-combustion bomb. Respiration calorimeters for measuring the heat evolved by living beings, and throttling calorimeters for ascertaining steam moisture have also been invented.

Calpurnia Wife of Julius Caesar. Daughter of Lucius Calpurnius Piso, she married Caesar, whose first wife was Cinna's daughter Cornelia, in 59 B.C.

Calshot District of Hampshire. It is on the coast just where Southampton Water joins the Solent. Here are the ruins of a castle built by Henry VIII. Since 1912 it has been a seaplane station.

Calton Hill Hill of Edinburgh. It is 350 ft. high and overlooks the city from the east. On it are some memorials, including one of the Great War, an observatory and a prison.

Calumet Pipe of peace. The North American Indians had tobacco pipes about two feet long, which they handed to strangers. A refusal to puff it was regarded as an act of war.

Calvary Place where Christ was crucified. It is traditionally identified with a spot beneath the Calvary chapel in the 5th century church of the Holy Sepulchre. Representations of the Passion erected in Roman Catholic countries on wayside prominences or in churchyards are called calvaries.

Calverley **Charles Stuart.** English poet. A son of Rev. H. Blayds, he was born Dec. 22, 1831, and took the name of Calverley. He went to Harrow, and then to Oxford and Cambridge. At Cambridge he proved himself a fine scholar, a fact evidenced by his translation of Theocritus. Calverley is chiefly known for his unrivalled parodies. Full of exquisite humour and wit are his *Verses and Translations*, 1862, and *Fly Leaves*, 1872. He died at Folkestone, Feb. 17, 1884.

Calvin **John.** French theologian. Born at Noyon, July 10, 1509, he was educated for the priesthood in Paris, and then for the law at Orleans. There about 1532 he became a Protestant and lived for a time in Paris and Basel. In 1536 he settled in Geneva, where he became very active as a moral reformer, and in 1538 was banished. He went to Strasbourg, but in 1541 was recalled to Geneva, where he died May 27, 1564.

For thirteen years Calvin was the autocrat of Geneva. He aimed at making it a place where righteousness was paramount, and those who transgressed, either in creed or conduct, were punished, one, Servetus, a unitarian, being burned. On the other hand, Calvin improved the city in many ways. Trade was fostered and education encouraged.

Calvin gave the Protestants a creed which, if harsh, was logical and which has exercised an enormous influence in Europe and America. His great work is the *Institute of the Christian Religion*, written in Latin in 1536, and translated into English.

Calvinism Religious belief expounded by John Calvin in the 16th century. Its central idea is the doctrine of predestination which comes from the belief that everything that happens is due to the will of God. It accepts the idea of eternal salvation for some and eternal damnation for others.

Calvinism was very strong among the Protestants until the 19th century and is set forth in the confessions of the various reformed churches and, in part, in the 39 articles of the Church of England. The Huguenots accepted it and it obtained a firm footing in Scotland and the Netherlands. The Puritans, both in England and America, were Calvinists.

Calydon Ancient Greek city in Aetolia. Situated on a hill overlooking the River Euenus, 7 m. from the Calydonian Gulf, it was the marshland region in which Byron met his death from fever. Here occurred Meleager's fabled hunt for the Calydonian boar which had been sent by Artemis to ravage the fields. Ruined ramparts about 2 m. in circuit and a temple to Artemis remain.

Calypso In Greek mythology, a nymph. She was a daughter of Atlas, and inhabited the island of Ogygia. When Odysseus was shipwrecked on her shores she promised him eternal youth if he would remain. After seven years of dalliance he longed for home, and Zeus bade her release him. On his departure she died of grief.

Calyx Botanically, the external set of floral leaves, or sepals. These may be free, as in the buttercup, the calyx being then polysepalous. If more or less united into a tube, as in the primrose, the calyx is gamosepalous, the tube having its margin entire, toothed, cleft or lobed. The calyx leaves, usually green, are sometimes coloured or petaloid, as in the anemone, which has no petals.

Cam River of Cambridgeshire. It flows through the country for 40 m. until it falls into the Ouse just below Ely, and it is navigable as far as Cambridge, the chief town on its banks. Its old name is the Granta.

Cam Device for converting the whole or part of a machine's regular rotation into irregular, intermittent or reciprocating motion. Eccentric cams necessarily have the centre of rotation outside the centre of the figure. Such wheels, lobe-shaped or otherwise, impart motion to others by geared or rolling contact. Sometimes cams contrive slow thrusts and quick returns, as in some machine tools. Heart cams may impart regular up-and-down motion, as in cotton spindles. Cams are essential for the complex operations of sewing machines and printing presses.

Camalodunum Roman town in England. It stood where Colchester now stands and was one of the largest Roman settlements in the country. Before the Romans took it in 48 it was the chief town of the Trinobantes. Boadicea captured it in A.D. 62. Remains of many Roman buildings have been unearthed.

Camberley Village of Surrey. It is 7 m. from Ascot and 35 from London, on the S. Rly. The chief building is the military staff college, built in 1858.

Camberwell Borough of London. It is on the south side of the river and includes Dulwich and Peckham. It has several stations on the Southern Rly. Camberwell Green is a great road junction. Pop. (1931) 251,373.

Cambodia French protectorate in Indo-China. With 200 m. of coast line, it is bounded N.W. by Siam, and elsewhere by other French colonies and protectorates. It is centrally a flat plain traversed by the Mekong; an inland lake, Tonle Sap, 770 sq. m. in extent, supports a large fishing population. The native king resides at the capital, Pnom-Penh. Of the population three-fifths are Khmers, the remainder Annamese, Chinese, Chams and Malays. Rice, cotton, cattle, timber and gums are produced. Its area is 67,550 sq. m. Pop. (1931) 2,806,000.

Cambon **Pièrre Paul.** French statesman. Born, Jan. 20, 1843, he became a lawyer and entered the public service. He was in succession minister in Tunis, 1882-86; ambassador at Madrid, 1886-90; and ambassador at Constantinople, 1890-98. In 1898 he became French ambassador in London and here he remained for 22 years, He retired in 1920 and died May 29, 1924.

Cambon's brother, **Jules Martin Cambon**, born April 5, 1845, had also a long career in the public service. From 1901-07 he was governor general of Algeria; from 1897-1902 ambassador at Washington; from 1902-07 ambassador at Madrid. From 1907 to 1914 he was French Ambassador in Berlin. He died in 1935.

Camborne Market town and urban district of Cornwall. It is 3 m. from Redruth and 267¾ from London. on the G.W.Rly. It is the centre of the Cornish mining industry and has a school of mines. Pop. (1931) 14,157.

Cambrai City of France. It stands on the Schelde, 37 m. from Lille, is an important railway junction and is served by a canal. The chief buildings are the hôtel de ville on the Place d'Armes, the modern cathedral, the citadel and the belfry. One of the old gates still stands. The buildings were much damaged during the Great War. Textiles are made and the place gives its name to cambric.

Cambrai has a notable history, especially before 1678, when it became part of France. Its bishop was one of the most powerful in the Netherlands. Here in 1508 the pope and many European princes made a league to humiliate Venice. Pop. 28,542.

During the Great War two battles were called after Cambrai. On Nov. 20, 1917, the British army under Sir Julian Byng, helped by a strong force of tanks, broke through the German lines near Cambrai and took many prisoners and guns. The advance lasted until the 27th, when the battle ended.

The second battle of Cambrai, fought between Sept. 27 and Oct. 5, 1918, was an assault on the Hindenburg line and part of the great offensive that ended the war.

Cambria Latin name for Wales. The mountain system which runs from the Black Mountains in Brecknockshire to Snowdon and the adjoining area is called the Cambrian. A system of rocks, found in Wales and in other parts of Great Britain and of Europe, is known as the **Cambrian System.** The Cambrian Rly., which served the greater part of Wales, is now part of the G.W. line.

Cambridge Borough and market town of Cambridgeshire; also the county town and a university centre. It stands on the Cam 56 m. from London, on the L.N.E. Rly. Apart from the university it is an agricultural centre. The buildings, in addition to the colleges and those belonging to the university as a whole, include several churches, notably Great S. Mary's, the university church, S. Benet's, the round church of the Holy Sepulchre and the shire hall. The chief schools are the Leys and the Perse grammar school. Pop. (1931) 66,803.

Cambridge City of Massachusetts, U.S.A. It is on the Charles River, adjacent to Boston. Cambridge is chiefly known as the seat of Harvard University, which has its buildings here, including an observatory and a botanic garden. Here are the Massachusetts Institute of Technology and several colleges and schools. The city has some industries and is a printing and publishing centre. Pop. (1930) 113,643.

Cambridge **University.** One of the great English universities. It consists of 17 colleges and two halls. The colleges are Christ's, Clare, Corpus Christi, Downing, Emmanuel, Gonville and Caius, Jesus, King's, Magdalene, Pembroke, Queens', S. Catherine's, S. John's, S. Peter's or Peterhouse, Sidney Sussex, Trinity and Trinity Hall. Peterhouse founded in 1284 is the oldest. The halls are Fitzwilliam and Selwyn. Girton and Newnham colleges for women, though not part of the university, work in association with it. There are also theological colleges not connected officially with the university. The colleges are self-governing.

Other buildings belong to the university as a whole; these including the library, one of the finest in the world, the senate house and the Fitzwilliam museum, enlarged in 1930-31. The university has also many laboratories and schools for science teaching, an observatory and a botanic garden.

The university has some 5000 undergraduates and a large staff of professors and lecturers. Its head is the chancellor, its acting head the vice-chancellor. Its income apart from that of the colleges is over £200,000 a year. It gives degrees in all subjects of ordinary study, especially classics and mathematics. Many eminent men have been educated at Cambridge; they include Burghley, Cromwell, Pitt, Bacon, Newton, Darwin, Milton, Wordsworth and Tennyson. The university is a famous sporting centre and many of the greatest English athletes have passed through it. The Cambridge University Press, sometimes called the Pitt Press, is associated with the university. It has printing works in Cambridge and an office in Fetter Lane, London, E.C. The university sends two members to Parliament.

Cambridge **Duke of.** English title borne by members of the royal family. In 1706 George, afterwards George II., was made an English peer as Duke of Cambridge. In 1801 Adolphus Frederick (1774-1850), a son of George III., was made duke. From 1815 to 1837 he was viceroy of Hanover. His son George William Frederick, the 2nd duke, born in Hanover, March 26, 1819, entered the British army and served in the Crimean War. From 1856 until 1895 he was commander-in-chief, and he died March 19, 1904. The duke married morganatically and consequently his title became extinct. His three sons took the name of FitzGeorge.

Cambridge **Marquess of.** British title. In 1917, when the name of the royal family was changed, the Duke of Teck was given the title of Marquess of Cambridge. Born Aug. 13, 1868, he was the eldest son of the Duke and Duchess of Teck and brother of Queen Mary. He married a daughter of the 1st Duke of Westminster, and died Oct. 24, 1927. His son George (b. 1895) became the 2nd marquess.

Cambridgeshire Inland county of England. In the east of the country, it covers 864 sq. m., and is largely in the fen area. In the south and south-east, however, are slight elevations called the Gogmagog Hills. The chief river is the Ouse; others are the Nen, the Cam and the Lark. Cambridge is the county town; others are Wisbech, Ely, March and Newmarket. The county is a famous agricultural area. For some purposes Cambridgeshire is two counties, each with its county council, Cambridge proper and the Isle of Ely. Pop. (1931) 217,709.

The Cambridgeshire is a race run at Newmarket in October.

Cambuskenneth Village of Scotland. It stands on the Forth just outside Stirling. Its abbey, of which only ruins remain, was founded by David I. in 1147, and here James III. and his wife were buried.

Cambuslang Town of Lanarkshire. It is on the S.W. bank of the Clyde, 6 m. from Glasgow, on the L.M.S. Rly. The chief industry is steel making. A great religious revival here in 1742 was known as the Camb'slang wark. Pop. 26,130.

Camden City and river port of New Jersey. It is on the Delaware opposite Philadelphia, and a busy industrial centre with manufactures of various kinds, also shipbuilding yards. Pop. (1930) 118,700.

Another Camden is a town in S. Carolina. Here, during the war of independence, on Aug. 16, 1780, the Americans attacked the British under Lord Cornwallis. The engagement ended in a British victory.

Camden **Marquess.** English title. Charles Pratt was born in 1714. He was made attorney-general in 1759 and chief justice of the common pleas in 1762. From 1766-70 he was lord chancellor and later president of the council. He was made Baron Camden in 1765, and an earl in 1786 and died April 18, 1794. His son John was made a marquess in 1812 and the title is still held by his descendant. The family seat is Bayham Abbey and the estates are in Kent and Sussex. The earl has property in Camden Town and his eldest son is called the Earl of Brecknock.

Camden **William.** English antiquary. The son of a painter, he was born in London, May 2, 1561, and educated at London schools and at Oxford. In 1575 he was appointed a master at Westminster School, and from 1593 to 1597 he was headmaster. Camden is famous for his *Britannia*, a survey of the British Isles written in Latin. Its value, even in our own time, is extremely great. He collected the epitaphs in Westminster Abbey and wrote two or three historical works. He died at Chislehurst, Nov. 9, 1623.

Camden Town District of London. It is in the boroughs of St. Pancras and Islington to the N.W. of the city and is served by the tube railways and by omnibuses. It has many factories and warehouses.

Camel Genus of hump-backed ruminant mammals. The feet are splayed for desert travel. Water cells in the stomach lining store a three-days' supply. The one-humped camel, *C. dromedarius*, no longer known wild, comprises the swift racing breed called dromedaries as well as baggage camels. Originally Arabian, they now live in N. Africa, the Canaries, W. Asia and N.W. India, and have been introduced into Australia. The two-humped Bactrian camel, *C. bactriana*, inhabits the central Asian steppes, feeding on saline herbage. The hair of the camel is used for making brushes and clothes.

Camelford Market town of Cornwall on the little River Camel, 12 m. from Bodmin and 241 from London, on the S. Rly. Near the town are large slate quarries. Pop. 1400.

Camellia Genus of evergreen trees native in tropical and eastern Asia. One sub-genus, with pendulous flowers and persistent sepals, is represented by the tea plant. The other, with erect flowers and deciduous sepals, contains about eight species, of which *C. japonica*, brought from Japan to England in 1739, a tree 20 ft. high, has laurel-like leaves and odourless red flowers, now presenting many pink and white varieties. A smaller species, *C. reticulata*, from Hong Kong, has larger bright-rose, semi-double blooms.

Camelot Name given to King Arthur's capital. Its locality is uncertain, but it has been identified with Caerleon.

Camel's Thorn Genus of small leguminous shrubs ranging from Egypt to central Asia (*Alhagi*). Its rigid, spiny stems and ligneous seed-pods are often covered with a light-brown, sweetish exudation of which camels are very fond.

Cameo Engraving in relief on hard material, and the object so engraved. Such carved gems are found in the earliest civilisations; supreme examples represent gem-cutting at its best. Surfaces with variegated colouring, as agate and onyx, were preferred, and were simulated in glass, as in that incomparable cameo-engraving, the Portland vase. The Italian Renaissance introduced cameos carved out of molluscous shells, and Josiah Wedgwood imitated the effect in ceramic jasperware. Cameos have been used for brooches and signet rings.

Camera Apparatus for throwing an image of an object through a lens upon a screen, for purposes of drawing, instruction or photographic record. For the first-named purposes it was called the camera obscura, having its modern outcome in the periscope. Utilised for photography by Thomas Wedgwood before 1802, the photographic camera is essentially a rectangular box holding lens and sensitised glass plates or films. Cameras take pictures by instantaneous or time exposure, and variants enable pictures to be taken stereoscopically, in natural colours, or recorded consecutively on cinematograph films. In 1933 an invention made possible the recording of moving pictures in relief.

Cameron **Richard.** Scottish Covenanter and founder of the Reformed Presbyterians, or Cameronians. A schoolmaster at Falkland, he became a preacher and a leader among those who disliked episcopacy. He joined the Sanquhar Declaration

(June 22, 1680) disowning allegiance to Charles II., and was outlawed. He was killed in a skirmish at Airds Moss, Ayrshire, July 20, 1680.

Cameron Sir David Young. Scottish artist. Born in Glasgow in 1865, he studied art in Edinburgh. In 1911 he was made A.R.A., in 1920 R.A., and in 1924 he was knighted. He shows great richness of tone in his treatment of architecture, while his later productions are marked by a more personal style in his dry points of mountain and moorland scenery. He has published *Paris Etchings* and *Etchings in Belgium*.

Cameron Sir Ewen. Highland chieftain. The eldest son of John Cameron, he became head of his clan and was known as Lochiel. A romantic figure and a great fighter, he served Charles II., who made him a knight. He is said to have killed the last wolf in Scotland. He died in Feb., 1719.

Cameron Verney Lovett. English explorer and writer. He was born at Weymouth, July 1, 1844, and became a sailor. In 1872 the Royal Geographical Society sent him to Africa as leader of an expedition to help Livingstone. Next year he heard of Livingstone's death, but went on to Lake Tanganyika, and was the first explorer to cross Africa from east to west. In 1882 he accompanied Sir Richard Burton to the west coast of Africa. He was killed while hunting, March 27, 1894. He wrote *Across Africa* and some stories for boys.

Cameronians Followers of Richard Cameron (*q.v.*). They refused to take the oath of allegiance to William III. after the religious settlement of 1689-90. In 1743 they formed a church which spread to N. Ireland and the United States. In 1876 most of them united with the Free Church of Scotland and soon ceased to have a separate existence.

The **Cameronians**, or Scottish Rifles, is a regiment of the British Army. It was raised among the Covenanters to fight for William III. against James II. Its record includes service under Marlborough; in Egypt and Spain; in the Crimea and the Indian Mutiny; in S. Africa and in the Great War.

Cameroons District of West Africa. With a coastline on the Atlantic, it lies between Nigeria and French Equatorial Africa and is partly French and partly British. French Cameroons covers 166,489 sq. m. Yaunde is the capital and Duala the chief port. It is under a commissioner. Pop. 1,880,000. British Cameroons adjoins Nigeria and covers 34,236 sq. m. It is divided into two parts, both being governed from Nigeria. Buea is the capital and Victoria the chief port. Pop. 774,585.

Camilla In Roman legend, a virgin warrior, queen of the Volscians. Virgil's *Aeneid* describes her as the daughter of King Metabus of Privernum, and as having been brought up as Diana's fleet-footed companion. She went to the aid of Turnus against Aeneas, one of whose knights, Aruns, slew her treacherously in battle.

Camillus Marcus Furius. Roman general and statesman. He was five times dictator, and had four triumphs. He was censor in 403 B.C., and as dictator completed the siege of Veii in 396. He went into voluntary exile, but returned to prevent Brennus and his Gauls from seizing Rome in 390. He helped to pass the Licinian laws in 367.

Camisards Name given to French Protestants in the 17th century. They were persecuted after the edict of Nantes, 1685, especially in Languedoc. In 1702 some of them under Jean Cavalier rose in revolt. They were called Camisards because they wore a *camise*, or shirt, over their armour so that their friends could recognise them in the dark. For two years a savage civil war was waged, but in the end the few remaining Camisards were forced to submit.

Camoens Luis Vaz de. Portuguese poet. Banished in 1546 he fought against the Moors and went to the East Indies in 1553. Then he was in prison at Goa, as he was later at Mozambique, and did not return to Lisbon until 1570. He died in 1580.

While in the East Camoens wrote his great poem, *Os Lusiados* (The Lusitanians), 1572. This tells the story of the deeds of the Portuguese in stately and noble verse, and is their national epic. Camoens also wrote much other verse and some comedies. A chair of Portuguese language and literature has been established in his memory at King's College, London.

Camomile Genus of strongly scented composite herbs. They grow in Europe, W. Asia and N. Africa. The solitary heads of yellow tubular florets are usually surrounded by a single white ray. The common camomile *Anthemis nobilis*, tends to produce double heads, with the yellow centre white and ligulate. Its bitter principle and aromatic oil are utilised as a stomachic and tonic, or in fomentations; in large doses it is a purgative.

Camorra Secret society. It arose probably in the prisons of Naples about 1820 and attained enormous strength. Candidates for membership were subjected to severe tests and a council of twelve directed their movements with secrecy and skill. Large sums of money were obtained by blackmail between 1820-1860, when the society was at the height of its power. It had members in all classes, and, especially after 1860, had great political influence. The trial of 37 Camorrists at Viterbo in 1911 was a great blow to the organisation. The word came from the Spanish *chamarra*, a cloak.

Camouflage Device for deceiving or misleading. During the Great War the word denoted new methods of military deception necessitated by the activity of enemy aircraft and submarines. On land aerial observation was confused by extending mats or fishing nets painted to simulate vegetation over gun positions or roads. At sea, a dazzle department, under artistic supervision established by the British Admiralty, directed the painting in confusing patterns of merchant vessels and naval craft.

Campagna Flat, marshy plain surrounding Rome. Extending from the Sabine, Alban and Lepini hills to the coast between Civitavecchia and Terracina, it embraces the ancient Latin territory, and before Rome became supreme possessed many important cities. The soil yields pasturage for horses, cattle, sheep and goats. Its unhealthiness, noted in classical times, increased with the development of malarial conditions. These are gradually yielding to public sanitary campaigns, greatly expedited by Signor Mussolini, and in 1932 the new commune Littoria was founded.

Campanile Italian name for a belfry. It is now used for any tower detached from the main body of a church, such as that at Wilton near Salisbury or the one in the Piazza of S. Mark at Venice.

Campanology Science or art of bell-ringing. It comes from the Latin word *campana*, and is in practice confined to church bells. It usually takes the form of change-ringing which is ringing a peal of bells in different orders so as to obtain variety of sound. Thus, on a peal of eight bells 40,320 changes can be rung, but on a peal of four only 24. The bells can, however, be rung in rounds not changes. The bells are numbered and sometimes named, as are the peals, the chief of which are bob and grandsire. The finest bells are in the English cathedrals, notably York. Change-ringing was founded, so it is believed, by Fabian Stedman who was born at Cambridge in 1631. He wrote on the subject two books, *Tintinnologia* and *Campanologia*. In 1921 his work was commemorated at Cambridge. The earliest societies of bell ringers date from the 16th century, and to-day there are several associations and a central council of bell ringers. They hold festivals from time to time, one such being held at Croydon in 1932. *See* BELL.

Campanula (Bellflower). Genus of the order *campanulaceae*, which includes annuals, biennials, and perennials. The ordinary border campanulas are hardy perennials, varying in height from 18 inches to 3 or 4 ft, and bearing spikes of blue or white bells.

Campbell Scottish clan. One of the heads of the clan named Callum was given the surname of More (the great) from his numerous exploits and his successors in the chieftainship called themselves Mac-Callum-More, the sons of Callum the great. Among the Gaelic clans of Scotland the Campbells occupied a distinguished place; their chief became Duke of Argyll. Their original home was in Argyllshire and the islands of the west coast of Scotland. Other titles borne by the Campbells are those of Earl of Breadalbane and Earl Cawdor.

Campbell **Beatrice Stella.** English actress, known as Mrs. Patrick Campbell. She was born in Kensington, Feb. 9, 1865. She was educated in England and Paris, and married in 1884 Patrick Campbell, who was killed in S. Africa in 1900. In 1914 she married Major G. F. M. Cornwallis-West. After appearing in amateur theatricals, she toured with several dramatic companies, including the Ben Greet Company. From 1891 to 1893 she played at the Adelphi Theatre, London, and in May, 1893, scored a notable success as Paula in *The Second Mrs. Tanqueray* at the St. James's Theatre. Other successes were Juliet (1895), Magda (1896), Ophelia (1897), Lady Macbeth and Lady Teazle (1898), and George Sand at the Duke of York's Theatre in 1920. She published *My Life and Some Letters* in 1922.

Campbell **Lord.** British lawyer. John Campbell was born at Cupar, Sept. 15, 1779, and studied at St. Andrews for the ministry, but became a barrister in London. In 1830 he entered the House of Commons as Liberal M.P. for Stafford, and in 1833 was solicitor-general. In 1834, 1835-39 and 1840-41 he was attorney-general, and in 1841 he was made lord chancellor for Ireland and a peer. In 1846 he was appointed chancellor of the duchy and in 1850 lord chief justice. From 1859 to his death, June 22, 1861, he was lord chancellor. Campbell is chiefly remembered for the measure of 1843 dealing with libel, called Lord Campbell's Act, and for his *Lives of the Lord Chancellor*, and *Lives of the Chief Justices*.

Campbell **Reginald John.** English preacher. Born in London in 1867, he was educated at Christ Church, Oxford. In 1895 he became the minister of a Congregational Church at Brighton, where his preaching attracted much attention. In 1903 he was chosen minister of the City Temple, London. In 1915 he joined the Church of England and was ordained. He was vicar of Christ Church, Westminster, 1917-21 and of Holy Trinity, Brighton, 1924-29. Resigning, he devoted himself to mission work in the diocese of Chichester and in 1930 was made a canon residentiary of the cathedral.

Campbell **Sir Malcolm.** British motorist. Born in March, 1884, he entered Lloyds in 1903 and became an underwriter there in 1906. In 1909 he became a racing motorist. After the war won many trophies at Brooklands and elsewhere. In 1924 he made a world's record by driving his car 146.4 m. in the hour. In 1927 the first of his Blue Bird cars appeared and in 1928 he created a record, 212 m. per hour, for the five m. On Feb. 5, 1931, at Daytona, he beat Segrave's record with a speed of 245.7 m. per hour, and on his return to England he was knighted. In 1935 he made a new record with a speed of 301.12 m. per hour. In 1931 he published *My Greatest Adventure*, an account of his expedition in 1926 in search of treasure believed to be hidden in Cocos Island.

Campbell **Thomas.** Scottish poet. He was born July 27, 1777, and educated in Glasgow. In 1799 he published *The Pleasures of Hope*. Later came *Gertrude of Wyoming* and the martial songs by which he is best known, such as *Ye Mariners of England* and *The Battle of the Baltic*. *Lord Ullin's Daughter*, *Lochiel* and *Hohenlinden* are others of his poems. He died at Boulogne, June 15, 1844.

Campbell-Bannerman **Sir Henry.** British politician. Born in Glasgow, Sept. 7, 1836, he was a son of James Campbell, a business man there. In 1872 he took the additional name of Bannerman, that of his mother. He was educated at Glasgow and Trinity College, Cambridge, and adopted a political career. In 1868 he was elected Liberal M.P. for the Stirling Burghs, and in 1871-74 and 1880-82 he was Financial Secretary to the War Office. From 1882-84 he was Secretary to the Admiralty and in 1884-85 Chief Secretary for Ireland. From 1892-95 he was Secretary for War, being knighted when he left office. In 1899 he was chosen leader of the Liberal Party, which he led through some very difficult years. In Nov., 1905 he became Prime Minister. He died childless, April 22, 1908. Sir Henry was a moderate Liberal, best remembered because his ministry gave self-government to S. Africa.

Campbeltown Burgh and seaport of Argyllshire. It is 85 m. from Glasgow, 37 from Tarbert, and has a good harbour. The chief industries are fishing and distilleries. Steamers ply between here and Glasgow. Pop. (1931) 6309.

Campeggio **Lorenzo.** Italian cardinal. Born at Bologna in 1472,

he studied there and at Padua. In 1512 he was made a bishop and in 1517 a cardinal. He visited England in 1519 and was made Bishop of Salisbury, but was soon in Italy again. In 1523 he was sent to try the case for a divorce between Henry VIII. and Catherine of Aragon. Acting on instructions he refused to pronounce sentence, and adjourned the case. Soon afterwards he lost the bishopric of Salisbury, but he had already received that of Bologna. He died in Rome, July 25, 1539.

Camperdown English name for the Dutch village called Camperduin. It is on the coast of the Netherlands, 27 m. from Amsterdam, near the scene of the battle fought on Oct. 11, 1797, between the British and Dutch fleets. The Dutch fleet came out of the Texel, where it had been blockaded, and the English ships, under Adam Duncan, crossed from Yarmouth to meet it. After a hard fight the Dutch vessels were either sunk or seriously damaged.

Camperdown Town of Victoria. It is 123 m. from Melbourne, with which it is connected by railway, and is in a pastoral district. Pop. 3900.

Camphor Species of tree (*cinnamomum camphora*). It grows in Formosa, Japan, and E. China. From its timber is distilled the hydrocarbon known as camphor ($C_{10}H_{16}O$). This whitish, translucent, volatile substance, with a penetrating odour, is an essential constituent of celluloid, and is used in medicine as a nervous stimulant and antispasmodic. Borneo or Sumatra camphor, with two additional hydrogen molecules, is found in solid, crystalline masses in the wood of a gigantic forest tree.

Campion Popular name for several plants of the pink-carnation order. They are common in Britain and in N. Europe and Asia. Red campion is *lychnis diurna*; the night-flowering white campion is *L. vespertina*. Meadow campion, or ragged robin (*L. flosculi*), has dissected petals. Another garden favourite, rose campion (*L. coronaria*), is cultivated in double forms. Moss campion (*silene acaulis*) forms green cushions of close-set, hair-like leaves; bladder campion (*S. cucuvalus*), with inflated calyx, is allied to sea campion (*S. maritima*). Spanish campion (*S. otites*) has greenish-yellow flowers.

Campion **Edmund.** English Jesuit. Born in London, Jan. 25, 1540, he was educated at Christ's Hospital and Oxford, and was ordained. Afterwards he took a degree at Douay, went to Rome and joined the Jesuits. He was sent to England in 1581 with Robert Parsons to strengthen the wavering Catholics at a time when Roman priests were forbidden to enter. After about a year he was captured in Berkshire, tried for treason and sentenced to death. On Dec. 1, 1581, he was hanged at Tyburn. In 1886 he was beatified.

Campion **Thomas.** English poet. Born in London, Feb. 13, 1567, he was educated at Cambridge. He studied law, but soon turned to medicine and practised in London. He is best known as a writer of lyrics, some of which he set to music. He died in London, March 1, 1620.

Campsie District of Stirlingshire. Here are the Campsie Fells, a range of hills which rise to 1500 ft. Campsie Glen is a beauty spot.

Camwood Red-wood obtained from a W. African leguminous tree (*baphia*). Allied to barwood, it reaches 30 ft. in height and bears lustrous leaves and white flowers. The timber, roughly pulverised, yields the mock Turkey red of cotton dyers, and an indigo base for wool dyeing.

Cana Village of Palestine. It was the home of Nathaniel and the scene of the marriage feast at which Christ wrought his "beginning of miracles" (John ii. 4). Its site is traditionally attributed to Kefr Kenna, a Galilean village between Nazareth and Capernaum.

Canaan Name of one of Noah's grandsons (Gen. iv). He gave his name to the land later called Palestine. Its inhabitants, the Canaanites, were crushed by the invading Israelites.

Canada Dominion of the British Empire. It occupies the northern part of the Continent of N. America and stretches from the Atlantic to the Pacific. From the United States it is separated by an artificial boundary drawn (east to west) along the 49th parallel of latitude through the Great Lakes and then in an irregular fashion to the sea. In the north the Dominion extends into the Arctic. Labrador, on the east coast, belongs to Newfoundland. The land area is 3,510,000 sq. m. and the population (1931) 10,374,196.

Much of Canada is a great plain, but in the west are vast mountain ranges. The Rocky Mts. are partly in Canada and in among them are many peaks over 10,000 ft. high. The highest points in the Dominion are Mt. Logan (19,850 ft.) and Mt. St. Elias a little lower. The main river is the St. Lawrence. This is navigable by large vessels in the summer months as far as Montreal. Other great rivers are the Mackenzie, Peace, Saskatchewan, Nelson, Churchill and Yukon. Four of the Great Lakes are partly Canadian; others are Great Bear, Great Slave, Winnipeg, Lake of the Woods and Athabasca.

Canada is a federation of nine provinces and two territories. Four of the provinces, Quebec and Ontario, the original Canada, Nova Scotia and New Brunswick, formed the federation of 1867. Prince Edward Island and British Columbia were soon admitted. Manitoba, Alberta and Saskatchewan were formed out of the vast territories to the north-west. These nine provinces have their own ministries and legislatures for internal administration, but for other matters there is a ministry and parliament at Ottawa, the Dominion capital.

Wheat and other cereals are grown in great abundance in the prairie provinces. Other branches of agriculture that flourish are cattle raising, dairy farming and fruit growing. The fisheries are important. There are vast reserves of coal, and a good deal of gold, silver nickel, cobalt and copper is produced. The enormous forests provide pulp for paper making which, like lumbering, is another source of wealth. Manufacturing industries, protected by tariffs, have been established. Of these Montreal is the largest; others are Toronto, Winnipeg, Vancouver, Hamilton, Ottawa and Quebec.

The country is well supplied with railways. These are linked into two great systems; one, the Canadian National, is owned by the State; the other is the Canadian Pacific. There are a militia, a small navy and an air force, the militia having been the nucleus of the armies that Canada sent to the Great War.

The country has its own banking system. Its coinage is based on the American system, being

in dollars and cents. Canada is a member of the League of Nations.

HISTORY.—The first settlers in Canada were the French who founded both Montreal and Quebec on land visited by Cartier and Champlain. New France, as they called it, included the older part of the province of Quebec and Nova Scotia, known as Quebec. War between England and France resulted in the surrender of Nova Scotia, and 50 years later, in 1763, of Quebec to Great Britain. Unlike Quebec, Ontario, or Upper Canada, was colonised by the British, many of its early inhabitants being loyalists from the United States who made their homes there after 1783.

Quebec and Ontario, or Lower and Upper Canada, were made separate provinces, each with its own legislature in 1791, but in 1841 they were united after there had been risings in both districts. In 1867 the Dominion of Canada was formed, this being a federation of four provinces, the two named and New Brunswick and Nova Scotia. Manitoba, Prince Edward Island and British Columbia joined it a little later, and it was completed when Alberta and Saskatchewan were carved out of the vast district that had once belonged to the Hudson's Bay Co.

The first premier of Canada was Sir J. A. MacDonald who was responsible for a national policy of protection. His party (the Conservatives) remained in power, except during the years 1874-78, until 1896, when the Liberals under Sir W. Laurier had a long spell of office. This was terminated in 1911 as the people disliked the proposed reciprocity treaty with the United States. Soon afterwards came the Great War, which Canada entered at once. The Conservative minority under Sir Robert Borden became in 1917 a coalition, and a fierce fight was waged over conscription, which was specially disliked by the French in Quebec. Canada sent some 400,000 men to the seat of war and over 50,000 names were on her roll of honour. The coalition broke up in 1920 and the Liberals, under W. L. Mackenzie King, except for a short time in 1925-26, formed the government until 1930. In that year a general election resulted in a Conservative victory. The premier, R. B. Bennett, called the Empire Conference which met at Ottawa in July, 1932. The general election of 1935 gave an overwhelming majority to the Liberals, and Mackenzie King again became premier.

Canadian Mounted Police

Royal. Police maintained by the Dominion of Canada, for service in the Arctic, the N.W. and Yukon territories, and also in the Indian reservations and the national parks. The force is controlled from Ottawa, and until 1919 was called the N.W. Mounted Police. It is organised in thirteen divisions and its strength in 1936 was 2500 officers and men.

Canal Artificial waterway used for transport. In a few canals the water is on the same level throughout, but in most of them locks are used for raising and lowering boats. Canals were made by the Chinese and the Persians in the days before Christ. In Great Britain they were constructed for commercial purposes in the 18th century. In the 19th the competition of the railways adversely affected their prosperity, but the introduction of motor traction revived their use.

The world's ship canals include the Suez, Panama, Welland, Sault Ste. Marie, Kiel, Corinth and Manchester. The Panama is the largest, and the Suez the longest. Projected ship canals include the Georgian Bay in Canada and one between Forth and Clyde.

In England the chief canal is the Grand Union, an amalgamation of several waterways that serve the area between London and Birmingham. The Birmingham area is also connected by canal with the Manchester area, and with the Aire and Calder navigation system in Yorkshire. The Caledonian and Crinan are the chief of several canals in Scotland. In all there are 4673 m. of canals and canalised rivers in Great Britain and Ireland.

In 1909 a Royal Commission favoured the development of the canal system. The rates charged for carriage by canal are controlled by the Railway and Canal Commission.

In Great Britain many families make their homes on canal barges. A floating school for these children has been opened at W. Drayton, Middlesex. There is a Canal Boatmen's Institute at Paddington.

Canaletto Antonio. Italian painter. Born in Venice, Oct. 18, 1697, his real name was Canale. He lived chiefly in Venice, although he studied in Rome; in later life he twice visited England. His pictures are chiefly scenes of Venetian life. Examples are in the Wallace Collection and the National Gallery, London. He died in Venice, Aug. 20, 1768.

Canary Popular song bird. It belongs to the finch family and is a native of the Canary and Azores Islands, where it is still found wild. There it is greenish in colour with brown streaks, not yellow as in captivity. In the 16th century it was domesticated, and since then has been bred in captivity. The birds lay four or five blue eggs and raise three or four broods in a season.

Of the many varieties the best singer is the Roller, which is bred in the Harz Mts., Germany. The birds feed on canary seed or millet, with some chickweed or groundsel.

Canary Grass Annual grass. A native of the Canary Islands and Madeira, it is cultivated in the S. of England. In Morocco, Italy and elsewhere it is grown under the name of alpist for bird seed and as a breadstuff. It grows to a height of about 3 ft. with compact, oval panicles.

Canary Islands Archipelago of volcanic origin in the N. Atlantic. Situated 60 m. W. of the African coast, there are seven islands and six uninhabited islets, covering 2807 sq. m. The chief are Teneriffe with Santa Cruz as its chief town, and Grand Canary with its chief town Las Palmas. The fertile soil produced Canary wine; it is now used for the growing of fruit, especially bananas, tobacco, and vegetables. The equable climate attracts many visitors. On Teneriffe is the peak of that name, 12,200 ft. high. Pop. (1931) 561,878.

Canary Wood Mahogany-like timber. It is procured from evergreen tree laurels, especially *Persea indica*. Sometimes sold as Madeira mahogany, it polishes dark and derives its name from having come first from the Canary Islands. The trees grow in Madeira and the Azores.

Canberra Capital of the Commonwealth of Australia. It stands in federal territory, 196 m. from Sydney, with which it is connected by railway. The site was selected for the federal capital soon after 1900, and since then the city has been planned and many buildings erected. These include the

Parliament House, opened in 1927. Canberra has an Anglican cathedral, and on a hill near is an observatory. The principal streets radiate from the capital circle. A university has been founded here.

The federal territory is also called Canberra. This covers 912 sq. m. around the city and a further 28 sq. m. at Jervis Bay on the coast. The Murrumbidgee flows through it and a tributary through the city itself.

Cancer The name of a small constellation between Gemini and Leo. The northern of the two tropics is called the Tropic of Cancer. It is a line of latitude 23½ degrees north of the Equator.

Cancer Malignant tumour, technically called carcinoma. Observable in most if not all vertebrates, it comprises a framework of connective tissue enclosing cells of epithelial type, which may invade other organs and occasion secondary tumours. Early extirpation may effect a permanent cure. Cancer is non-infectious, but is apparently influenced by long-continued irritation. Its cause, still uncertain, is increasingly attributed to a filter-passing virus acting in conjunction with another specific factor. It is essentially a disease of middle and advanced life; in England and Wales deaths from it increased from 39,000 in 1913 to 63,263 in 1934. Radium treatment is being studied with a view to checking the disease. It is so called because of its resemblance to a crab with its tentacles. (Lat. *cancer*).

Various societies exist to combat cancer. There is a **Cancer Research Fund** at 8 Queen Square, Bloomsbury, London, W.C., and a **British Empire Cancer Campaign** at 19 Berkeley Street, London, S.W. The **Cancer Hospital** is in Fulham Road, London, S.W. 3, and there is a **National Society for the Relief of Cancer** at 15 Ranelagh Road, London, S.W. 1.

Candia City of Crete. It is on the north coast and has a small harbour. The chief buildings are the cathedral, a modern edifice, and the arsenal erected by the Venetians. Pop. 33,400.

Candle Solid fat or wax rod, with fibrous wick, burned for artificial light. The earliest domestic forms were tallow dips, with cotton, flax or rush wicks, beeswax being reserved for church use. Later, by the use of chemically impregnated plaited wicks, snuffing was avoided. The extraction of glycerine from stearine and palmitin released fatty acids which, mixed with some paraffin, constitute stearine candles. Paraffin candles are derived from solid hydrocarbons in certain mineral oils, and sperm candles from the spermaceti of sperm whales.

Candlemas Ecclesiastical festival. This feast, in honour of the purification of the Virgin Mary, is held on Feb. 2, and commemorates the offering of the Infant Jesus in the Temple. In the Middle Ages it was general in the Christian Church, and candles were blessed and carried in procession to signify the entry of Jesus Christ as the light of the world. Candlemas is a quarter day in Scotland.

Candlenut Fruit of a Moluccan and Hawaiian tree (*Aleurites triloba*). Widely cultivated, it grows to a height of 30 or 40 ft. Its fruits contain several seeds which yield two-thirds of their weight in quick-drying oil. In Hawaii the dried berries are used as torches. The oil is used by artists and dyers, and for making soap and candles.

Candle Tree Central American tree of the bignonia order (*Parmentiera cerifera*). It forms natural forests in the Chagres Valley of Panama. The trifoliate leaves have incurving spines. The large greenish flowers have sheath-like calyces from which grow fleshy, spindle-shaped fruits, nearly 4 ft. long. They are used for cattle food.

Candolle Augustin Pyrame de. Swiss botanist. Born in Geneva Feb. 4, 1778 he died there Sept. 9, 1841. De Candolle's writings include part of a large work on the vegetable kingdom. He is also known as the author, or developer, of a system of classifying plants. His son, **Alphonse de Candolle**, helped in this work and also made a name as a botanist.

Candytuft (*Iberis*). Hardy plant of which there are annual and perennial varieties. The annual candytuft is about 12 in. high with clusters of flowers in many shades of rose, purple, crimson and mauve. The perennial variety (*Iberis sempervirens*) is an evergreen shrubby plant of low growth, with masses of white blossom.

Cane Stem of certain grasses and palms. They have well-marked rings where the leaves arise. They are used for basket-work, chairs, matting, ropes, etc. Malacca cane and rattans are used for walking sticks. Sugar-cane is the source of cane sugar and the bamboo finds many special uses where it grows.

Canea Capital and seaport of Crete. It stands on the north side of the island and has a harbour suitable for small vessels. A modern quarter has arisen on a hill above the old town. Canea has some manufactures and around it are the walls built by the Venetians after they took the city in the 13th century. In 1646 it was taken by the Turks, and in 1841 it was made the capital in place of Candia. Pop. 26,000.

Cang, or Cangue Instrument of torture. Used by the Chinese, it consists of a large wooden collar fitting closely round the neck which prevents the wearer from resting.

Canker Plant disease due to the attacks of a fungus, usually *nectria ditissima*. The growing tissues are destroyed and malformation of the cortical tissues ensues, a gaping wound being formed. Beech, ash and apple trees are frequently attacked.

Medically, canker is the name for an ulcerative gangrenous affection of the cheek and mouth, principally affecting young children. It may attack a child debilitated by previous illness or living amid insanitary surroundings. Canker is also a chronic disease of the ear, affecting dogs and cats.

Cannae Ancient town of Apulia, Italy. It is memorable for the crushing defeat of the Romans by the Carthaginians in 216 B.C.

Cannel Coal Variety of coal. It has a high percentage of volatile matter, 80 to 84 per cent. of carbon, and leaves but little ash. It shows no trace of its vegetable origin and is hard, dull in lustre and brownish or black in colour. It burns readily with a bright candle-like flame, and is used in gas making.

Cannes Watering place of France. It is situated on the south coast, 120 m. from Marseilles. A casino is among

the attractions, and tennis tournaments, regattas and other meetings are held regularly. There is a fine promenade along the front. In the old town are the church of Notre Dame and the ruins of a castle, and on a hill near is an observatory. Pop. 47,259.

Canning Earl. English statesman. Charles John Canning, the 3rd son of George Canning, was born in London, Dec. 14, 1812. Educated at Eton and Christ Church, Oxford, he entered the House of Commons in 1836, and in 1837 was made a viscount. Postmaster-General, 1853-55, in 1855 he became Governor-General of India, and he was there during the Mutiny and also when the government was taken over from the E. India Co. by the Crown. In 1859 he was made an earl. He retired just before his death, June 17, 1862. The title is extinct.

Canning George. British statesman. Born in London, April 11, 1770, he was educated at Eton and entered Parliament as M.P. for Newport in 1794. He held positions under Pitt before 1801, and made a name by his writings in the *Anti-Jacobin* and as a speaker. In 1804-06 he served, again under Pitt, as Secretary of the Navy.

In 1807 he became Foreign Minister, and held that post until 1809, resigning owing to his quarrel with Castlereagh, which led to a duel between them. From 1816-21 he was President of the Board of Control and in 1822 he succeeded Castlereagh as Foreign Secretary. He remained in that office until April, 1827, when he succeeded Liverpool as Premier, but in a few weeks he died, Aug. 8, 1827. He was buried in Westminster Abbey.

Canning was a great administrator and a great orator, a man of vision and determination.

Canning Town District of London. In the borough of West Ham, it lies along the north of the Thames, on the L.N.E. Rly. It is a busy industrial area and includes the Victoria and Royal Albert Docks.

Cannock Urban district and market town of Staffordshire. It is 128 m. from London, on the L.M.S. Rly. It is chiefly the centre for the coal mines in the district called Cannock Chase, but has some manufactures. Pop. (1931) 31,588.

Cannon Piece of artillery, now usually called gun. Cannon were used at Crécy (1346) or perhaps earlier.

Cannon Name of a family of English jockeys. Tom Cannon, born at Eton in 1846, won many of the leading races between 1866 and 1884. He then became a trainer at Stockbridge, where he died, July 13, 1917. Three of his sons, Tom Cannon, Jun., Mornington Cannon and Kempton Cannon, were prominent and successful jockeys between about 1890 and 1920.

Cannon Ball Tree of tropical America. It is of the natural order *Myrtaceae*, and has large flowers, rosy or whitish in hue, and alternate leaves which grow out from the branches and the trunk. Its fruit is large and globular, hence its name.

Canon Originally a rule or law ordered by ecclesiastical authority. From this the word came to describe certain persons in holy orders. The rules were collected and became the Canon Law, which was very important in Europe in the Middle Ages and the influence of which may be traced in the laws of to-day. It was administered in the church courts, had its own practitioners and was a favourite subject at medieval universities.

The **Apostolic Canons** are a collection of ecclesiastical laws put together in the 8th century. The **Bible Canon** is the list of books which have been declared canonical, *i.e.* included in the Old and New Testaments.

The word canon, at one time used for **all** clergy, came to be used in the Church of England for cathedral clergy only, and this is its use to-day. They are divided into residentiary canons who with the dean form the chapter or governing body of a cathedral; minor canons, also regular workers in a cathedral, but not members of the chapter; and honorary canons, a much larger number.

In the Roman Catholic Church there are canons regular, men who live under a rule as they did in the Middle Ages. The chief of these are the Augustinians, or **Black Canons**, and the Praemonstratensians, or **White Canons.** Canonesses are women living in communities.

Canonbury District of London. In the metropolitan borough of Islington, it lies to the north of the city, on the L.M.S. and Metropolitan Rlys. Here is Canonbury Tower, the successor of the old manor house of the estate belonging to the Priory of S. Bartholomew, Smithfield. It is now a club.

Canonisation Act of making a person a saint. It is practised in the Roman Catholic Church, where, since 1634, only the Pope has had authority to canonise. The process occupies many years, and takes the form of a trial or elaborate inquiry. A recent case of canonisation was that of Joan of Arc in 1920.

Canopus Seaport of ancient Egypt. Situated near the western mouth of the Nile, 12 m. E. of Alexandria, it had a considerable trade, but its inhabitants were notorious for their luxury and profligacy. Here was a great temple of the Egyptian god Serapis. After the introduction of Christianity the city fell into decay. Its ruins are near the modern Abukir.

Canopus was also the name of a British battleship, the first of a class built between 1899 and 1902, and designed to pass through the Suez Canal. They were 420 ft. long, displaced 12,950 tons and carried four 12-in. and twelve 6-in. guns.

Canossa Village of Italy. It is 12 m. from Reggio and has the remains of a famous castle. Here in 1077 the Emperor Henry IV. appeared before Pope Gregory VII., and asked for pardon. The ruins of the castle are national property.

Canova Antonio. Italian sculptor. Born Nov. 1, 1757, he passed most of his life in Rome engaged in practising his art, but made several journeys abroad, including one to England. He died Oct. 13, 1822.

Some of his pieces bear comparison with those of Michael Angelo. "Theseus Vanquishing the Minotaur," "Perseus with the Head of Medusa," "Hercules and Lichas," "Dancing Nymphs," and "The Awakened Nymph," are notable. He also made a bust of Napoleon and executed some splendid memorials in Rome.

Cantaloup Variety of musk melon. It is small and round with a rough hard rind and reddish-orange flesh. More choice than the ordinary water melon, it is very popular in the United States.

Cantata Word meaning originally "sung" (Lat. *canto*, sing). Anciently a

story declaimed in verse by a single person, accompanied by a single instrument, it developed by the introduction of an air repeated at certain stages of the narrative into the concert aria. Handel, Bach, and Mendelssohn called their extended sacred compositions cantatas.

The modern cantata is a choral work, too short to be classed as oratorio or opera, and performed as a concert piece without actions.

Canteen Word meaning originally a water bottle. From this it came to mean the place at which liquor was sold in barracks, on warships and in other places where soldiers and sailors live. These canteens soon began to sell food and drink generally, also tobacco and other requirements. Dry canteens, where no intoxicating liquor are sold, were also established.

Canterbury City of Kent and ecclesiastical capital of England. It stands on both sides of the River Stour, 54¼ m. from London, with three stations on the S. Rly. Its chief building is the cathedral, one of the largest and most magnificent in the land. It was built chiefly in the 12th and 14th centuries.

The city has other interesting churches, among them the Holy Cross, S. Martin's, S. Dunstan's and S. Peter's. Secular buildings include the fine west gate with a museum, the guildhall, and the exchange. There are ruins of the castle keep, the third largest in England. In 1931 it was bought by the city. Its main industry is a trade in cattle, corn and other forms of agricultural produce. Its butter market is famous.

Canterbury was a Roman city and Roman remains still exist. It was made a bishopric by S. Augustine in 597. Soon afterwards he became the head of the English Church, and in 1353 was styled Primate and Metropolitan of All England. The archbishop has charge of the Diocese of Canterbury and is the unofficial head of the Anglican Church throughout the world. Pop. (1931) 24,450.

A district of South Island, New Zealand, is called Canterbury. Here are Canterbury Plains, covering about 4000 sq. m. which rear an enormous number of sheep. The district covers 14,000 sq. m. Christchurch is the capital.

Canterbury Bell (*Campanula medium*). Genus of the order Campanulaceae. It is a biennial plant, 2 to 3 ft. in height, bearing beautiful bell-like flowers in shades of purple, blue, rose and white. Easily grown from seed sown out of doors in May and June, the seedlings should be planted out in the autumn.

Cantharides Blistering agent used in medicine. It consists of the dried bodies of a beetle of the genus *Cantharis vesicatoria*, commonly called the Spanish blister fly. They contain the active irritant principle cantharidin, criminally used as an aphrodisiac.

Cantilever Term used in engineering for a beam or girder which projects from a wall or other structure, and is supported only at one end. It is the essential feature in certain types of bridge where two or more cantilevers are used, and in modern concrete architecture, where solid overhanging and projecting slabs are used.

Canton Name of a territorial division in France and Switzerland. In France each arrondissement is divided into cantons, each of which has its own magistrate. In Switzerland there are 22 cantons, each with rights of self-government.

Canton City and seaport of China, called by the Chinese Sheng Cheng or Kwang Chow Fu. It stands on the Chu-Kiang River, 80 m. from its mouth, and is one of the great seaports of S. China. It consists of a walled town, the original city, modern suburbs including Honan, on an island, and a European quarter. The chief buildings are the many temples, some of them magnificent. The port does a large trade. Vessels land their cargoes at Whampoa, 10 m. down the river, where there is a state dockyard. Canton is the capital of the province of Kuang-Tung. The population in 1931 was about 861,024. Many of the people live in boats on the river.

Canute Name of several Danish kings, often spelt Cnut or Knut. **Canute I.**, called the Great, became King of Denmark in 1014 and claimed the throne of England, which had been won by his father, Sweyn. After a struggle with Edmund Ironside he became king and ruled the two countries until his death at Shaftesbury, Nov. 12, 1035. He married Emma, the widow of the English King Ethelred. **Canute IV.**, who was King of Denmark from about 1080 until 1086, tried to spread Christianity and was canonised. His day is Jan. 10.

Canvas Stout fabric made of jute or cotton. It is much used for tents, the sails of boats, packing and other purposes in which great strength is necessary. Finer varieties are used by artists and as a backing for embroidery. In N. America a certain wild duck is called the **Canvas Back Duck.**

Canvassing Solicitation of business or votes. The term is sometimes applied to the method of selling goods by sending agents to visit private houses, but more usually to the system of asking persons to vote at election times for a particular person.

Canvey Island off the coast of Essex. It is 30 m. from London and is reached from Benfleet by means of a causeway at low tide. It covers about 7 sq. m. In 1931 the erection of a bridge from the mainland was finished. Canvey is an urban district. In the 17th century it was recovered from the sea by Dutch engineers. Pop. 6000.

Canyon Ravine or deep gorge between steep rocks. Ravines are usually made by rivers cutting their way through the rocks. The most famous in the world are in the western part of the United States. In Arizona is the Grand Canyon of the Colorado River with walls 6000 ft. high.

Capablanca **José Raoul.** Cuban chess master. He was born in Havana, Nov. 19, 1888. In 1909, he defeated the United States champion, F. J. Marshall. Five years later he was beaten by E. Lasker, the world champion, but in 1921 he retrieved his defeat and for six years was champion of the world, until beaten by the Russian, Alexander Alekhine, in 1927.

Capacity In electricity, the quantity of electricity which will charge a body or condenser to a stated potential. The unit of capacity is termed a farad, defined as that capacity which a coulomb of electricity will charge to the potential of one volt, but for practical purposes a micro-farad equal to one-millionth of a farad is used generally.

The capacity of an accumulator is indicated

by the number of ampère hours given by a fully charged cell and this is dependent upon the discharge rate.

Capacity Power of receiving or containing; the cubic content or volume. The capacity of an airship is the size of its envelope. The capacity of a ship is the amount of its accommodation for passengers and goods. Capacity is usually given in cubic feet or yards. In law, capacity is the power to act as a full citizen. A minor is not of full capacity; nor is a lunatic.

Cape Breton Island of Canada. Lying to the S. of Nova Scotia from which it is separated by the Gut of Canso, it covers 3975 sq. m. and is part of the province of Nova Scotia. It is divided into two parts by the Bras d'Or Lake and St. Peter's Canal. The largest town is Sydney, around which are valuable coalfields. Agriculture, fishing and lumbering are carried on.

In 1632 the island became French and on it the French built the strong fortress of Louisbourg. In 1763 it was ceded to Great Britain and in 1820 was united with Nova Scotia (*q.v.*).

Cape Coast Port of W. Africa. In the Gold Coast Colony, it is about 80 m. from Accra. Founded in 1610 by Portuguese settlers, it was captured in 1659 by the Dutch. In 1664 it became British. It was superseded as the capital by Accra in 1876. It has no harbour, but passengers and cargo are landed by means of surf boats. Oil, ivory and gold are exported. The town was formerly known as Cape Coast Castle. Pop. 17,685.

Cape Cod Part of Massachusetts, U.S.A. It is a peninsula over 60 m. long between Cape Cod Bay and Nantucket Sound. On it are several harbours and pleasure resorts. A canal shortens the sea passage between Long Island Sound and Boston. On the bay is Plymouth, where the Pilgrim Fathers landed.

Cape Colony *See* CAPE PROVINCE.

Cape Gooseberry Shrub growing in S. Africa and other warm countries. It is called by botanists *Physali peruvianas* and was first found in S. America whence it was taken to Africa. It bears whitish flowers and purple berries which are acid to the taste.

Cape Horn *See* HORN CAPE.

Cape of Good Hope Cape of S. Africa, often called simply the Cape. It is in the S.-W. of the continent, of which it is the southernmost point. It was discovered in 1486. It gives its name to the district and to one of the provinces of the Union of S. Africa.

Cape Province Province of the Union of S. Africa, in full the Province of the Cape of Good Hope. The most southerly part of the continent, it has a coast line of 1300 m. and includes Bechuanaland and Namaqualand. In 1814 it became a British colony; in 1850 it was given responsible government and in 1910 it joined the Union. The province covers 260,185 sq. m. In addition it has four native territories, East Griqualand, Tembuland, Transkeir and Pondoland, making another 16,351 sq. m. The pop. is over 2,800,000, of whom 748,455 are Europeans. Capetown is the capital; the only other places of any size are Port Elizabeth, East London and Kimberley. It sends 58 members to the House of Assembly and for local affairs has an Administrator and a Provincial Council.

Caper (*Capparis spinosa*). Deciduous shrub found in the Mediterranean lands. The flower buds are gathered and preserved with salt and vinegar for use in sauces and salad dressings. The berries of the African caper are sometimes used for the same purpose.

Capercailzie *Tetrao urogallus*. Wood grouse or cock of the wood. This game bird of N. Europe was once indigenous in the British Isles. The male is brownish black with a glossy, greenish black breast and black tail feathers. It is equal in size to a small turkey and weighs from eight to twelve pounds. The hen bird is smaller, with markings of red and black and an orange red tinge on the breast. She nests on the ground and the eggs number 6 to 12. Once extinct in Great Britain, it has been re-introduced to the Scottish Highlands.

Capernaum Ancient city of Palestine. It was situated W. of the Sea of Galilee. Sometimes distinguished by the name of "His own city," it was the scene of many events in the life of Christ. There was a Roman garrison here, and it was also a town where taxes were levied.

Capet A royal family of France. The first was Hugh Capet, who began to reign in 987. The Valois kings and the Bourbon kings were both descended from Hugh, as were the Dukes of Burgundy and Anjou and other noble families. Louis XVI. was called at his trial Louis Capet.

Capetown City and seaport of S. Africa, the capital of Cape Province. It stands near the Cape of Good Hope, between Table Mountain and the sea. There is a good harbour suitable for the largest liners and equipped for a large export and import trade. The buildings include those of the Union legislature, city hall, new Anglican cathedral and the old town house. The castle dates from the 17th century. The university is at Groote Schuur in Rondebosch, one of the suburbs. In 1913 the city was enlarged and it now covers 60 sq. m.

Capetown is the terminus of the main railway lines that go into the heart of Africa. Founded by the Dutch in 1652, it is the oldest European settlement in Africa. Pop. 213,000, of whom 149,236 (1931) are Europeans.

Cape Verde Cape of Africa; also a group of islands in the Atlantic Ocean. The Cape is the most westerly point of Africa and the islands are 350 m. from it. The largest island is Sao Thiago; others are San Antao, Santa Luzia, Sao Vincente Fogo and Boa Vista. They cover 1511 sq. m. and have 153,700 inhabitants. Praia, on Sao Thiago, is the capital. The islands are mountainous, the highest point being nearly 10,000 ft. high. They were discovered and named by the Portuguese about 1450 and have since belonged to Portugal.

Capillarity Cohesive force which acts at an insensible distance, producing a tension upon a film of water in a tube of small bore, in fissures, or between two applied plates. Capillarity exerts an upward pull causing a distinct rise of the liquid in the tube. Examples of this phenomenon are seen in the rise of oil in a wick or candle and in the rise of water in a sponge.

Capital In economics accumulated wealth, especially that used for

industrial purposes. It is the result of saving or abstinence from spending, and is necessary to material progress.

Capital is sometimes divided into fixed, such as a factory; and floating, such as a balance at the bank; or into productive, such as a loom; and unproductive, such as a picture. It is distinguished from labour, the other main element in production, and its reward takes the form of profits, whereas labour receives wages.

The modern system of industry is called the **capitalist system**, because large supplies of capital are necessary to its existence. The objection of Socialists is not to capital as such, but to the concentration of large blocks of capital in a few hands.

CAPITAL DUTY is the term used for the duty payable when a corporation or public company raises money. The rate is one per cent. on share capital and ½ per cent. on money raised as loan.

CAPITAL LEVY. A tax on the capital of living persons. In Great Britain, after the Great War, a special tax on capital accumulated during the war was suggested and a committee reported that it was feasible, but the Government declined to carry it out. In 1921 a levy on capital was enforced in Italy.

Capital In architecture, the uppermost part of a column, between the shaft and the superstructure. In the simplest forms, as in some primitive Egyptian columns, the capital consisted of a thin square block on the top of the shaft, but more ornate and elaborate capitals are seen in Greek and Roman columns.

Capital Punishment Infliction of death as a punishment for crime. In most lands death was long the recognised penalty for murder and much less serious crimes. In Great Britain it could be inflicted for stealing. In the 19th century laws were passed by which the death penalty was reserved for murder, treason and piracy. In other European countries there has been also a tendency to limit it to serious offences and some, the Netherlands for instance, have abolished it.

Capitol Name meaning head, and derived from the Capitoline Hill at Rome. Thereon stood Rome's chief temple, dedicated to Jupiter, and regarded as the most important part of the city. The site is occupied by the Campidoglio, a building designed by Michael Angelo and including the Capitoline and other museums.

In the U.S.A. the word capitol is used for the buildings where the legislatures meet, and in the chief cities of the various states as at Washington.

Cap Martin Pleasure resort of France. It is on the Riviera and is best reached from Mentone. The name is that of a cape, which is nearly 250 ft. high. It is a popular winter resort.

Caporetto Village of Italy. It is on the Isonzo and gives its name to a battle fought here in Oct. and Nov., 1917, during the Great War. On Oct. 23, the Austrians, reinforced by some Germans, attacked the Italians along a wide front, and drove them back on the Tagliamento and then on the Piave. Gorizia and a large part of northern Italy were occupied by the Austrians and the Italians lost about 200,000 men.

Cappadocia In ancient geography, a district of Asia Minor. It had different boundaries at different times and was an independent kingdom before the opening of the Christian era. During the reign of Tiberius (A.D. 17) it became a Roman province. Its chief city then was Mazaca, called by the Roman Cæsarea.

Capri Island of Italy. Situated in the Bay of Naples, 21 m. from that city and 5½ sq. m. in area, it is noted for its mild climate and beautiful scenery. There are some famous grottos or caverns, especially the Blue Grotto. The industries are fishing and vine growing. The Roman emperors, Augustus and Tiberius, resided here, and there are remains of their villas. Pop, 4000.

Capricorn Tropic of. Southern limit of the Torrid Zone, latitude about 23½ S. It is named from the zodiacal constellation thought to resemble goat's horns.

Captain Term used to describe a leader. In the fighting services a captain holds a definite rank. In the navy a captain ranks with a rear-admiral and commands one of the large ships. He wears on his sleeve four stripes of gold braid with a loop.

In the army a captain ranks below a major and above a lieutenant. In the infantry he commands a company or is the second in command. In the artillery and cavalry he commands a battery or a squadron. His rank is shown by three stars on the shoulder. In the air force a group captain ranks with a captain in the navy and a colonel in the army.

Every merchant ship has a captain who is by law the master of that ship and has special responsibilities and duties towards the passengers and the crew. He has power to take any measures necessary to maintain discipline.

Capua Ancient city of Campania, Italy. Situated 17 m. north of Naples, it became the wealthiest city in S. Italy. After the Battle of Cannæ it revolted from Rome and joined Hannibal, but was retaken and severely punished. Sacked by Genseric, King of the Vandals, in 455, it was destroyed by the Saracens in 840. The modern village contains remains of a Roman amphitheatre.

Capuchin Mendicant order of Franciscan monks. Founded by Matteo di Bassi in Italy in 1528, they take their name from the *capuce* or *capuchen*, a pointed hood or cowl. They sought to restore the old severity of the institutes of S. Francis, which had been relaxed by Pope Innocent IV. They must live by begging, and must not use gold or silver to decorate their altars, their chalices being made of pewter. The order has houses in Great Britain and Ireland.

A type of monkey is called the **Capuchin monkey**. Several species are found in the hot parts of America and they will live in captivity in Britain. The males are usually bearded and both sexes vary much in colour.

Carabinier Originally a soldier armed with a carbine or short musket. Carabiniers were cavalry and first appeared in the British Army in the 17th century. The 6th Dragoon Guards, founded in 1692, were called the Carabiniers or Carabineers. After the World War this regiment was amalgamated with the 3rd, which now bears the title of Carabiniers.

Caracal (*Felis caracal*). Species of lynx found in many parts of Africa and S. Asia. It is a small, fierce, carnivorous animal, about 2 ft. long and averaging 10 in. high, with a reddish-brown body, lighter on the lower parts, two white spots near each eye, and tapering black ears.

Caracalla Roman emperor. Born at Lyons in 188, his name was Bassianus, but he called himself Marcus Aurelius Antoninus. His nickname comes from the Gallic cloak, or caracalla, which he wore. In 211 Caracalla and his brother, Gaeta, were proclaimed joint emperors, but in 212 Caracalla murdered Gaeta and a great number of his friends and adherents, and in 217 he was himself murdered at Edessa. In 212 he declared all freeborn inhabitants of the empire to be Roman citizens.

Caracas Capital of Venezuela. It is 7 m. from the coast, its port being La Guaira on the Caribbean Sea. Between the two is a railway line. The buildings include the capitol and law courts, also a cathedral and many churches, a university, an opera house and a pantheon. Independence Park is the largest of the public parks and gardens. It is the commercial centre of the republic. Pop. 135,300.

Caractacus King of the Silures, a British tribe. After defying the Romans for about nine years, he was defeated in a battle near the Wrekin about A.D. 50. He took refuge with Cartamundua, Queen of the Brigantes, but she handed him over to the Romans. He was taken to Rome and Tacitus tells how nobly he bore himself in captivity. The Emperor Claudius pardoned him and he disappeared from history.

Caramel Brown colouring matter, often known as *burnt sugar*. It is produced from glucose or sugar by heating. A small quantity can be made by heating sugar and stirring continuously until the requisite colour is obtained, when it can be diluted with hot water. For commercial purposes glucose is used in the manufacture with a certain quantity of ammonium chloride and ammonium carbonate. It is subjected to a slow boiling process and diluted with water to liquid form. It is largely used in colouring confectionery, food and spirits. The name is also given to a popular form of sweetmeat.

Carat Name given to the standard of weight for precious stones and to the standard of fineness of gold. The carat weight is equal to 3.17 grains Troy, or four diamond or carat grains. As a standard of purity and fineness of gold, the pure metal is said to be 24 carat, but standard gold for coinage, wedding rings, and so on contains a small percentage of base metal and is termed 22 carat. Other grades of purity are 18, 15, 12 and 9 carat.

Caravaggio Michelangelo Amerighi Da Italian painter. Born at Caravaggio, in Lombardy, in 1569, he worked in Venice and Rome, and at Naples, where he founded a school of painters who were greatly influenced by the natural, as opposed to the ideal, way in which he treated his subjects. Having killed a man in a quarrel, he was forced to leave Rome and was only pardoned just before his death in 1609. His "Christ and the Disciples at Emmaus" is in the National Gallery, London. "The Entombment" and "S. Sebastian" are in Rome.

Caravan Group of persons travelling together on a long journey. The word is Persian and caravans originated in the east. For thousands of years journeys across the deserts of Asia and Africa were made by caravan, as to some extent they are to-day. Many of the travellers were pilgrims, others were traders, and camels were a prominent feature of the caravan. The caravans took certain known routes and on these were places at which they could rest, called **caravanserais**. They were unfurnished, but were able to give shelter to a large number of men and beasts.

In England a caravan is a vehicle in which people live while moving from place to place. The gypsies live in caravans, and caravan holidays are popular. These caravans are mainly horse-drawn, but motor caravans are increasing.

Caravel Kind of ship. A Spanish word, it was used in the days of sailing ships for one with broad bows and a high narrow poop. It had three or four masts and lateen sails on the after masts. The word was also employed for a small boat used by French fishermen.

Caraway (*Carum carui*). Biennial herbaceous plant of the order *Umbelliferae*. It is native in north and central Europe and Asia, and is found wild in waste places in England. The minute fruits are the caraway seeds used in cooking and confectionery, and in the manufacture of the liqueur called kümmel. Distilled caraway oil is used medicinally as a stomachic and a carminative.

Carbide Compound formed by the union of carbon with certain metallic elements. It is made either directly or indirectly by fusing metallic oxides with an excess of carbon at a high temperature. The best known of these compounds, calcium carbide, used for making acetylene, is prepared by heating a mixture of lime and coke in an electric furnace. Iron carbide, formed by the fusion of iron with carbon, is present in steel and contributes to the hardness of the metal.

Carbohydrates Term used for a group of organic substances containing carbon with hydrogen and oxygen in the same proportions as in water. These compounds form valuable heat and energy-forming foodstuffs and are of vegetable origin, the most important being the sugars and starch. There are three classes of carbohydrates: the monosaccharoses, such as dextrose; the disaccharoses, such as cane sugar, lactose and maltose; and the polysaccharoses, as starch and cellulose.

Carbolic Acid Organic compound also known as phenol. It is obtained from coal tar by distillation. The distillate is freed from naphthalene and other hydrocarbons, and the impure acid thus obtained is further distilled and purified to form a mass of colourless crystals which readily absorb water from the air, producing a pinkish solution. Carbolic acid is a strong antiseptic and disinfectant, and is used in the manufacture of picric and salicylic acids, synthetic resins and plastic substances.

Carbon Element having the atomic weight 12, and denoted by the symbol C. It is abundant in nature as a carbonate, in air as carbon dioxide, and forms the basis of animal and vegetable life. It occurs in crystalline form as the diamond, also as graphite, and in amorphous form as charcoal, which, however, is impure. Carbon is insoluble in all solvents and infusible except at very high temperatures. Our chief sources of power, light and heat are from forms or compounds of carbon, such as coal, petroleum and alcohol. Charcoal and other amorphous forms have great absorbent power, and are powerful reducing agents in metallurgical operations.

Carbon dioxide, or carbonic acid gas (CO_2),

is found in the atmosphere and is produced by respiration. Where allowed to accumulate, as in coal pits, where it is called choke damp, or in caves or disused cellars, it will cause death, as human beings cannot inhale more than 15 or 20 per cent. of it and live. A smaller amount will cause discomfort, hence the necessity for fresh air to dispel it, especially from crowded rooms. In solid form carbon dioxide resembles snow in appearance and is used as a caustic in surgical work and for refrigeration in industry, *e.g.*, in the ice-cream industry.

Carbon monoxide, or carbonic oxide (CO), is also poisonous. It is created by burning charcoal, and if this is done in a closed room death will take place. It is also given off by geysers and the engines of motor cars.

Carbon bisulphide (CS_2) is a liquid. It is used by chemists for recovering sulphide from ore and employed to kill noxious insects and germs and as a poison for vermin.

Carbonate Salt resulting from the action of carbonic acid upon various bases. Many carbonates occur in nature, the chief being carbonate of calcium represented by chalk, limestone and marble, and the carbonate of magnesium and calcium in the form of dolomite. Carbonates of sodium occur as natural deposits or in brines, and form one of the sources of soda. Potassium carbonate, or potash, is another compound of importance, and various carbonates of metals are used as ores.

Carboniferous System

Name given to the series of strata lying above the Devonian and below the Permian systems of rocks. It consists of three divisions: at the base, the carboniferous limestone, a series of limestones and shales of deepwater origin; next the millstone grit consisting of grits, sandstones and shales, and then the overlying coal measures composed of sandstone, fireclays, ironstones and coal seams. These upper and middle beds are of shallow water origin.

Carbonising Term applied to the process by which organic matter is reduced to a state of carbon. In the manufacture of briquettes a carbonising process has been adopted for obtaining a smokeless fuel from finely powdered coal. High temperature carbonisation is carried out in the production of coke and important by-products. By low temperature carbonising, coalite and other free-burning and smokeless fuels are obtained as a substitute for ordinary coal, in addition to valuable by-products.

Carborundum Abrasive of extreme hardness. It is composed of silicon carbide and is prepared by heating at a high temperature in an electric furnace a mixture of sand, coke and sawdust, with salt as a flux. It is infusible, unaffected by acids, and in hardness comes between the diamond and corundum. The toughness and angularity of its grains render carborundum a valuable abrasive for many purposes, either in the form of powders in varying grades, discs, or hones. In addition it is used as a refractory lining for furnaces.

Carbuncle Local inflammation of the tissues of, and beneath the skin. More severe than boils (*q.v.*), carbuncles come on the back of the neck and the lower part of the body. The swelling is hard and usually very painful, while with elderly people it is often fatal. A similar complaint in animals is called anthrax. Surgical treatment and hot antiseptic poultices are required. A wick of sterile gauze inserted into the cavity after incision will ensure free drainage. Carbuncles often occur in cases of diabetes.

The stone called the carbuncle is a garnet cut in a round or oval form. At one time it meant the ruby or some other red stone.

Carburetter Apparatus used in motor cars and gas engines for converting petrol or other hydrocarbons into a gaseous or finely divided state to form with the air an explosive mixture. There are many kinds in use, but practically all are of the spray type with a float feed. A fine jet of petrol is sprayed into the mixing chamber, the supply being governed by a needle valve attached to a float in the feed chamber. Air is admitted to the mixing chamber, and the mixture of air and petrol vapour passes to the engine cylinder by way of a pipe furnished with a throttle valve.

Carcassonne City of France. It stands on the Aude, 57 m. from Toulouse and is a port on the Canal du Midi. The old town is on a hill on the right bank of the river; the new town is on the left. The city has two cathedrals, a citadel and a museum. S. Vincent is an interesting church. There is a trade in wine and other produce and some manufactures. Carcassonne is famous for its fortifications, which give a perfect idea of a fortified town of the Middle Ages. Along the ramparts are 54 towers and two gates. Pop. 30,000.

Carchemish Ancient capital of the Hittites. Its site is now identified with the ruins of Jerablus (a corruption of Hierapolis) on the Euphrates in Syria. Carchemish, the fortress of Camos, occupied an important strategic and commercial position. Treasures found in the ruins are in the British Museum.

Cardiff City and seaport of Wales, and county town of Glamorganshire. It stands on the Bristol Channel at the mouth of the rivers Taff, Ely and Rhymney, 145 m. from London, on the G.W. Rly. The chief industry is shipping, especially the shipping of coal, for which there are extensive docks. There are also flour milling, steel, copper, zinc, lead, paper and chemical works.

In Cathays Park are the National Museum of Wales, the city hall and the law courts. Near are the University College of S. Wales and the headquarters of the University of Wales. Llandaff with its cathedral is within the city boundaries. There is also a Roman Catholic cathedral and an archbishop.

Cardiff is a broadcasting station. It has a famous Association football club that won the Association Cup in 1927 and its Rugby football club is noted. Races are held here. Pop. (1931) 223,648.

Cardigan Borough and market town of Cardiganshire, also the county town. It stands on the Teifi, 116 m. from Cardiff, on the G.W. Rly. Pop. (1931) 3309.

Cardigan Earl of. English title borne by the eldest son of the Marquess of Ailesbury. In 1661 it was given to a royalist, Sir Thomas Brudenell, and it remained an independent title until 1868. James Thomas, the 7th earl (1797-1868), led the Light Brigade at Balaclava. His widow, who survived until 1915, published some rather

startling *Recollections* in 1909. In 1868 the title passed to the Marquess of Ailesbury and has since been borne by his eldest son.

Cardigan Bay Large bay formed by the coast of Wales. It is 55 m. from N. to S. and receives the Rivers Teifi, Aeron, Ystwyth, Dovey and Mawaddch. Aberystwyth is the chief place.

Cardiganshire County of Wales. In the centre of the country, it has a coastline of 50 m. on Cardigan Bay and covers 692 sq. m. Cardigan is the county town, but Aberystwyth is the largest; others are Lampeter, Newquay and Aberayron. The rivers are the Dovey, Teifi, Ystwyth and Rheidol. It is almost wholly an agricultural area. In the north are mountains and some magnificent scenery, notable spots being Plynlymmon and the Devil's Bridge. Pop. (1931) 55,164.

Cardinal Highest dignitary, save only the Pope, of the Roman Catholic Church. Cardinals are chosen by the Pope and together they form the college that elects a new Pope. They number about 60, 70 being the full complement of the college, and are taken from nearly all nationalities, but Italians are usually in the majority. A cardinal is addressed as "Your Eminence." A red hat and a scarlet biretta are the signs of his rank.

The **Cardinal numbers** are 1, 2, 3, etc., as opposed to the ordinal numbers, first, second, etc.

The **Cardinal virtues** are generally considered to be justice, prudence, temperance and fortitude. They were declared such by the Greek and other early philosophers and later were distinguished from the Christian virtues of faith, hope and charity.

Cardinal American song bird of the finch family. The male has a bright red plumage, black feet and pointed crest. The female is less bright in colour. The cardinal is a popular cage bird.

Carding Process by which cotton fibres are freed from impurities and broken parts and arranged in a more or less parallel manner, preparatory to the spinning of cotton yarn. This was done formerly by using teazel heads, but these were superseded by the use of flat cards set with brush-like teeth. Various forms of carding machines are used, one type having a series of rollers covered with fine metal teeth.

Cardington Village of Bedfordshire. It is 3 m. from Bedford, on the L.M.S. Rly. At the aircraft works here the R 101 was built. Pop. 400.

Cardiograph Instrument used in medical practice for recording the character and movements of the heart. It usually consists of a cup-shaped appliance containing a spring, which when pressed over the heart conveys the movements of the organ to a diaphragm from which a lever passes to a revolving drum upon which a tracing is made.

Cardross Industrial district of Dumbartonshire, on the Clyde, 4 m. from Dumbarton, on the L.N.E. Rly. There was once a castle here in which Robert Bruce died in 1329. The title of **Lord Cardross** is borne by the eldest son of the Earl of Buchan.

Cardwell Town and seaport of Queensland, Australia. In the north of the state, it stands on Rockingham Bay, 90 m. from Townsville and 800 m. from Brisbane. It has a good harbour and fishing is the main industry. Pop. 3500.

Cardwell Viscount. English politician. Edward Cardwell was born at Liverpool, July 24, 1813, and had a distinguished career at Oxford. In 1842 he was elected an M.P. as a follower of Sir R. Peel. As Secretary for War, 1868-74, he introduced the principle of the linked battalions and short service and abolished the purchase of commissions. In 1874 he was made a viscount and he died Feb. 13, 1886.

Carew Thomas. English poet. Born about 1598, he went to Oxford and then studied law in London. He travelled and was much at the court of Charles I. He died in 1645, leaving many short poems marked by beauty and tenderness.

Carey William. English missionary. Born in Northamptonshire, Aug. 17, 1761, he was apprenticed to a shoemaker, but later became a minister, helped to found the Baptist Missionary Society and in 1793 went to India. He obtained a wide knowledge of Indian languages, translated much of the Bible and compiled a number of grammars and dictionaries. For nearly 30 years Carey was Professor of Oriental languages at Fort William College, Calcutta. He died in India, June 9, 1834.

Carham Village of Northumberland. It is on the Tweed, 19 m. from Berwick, on the L.N.E. Rly. Here in 1018 the Scots, under Malcolm II., defeated the English.

Caribbean Sea Part of the Atlantic Ocean. It is almost enclosed by the coasts of S. America, C. America, Cuba and the West Indian Islands. The Strait of Yucatan connects it with the Gulf of Mexico and the Panama Canal leads from it into the Pacific Ocean. Its extreme length is 1500 m. The name is derived from the Caribbee Islands which include Guadeloupe, St. Lucia and Dominica.

Caribou Variety of reindeer. It is found in Canada and Greenland and is sometimes known as the American reindeer. Of the two species, the woodland is found in Canada proper and the barren ground in the Arctic regions. Unlike the reindeer, the caribou has not been domesticated.

Caricature Drawing or description of a person which is deliberately exaggerated or distorted so as to produce a ridiculous effect.

Pictorial caricatures were very common in the 18th century and many were very coarse. James Gilray and Thomas Rowlandson were noted caricaturists of that time. In the 19th and 20th centuries caricatures became more refined and great cleverness was shown in drawing them. Max Beerbohm is the prince of English caricaturists. The caricatures of H. K. Brown (Phiz) and Leslie Ward (Spy) are famous. Many clever caricatures have appeared in *Punch*, notably from the pencils of John Leech, Harry Furniss, Du Maurier and others. Caran d'Ache is perhaps the most famous of the French caricaturists and Louis Raemakers of the Belgian school. Germany has produced some clever workers.

Caries Inflammatory disease of bone. It corresponds to ulceration of the softer tissues and results in the death of the part affected. Its commonest form is dental caries, in which case the decay of the tooth is

caused by acids arising from decomposed foodstuffs destroying the enamel and dentine, followed by bacterial action upon the pulp.

Carillon Set of bells upon which tunes can be played. This is done by the agency of a keyboard mechanism set in motion by hand or electric power. A carillon differs from chimes as the bells are fixed instead of swinging and are struck on the outside by hammers.

There are some famous carillons in the Netherlands, notably at Bruges. In England there is one at Loughborough, a war memorial. One made for Wellington, New Zealand, was for a time in Hyde Park, London, in 1930.

Carisbrooke Town of the Isle of Wight. It is a mile from Newport, on the S. Rly. It is famous for its castle, long the residence of the Governor. In 1647-48 Charles I. and his children were in prison here.

Alexander, a son of Princess Beatrice, took the title of **Marquess of Carisbrooke** when made a peer in 1917. He married Lady Irene Denison, a daughter of the Earl of Londesborough. Pop. 4767.

Carline Thistle (*Carlina vulgaris*). Biennial plant of the order *Compositae*. In Great Britain it is common on dry fields and sandy uplands. The flowers are purple with spiny bracts, and a centre of yellow bristles.

Carlingford Market town and watering place of Louth, Irish Free State. It stands on the south side of Carlingford Lough, 10 m. from Dundalk, on the G.N. Rly. The industries are fishing and catering for visitors. Carlingford Lough, an opening of the Irish Sea, is 10 m. long and 2 m. wide, between Down and Louth.

The title of **Lord Carlingford** was borne by Chichester Samuel Parkinson-Fortescue (1823-98), from 1874 to 1898. He was M.P. for Louth, 1847-74, and filled the offices of Chief Secretary for Ireland, 1865-66 and 1868-70; President of the Board of Trade, 1871-74; Lord Privy Seal, 1881-85, and Lord President, 1883-85. He died Jan. 30, 1898, when his title became extinct.

Carlisle City, borough and county town of Cumberland. It is 299 m. from London and stands at the union of the little Rivers Eden, Caldew and Petteril. It is on the L.N.E. and L.M.S. Rlys. In addition to railway works the industries include the making of biscuits and woollens. The chief buildings are the cathedral, which, although small, has some beautiful features, and the castle with its keep, one of the finest in England. During the World War, the experiment was tried of putting the licensed houses under the control of the state. This control still continues. Pop. (1931) 57,107.

Carlisle **Earl of.** English title borne by the family of Howard. In 1632 James Hay, a courtier, was made Earl of Carlisle by Charles I. The title became extinct in 1660.

In 1661 **Charles Howard** was made Earl of Carlisle and the title is still held by his descendants. **Frederick,** the 5th earl (1748-1825), was Lord-Lieutenant of Ireland (1780-82). **George,** the 7th earl (1802-64), was Chief Secretary for Ireland, 1835-41, and Lord Lieutenant, 1855-58 and 1859-64. The earl's seats are Naworth Castle, Carlisle, and Castle Howard, Yorkshire, and his eldest son is called Viscount Morpeth.

Carlists Name given to those who fought to make Don Carlos, and then his son and grandson, King of Spain. In 1833, Ferdinand VII. died, leaving an only daughter, Isabella. By the Salic law his brother Carlos claimed the throne, but Isabella had a strong following and was crowned. The Carlists started a civil war which lasted until 1839, but Isabella retained the crown. In 1860, and again in 1868-70 and 1872-76 they were in arms, but met with no success. Since then the party has been quiet, although the claim of the descendants of Don Carlos is still in being.

Carlos Name of several Spanish princes. Don Carlos (1545-68) was a son of Philip II., King of Spain. He was eccentric and perhaps insane, and his death on July 24, 1568, has been attributed to foul play. Schiller and others have written dramas on him.

A later Don Carlos (1783-1855) was a brother of Ferdinand VII., King of Spain, and from him the Carlists took their name. He claimed the Spanish throne and the claim was carried on by his son, Don Juan, then by his grandson, another Don Carlos, who died July 18, 1909, then by the latter's son, Don Jaimé.

Carlos I. King of Portugal. Born Sept. 28, 1863, he succeeded his father, Louis, as king in 1889. In 1907 he suspended the constitution and on Feb. 1, 1908, he was murdered in Lisbon. His elder son, Louis, was killed with him; his younger son, Manoel (*q.v.*) was deposed in 1910.

Carlow County of the Irish Free State. In the S.E. of Ireland, it is mainly flat, but there are hills in the south. Its area is 346 sq. m., making it the second smallest county of Ireland. The Barrow and the Slaney are the principal rivers; the railway system is the G.S., and Carlow is the county town. Pop. (1926) 34,176.

Carlow Market town and urban district of the Irish Free State, also the county town of Co. Carlow. It is 56 m. from Dublin by the G.S. Rly., and stands on the Barrow. Here are a Roman Catholic cathedral and St. Patrick's College. Pop. 7163.

Carlton Urban district of Nottinghamshire. It is 3 m. from Nottingham, on the L.M.S. Rly. It has railway works and other industries. Pop. (1931) 22,336.

Carlton House Formerly a London residence. Built by Lord Carleton, it faced St. James's Park and, about 1730, was bought by Frederick, Prince of Wales, the father of George III. Later it was the residence of another Prince of Wales, afterwards George IV. It was pulled down in 1827. The name is perpetuated by the Carlton Club, Carlton Gardens and Carlton House Terrace on the site of the house and grounds.

The **Carlton Club,** the chief club of the Unionist party, is at 94 Pall Mall. It was founded in 1832. There is also a Junior Carlton Club at 30 Pall Mall.

Carluke Town of Lanarkshire. It is 20 m. from Glasgow, on the L.M.S. Rly. Around are coal and ironstone mines, and the town has engineering and other industries. Pop. 10,200.

Carlyle **Thomas.** Scottish historian. Born at Ecclefechan, Dumfriesshire, the son of a mason, Dec. 4, 1795, he was educated at Annan and at Edinburgh University. He became a schoolmaster, but found time to study German and in 1823 began to

write articles in *The London Magazine* and biographies for an encyclopaedia; he published also translations of some of Goëthe's writings. In 1834 he settled in London. There he passed the rest of his days. He had already published *Sartor Resartus* and *The French Revolution*, but he had yet to make his name.

In 1837 Carlyle began a series of lectures in London on German literature, followed by other subjects, and these drew attention to his powers. In easier circumstances, he wrote *Heroes and Hero Worship*, 1841; *Past and Present*, 1843; *Latter Day Pamphlets*, 1850; and *The Life of John Sterling*, 1851. In 1845 he issued *Oliver Cromwell's Letters and Speeches*, and between 1858 and 1865 appeared the massive volumes of his *History of Frederick the Great*. He died Feb. 4, 1881.

In 1826 Carlyle married Jane Baillie Welsh (1801-66). The relations between the two have been the subject of much discussion, but the truth seems to be that, both being geniuses, neither was easy to live with.

Carlyle was a great and powerful thinker and rightly exercised an enormous influence. Too prejudiced to be the perfect historian, he yet had an extraordinary care for detail, combined with a magnificent power of expression, that made some of his descriptions, especially in *The French Revolution*, immortal.

Carlyle's residence, 24 Cheyne Row, Chelsea, London, is now a museum open to the public.

Carman **William Bliss.** Canadian poet. Born at Fredericton, New Brunswick, April 15, 1861, he settled in the United States and was for some time editor of *The New York Independent*. His works include *Songs from Vagabondage*, *Songs of the Sea Children*, *By the Aurelian Well*, *The Rough Riders*, *A Painted Holiday*, *Earth Deities*, *Ballads and Lyrics*, *Daughters of Dawn*, *April Airs*, and *Sappho*, a translation of the fragments. He died June 8, 1929.

Carmarthen Borough and county town of Carmarthenshire. It stands on the Towy, 8 m. from the sea, and is served by the G.W. Rly. The buildings include St. David's church and the grammar school. The town has some manufactures and is an agricultural centre, fairs being held. Pop. (1931) 10,310.

Carmarthen Bay is an opening of the Bristol Channel. It extends from St. Gowans Head to Worms Head.

Carmarthenshire County of Wales. In the south of the county between Pembrokeshire and Glamorganshire, it has a coastline on Carmarthen Bay and covers 919 sq. m. Carmarthen is the county town; others are Llanelly, Llandovery, Kidwelly, Llandilo and Burry Port. The county is mainly agricultural, but around Llanelly in the S.E. are coal mines. The Towy is the chief river. Pop. (1931) 179,063.

Carmel Mountain ridge in Palestine. Terminating in a steep promontory in the Mediterranean, its highest point is 1800 ft. and it extends for about 14 m. It is famous as the scene of Elijah's encounter with the prophets of Baal (1 Kings xviii.). Its native name is Jebel Mar Elyas, or the Mount of Elijah.

Carmelites Order of mendicant friars. They wear a small brown woollen habit (scapulary) over their shoulders, and are also called White Friars from the white cloak which formed part of their dress. The order was founded by one, Berthold, a Calabrian, who, in the middle of the 12th century, migrated to Mount Carmel, where he built a cottage and a chapel. Carmelites practise total abstinence, strict fasting, silence and poverty.

The Carmelites had a priory in London and the name is preserved in Carmelite Street, Blackfriars. The order has many houses throughout the world for both men and women.

Carminative Name given to a drug which, by stimulation of the stomach and intestines, assists the expulsion of gases. Aromatic substances, camphor and volatile oils, and valerian are carminatives.

Carmine Crimson pigment. Obtained from the cochineal insect, it is used to tint fine fabrics, feathers, icing sugar, etc.

Carnac Town in the department of Morbihan, France. Near is the largest group of megalithic monuments known. It consists of menhirs or prehistoric upright stones, dolmens and tumuli. The stones are set in the ground at their smaller ends, some of them being as high as 16 ft. In the most considerable tumulus excavations have revealed the presence of a subterranean dolmen, with bones, axes and necklaces.

Carnarvon Town of Cape Province, S. Africa. It is 505 m. from Capetown, on the railway line to Calvinia. It is the centre of a sheep raising and corn growing district. Pop. 2150.

Carnarvon **Earl of.** English title borne since 1793 by the family of Herbert. Previously it had been held by the families of Dormer (1628-1709), and Bridges (1714-89). In 1793 Henry Herbert, a grandson of the 8th Earl of Pembroke, was made Earl of Carnarvon. His descendant, **Henry Howard**, the 4th earl, was Colonial Secretary, 1866-67 and 1874-78. In 1885-86 he was Lord Lieutenant of Ireland. His son **George**, the 5th earl (1866-1923), was connected with Howard Carter in opening the tomb of Tutankhamen. The earl's eldest son is called Viscount Porchester and his seat is Highclere Castle, Newbury.

Carnatic Former name of a country on the east coast of India. It is now included in the Government of Madras, having been conquered at the end of the 18th century. It has, perhaps, the hottest climate in India. There are many indications of the wealth and high stage of civilisation reached by the former inhabitants.

Carnation (*Dianthus caryophyllus*). Perennial herbaceous plant of which there are many varieties.

Plants can be obtained from seed sown in April and May, and seedlings planted out to bloom the following year. Shoots of established plants can be layered in July or cuttings struck in autumn after flowering is over. Perpetual or tree carnations for winter blooming in a greenhouse can be propagated by cuttings in Feb. or in the autumn. They should be struck in silver sand and potted up when rooted.

Carnedd Dafydd Mountain of Caernarvonshire. This height and Carnedd Llewellyn, quite near it, are nearly as high as Snowdon, Dafydd being 3426 ft. and Llewellyn 3484 ft. high.

Carnegie **Andrew.** Scottish philanthropist. Born at Dunfermline, Nov. 25, 1835, he was taken by his father to the

U.S.A. in 1848. They settled in Pennsylvania and at once the boy began to earn his living. In a short time he became a telegraph clerk with the Pennsylvanian Rly. Co., then a sectional superintendent. He was engaged in railway work during the Civil War. Presently he opened iron works at Pittsburg, and was soon at the head of a flourishing concern. A man of great determination and energy, in a few years he was the head of an enormous combine. In 1901 he retired, and the Carnegie companies became the nucleus of the U.S. Steel Corporation. He made his residence at Skibo Castle in Scotland, where he lived until his death, Aug. 11, 1919. Carnegie wrote several books, including *Triumphant Democracy*, 1886, and *The Gospel of Wealth*, 1900.

He gave away during his lifetime nearly the whole of a fortune estimated at £100,000,000. Peace and libraries were two of his favourite causes. Many libraries in Britain and the U.S.A. were founded with his money. He founded the Carnegie endowment for international peace, and built the Palace of Peace at the Hague, established hero funds in several countries and endowed his birthplace, Dunfermline, with substantial sums for civic improvements. He established a fund for aiding university students in Scotland, and founded pension funds and Carnegie Institutes at Washington and Pittsburg. In both Great Britain and the United States he established trusts which devote the interest on their capital to various philanthropic schemes. The headquarters of the **Carnegie United Kingdom Trust** are at Dunfermline, and one of its benefactions is a large sum to provide playing fields.

Carnelian Coloured variety of quartz. Typically bright orange-red, it varies from yellow to brown. Used as a semi-precious stone largely for signet rings. It is found in India, Brazil and Siberia.

Carnivora Order of mammals comprising those having special teeth adapted for a flesh diet. Most are terrestrial in habit, but a few families are adapted to a marine life. The terrestrial carnivora form three natural groups : the dog family, the bear, racoon and marten family, and the cats, civets and hyenas. The marine carnivors, or pinnipeds, comprise the seals, sea lions and walruses.

Carnot **Lazare Nicolas Marguerite.** French soldier. Born May 13, 1753, he entered the engineering branch of the army. In 1791 he was elected to the National Assembly, and was responsible for reorganising the army. From 1795-97 he was one of the five directors, and after an exile in Germany he became Minister of War in 1799. In 1801 he retired, but appeared again in public life in 1814 when, as governor, he defended Antwerp for Napoleon. He was Minister of the Interior in 1815, but on the return of the Bourbons he went again into exile. He died at Madgeburg, Aug. 2, 1823.

Carnot **Marie François Sadi.** French statesman. Born at Limoges, Aug. 11, 1837, he became a military engineer and served in the war of 1870-71. In 1876 he was elected to the Chamber of Deputies, and in 1885-86 was Minister of Finance. In 1887 he was elected President, and held that position until he was killed at Lyons by an Italian anarchist, June 24, 1894.

Carnoustie Burgh and seaside resort of Angus, Scotland. It is 10 m. from Dundee on the L.N.E. Rly. The town stands near the shore, the higher part being built in terraces commanding magnificent sea views. The sands are extensive and there are fine golf links. The Bell Rock and Lighthouse lie off the coast. Pop. (1931) 4806.

Carnwath Mining village of Lanarkshire. It is 6 m. from Lanark in a coal mining area. Pop. 6547.

The title of **Earl of Carnwath** has been borne by the family of Dalzell since 1639. The 1st earl was in attendance on Charles I. at Naseby.

Carob (*Ceratonia siliqua*). Name for the algaroba or locust tree. Found in Mediterranean countries, its long fleshy pods, sweet in flavour with hard bean-like seeds, are used as cattle food. They are supposed to be the locusts on which S. John the Baptist fed in the wilderness.

Carolina **North.** One of the southern states of the U.S.A. The capital is Raleigh and the chief city Wilmington. Its boundaries are Virginia (N.), the Atlantic Ocean (E. and S.E.), South Carolina and Georgia (S.), and Tennessee (W.). It covers 52,426 sq. m., and its population contains a high proportion of negroes. The chief agricultural products are Indian corn, cotton, tobacco and rice. It was one of the 13 original states, and seceded from the Union in 1861, but was readmitted in 1868. Pop. (1930) 3,170,276.

Carolina **South.** One of the southern states of the U.S.A. The capital is Columbia and the chief city Charleston. Its boundaries are N. Carolina (N. and N.E.), the Atlantic Ocean (S.E.), and Georgia (W. and S.-W.). It produces rice and cotton. The chief rivers are the Santee and the Savannah. Most of the inhabitants are negroes. One of the 13 original states, it was the first to secede and so bring about the Civil War. Its area is 30,989 sq. m. Pop. (1930) 1,738,765.

Caroline Name of two English queens. Caroline, daughter of the Margrave of Brandenburg-Ansbach, was married in 1705 to George, Electoral Prince of Hanover, later George II. of Great Britain. An able and educated woman, she exercised great influence, and her steady support of Sir R. Walpole was very useful to him. She died Nov. 20, 1737, 22 years before her husband.

Caroline, who married her cousin, George IV., when he was Prince of Wales in 1795, was a daughter of the Duke of Brunswick. They had one child, Charlotte, and after her birth they separated. In 1820 Caroline returned from Italy to England to assert her rights as queen. A bill was introduced into Parliament to dissolve her marriage, but was withdrawn. The queen tried to enter Westminster Abbey for the coronation, but was kept out by force. She died Aug. 7, 1821.

Caroline Islands Archipelago in the Pacific Ocean. There are about 549 small islands, chiefly coral, the most important being Yap and Ponapi. The principal export is copra. The name is generally used to include the Pellew Islands. In 1899 they were sold by Spain to Germany and were occupied by an Australian force on Sept. 12, 1914. Since 1919 they have been administered by Japan under mandate from the League of Nations. They cover 390 sq. m. Pop. 56,000.

Carolingians Name given to those rulers of the Franks who belonged to the family of Charles Martel, the ancestor of Charlemagne. They suc-

ceeded the Merovingians in the 8th century, and ruled the West Franks (France) until 987, and the East Franks (Germany), till 911.

Carp Fish (*carpio*) of the family *Cyprinidae*. It is sometimes eaten. It can live to a great age and feeds on vegetable matter. Some specimens have been known to weigh 40 lb. In the 15th century it was brought to Europe from Asia, and in the 17th introduced into the U.S.A.

The British fish is the common carp, but the leather-carp and the smooth carp have been produced by breeders.

Carpaccio **Vittore.** Italian painter. Born in Venice about 1465, he ranks as one of the great Venetian painters. In the Academy of that city are "The Presentation in the Temple," a series illustrating the life of S. Ursula. His "Virgin and Child" is in the National Gallery, London. He died in 1520.

Carpathians Mountain range of Europe. It stretches in a great semicircle from Rumania to Czechoslovakia, nearly touching the Danube at both ends; parts of the range being in Hungary and Poland. The length is about 900 m., and the extreme breadth 200. It includes the Transylvanian Alps in the south and the Tatra Mts. in the centre. The Little Carpathians connect with the Alps, and a further group is the Beskid Mts. The highest point is Gerlsdorfer in the Tatra (8740 ft.). There are many passes, several carrying railway lines. The mountains have great mineral wealth and some magnificent scenery.

In 1914-16 there was much fighting in the passes. First the Russians came through them to invade Hungary, and later the Austrians and Germans advanced into Poland.

Carpeaux **Jean Baptiste.** French sculptor. Born, May 11, 1827, he studied in Valenciennes and Paris, won the Prix de Rome with "Hector and Astyanax" and a further honour with "Ugolino and His Children." He died Oct. 12, 1875.

Carpentaria **Gulf of.** Opening off the N. coast of Australia. It lies between Capes York and Arnheim and is about 350 m. across. The Mitchell, Flinder and other rivers flow into it, and there are many islands. It was named after Pieter Carpentier, who was governor of the Dutch E. Indies when Tasman discovered the gulf.

Carpenter **Alfred Francis Blakeney.** British sailor. Born, Sept. 17, 1881, he entered the navy in 1896 and saw active service in Cuba and China. He won a medal for saving life at sea, and recognition for inventions in navigation. He led the *Vindictive* in the attack on Zeebrugge and was awarded the V.C. From 1921-23 he commanded the *Carysfort*, and from 1924-26 was captain of the dockyard at Chatham.

Carpentier **Georges.** French boxer. Born at Lens, Jan. 12, 1894. In 1913 he defeated the English heavyweight champion, Billy Wells, at Lens and then at the National Sporting Club, London, in one round. He served in the air service in the Great War, and in 1919 won the heavyweight championship of Europe by beating Joe Beckett, also in one round. He met Jack Dempsey at Jersey City in 1921, and was easily beaten.

Carpet Floor covering made of woven or felted woollen, worsted or mixed fabrics. The use of carpets began in eastern countries. France was the first European country to manufacture them, and the craft was brought to England early in the 18th century. These early carpets were made by hand, but in the 19th century a power loom for weaving them was invented. To-day, all except the most expensive carpets are woven on machines. The best are made in Turkey, Persia, India.

Most of the carpets seen in the houses of the western world to-day are the inventions of French workers, and may be divided into two classes, one with a pile and the other without. Pile carpets are known as Wilton, Brussels and Axminster, according to the style, and there are varieties of each. Carpets without a pile are called Kidderminster carpets and are usually reversible. All these are made in Kidderminster, the chief English centre, Yorkshire and Scotland. They are no longer made at Wilton, where French workers were settled by the Earl of Pembroke about 1740, or at Axminster.

Carpet-Bagger Political slang-term applied to a candidate for election in a locality in which he is a stranger, especially if he is sent by a central party organisation. The term was first used in America, of speculative bankers, who started business with nothing more than they could carry in a carpet-bag.

Carra Lake of Co. Mayo, Irish Free State. It is 7 m. long and amidst some of the finest scenery in Connemara.

Carrageen (*Chondrus crispus*). Purplish cartilaginous seaweed, known also as Irish moss. It is found on the coasts of Europe and N. America. Commercially it is washed, bleached and dried, and prepared with milk or water as a jelly for invalid use; it is also utilised in the manufacture of size. It derives its name from Carrageen, on the S. coast of Ireland, where it is abundant.

Carrantuohill Highest mountain of Ireland. One of the range of Macgillicuddy's Reeks, it is in Co. Kerry, about 10 m. from Killarney, and is 3414 ft. in height.

Carrara Town of Italy. It stands near the W. coast, 3 m. from Avenza, its port. It is famous for its marble, perhaps the finest in the world and much used by sculptors. This is mainly white, but black and yellow are also found in the quarries here.

Carriage Horse-drawn travelling vehicle. The older carriages were called coaches, carriages coming into use in the 18th century. There are many kinds of carriage, landau, brougham, victoria, wagonette, phaeton and others, some having four wheels and others two. For these the carriage horse was bred. Owing to the advent of the motor-car, carriages have nearly disappeared. The owner must pay a licence of £2 2*s*. a year for a four-wheeled vehicle if drawn by two horses and £1 1*s*. if drawn by one horse. For a two-wheeled vehicle the licence costs 15*s*. a year.

Carrick Division of Ayrshire. In the south of the county, the river Doon divides it from the north. The title **Earl of Carrick** was borne by Robert Bruce. It is now one of the titles of the Prince of Wales. There is also an Irish earldom of Carrick, held since 1748 by the family of Butler.

Carrickfergus Market town, seaport and urban dis-

trict of Antrim, N. Ireland. It stands on Belfast Lough, 9 m. from Belfast, on the N. Counties of Ireland, L.M.S. Rly. There are two harbours, and linen is made. Pop. 4610.

Carrick-on-Suir Market town and urban district of Tipperary, Irish Free State. It stands on the Suir, 14 m. from Clonmel, on the G.S. Rly. Across the river is Carrickbeg. Pop. 5500.

Carrier In medicine, a term applied to an organism which carries the germs of a disease. One species of mosquito is the carrier of malaria, another species is responsible for yellow fever, the tsetse fly carries the germ of sleeping sickness and the rat flea the bubonic plague. Persons who, without suffering from it, carry the germs of an infectious disease, which can be caught from them, are also called carriers.

Carroll Lewis. Pen name of Charles Lutwidge Dodgson, English writer and mathematician. Born at Daresbury, Cheshire, Jan. 27, 1832, he was educated at Rugby and Christ Church, Oxford, where he was mathematical lecturer from 1854 to 1881. He was ordained deacon in the Church of England in 1885, but did not take priest's orders. Of a reserved and retiring disposition, he delighted in the society of children, and *Alice in Wonderland* was written for Alice Liddell and her two sisters, the little daughters of H. G. Liddell, dean of Christ Church. It was published in 1865, and *Alice Through the Looking Glass* in 1871. Both were illustrated by Sir J. Tenniel, and have been translated into many languages and dramatised. Other books for children are *Sylvie and Bruno, Sylvie and Bruno Concluded* and *The Hunting of the Snark*. He also published various mathematical works, and *Principles of Parliamentary Representation*. He died unmarried, Jan. 14, 1898, at Guildford. In 1932 the centenary of his birth was celebrated.

Carron Village and river of Stirlingshire. The village is near Falkirk and is noted for its ironworks, opened in 1760. Carron gave its name to a naval gun, the carronade, invented by Robert Melville and made here. Lighter than the ordinary gun then in use, the carronade could fire a heavier ball; but its range was short.

Carron Oil is a mixture of linseed oil and lime water, and is used for burns. It is named from Carron, where it was first used.

Carrot Root crop. Extensively cultivated for its strongly flavoured root, it is used both for human food and for feeding cattle. The plant was brought to Britain from Holland in the 16th century and its cultivation quickly spread. The roasted and ground root is used as a substitute for coffee in some countries, and carrots are also used for distilling a strong spirit. Wireworm and carrot fly are enemies of the plant.

Carshalton Urban district of Surrey. It is 11 m. from London, on the S. Rly. There are an old church, some old fine houses and a public park. There are some industries, but it is chiefly a residential district for Londoners. The Wandle flows through it. Pop. (1931) 28,769.

Carso Limestone district. The formations are found in France and the Balkans, and subterranean rivers are a feature. The best-known carso is in Yugoslavia and gives its name to the battles fought between the Austrians and the Italians in the Great War. It lies to the N. and E. of the Adriatic Sea, and before 1919 was part of Austria.

The fighting in the Carso began in Sept., 1916, when the Italians attacked the Austrians. At the end of the year the advantage was with the Italians. In May, 1917, they attacked again and took ground and prisoners, but before the end of the year lost part of their gains.

Carson Baron. Irish politician. Born Feb. 9, 1854, Edward Henry Carson went to school at Portarlington and then to Trinity College, Dublin. He became a barrister, first in Dublin and then in London, and soon made a reputation as an advocate. In 1892 he was elected M.P. for his university, which he represented until 1918, when he was elected for a division of Belfast. In 1892 he was Solicitor-General for Ireland; from 1900-05 he was Solicitor-General for England.

The leader of the Ulster Unionists in their resistance to Home Rule, Carson was closely identified with the events of 1914. In 1915 he joined the Coalition ministry as Attorney-General and in 1917-18 he was First Lord of the Admiralty and then a member of the War Cabinet. In 1921 he was made a life peer and a Lord of Appeal, a post he resigned in 1929. A biography appeared in 1932. He died Oct. 22, 1935.

Carstairs Village and railway junction in Lanarkshire, on the Clyde, where the main L.M.S. line forks, one branch going to Edinburgh and the other to Glasgow. Pop. 1830.

Cartagena City and seaport of Spain. Situated on the Mediterranean, 325 m. from Madrid, it has a cathedral and the ruins of a citadel. There is a fine harbour and from it is exported the produce of the neighbouring mines. Cartagena is also a station of the Spanish navy. It was founded by the **Carthaginians**, hence its name. Pop. 97,000.

Another Cartagena is a city and seaport of Colombia, on the Caribbean Sea. It, too, has a fine harbour and from it much of the produce of the republic is exported. It has a cathedral and a university. Pop. 95,981.

Cartel Meaning little card, this word was used for a challenge. It then came to be used for an agreement made during a war between the combatants about such matters as the treatment of the wounded and of prisoners of war. A cartel ship was a ship that sailed under such an agreement.

To-day a cartel, or kartel, is a list of prices agreed to by the firms in a big industrial combine. It also refers to the combine or trust itself.

Carteret Baron. English politician. Born April 22, 1690, John Carteret was educated at Westminster and Christ Church, Oxford, and took his seat in the House of Lords among the Whigs in 1711. In 1719 he went as ambassador to Sweden, and on his return was made a secretary of state. He was Lord Lieutenant of Ireland, 1724-30. In 1742, on Walpole's fall, he became again a secretary of state, but resigned in 1744. In 1751 he was appointed Lord President of the Council. He died Jan. 22, 1763.

In 1744, on his mother's death, he became Earl Granville, a title which became extinct when his son, Robert, died in 1776, but was revived in 1833 in favour of George Leveson-Gower, a younger son of the 1st Marquess of Stafford.

Carthage Ancient city of Africa, the capital of a powerful state. It stood on the coast, near where Tunis now stands, and according to legend was founded by Phoenicians from Tyre, led by their queen, Dido. The Phoenician settlement soon became a prosperous city, with two excellent harbours and some fine buildings and a population of nearly 1,000,000. About 300 B.C. Carthage was the centre of a great empire, including the Mediterranean coast of Africa, and the coast lands of Spain, Corsica and Sardinia. Its commerce extended all over the known world.

Carthage was Rome's great rival. The three Punic wars between them began over the possession of Sicily. The first lasted from 264 B.C. to 241 B.C., the second from 218 B.C. to 201 B.C. and the third from 149 B.C. to 146 B.C. Carthage was defeated in the first war, and also in the second, but only after the genius of Hannibal had tried Rome's resources to the uttermost. In the third war, after a siege lasting three years, the city was taken by Scipio and razed to the ground in 146 B.C.

In the reign of Augustus, the refounded Carthage became the third largest city in the Roman Empire. In 439 it was taken by the Vandals, but, though retaken by Belisarius, its glory was over, and about 700 it was destroyed by the Saracens.

Carthusians Religious order. It was founded by S. Bruno in 1086 at Chartreux in Dauphiné, France, hence its name. The members may not eat together nor speak to one another except on certain days. The habit is white.

The order was introduced in England by Henry II. and still has houses in the country, one at Parkminster in Sussex. They are called charterhouses, and the most notable was that in London, the buildings of which still stand. Members of the school which had its origin in the London Charterhouse are called Carthusians. At the Grand Chartreuse, near Grenoble, the monks made the liqueur called chartreuse, now made at Tarragona in Spain.

Cartier **Jacques.** French explorer. He was born at St. Malo, Dec. 31, 1194, and became a sailor. With two others he set out to explore the territory of N. America, discovered the Magdalen Islands, and, on a second voyage, completed his exploration of the river and Gulf of St. Lawrence, and sailed up to Montreal. A third voyage, to colonise Canada, met with little success. Cartier died at St. Malo, Sept. 1, 1557.

Cartilage Elastic tissue forming part of the skeletal structure of an animal. Cartilage cells are rounded and scattered through the matrix, and the whole structure is covered by a fibrous membrane. Cartilage forms elastic pads between the various bones.

Cartoon Design or drawing of full size, made preparatory to the finished picture. Cartoons are usually drawn on strong paper and give the artist a chance to see how his ideas look. Sometimes the designs are transferred to tapestries, which are also called cartoons. Examples are the wonderful cartoons by Raphael, now in the Victoria and Albert Museum, South Kensington.

A picture, usually topical and political, in a daily or weekly paper is called a cartoon. Those in *Punch* are the most finished of their kind, but those in the London daily papers by Sir F. C. Gould, and later by Tom Webster, Low and Strube, are also celebrated. Cartoons of this kind are humorous or satirical.

Cartouche Old word for cartridge, used to describe a wooden receptacle in which musket balls were carried. In some fireworks it is the case which holds the inflammable material.

In heraldry a cartouche is a shield sometimes used by ecclesiastics of noble birth to show their bearings. In architecture it is an oval or oblong tablet or moulding, usually containing an emblem or an inscription.

Cartridge Case containing a charge of powder and shot or bullet for use in firearms. The case may be entirely of metal or of cardboard with a metal cap, and the charge may consist of gunpowder or some smokeless powder such as cordite. In a shot cartridge the pellets are of lead, but in rifle cartridges the bullet is either of lead or has a cupro-nickel casing over a core of lead. The cartridge is exploded by means of a percussion cap containing a fulminate compound.

Cartwright **Edmund.** English inventor. Born, April 24, 1743, in a Nottinghamshire village, he went to Oxford and became a clergyman. He was given a living at Goadby-Marwood in Leicestershire in 1779 and while there invented a loom, since developed into the modern power loom. He also invented a machine for combing wool. Leaving his living, Cartwright started a factory at Doncaster and then one in Manchester, but neither prospered. In 1809 Parliament voted £10,000 for him and he bought a farm near Sevenoaks. He died Oct. 30, 1823. Cartwright's elder brother, **John Cartwright** (1740-1824), was a soldier and a political reformer, whose ideas were much in advance of his time.

Caruso **Enrico.** Italian singer. Born in Naples, Feb. 25, 1873, he studied singing and first made his name known in 1896. In 1898 he took the part of Ridolfo in *La Bohème* and for the next 23 years was the world's leading tenor. He died Aug. 2, 1921.

Carver **John.** English puritan and leader of the Pilgrim Fathers. In 1608 he withdrew to the Netherlands because of his support of Brownism and became Deacon of the English Congregational Church at Leyden. In 1620 he sailed in the *Mayflower*, and was the first governor of Plymouth Colony. In the following year he made a treaty with the Indians. He died of sunstroke in 1621.

Carving Process of cutting and shaping objects in wood and ivory. Wood carving is of ancient date and at various periods has exercised great influence on sculpture. The art reached a high level in Europe from the 12th to 16th centuries, especially in decorating interiors of churches. In England, fine examples are seen in the work of Grinling Gibbons (1648-1720) and in the decoration of St. Paul's Cathedral, London.

Caryatides Name given in architecture to the figures of females used as columns to hold up entablatures. It is supposed that the name commemorates the overthrow of the inhabitants of Caryae by the Greeks, who carried off the women as captives. Notable caryatides were on the Erechtheum at Athens.

Casabianca **Louis de.** French naval officer. Born at Bastia, Corsica, he entered the French Navy, and helped to convoy French troops to the British-American colonies then in revolt. He was

appointed to the ship *Orient*, and at the Battle of the Nile off Aboukir, when defeated, safeguarded the crew and perished with the ship, with his ten-year-old son, Giacomo Jocante, Aug. 1, 1798. Their heroism is commemorated in Mrs. Hemans' poem.

Casablanca Seaport of Morocco. On the Atlantic coast, 60 m. S. of Rabat, it is the outlet for the produce of Central Morocco, including grain, hides, wool and mineral phosphates. Air services connect it with Toulouse daily, with Oran bi-weekly and with Dakar weekly. There is a British consul. Pop. (1931) 161,113.

Casals **Pablo.** Spanish musician. Born in 1878, he studied music in the Conservatoire at Barcelona and soon made his name as a performer on the violoncello. He played in London and other European capitals, and in 1912 won the medal of the Royal Philharmonic Society.

Casanova **Giovanni Jacopo.** Italian adventurer. Born at Venice in 1725, he was educated in London. When quite young he embarked on a career of intrigue and hazard. This led, after various European wanderings, to imprisonment at Venice, whence he escaped and was appointed to manage state lotteries in Paris. More European wanderings, embracing England, Poland and Spain, followed. He returned to Venice as a state spy, and then retired to Bohemia. He died, June 4, 1798. Casanova's *Memoirs*, in twelve volumes, are a genial account of Europe as he saw it.

Casaubon **Isaac.** French scholar. Born in Geneva, Feb. 18, 1559, he studied in that city and in 1581 he was made professor of Greek at Geneva. From 1586 to 1600 he was professor at Montpellier. In 1600 he went to Paris, where Henry IV. gave him a position and a pension and in 1604 made him a royal librarian. In 1610 he visited England, and here, received with great honour by James I., he passed the rest of his days. He died July 1, 1614, and was buried in Westminster Abbey. He edited several of the classical authors.

Casca **Publius Servilius.** Roman politician. A stolid, unimaginative man, he was tribune of the Plebs in 44 B.C., the year in which Julius Caesar was assassinated, and struck the first blow. He afterwards sided with the triumvirate in Macedonia, and shared the fate of his fellow conspirator, Cassius, being killed at Philippi, 42 B.C.

Cascade In electricity, a method of charging Leyden jars by connecting the outer coating of one to the inner coating of the next, and so through the series.

In gas liquefaction it is a method of causing a compressed and cooled refrigerant, such as carbonic acid, to flow continuously round the gas to be liquefied.

Cascara Bark of the Californian buckthorn, *Rhamnus purshiana*. From it are prepared solid and liquid extracts of cascara sagrada (sacred bark), one of the most useful tonic aperients. The bitter taste is lessened by aromatic aids, or by admixture with glycerine.

Casein Main constituent of cheese. An albumin, it is precipitated from skimmed or separated milk by the enzyme in rennet, a mineral acid, or by self-curdling with lactic acid. It yields a white, tasteless, amorphous, finely divided lime salt. Formalin converts it into a hard, insoluble, non-inflammable substance, used as a coating or cotton fabrics, paper and photographic films.

Casemate Protected vault or chamber. It may be a bombproof shelter for troops, hospital cases and stores, or when facing lower ground, such as ditches, be loopholed for firing heavy ordnance. In armoured warships it is the bulkhead protecting the main guns, and is defended by embrasures or loopholes for firing and withdrawing them.

Casement **Roger David.** Irish conspirator. Born in Dublin, Sept. 1, 1864, he entered the consular service and served in equatorial Africa and Brazil. He was knighted in 1911. Becoming hostile to England, he was in Berlin in Nov., 1914, urging Irish war prisoners to form a brigade for service against the Allies. In April, 1916, he landed at Tralee from a German ship and was arrested. Tried for treason, he was found guilty and hanged Aug. 3, 1916.

Cashel Market town and urban district of Tipperary, Irish Free State. It is 96 miles from Dublin, on the G.S. Rlys., and is the see of a Roman Catholic archbishop and a Protestant bishop. It is famous for its rock, 300 feet high, on which are the ruins of a cathedral and a round tower, dating from the time when it was an important place in the kingdom of Munster. Pop. 2950.

Cashew Nut Hard-shelled fruit of a tropical gum tree, *anacardium occidentale*. Its kernel is roasted for food, or used in confectionery. It grows in the West Indies.

Cashmere Fine, soft woollen fabric. It differs from merino in being twilled on one side only. It assumes the name of a material originally woven in the Kashmir valley, from the undercoat of wool growing amid the long hair of the Tibetan goat. Flocks of this domesticated breed are kept both there and in Bokhara. Shawls made from their wool once fetched high prices.

Cash on Delivery System by which goods are supplied by sellers through an agent to customers at a distance, payment being made on delivery. The Post Office, frequently operating in conjunction with the railway companies, is the agent usually employed. The Swiss Post Office started the system in 1849, and in 1885 regulations for the service were laid down by the Postal Congress at Lisbon.

After the Great War, a C.O.D. system was introduced into Great Britain. The Post Office will collect any sum up to £40 when delivering a parcel. A small fee is charged. In 1929 the number of parcels dealt with under this system was 2,290,000. On July 1, 1930, the system was extended to include perishable goods. There is a C.O.D. service between Great Britain and other parts of the Empire and with certain foreign countries.

Cash Register Machine invented by James Ritty in 1879 for retail traders. A common modern type has keys representing particular sums, which when depressed, record the amount of the purchase, register the total amount passed through the machine, and by raising an indicator show the customer how much he has to pay. The drawers containing the cash cannot be opened without a record being made in the machine.

Casino Public building in a pleasure resort. It comes from the

Italian *casa*, a house, and was given to buildings at French and Belgian watering places where gambling was carried on. Other attractions, such as dancing, were soon added, and the casino became the centre of social life. Noted casinos are at Monte Carlo, Nice, Ostend, Dieppe and Boulogne. The German equivalent is Kursaal.

Casket Letters Collection of documents attributed to Mary Queen of Scots, which, if genuine, prove her complicity in the murder of her husband, Darnley. The Earl of Morton professed to have found them in June, 1567, three months after their alleged date, in a silver casket. There were eight letters and some sonnets in French. They disappeared after the execution of the Earl of Gowrie in 1584. On examination Mary denied that the letters were genuine.

Caspian Sea Inland sea on the boundary between Europe and Asia. The S. coast is Persian, the remainder Russian. The world's largest inland sea, it is 760 m. long, and from 100 to 270 m. broad, and covers 169,000 sq. m. It is 86 ft. below sea level, shallow in the N., where it freezes in winter, but deepening southward to 3000 ft. It receives its waters chiefly from a vast area drained by the Volga. Its fauna intermingles marine and freshwater types, such as sturgeon, salmon, herring and common seal. Astrakhan and Baku are the chief ports.

Casquets Group of rocks in the English Channel, 8 m. W. of Alderney. Their constant menace to navigation is attested by the foundering here of the *White Ship* in 1120, the *Victory* in 1744, and the *Stella* in 1899. A lighthouse was erected on the largest rock in 1877.

Cassandra In Greek mythology, daughter of Priam, King of Troy, and Hecuba. She received the prophetic gift from Apollo who, enraged by her rejection of him, ordained her predictions to be discredited. After Troy fell she was killed by Clytaemnestra, Agamemnon's wife.

Cassava Name of several species of tropical euphorbiaceous plants. Bitter cassava yields from its fleshy root a starchy food, Brazilian arrowroot, which when dried on hot plates becomes tapioca.

Cassel **Gustav.** Swedish economist. Born at Stockholm, Oct. 20, 1866, he was there educated. In 1904 he was made Professor of Economics at Stockholm. In pamphlets and reports he showed a remarkable grasp of the currency problems created by the Great War and more than one European government asked his advice. As an expert he attended the International Conference at Geneva in 1922.

Cassia Genus of leguminous plants of temperate and tropical regions outside Europe. *Cassia fistula* pods provide a mild laxative. Senna leaves come from the acute-leaved Alexandrian and the narrow-leaved Indian cassia shrub.

Cinnamomum cassia, a species of aromatic laurel of tropical Asia, furnishes *cassia lignea*, a spice preferred to cinnamon in S. Europe.

Cassiopeia Constellation in the northern hemisphere. In it are a group of stars known as Cassiopeia's Chair.

Cassiterite Mineral. Tin oxide, SnO_2, is the commonest ore of tin. It occurs massive or crystalline, and is hard and heavy. Worked in Cornwall for ages, it occurs in many other countries.

Cassius Longinus **Gaius.** Roman general and politician. Gaining distinction in the Parthian War, 53-51 B.C., he held a fleet command in the Mediterranean in support of Pompey, on whose death in 48 B.C. he sided with Julius Caesar. He led the conspiracy against Caesar and was present at his assassination, 44 B.C. Proceeding to Syria, he joined forces with Brutus. Defeated by Antony at Philippi, he compelled his servant to slay him, 42 B.C.

Cassivelaunus British prince. As ruler of the Catuvellauni, a British tribe living along the Thames valley, he opposed the march of Julius Caesar during his second British campaign. He was defeated at a ford over the Thames and gave hostages to Caesar.

Cassowary Ostrich-like bird, *Casuarius*. At least ten species inhabit N. Australia, New Guinea and neighbouring islands. They are three-toed with rudimentary wings, horny crest and black plumage. The dark-green eggs are incubated by the male bird. Cassowaries are forest dwellers, and their running speed rivals that of the horse.

Caste Exclusive social group. The system prevails in India where the Hindu population is divided into a number of groups or castes. No member of one of these groups may marry outside it, while its rules may also regulate his occupation and, even his diet. A caste is, therefore, a grouping of families bearing a common name, usually associated with a particular occupation, and living socially quite apart from other castes.

Castelnau **Marie Joseph Edouard de Curières de.** French soldier. Born Dec. 24, 1851, he entered the army in 1870, saw service in the Franco-Prussian War and rose in rank until he became a general and a member of the Supreme Council of War. In Aug., 1914, he was given command of the army that defended Nancy and in 1915 he became Chief of the Staff to Joffre. In 1917 he commanded the forces at Verdun and in 1918 an army in Lorraine. In 1919 he was elected a deputy.

Castiglione **Baldassare.** Italian writer. Born near Mantua, in 1478, he became attached to the court of the Duke of Urbino, who sent him to England on a mission to Henry VII. in 1506. He afterwards carried out delicate negotiations in Rome and Madrid, where he became Bishop of Avila. He died in 1529 at Toledo. His famous book, *The Courtier*, 1514, is a portrait of the ideal gentleman.

Castile District of Spain. It began as a county and was long ruled by counts. About 1030 one of these called himself a king and ruled over Leon as well as Castile. By wars against the Moors the kingdoms were gradually enlarged, and strengthened and the name Castile was used for the two. In 1469 Isabella, already heiress of Castile, married Ferdinand, the heir to Aragon. Isabella succeeded in 1474 and Ferdinand in 1479, thus uniting the two kingdoms which developed into the kingdom of Spain. Madrid and Burgos are the chief towns.

Casting Term used in metal working. It denotes the operation of pouring molten materials into moulds, and

also the cooled and hardened result. In early times sand moulds fortified with clay were used for bronze and afterwards for iron. Nowadays iron moulds are successfully employed. Metals are cast into ingots, and this raw material is afterwards used either for hammering (forging) or casting (founding). The foundry products embrace all descriptions of metal work.

Castle Fortress erected for defence. The Romans had castles on their camps and there are the remains of them along the Roman Wall in Northumberland.

In feudal times strong buildings called castles sprang up in W. Europe. They were usually built on an eminence. Notable examples were those erected by barons on the hills above the Rhine whence they could watch the trading vessels and take toll of them. Towns sprang up where people built their huts around a castle for protection. Castle Gaillard, built by Richard I. in France, was regarded as the strongest of mediaeval fortresses.

In Britain many castles were built by the Normans, consisting typically of an outer and an inner fort. The outer fort was protected by walls, round which was a moat, or ditch, and within the walls were the buildings for the inmates, both man and beast. The inner fort, called the keep, was much stronger and served as a refuge. So many of this type were built in the reigns of William I. and Stephen that when Henry II. came to the throne he ordered their destruction in hundreds. Many ruins remain. Some, like Alnwick and Arundel, have been rebuilt on the old plan. Others, such as Bodiam in Sussex and Tattershall in Lincolnshire have been restored. The ruins of Berkeley, Durham and Rochester give a good idea of what the mediaeval castle was like.

Castle Ashby Residence of the Marquess of Northampton. About 6 m. from Northampton, on the L.M.S. Rly., it was built in the 16th century, but the present house was designed by Inigo Jones.

Castlebar County town, urban district and market town of Co. Mayo, Irish Free State. It is 150 m. from Dublin on the Gt. S. Rlys. It is a market for agricultural produce. The river Castlebar flows through the town. Pop. 4260.

Castlecary Village of Somerset. It is 116 m. from London, on the G.W. Rly. It stands amid picturesque scenery. Pop. 1646.

Another Castlecary is a village of Stirlingshire. This is 6 m. from Falkirk and is famous for its fort built by the Romans as a defence on the line of Antonine's Wall.

Castle Donington Town of Leicestershire. It is 11 m. from Nottingham, on the L.M.S. Rly. There are remains of a castle and some industrial establishments. Donington Hall, once a seat of the Marquess of Hastings, is near, and during the Great War was used for the internment of German officers. Pop. 2736.

Castle Douglas Burgh and market town of Kirkcudbrightshire. It is 19 m. from Dumfries, on the L.M.S. Rly. An agricultural centre, it is noted for its sheep and cattle market. Near is Thrieve Castle, the old seat of the Douglas family. Pop. (1931) 3008.

Castleford Market town and urban district of Yorkshire (W.R.). It stands on the Aire, 10 m. from Leeds, and is served by the L.N.E. Rly. and the Aire and Calder Navigation System. Bottles are manufactured and around are collieries. Pop. (1931) 21,781.

Castlemaine Town of Victoria. A railway junction and health resort, it is 78 m. from Melbourne by railway in a fruit-growing district. Pop. 7170.

Another Castlemaine is a village in Co. Kerry, Irish Free State.

Castlereagh Viscount. Title borne by the eldest son of the Marquess of Londonderry. Its most famous holder was Robert Stewart. Born June 18, 1769, he entered the Irish Parliament in 1790. From 1794 to 1798 he sat also in the parliament at Westminster. In 1796 he was given a confidential position in Ireland and was instrumental in suppressing the rebellion of 1798 and bringing about the union of 1800. He resigned office with Pitt in 1801, but in 1802 became President of the Board of Control. In 1805 he was made Secretary for War. The failure of the Walcheren expedition was followed by his famous duel with his colleague Canning (*q.v.*) and by the resignation of both ministers in 1809. In 1812 Castlereagh returned to office as Foreign Secretary under Lord Liverpool and he was responsible for the negotiations with France in 1814 and 1815, and perhaps the most influential member of the House of Commons. In 1821 he became a marquess, but in 1822 his mind gave way and he committed suicide on Aug. 12.

Castle Rising Village of Norfolk. It is 4 m. from King's Lynn, and 1½ m. from North Wootton, on the L.N.E. Rly. It is noted for its castle, its old church and the almshouse called Trinity Hospital. It was a seaport until the sea receded.

Castleton Village of Derbyshire. It is 17 m. from Sheffield, on the L.M.S. Rly. A tourist centre, it is regarded as the capital of the Peak District and stands high amid magnificent scenery. It is renowned for its caverns and the Blue John Mine, from which the fluorspar called Blue John is obtained. There are remains of the castle mentioned in Scott's *Peveril of the Peak*. Pop. 650.

Castletown Town of the Isle of Man, capital of the island until 1862. It stands on Castletown Bay, 10 m. from Douglas, with which it is connected by railway. Here is Castle Rushen, once the residence of the lords of Man, and near it the old meeting place of the House of Keys. Castle Rushen was given by King George V. to the island in 1928.

Castor One of two brothers in Greek mythology, the other being Pollux. They are supposed to have been the sons of Zeus and Leda. Their exploits include the expedition of the Argonauts, the hunting of the Calydonian boar and the assistance given to the Romans at the Battle of Lake Regillus when they appeared on their horses at the crisis of the fight. Castor was a tamer of horses and Pollux a boxer. The dioscuri, as they were called, were worshipped by the Romans and many temples were built in their honour. Two stars in the constellation of Gemini are called Castor and Pollux.

Castor Abbreviation for castoreum, a reddish-brown substance from two elongated posterior glands of the beaver. Bitter-tasting and of enduring odour, it contains a specific principle, castorin, which is used in perfumery.

Castor Oil Oil from seeds of the euphorbiaceous castor oil plant *Ricimus communis*. Native in Africa, it is grown commercially in India, California, Italy and elsewhere, with a world production of 300,000 tons. The seeds are bruised between rollers, poured into hempen bags and pressed. A mild purgative, it is also a valuable lubricant, notably for aircraft engines.

Casualties Term used for mishaps or accidents of any kind. The word is most usually applied to wartime losses in battle and by sickness.

Various attempts at a final estimate of the casualties in the Great War have been given from time to time. An authoritative statement was made in the House of Commons in May, 1921, as follows :

BRITISH EMPIRE.

	Dead.	Wounded
Great Britain ..	743,702 ..	1,693,262
Canada	56,625 ..	149,732
Australia	59,330 ..	152,171
New Zealand	16,136 ..	40,729
India	61,398 ..	70,869
Elsewhere	8,832 ..	15,153
	946,023 .	2,121,906

ALLIED COUNTRIES

France	1,385,300 ..	?
Belgium	38,172 ..	44,686
Italy .. .	460,000 .	947,000
Portugal .. .	7,222 .	13 751
Rumania	335,706 ..	?
Serbia	127,535	133,148
United States ..	115,660	205,690

ENEMY COUNTRIES.

Germany	2,050,466 ..	4,202,028
Austria-Hungary ..	1,200,000 ..	3,620,000
Bulgaria	101,224 ..	152,400
Turkey .	300,000 ..	570,000

No figures were given for Russia

Casualty Term used in Scots law. It refers to a payment made by a tenant to a landlord upon the happening of a contingency or uncertain event. Cases are rare, but there was one in 1929 when the Duchess of Norfolk, under an Act of 1914, demanded casualties from her tenants in Maxwelltown.

Casual Ward Poor law institution at which the casual poor are sheltered. Vagrants and tramps are searched on admittance and deprived of money or tobacco, which are restored on leaving. Cocoa and bread and a compulsory bath are provided. Before discharge some work must usually be done, such as wood chopping or stone breaking, but oakum picking, formerly a common task, has been abolished.

Casuistry Application of moral principles to specific acts. The tendency to stereotype applied morality, under biblical or ecclesiastical authority, instead of trusting to the individual conscience, is observable in Talmudic, Christian and Moslem literature. From the 17th century onwards the Penitential Books allotted public penances to particular sins, and the medieval church developed the practice at confession. The term has acquired a sinister meaning when used for the sophistical arguing away of ambiguous acts by hair-splitting subtleties.

Cat Name usually denoting domesticated breeds derived from several small species of the feline genus of carnivorous mammals. The ancient Egyptian domesticated breed penetrated to S. Europe, crossing occasionally with European wild cats westward and Asiatic forms eastward. It reached Britain during the Roman occupation. According to breeders' classifications long-haired cats include tabby, blotched, tortoiseshell—with sandy male—and slate-blue Chartreuse, together with blue or silver Persian, with its derivative chinchilla, smoke and Angora. Beside British short-haired types are the half-tailed Siamese, the tailless Manx, the Maltese, blue Russian and Abyssinian. Cat shows, inaugurated in 1871, are held annually in London and other cities of Great Britain.

Cat Tackle used for hoisting an anchor from the water's edge or the hawse-hole to the cat-head. It comprises an iron beam projecting from either bow, with pulley and sheaves in the outer end, fastened to the ship's side by the cat-tail frame. Overhanging beams stepped like boat-davits are called cat-davits.

Catacomb Subterranean gallery excavated for use as a burial place. Originating in the volcanic layers beneath Rome, they were utilised by the Christian community down to Alaric's onslaught on Rome, A.D. 410. Rediscovered in 1578, they are a mine of archaeological interest. The galleries, 4-5 ft. wide, form a labyrinth several hundred miles long, where interments exceeded 6,000,000. The berth-like recesses, or *loculi*, were carefully sealed with inscribed slabs. Circular rooms served for families or distinguished martyrs. They were utilised for refuge and worship during periods of persecution. Similar galleries exist in Naples, Syracuse and Alexandria.

Catalepsy Nervous affection involving sudden suspension of will power and sensation. The muscular rigidity may simulate death, or the patient may utter vehement exclamations unconsciously. It may end in a few minutes, or endure for several days. It arises from fright or prolonged depression, and sometimes attends the hysteria induced, especially in women, by mental or religious excitement, which sometimes assumes an epidemic form. It is producible artificially by hypnotic means.

Catalonia Former province of Spain. Bounded N. by the Pyrenees, S. by Valencia, E. by the Mediterranean, and W. by Aragon, it was divided in 1833 into the provinces of Tarragona, Barcelona, Gerona and Lérida, with an area of 12,500 sq. m. It has modern textile factories and great metalliferous and cereal wealth.

There has always been among the Catalans a tendency to independence and in 1919 they sent a request to the Peace Conference in Paris asking to be made into a separate state. It was met during the dictatorship of Primo de Rivera with a policy of repression, but after the fall of the dictator, in 1929, a more liberal policy was pursued. In 1931, when Spain became a republic, a large measure of home rule was given to Catalonia.

Catalpa Genus of large-leaved ornamental trees of the bignonia family. They are natives of N. America and E. Asia. There are ten species, some of them 40 to 50 ft. high, with panicles of showy flowers and winged pods. *C. bignoides*, occurring in British parks and gardens, furnishes light, durable timber. *C. longissima*, or French oak, is rich in tannin.

Catalysis Acceleration or retardation of chemical reactions effected by

the presence of a substance not itself permanently changed. Catalysts may react by mere contact, or by entering momentarily into reactions which liberate them again immediately. Some are of industrial importance such as platinum in the contact-process of sulphuric acid manufacture, or nickel in hydrogenating liquid oils for conversion into hardened edible fats. Catalysis is due to atomic rather than molecular excitement.

Catamaran Surf boat used on the Coromandel coast, particularly at Madras. Comprising three or more logs lashed together, 20-25 ft. long, the middle trunk, on which the two paddlers squat, is elongated for turning up as a prow. Larger sailing rafts of similar construction are used in the Caribbean and on S. American coasts.

Catania City and seaport of Sicily. On the E. coast at the foot of Mt. Etna, it controls the trade of the fertile Catania Plain, the granary of Sicily. It is 59 m. from Messina. Catania was founded by the Greeks and was very rich under the Romans. There are remains of a Roman amphitheatre. It has been destroyed more than once by earthquake and volcanic eruptions. Pop. (1931) 227,765.

Catapult Ancient military engine for projecting stones, arrows and similar missiles. In Medieval Europe it was a huge, pedestalled crossbow operated by a twisted cord. The distinct high-trajectory *ballista* discharged heavier stones from the end of rotating arms.

Cataract Eye disease rendering the liquid contents of the crystalline lens opaque. It occasions blindness by obstructing the passage of light. The commonest form is senile cataract in ageing persons.

Catarrh In chronic catarrh, or inflammation of the mucous membrane of the nose, throat and bronchial tubes with troublesome discharge, make frequent use of a nasal spray with eucalyptus, menthol, or other compounds in paraffin base. Gargle night and morning with glycothymoline, listerine, or a mixture of equal parts common salt, borax, and chlorate of potash (1 teaspoonful to 1 pint of warm water). Plenty of fresh air and avoidance of dust are necessary, and surgical treatment may be indicated. Catarrhal inflammations may also occur in the stomach, intestines, bladder, urethra, and womb.

Catbird Genus of N. American mocking birds of the thrush family, *Galeoscoptes*. The only species, with black-polled slate-grey plumage, is a voluble songster which also utters a mewing cry. Another catbird is a genus of Australian weaver birds of the paradise bird family *Aeluredus*. One with bright green plumage and one with spotted, utter catcalls at evening.

Catch Term in English music denoting a jocund round. Written for three or more unaccompanied voices in glee form, it enables each singer in turn to catch up his predecessor's words. Catches were favourite folksong compositions in Tudor and Stuart times.

Catchment Area Defined space of land made by its rainfall into a self-contained drainage basin. The catchment area of the Amazon is 2,722,000 sq. m., of the Thames 5924 sq. m. In hydraulic engineering it is the area available for furnishing water at a specific point for a public water supply.

In 1931, in connection with a scheme of land draining, **Catchment Boards** were set up in various parts of the country. There were 47 of these boards, one for each of the principal rivers, and their object is to take measures to prevent floods and generally to look after the flow of the river's water.

Catechism Term meaning instruction by question and answer, or a book containing such instruction, particularly in religious doctrine. Outstanding examples are: Luther's, 1529, Calvin's, 1536, the Heidelberg, used in the Dutch Reformed Church, 1563, the Methodist, 1852, since revised, and the Evangelical Free Church, 1898. The Roman Catholic (Tridentine) 1566, is in Great Britain replaced by The Penny Catechism. The catechism of the Church of England is in the Book of Common Prayer. The Presbyterians have two catechisms—the Shorter and the Longer, dating from 1648.

Catechu (or Cutch) Tanning and dyeing extract. It is obtained from the heart-wood of two Indian species of acacia, and is used for dyeing fishing nets and tanned canvas. It also comes from the leaves of two Malayan species of cinchonaceous climbers. These yield the astringent pale catechu of pharmacy, which is the gambir of industry.

Caterham Urban district of Surrey. It is 20 m. from London and 7 from Croydon on the S. Rly. It is a beautiful residential area, and has barracks where recruits for the Foot Guards are trained. The urban district includes Worlingham. Pop. (1931) 19,503.

Caterpillar Popular name for the larva of a butterfly, moth or sand fly. Its head bears strong biting mandibles for nipping leaves or gnawing timber, with three simple eyes, three thoracic segments each with a pair of true jointed legs, and ten abdominal segments variably endowed with tubular hooked prolegs, the last two being claspers. Their mission is to store food for the pupal or resting stage, and they moult 8 or 10 times. Their voracity frequently causes enormous destruction to agriculture.

Catesby **Robert.** English conspirator. Born in 1573, he was the son of Sir William Catesby and was brought up a Roman Catholic. He was one of the promoters of the Gunpowder Plot. When it was discovered he left London and was shot by his pursuers near Dudley, Nov. 8, 1605.

Catfish Numerous family of naked or bony-skinned scaleless fishes (*Siluridae*) with barbels or feelers round the mouth. Almost all of them inhabit temperate and tropical freshwater, and include the largest European freshwater fish, found only E. of the Rhine. Several species inhabit American rivers and lakes, some travelling overland in dry seasons. There are about 1000 species.

Catford Suburb of London. In the metropolitan borough of Lewisham, 8 m. from London, with stations Catford and Catford Bridge on the S. Rly., it is a busy centre. Here is St. Dunstan's College for boys.

Catgut Cord made from the intestines of sheep and lambs, less often from those of horses and asses. It serves as strings for harps, violins, bows, clockweights, sutures for wounds and lathe belts. The intestines are clarified, scraped, steeped in lye, made

aseptic, dyed, if necessary, and made up into cords of twisted strands.

Cathay Name for China in the Middle Ages. It was given by Marco Polo and comes from Khitan, Mongolian tribes who ruled over the N. part until about 1100.

Cathcart Name of a parish in Scotland, now part of Glasgow. It stands on the White Cart, and gives its name to a famous Scottish family. The barony dates from 1460 and the 9th baron, William Schaw Cathcart (1755-1843) was in 1814 made an earl.

Cathedral Church in which a bishop has his seat. In the Church of England most of the cathedrals are controlled by a dean and a number of canons who are known as the dean and chapter.

The finest English cathedrals were built in the Middle Ages, Canterbury, York, Lincoln Salisbury, Lichfield and Winchester for instance. S. Paul's, London, is of later date. Westminster Abbey is not a cathedral as there is no bishop. The only cathedral built by the Church of England since the Reformation is at Liverpool, but cathedrals at Sheffield, Guildford and Monmouth are planned. In other cases where bishoprics were created, as in Birmingham and Manchester, existing churches were converted into cathedrals. At Truro the parish church was enlarged and made into a cathedral. The Roman Catholics have a fine modern cathedral at Westminster and another is planned for Liverpool.

Outside England the finest cathedrals in the world are S. Ambrose, Milan; S. Mark's, Venice; and the Duomo, Florence. In Spain, Seville, one of the largest in the world, ranks first. In France, Notre Dame, Paris, Chartres, Amiens and Rheims may be mentioned. In Germany, Cologne, Mainz and Treves are notable. A fine modern cathedral is S. John the Divine, New York.

Catherine Italian saint called Catherine of Siena. Born in 1347 at Siena, she joined the Dominican tertiaries in 1365. She announced the impression on her body of the stigmata in 1375, and induced Gregory XI. to leave Avignon for Rome in 1376. She practised works of mercy, and wrote mystical letters and prayers. Commemorated on April 30, the day of her death in 1380, she was canonised in 1461.

Catherine Saint and martyr called Catherine of Alexandria. She lived in the 4th century and tried to convert the Emperor Maximinus to Christianity. She was scourged, imprisoned and then tortured on a wheel. She is the patron saint of the wheelwrights, the Paris university and religious sisterhoods. She is commemorated on Nov. 25.

Catherine Queen of Henry II. of France. A daughter of Lorenzo de Medici, she was born April 13, 1519, and in 1533 was married to Henry, heir to the throne of France. He became king in 1544 and reigned for 15 years, after which three of the four sons Catherine bore him were kings in turn. The eldest, Francis II., only reigned for a year, but during the reigns of the other two, Charles IX. and Henry III., Catherine, as regent, was the dominant person in France. She first favoured the Huguenots against the extreme Roman Catholics led by the Guises, but later turned round and assented to the massacre of S. Bartholomew. She died Jan. 5, 1589.

Catherine I. Empress of Russia. Born in Lithuania she passed her youth in Marienburg and married a Swedish soldier. Taken prisoner by the Russians in 1702 she became the mistress of Peter the Great, and in 1711 his wife. Her abilities were considerable, and Peter named her as his successor. From 1725 until her death, May 17, 1727, she was Empress.

Catherine II. Empress of Russia. Born at Stettin, May 2, 1729, a daughter of a German prince, in 1745 she married Peter, Duke of Holstein, who had been chosen as heir to the Russian throne. In 1761 Peter became czar, but in 1762 he was murdered and his widow took his place. Catherine reigned until 1796 and greatly increased the area and power of Russia. An enlightened despot, she carried out many reforms. She died Nov. 17, 1796, her successor being her son Paul II.

Catherine of Aragon. Wife of Henry VIII. A daughter of Ferdinand and Isabella of Spain, she was born in Dec., 1485, and in 1501 was married in London to Arthur, Prince of Wales. In April, 1502, he died, and the princess was betrothed to his brother Henry. He became king in 1509, and the two were married in June of that year. When Henry fell in love with Anne Boleyn he put forward the theory that the union with Catherine had been illegal on the ground of relationship. The Pope would not consent to a divorce and the result was the overthrow of the Papal authority in England. Cranmer then pronounced the marriage invalid. Called the princess dowager, Catherine was practically a prisoner until her death at Kimbolton, Jan. 7, 1536.

Catherine of Braganza. Wife of Charles II. Born Nov. 25, 1638, she was a daughter of John, King of Portugal. She married Charles in May, 1662, her dowry being Tangiers, Bombay, and a large sum of money. She remained in England until 1692, when she went back to Portugal and was regent of that country for her brother. She died Dec. 31, 1705.

Cathetometer Instrument for measuring accurately small differences in vertical heights, as in the case of the different levels of the mercury in the tube and cistern of a barometer. It consists essentially of a horizontal telescope which slides up and down on a vertical stand provided with a finely divided scale.

Cathode (or **Kathode**). Electrode point from which the current leaves, or negative plate of a voltaic cell or electrolyte, or positive terminal of the external circuit. In a vacuum tube or thermionic valve the electrons leave the cathode and flow to the anode (*q.v.*). Metal is deposited at this pole when objects are electroplated.

Catholic Apostolic Church

Religious communion due to the preaching of Edward Irving; hence its alternative name of Irvingite. Founded in 1832, it uses symbolic ceremonial based on primitive practice, under the direction of twelve apostles who claim supernatural powers. Subordinate to them are prophets and evangelists, each congregation having its angel. There is a fine Gothic church in Gordon Square, London, built in 1854, and upwards of 80 churches with adherents in Great Britain, Europe and the United States.

Catholic Emancipation

Term used for the removal of political and other disabilities, under which Roman Catholics suffered. These dated in Great Britain from the time of the Reformation. In 1778 a few of the disabilities were removed, but full emancipation dates from 1829, when the oath of supremacy was altered. Roman Catholics can now sit in Parliament and hold civil and military offices of all kinds. They can also enter the professions.

Catiline Lucius Sergius. Roman politician and conspirator. Of impoverished family, he served under Sulla, displaying much cruelty during the proscription. He governed Roman Africa in 67 B.C., and on his return conspired to seize the consulship. The conspiracy was defeated by Cicero, who was then consul. Cicero's orations against Catiline are among his greatest efforts.

Catkin Crowded spike, usually pendulous, bearing small, unisexual flowers protected by scale-like bracts instead of petals and sepals. Botanists call it an amentum. During flowering time they are seen on some British forest trees, including the birch, alder, oak, beech, hazel, hornbeam, poplar and willow.

Catmint Flowering plant seen in British gardens. Known botanically as *nepeta cataria*, it bears white flowers which grow in dense whorls. The plant is aromatic and attracts cats, hence its name. Other kinds of catmint grow in warmer countries and bear coloured flowers.

Cato Marcus Porcius. Roman statesman, general and writer. Born at Tusculum he became in turn quaestor, aedile, praetor and, in 195 B.C., consul with Flaccus. He served in Africa during the second Punic war, and held commands in Sardinia and Spain. In 184 he was chosen censor, and in that office he tried to restore the simple manners and purer morals of an earlier age. Known also for his enmity to Carthage, he coined the famous phrase *Delenda est Carthago* (Carthage must be destroyed). He died in 149 B.C. at 85. Cato wrote a famous book on agriculture, *De Re Rustica*.

Cato's great-grandson, also Marcus Porcius Cato, was a famous Roman statesman and soldier. He was among the enemies of Julius Caesar and during the civil war joined the party of Pompey. He committed suicide at Utica in 46 B.C.

Cato Street Conspiracy

Plot to murder British ministers in 1820. Arthur Thistlewood, a revolutionary concerned in other projects during the reign of George III., conceived a plan for assassinating Lord Castlereagh and his ministerial colleagues at a dinner in Grosvenor Square, London, on Feb. 23. Arms were collected in a hired rendezvous in the neighbouring Cato Street. Thistlewood and his colleagues were arrested beforehand, and he and four other were executed.

Cat's Ear Popular name for a genus of composite plants (*Hypochaeris*). Inhabiting Europe, W. Asia and N. Africa are 30 species. Some of them, such as the common cat's ear (*H. radicata*), which is found throughout Britain, have yellow heads.

Cat's Eye Gem stone which when cut convexly shows yellowish opalescence resembling that reflected in a cat's eye. The chrysoberyl, or true cat's eye, has a white gleam. Occidental cat's eye, also found in Ceylon, is softer, a variety of quartz containing asbestos fibres. S. African cat's eye is a bluish stone with crocidolite fibres.

Catskill Mountain range in New York State, U.S.A. Situated west of the Hudson, it belongs to the Alleghany Plateau and has well-timbered uplands rising to 4200 ft. in Slide Mt. It is the scene of Rip van Winkle's reputed adventures.

Catskill is a small town on the Hudson, 30 m. from Albany. The Catskill aqueduct is a wonderful piece of engineering. It carries water from the Ashoken Reservoir to New York.

Cat's Tail Popular name for the club rush or reed mace (*Typha*). Growing throughout Britain, the broad-leaved has brown spikes from 6 to 12 in. long, the narrow-leaved being smaller.

Cat's-tail, or timothy grass (*phleum*), is a useful fodder plant, with dense cylindrical spikes. The name also denotes cirrus cloud, when curling into brush-like filaments.

Cattaro Seaport and city of Yugo Slavia, also called Kotor. It is on the Gulf of Cattaro, an arm of the Adriatic. During the Great War the Austrians used the port as a naval base. Cattaro belonged to Venice before becoming Austrian in 1814. In 1919 it was given to Yugo Slavia. Pop. 6000.

Cattegat Arm of the sea, between Sweden and Denmark. Northwards it connects through Skagerrak with the North Sea and southwards through the Sound, the Great and Little Belts with the Baltic. About 150 m. long its greatest width is 88 m.

Catterick Village of Yorkshire. The Roman Cataractonium, it stands on the Swale, about 5 m. from Richmond. Near it the War Office has a large camp, made during the Great War, and there is a racecourse.

Cattle Cows and oxen used agriculturally for supplying beef, milk or labour. Most European strains descend from the extinct aurochs, the first domesticated breed in Britain being the Celtic shorthorn. Among English breeds shorthorns have provided high-priced pedigree stock the world over. Herefords are now the chief beef yielders on N. American ranches. Famous milkers are Devons, Ayrshires, Jerseys and Guernseys. Other Scotch, Welsh and Irish strains are appreciated. Great continental milkers are Dutch, Swiss, Simmenthal, Norman, Breton and Danish.

Cattwater Opening of Plymouth Sound. Covering about 200 acres, it is to the east of Plymouth, forms the estuary of the Plyn, and can accommodate large vessels.

Catullus Gaius Valerius. Roman poet. Born at Verona, he usually resided quietly in his villas on Lake Garda or at Tivoli. His 116 poems, of varying metre, cover the closing eight years of his life. Many were inspired by P. Clodius Pulcher's sister Clodia, whom he entitled Lesbia; others concern men of the time, as Caesar and Cicero. He died in 54 B.C.

Caucasia District between the Black and Caspian Seas. Northern Caucasus comprises autonomous republics, provinces and areas in Soviet Russia, including Daghestan. In Transcaucasia are the Soviet Republics of Azerbeijan, Armenia, and Georgia, with Abkhasia, Adjaria and S. Ossetia. This southern region covers 74,105 sq. m., with nearly 6,000,000 people.

Caucasus Mountain range between Europe and Asia. It

stretches almost from the Sea of Azov along the northern shore of the Black Sea to the Caspian Sea, nearly 1000 m. Its breadth varies from 30 to 140 m. and the highest point is Mt. Elburz (18,465 ft.), but there are other heights over 12,000 ft. and several over 15,000. The district is rich in minerals.

Caucus American term for a meeting of party managers to select candidates for election. Lord Beaconsfield used it satirically of the Liberal 600 organised by Joseph Chamberlain at Birmingham in 1878.

Caul Woman's close-fitting, network cap worn in Europe in the 16th-17th centuries; hence a piece of the foetal membrane or amnion which sometimes encompasses a child's head at birth. Byron was so born. A caul was deemed an infallible and transferable safeguard against drowning.

Cauliflower Variety of cabbage and a popular vegetable for the table. Its flowers have been mostly condensed while young into a cluster forming a succulent white head. Its flower-stem is shorter, fleshier, whiter, more compact and more delicately flavoured than in broccoli. It was apparently developed in the Mediterranean basin, where it still grows luxuriantly, and came thence, traditionally from Cyprus, to England in the 16th century.

Causerie Familiar talk. The word was used by Sainte-Beuve for the weekly articles he contributed to Paris newspapers for twenty years from 1849, as *Causeries du lundi, Nouveaux lundis*, etc.

Causeway Road or path raised above ground level across marshy or low-lying land. It may be formed by rammed earth, stones, timber, brushwood or the like, and be used for crossing a ford or traversing an embankment.

The term describes also the paved military roads of Roman Britain. The **Giant's Causeway** in Northern Ireland is famous.

Caustic Substance having the power of destroying animal tissues by chemical action. Such substances are used in surgery in local applications for germ-infected bites, as well as for cancerous and gangrenous conditions. Lunar caustic (silver nitrate), caustic soda, potash and lime, and carbolic acid are examples.

Cautery Instrument for burning bodily tissues. The red-hot poker of primitive surgery, used for arresting arterial bleeding after amputation, has become refined into Paquelin's thermocautery for removing growths, like warts, Corrigan's button for applying counter-irritation, and the galvanocautery. The instrument has a steel or platinum head, and the heat is usually produced by electricity.

Cavalry Body of soldiers who fight on horseback. Cavalry were used in warfare in very early times. The horsemen of the Bible were cavalry and cavalry were also used by Persians, Carthaginians and Romans.

The first great age of cavalry in warfare, however, was in mediaeval times. Knights, with their heavy armour, could only move on horseback. By forming themselves into a compact mass they could crush down hostile infantry, and as they could only be checked by other horsemen similarly armed, the battles of the age of chivalry were between bodies of knights, with infantry playing a secondary part. The supremacy of cavalry was challenged by the English archers, notably at Crécy, while the final blow was given by the invention of firearms.

Cavalry, however, had still a great part to play. Freed from the weight of their armour, horsemen were used with great effect to ride together against slightly demoralised troops. In the S. African War mounted infantry took their place, and against trained European troops there was little use for them in the Great War.

In the British Army the cavalry are a distinct branch, and there is a school for them at Netheravon. They are divided into regiments, each about 500 strong, called Hussars, Lancers, Dragoons or Dragoon Guards. In addition, there are the Household Cavalry, composed of Life Guards, and Royal Horse Guards. The yeomanry form a cavalry reserve.

Cavan County of the Irish Free State. An inland county of Ulster, it covers 730 sq. m., with hills in the north. Cavan is the county town. The chief rivers are the Erne and the Blackwater. Pop. (1926) 82,452.

Cavan Market town and urban district of Co. Cavan, Irish Free State, also the county town. It is 85 m. from Dublin on the Gt. Southern Rly. Pop. 3000.

Cavan Earl of. Irish title held by the family of Lambart. In 1617 Sir Oliver Lambart, Governor of Connaught, was made a baron, and in 1647 an earl. His descendant, Frederick Rudolph Lambart, who became the 10th earl in 1900, was born Oct. 16, 1865. Educated at Eton, he entered the Grenadier Guards and served in S. Africa. In the Great War he commanded the Guards Brigade and the Guards Division on the Western Front, and later the 14th Corps there and in Italy. From 1920-22 Cavan was commander-in-chief at Aldershot, and from 1922-26 chief of the Imperial General Staff. In 1929 he became captain of the Gentlemen-at-Arms.

Cave Hollow place in the earth. Usually of natural origin, it may occur in limestone regions where percolating rain water has dissolved the carbonate of lime, in sandstone cliffs once exposed on a seashore, or in volcanic regions where the upper crust of a flowing lava has solidified. The mammoth caves of Kentucky are the largest known. When occurring in hillsides with natural outlets they have from the earliest times been utilised for human occupation. The fossil bones and implements unearthed in them have enabled students to reconstruct the manner of life and cultural development of the men, called cave men, who lived in them.

Cave Viscount. English politician. George Cave was born in London, Feb. 23, 1856, and educated at the Merchant Taylors School and St. John's College, Oxford. He became a barrister, entered Parliament as Unionist M.P. for the Kingston division in 1906, and in 1915 he was made Solicitor-General. From 1916-18 he was Home Secretary. In 1918 he became a Lord of Appeal and a viscount, and he was Lord Chancellor 1922-28, except for the few months of the first Labour ministry. He died March 29, 1929.

Caveat Latin word meaning "let him beware." It is used in the law courts for an order forbidding a thing to be done without notice given. Thus a person who has good reason for preventing someone else from proving a will can obtain a caveat, which orders the person to take no further steps in the matter without giving notice.

Cavell **Edith Louisa.** British nurse. Born in Norfolk, Dec. 4, 1865, she was trained at the London Hospital, became matron of a medical institute in Brussels, and during the German occupation harboured wounded and refugee soldiers, and aided their escape into Holland. Denounced by a renegade, she was tried by court martial Oct. 7, 1915, and, despite neutral mediation, was shot five days afterwards. Her remains now repose in Norwich Cathedral; a memorial statue stands in St. Martin's Lane, London.

Cavendish Name of the English family whose head is the Duke of Devonshire. It comes from Cavendish in Suffolk where the early Cavendishes lived. Sir John Cavendish, a judge, was beheaded by the peasants in 1381. His descendant, Sir William Cavendish (died 1557), obtained large grants of land when the monasteries were dissolved, and married the rich Countess of Shrewsbury called Bess of Hardwick. This brought the Derbyshire estates, including Chatsworth and Hardwick, into the family. Their son, William Cavendish, was made Earl of Devonshire in 1618, and the 4th earl was made Marquess of Hartington and Duke of Devonshire in 1694. The duke also bears the title of Earl of Burlington. Another branch of the Cavendish family bears the title of Baron Chesham.

Cavendish **Henry.** English chemist and physicist. Born at Nice, Oct. 10, 1731, a nephew of the 3rd Duke of Devonshire, he studied at Cambridge, and became an F.R.S. in 1760. He devoted himself to researches in electricity, heat and the composition of gases. He discovered hydrogen 1766, determined the constituents of water and atmospheric air, and experimentally combined oxygen and hydrogen into water, before 1781. He calculated experimentally the density of the earth, 1798. He died at Clapham, March 10, 1810.

Caversham Suburb of Reading, on the Oxfordshire side of the Thames, opposite Reading proper, with which it is connected by a bridge rebuilt in 1926. The chief building is the church, much restored. Here are the Oratory School, which was removed from Birmingham in 1922, and Queen Anne's school for girls, founded in 1698. Caversham was included in Reading in 1911.

Caviare Sturgeon roe prepared for table. The Russian name is ikra. The eggs are sifted out of the ovaries and lightly salted. Caviare is served as a hors d'oeuvre or savoury, spread on toast. The choicest is that from the sterlet, freshly prepared. Coarser varieties come from Scandinavian and N. American fishing grounds.

Cavitation Formation of partial vacuums or air-cavities within a liquid when undergoing rapid agitation. The term denotes specifically the phenomenon observable when the propellers of ships are driven in water at excessive speeds. The effect is to churn the water into masses with independent movement, the partial vacuum causing reduced thrust and loss of efficiency.

Cavour **Camillo Benso.** Count. Italian politician. Born in Turin, Aug. 10, 1810, of noble family, he began to take part in political life in 1847. In 1848 he was elected to the Parliament of Sardinia, and in 1850 was made Minister of Agriculture. He became Premier in 1852, and was responsible for sending Sardinian troops to the Crimea, by which he earned the goodwill of Britain and France. In 1859 war broke out between Sardinia and Austria, and with French help the Sardinians were victorious. The treaty of peace did a good deal to prepare the way for a united Italy. Cavour, who had opposed the republican zeal of Mazzini and the military ardour of Garibaldi, as likely to hinder rather than aid the desired union, died June 6, 1861.

Cavy Genus of small S. American rodents (*Cavia*). Several species honeycomb the continent with their burrows. They include the restless cavy of Brazil and Uruguay, and the rock cavy. The Cutler's cavy of Peru, domesticated by the Incas, was brought to 16th-century Europe by the Dutch, and is now familiar as the guinea pig.

Cawdor Village of Nairnshire. It is 5 m. from Nairn. In its castle, Macbeth, the Thane of Cawdor, is supposed to have lived. The present castle, the property of the Campbells, dates from the 16th century.

Cawdor **Earl.** Title held since 1827 by the family of Campbell. Sir John Campbell, a son of the 2nd Earl of Argyll, married about 1510 the heiress of Cawdor Castle and estate, and here he and his descendants lived for some three centuries. In 1796 John Campbell was made Baron Cawdor, and in 1827 his son was made an earl. Frederick, the 3rd earl, was M.P. for Carmarthenshire, 1874-85, and First Lord of the Admiralty in 1905. He was (1895-1905) chairman of the G.W. Rly., and died Feb. 5, 1911. The earl's eldest son is called Viscount Emlyn. The family estates are chiefly in Pembrokeshire and Carmarthenshire.

Cawnpore City of India. The capital of the Cawnpore district of the United Provinces, it is situated on the Ganges 40 m. S.-W. of Lucknow. It is a busy railway junction, a military station with large factories for army equipment, and a centre of the grain trade. A church and memorial mark the massacre by Nana Sahib of surrendered Europeans during the Indian Mutiny, 1857. In 1931 there were riots here. Pop. (1931) 243,755.

Caxton **William.** English printer. Born in Kent, he was apprenticed in 1439 to a London mercer. In 1441 he went to Bruges, then to Cologne where he learned printing, and in 1474 he was responsible for *The Recuyell of the Histories of Troye*, the first book printed in the English language. The second was *The Game and Playe of the Chesse*, also printed by him at Bruges. In 1476 Caxton returned to London and set up a printing press at Westminster, the first in England. Here he printed 96 books, including *The Canterbury Tales*, *Morte d' Arthur*, and *The Myrror of the World*, the first to be illustrated. He died in 1491 and his business was continued by his assistant, Wynkyn de Worde.

CAXTON HALL, in Caxton Street, Westminster, was built in 1882 for a town hall. It is now used for public meetings and offices.

Cayenne Capital and only seaport of French Guiana, S. America. Situated on the island of the same name, it has convenient administrative buildings overlooking a fortified harbour. It exports gold derived from placer mining, besides phosphates, balata, rosewood and other forest products. It is the official headquarters of the French penal settlement at the Ile du Diable, 30 m. to the N.W. Pop. (1931) 10,744.

Cayenne Pepper Condiment. It is prepared from the

dried and pounded pods of several species of *Capsicum*, a native of Central and S. America. Some species were brought to Europe in the 16th century. The unpounded pods of the common annual kind, and of another, called goat pepper, grown in the East Indies, are the chillies used for vinegar and pickles. The pungency arises from an active principle, capsicin, which is utilised in pharmacy as a counter-irritant.

Cayman Genus of Central and S. American reptiles of the crocodile family (*Caiman*). The five species are distinguishable from the Mississippi and Chinese alligators in having no bony septum to the nose. The great Amazonian cayman reaches a length of 20 ft.

Cayman Islands Island group of the W. Indies, a British possession. Three in number, the islands are governed from Jamaica, which is some 200 m. to the S.E. The inhabitants engage in turtle fishing and coconut planting, and cattle, ponies and hides are exported. Georgetown is the capital. Pop. 5650.

Cecil Name of a famous English family. It originated at Stamford with a certain David Cecil who was an M.P. in the time of Henry VIII. His grandson was Lord Burghley, who left two sons. The elder was made Earl of Exeter and the younger Earl of Salisbury, and from them descended the two branches of the family represented by the Marquess of Exeter and the Marquess of Salisbury.

Cecil **Lord Hugh.** English politician. Hugh Richard Heathcote Gascoyne Cecil, youngest son of the Marquess of Salisbury, was born Oct. 14, 1869, and educated at Eton and University College, Oxford. In 1895 he was elected M.P. for Greenwich, a seat he retained until 1906. In 1910 he was chosen M.P. for the University of Oxford, and was re-elected at succeeding elections, including 1935. He was made a privy councillor in 1918. Although never in office, Lord Hugh Cecil has dominated the House of Commons as an orator.

Cecil Viscount. English politician. Edgar Algernon Robert Gascoyne Cecil was born Sept. 14, 1864, being the 3rd son of the 3rd Marquess of Salisbury. He went to Eton and University College, Oxford, and became a barrister. In 1900 he was made a K.C., and in 1906 he entered Parliament as Unionist M.P. for East Marylebone. In 1912 he was elected for the Hitchin division and he retained the seat until 1923. In 1915 Lord Robert Cecil, as he was known, became Under-Secretary for Foreign Affairs in the coalition, and from 1916-18 he was Minister of Blockade, resigning rather than consent to the disestablishment of the Church in Wales. In 1923-24 he was Lord Privy Seal, and in 1924-27 Chancellor of the Duchy in the Unionist ministry. In 1924 he was made a peer, as Viscount Cecil of Chelwood. Lord Cecil was perhaps the leading English advocate of the League of Nations, and this led to his retirement from office in 1927.

Cecilia Italian saint and martyr. It is said that Marcus Aurelius ordained her death, about A.D. 176. Another legend says she was martyred under Alexander Severus, about 230. The patron saint of music and the blind, she has inspired many masterpieces in painting and music, including Handel's setting of Dryden's "Ode for St. Cecilia's Day."

Cedar Name of various evergreen, coniferous trees, pre-eminently of the genus, *Cedrus*. The stately cedar of Lebanon, *C. libani*, acclimatised in England, rises sometimes to 80 ft. with wide-spreading horizontal branches. The silver cedar, *C. atlantica*, grows in the Atlas; a third species, *C. deodara*, is the Himalayan deodar. Spanish cedars, and those used for cedar pencils, are *Juniperus*; that used for cigar boxes is a *Cedrela*.

Cedron Pear-shaped fruit of a tropical American tree (*Simaba cedron*). A native of Colombia and closely allied to the Jamaican bitter ash which supplies quassia, this fleshy, lemon-sized fruit contains a bitter, almond-shaped nut which is a remedy for snake bite, intermittent fever and hydrophobia.

Ceiling Interior overhead surface of an apartment. Some ceilings are boarded; others utilise the roof beams and joists to emphasise panelled patterns. The concealment of the roof timbers by horizontal or coved surfaces found expression in the painted ceilings of the Italian Renaissance, introduced into France, and into England by Verrio and others. This principle, facilitated by the use of plaster, was especially utilised in the 18th-century low-relief classical mouldings of the Adam brothers. Painted ceilings reappear with marked effect in some modern architectural work. Plaster mouldings, notably in reinforced construction, have been replaced by fire-resisting sheet steel stampings.

Celandine Name of two perennial yellow-flowered herbs. The greater (*chelidonium majus*), of the poppy order, with much-divided leaves, bears umbels of four-petalled flowers. The lesser (*ranunculus ficaria*), of the buttercup order, is a short, decumbent plant with heart-shaped, scalloped leaves and stalks bearing single flowers with from eight to twelve petals.

Celebes Island of the E. Indies. Separated from Borneo by the Macassar Strait, it presents a contortion of four long peninsulas covering 73,160 sq. m. The interior is mountainous; some volcanic peaks exceed 10,000 ft. Besides mineral wealth it yields timber, rattans, nutmegs, spices, copra, hides, fish and tortoiseshell. The inhabitants are Malayo-Polynesians. Except in the Menado residency, the island government is centred in Macassar. It was discovered in 1512, by the Portuguese, but was taken in 1660 by the Dutch. In 1933 pottery dating to 2500 B.C. was discovered on the island. Pop (1930) 3,087,335.

The **Celebes Sea** is a division of the Pacific Ocean, between Celebes, Borneo and the Philippine Islands.

Celeriac Turnip-rooted celery. This form of the vegetable, preferred to celery in France and Spain, is treated as a biennial, and raised untrenched and unblanched. The root and stems are sliced for salads or cooked as a substitute for the turnip.

Celery Biennial umbelliferous herb (*Apium graveolens*). A native of Europe, W. Asia and N. Africa, it grows wild in British marshlands near the sea, having an acrid, poisonous flavour. It has long been cultivated as a table vegetable, being raised from seed annually and finally planted out in trenches. By earthing up the heart and stems are blanched, and are eaten uncooked. Celery is also stewed and used in soups. There are white and red varieties.

Celestine Name of five Popes. The most important are Celestine I. (422-432), the first Pope who took a direct

interest in the British and Irish Churches, and Celestine V. who resigned in Dec., 1294, after a reign of a few months, and died May 19, 1296. Before becoming Pope, he founded an order called the Celestines, now extinct.

Celibacy State of being unmarried. Adopted by Buddhist monks and Palestinian Essenes, it was continued by 3rd-century Christian hermits; in monastic communities the celibate vow was essential.

The Eastern Church permits marriage to ordinands, but not to ordained clergy. In the Roman Catholic Church clerical celibacy was ordered from time to time. The present rule prohibiting marriage among the clergy dates from the Council of Trent, 1563. In the Church of England the marriage of the clergy was permitted at the Reformation.

Cell In biology, the structural unit of all living organisms. Formed of a substance, protoplasm—nowadays called cytoplasm—it is usually separated from its neighbours by a membranous wall, usually better defined in plants than in animals. The cytoplasm normally contains a nucleus, charged when active with a definite number of rodlets called chromosomes bathed in a complex nuclear sap. The most elementary organisms, conveniently called unicellular, are not necessarily comparable with the separate cells of more highly organised, multicellular beings. In these the physiological functions of life and reproduction are fulfilled by modified cells discharging specialised duties.

Cell In electricity, single jar or unit used for interchanging chemical and electrical energy. Simple voltaic cells produce continuous electric currents from differential electrodes, *e.g.*, copper and zinc held in electrolytes or decomposable solutions. Such cells joined in series become primary batteries; on the Leclanché type are based dry cells. Conversely, electrolytic cells serve for decomposing solutions when their constituents are required industrially, as in electroplating.

Cellini **Benvenuto.** Italian artist. Born in Florence, Nov. 3, 1500, he devoted himself especially to the goldsmith's art. Reaching Rome in 1519 he practised his craft there for 20 years. In Paris in 1540, he produced the superb silver salt cellar now in Vienna, and a bronze high-relief, the Nymph of Fontainebleau, now in the Louvre. Returning to Florence, he produced the bronze casting of Perseus, with the head of Medusa, still there. Much of his work is lost. His *Autobiography* is a marvellous record of an untameable and self-applauding temperament. He died in Florence, Feb. 13, 1571.

Celluloid Artificial, solid and highly inflammable substance made by mixing nitrated cellulose with camphor or a substitute. First produced in 1856 under the name xylonite, it was developed in New Jersey. Unaffected by the atmosphere, water or dilute acids, it becomes plastic at 75 deg. C., and can then be moulded. At ordinary temperatures it is turned, sawn, cut or drilled, being used for cutlery handles, pianoforte keys, combs, accumulator cases and photographic films. When coloured it simulates tortoiseshell, coral, amber and malachite.

Cellulose Essential constituent of the wall membrane of all vegetable cells, and therefore the structural basis of the plant world. A white, opaque carbohydrate insoluble in water, isomerous with starch, it is nearly pure in the fibre of cotton, linen and hemp. Boiling with dilute sulphuric acid changes it into dextrose. Nitric acid converts it into nitrocellulose, the base of celluloid, collodion and gun-cotton. With caustic soda and carbon disulphide it becomes the viscose which yields artificial silk.

Celt Generic name used variously to designate a racial type and a language group. To classical writers the Celts were tall, blue-eyed, fair-haired tribes N. of the Alps, who passed southward during the Bronze Age into Gaul, and fanned out into Spain, Italy, Greece and Asia Minor. Their Indo-European speech developed two types, which were acquired by peoples of other racial origins who preserve them to this day as the Q-Celtic (Gaelic-Erse-Manx), and P-Celtic (Breton-Welsh) languages respectively. The dark-complexioned, so-called black Celts in Ireland have no racial connection with the Celtic type.

To-day the word Celts is used for the peoples, not English, who inhabit Scotland, Ireland and Wales, and have their own languages.

Celt Prehistoric and primitive axe-head with cutting edge at the broader end. This implement, developed in neolithic times, was imitated in the early Metal Age in cast copper or bronze.

Cement Composition which is plastic at one level of temperature or moisture and then sets or hardens. Stucco is calcined gypsum in such forms as Keene's, Parian and plaster of Paris cement. The term predominantly denotes hydraulic compositions used in modern engineering. In the 18th century septarian nodules containing clay and carbonate of lime were calcined and ground into cement. In 1824 Joseph Aspdin of Leeds calcined an artificial mixture of clay and limestone, ground the clinker, and called it Portland cement, because when set it resembled Portland stone. The process is now highly standardised under a British standard specification. The mixture is burned in huge rotary cylinders, ground extremely fine, and used in making concrete for structural foundations, bridges, tanks, buildings and even ships. Reinforced steel enormously enhances its utility. Aluminous cement is used for quick setting.

Cementation Metallurgical process effecting change in one of two substances heated together. Iron bars heated in powdered charcoal gradually change into steel. Cast iron decarbonised in powdered red-oxide becomes malleable cast iron. Gold was formerly separated from silver by cementation with salt and brick dust, which converted the latter into silver chloride.

Cemetery Piece of ground, not attached to a church, set apart for the burial of the dead. Among famous cemeteries are Abney Park, London, Père Lachaise, Paris, and Glasnevin, Dublin.

It is usual in cemeteries to consecrate part of the ground for Anglicans, others for Nonconformists, Roman Catholics and Jews.

Cenci **Beatrice.** Roman lady. The daughter of Francesco Cenci, she is the central figure of Shelley's tragedy *The Cenci*. With her stepmother and her brother she murdered her father, and for this crime the three were beheaded, Sept. 10, 1599. Shelley's representation of her as the victim of her father's incestuous passion has been disproved.

Cenis Mountain of the Alps between France and Italy. Across it is a

pass, nearly 7000 ft. high, which has been one of the chief routes to Italy for over 2000 years. A carriage road over it was made by order of Napoleon. Beneath is a tunnel, 7½ m. long, opened in 1871. This is on the line from Lyons to Turin.

Cenotaph Name given to an empty tomb used as a memorial to the dead. The Greeks erected cenotaphs, and a number were built after the Great War. The chief is that in Whitehall, London. It was designed by Sir E. Lutyens and unveiled by the King on Armistice Day (Nov. 11, 1920). It bears the inscription "The glorious dead."

Censor In Rome a magistrate who took the census or record of the people and their property. There were two censors, and they were first appointed in 443 B.C. Gradually other powers were given to them. They began to look after the finances, to care for the temples and to forbid practices regarded as harmful to the State.

For long the Church had a censorship of books, and to-day the Roman Catholic Church has censors who place books they regard as harmful on the Index. In Great Britain there is no censorship of literature or of the Press; but persons can be punished for publishing indecent or libellous matter. There is a censorship of the theatre and no play can be publicly produced unless it has been passed by the examiner of plays. There is a film censorship by an unofficial body appointed by the trade.

In 1928 the Irish Free State set up a board of censors with power to forbid the publication of anything considered immoral. In time of war censors are invariably appointed and all written and printed matter must be submitted to them before being published. Letters from the seat of war are also censored.

Census Official estimate of the number of people in a country and other particulars about them. Censuses of the Jews, Romans and other peoples were taken in ancient times, but there are no reliable figures for the modern world before about 1800. To-day a census is taken in most civilised countries every five or ten years; in Great Britain one has been taken every decade since 1801, usually in April. In 1921, for special reasons, it was taken in June; the particulars asked for were the name, age, sex, occupation, birthplace, marital condition and nationality. The results are published in blue books. In Ireland the census was taken in 1926. In Great Britain and Northern Ireland a census was taken on April 26, 1931.

A census of production is an estimate of the amount and value of a country's output of wealth. First taken in the United States, one was taken in Great Britain in 1907 and another in 1924. For 1924 the output of goods was valued at £3,853,000,000 against £1,698,000,000 in 1907, an increase due largely to higher prices. Another census was taken in 1930.

Cental Measure of weight used in the United States and to some extent in Canada and Great Britain. It equals 100 lb.

Centaury (*Erythraea Centaurium*). Annual herb. It is about 12 in. in height, with oblong leaves joined at the base growing in pairs. The rose-coloured flowers are funnel shaped and borne in a terminal cluster on an erect stem. The centaury flowers from early summer to September.

Centavo Monetary unit used in Portugal, Mexico and most of the countries of Central and S. America. It is minted in silver coins of 5, 10, 20, 25, 40 and 50 centavos. In Portugal 100 centavos go to the escudo, in Mexico 100 to the dollar, in Argentina 100 to the peso.

Centenarian A person who reaches the age of 100. In 1911 there were 466 centenarians in the British Isles, 292 being women. In 1921 there were only 145, but the figures for Ireland were not then included.

Centigrade Type of thermometer invented by Anders Celsius, a Swede, in 1742. In it the scale is divided into 100 degrees. The lower point 0 deg. C. is the melting point of ice and the higher point 100 deg. C. the temperature of steam given off by boiling water.

Centipede Animal belonging to the Myriapoda. They resemble insects, save that they are without wings, and are remarkable for the number of their legs, some having over 100. The body is divided into segments, and in all these, except the last two, are two legs. They possess claws which contain poison and with these the tropical species can give a dangerous, perhaps fatal, wound. The bite of the British species is not dangerous.

Central America Stretch of land connecting N. and S. America or Mexico and Colombia. It contains six little republics, Guatemala, Costa Rica, Nicaragua, Honduras, Salvador and Panama, and is pierced by the Panama Canal. British Honduras is in the N.-E. corner. The isthmus is about 1000 m. long and varies in breadth.

From its discovery in 1502 until 1821 Central America was a Spanish possession. After 1821 it became independent, and was for a short time the United States of Central America. This union was soon broken and separate republics formed, the last being Panama, created in 1903. Other efforts to form a single state also failed, and there were constant wars between one and another of the republics. In 1923 the republics signed a general treaty of peace. *See* COSTA RICA, HONDURAS, SALVADOR, etc.

Central Australia Name of a territory of Australia. It dates from 1927 when Northern Australia was divided. Alice Springs is the capital and the territory covers 236,400 sq. m.

Central Criminal Court London court of law. It is in the Old Bailey on the site of old Newgate Prison, and was set up in 1834. Here serious criminal cases from the London and surrounding districts are heard. It thus corresponds to the assizes held outside the London area. The judges are the lord mayor, recorder, common serjeant, city aldermen and judges of the city court, but usually a judge of the high court presides. The present building was completed in 1905 at a cost of £250,000.

Central Powers Name given during the Great War to Germany and Austria, and their allies.

Central Provinces Name of one of the provinces of India, in full the Central Provinces and Berar. The British districts cover 82,149 sq. m., Berar 17,789 sq. m., and the feudatory states 33,112 sq. m. Nagpur is the capital and Jubbulpore the next largest city. Before 1853 much of the province consisted of the Kingdom of Nagpur. It was formed in 1861 and Berar

was added in 1902. It is under a governor and a legislative council.

Centre Name of a political party. It was first used in this sense at the time of the French Revolution. When the National Assembly met the groups were classified as left, right and centre according to where they sat. In the German Reichstag the centre has been the moderate party.

Centre Term having a number of special applications in various sciences. In physics an example is the centre of oscillation of a pendulum, the point at which, if the weight of the body were concentrated, the pendulum would continue to vibrate in the same intervals of time.

In optics, the centre of a lens, if a thin one, is the point at which the axis passes through the lens. In engineering, the term occurs in centre chucks and centre plates.

Centre Board Board or iron plate used instead of a fixed keel in small sailing boats. When the use of a keel is required to give stability, the centre board can be lowered through the bottom of the vessel. It is also called a drop keel.

Centre of Gravity Point fixed relative to a body at which the whole weight of the body may be supposed to act; if the body were suspended therefrom it would be balanced in all positions. The term "relative to" is used, as the centre of gravity is not necessarily within the body, but may lie outside it. In the case of a circular ring or hoop, the point lies at the centre of the circle and therefore not in the substance of the ring, but fixed relative to it. In a parallelogram the point is at the intersection of the diagonals, and in a uniform rod at the middle.

Centrifugal Force Term given to the force which, when a body is moving in a curved path, is equal but opposite in direction to the centripetal force keeping the body in its curved path. Centrifugal force is employed in separators for butter making, drying machines and concentrators in mining.

Centurion Officer in the ancient Roman army in command of a hundred men, known as a centuria, the sixtieth part of a legion.

Cephalic Index Term used to denote the size and class of human skulls. It is anthropometric ratio of breadth to length of head. Retzius devised it, about 1842, by multiplying by 100 the number representing the greatest breadth above the ear level, ascertained by calipers, and dividing this by the greatest length from the glabella, or point above root of nose, to the back of the occiput. The cranial index of the skull is one or two units less than the cephalic index of the living head. Persons from 75 to 80 are medium-headed, below long-headed, and above broad-headed.

Cephalonia Largest of the Ionian islands. Situated off the mouth of the Gulf of Corinth, it forms with Ithaca a monarchy of Greece. It produces currants, olives, figs and oranges. It is 31 m. long, covers 348 sq. m., and Argostoli is the capital. Mt. Ainos, 5315 ft., is the highest point.

Cephalopoda Class of marine, free-swimming molluscs with muscular tentacles and two or four plume-like gills. The two-gilled order, having no external shell—the paper shell of the female argonaut is abnormal—has two sub-orders. These are the eight-armed octopoda, like the common octopus, and the ten-armed decapoda, with internal shells—squids with horny pens, cuttle fishes with calcareous bone, and spirulas with coiled tubes. Of the four-gilled order, with external shells, only the pearly nautilus survives; they were multitudinous geologically, notably the ammonites.

Ceram Island of the Molucca Archipelago. Also called Sirang. Situated 100 m. W. of New Guinea, it is 200 m. long and 50 m. broad. With a soil of crystalline and eruptive rocks, its densely forested interior attracts game hunters. The interior is peopled by head-hunting Papuan stocks. Sago, tobacco, rice, coconut and sugar are grown by the Malay coast populations. It belongs to the Netherlands and is administered from Amboyna. Its area is 6600 sq. m. Pop. 105,000.

Ceramics Technical term denoting the study of the whole potter's art in every age and in every form, whether it be porcelain, stoneware, terra cotta or earthenware.

Cerastes Genus of vipers ranging from Algeria to Arabia and Syria. The horned viper, *C. cornuta*, about 2 ft. long, has in the male—sometimes in the female—small horn-like processes above the eyes. Its unprovoked attack may cause death within 30 minutes. The hornless *C. vipera* is the reputed asp of Cleopatra.

Cerberus In Greek mythology, the dog which guards the portal of the underworld. He was represented with two, three or many heads, and with a snake encircling him. Hercules' twelfth labour was to fetch him to earth, and take him back again. One visitant, according to Virgil, sought to pacify him with a sop, and so comes the phrase "a sop to Cerberus."

Cerdic Saxon invader and king. According to the *Anglo-Saxon Chronicle* he landed in England in 495 with his brother Cymric and a band of warriors. They defeated the Britons at Charford in Hampshire and made themselves kings of the district.

Cereal Grass cultivated for edible grains. As the chief source of breadstuffs cereals are of primary importance for human sustenance. They contain predominantly starch, besides proteins and vitamins. The outstanding cereals of temperate regions are wheat, barley, oats and rye, with an annual world harvest of 1425 million quarters. Among tropical cereals rice and millet are staple foods of hundreds of millions. Breakfast cereals are grains in puffed, shredded, flaked, granulated and other prepared forms.

Cerebration Action of the brain. Physiologists hold that molecular changes in the brain substance attend all mental processes in consciousness. In 1853 Dr. W. B. Carpenter, believing that these changes also continue automatically, called "unconscious cerebration" what Sir W. Hamilton had previously called "latent thought." It accounts, for example, for the sudden recollection of forgotten facts.

Cerebro-Spinal Fever Inflammation of the meninges or membranes investing the brain and spinal cord. It may occur sporadically, incited by tubercular or typhoidal microbes. The more malignant epidemic type,

going by such names as spotted fever, arises from a specific micro-organism called meningococcus, capable of entering the body through the nose. The direct injection into the membranes of a serum introduced by Flexner and Jochmann has resulted in great saving of life.

Ceres Largest and first discovered of the minor planets. It was observed by Piazzi at Palermo in 1801, in connection with an organised search for a planet that, according to Bode's Law, should intervene between Mars and Jupiter. Its diameter is 485 m. and it is invisible to the naked eye.

Ceres Roman goddess, regarded as identical with the Greek Demeter (*q.v.*).

Cerium Metallic element, its symbol is *Ce*, and its atomic weight 140. Iron-grey, malleable, ductile, tarnishing in the air, it is not found native, but is derived from its ores, the so-called rare earth minerals. Of these the most important is monazite, containing 35 per cent of cerium oxide and 8 per cent. of thorium oxide, both being used in incandescent gas mantles. The sparking substance of cigar lighters and shell-flight tracers, is ferrocerium, an iron alloy with cerium, 70 per cent. Cerium is used sparingly in pharmacy.

Cernavoda Village in Rumania. Situated on the Danube's right bank, almost directly between Bukarest and the Black Sea port of Constanza, it was chosen for the site of the Carol Bridge, built in 1896 for the railway connecting the capital and the port. This double bridge was strategically important because it was the only bridge across the Danube between Belgrade and the Black Sea. It was seized by Germano-Bulgarian forces in Oct., 1916.

Certificate Document for attesting or certifying facts. Any signed attestation of facts is a certificate, but the word is now almost invariably applied to official or semi-official documents, *e.g.*, medical certificates, examination certificates and certificates by auditors of accounts.

Other certificates are those issued by registrars to prove births, marriages and deaths. Copies of these can be obtained from Somerset House, London, or the General Register Office, Edinburgh.

Still another kind is the Savings Certificate (*q.v.*) first issued during the Great War.

Cervantes **Miguel de.** Spanish writer. Born at Alcala in Oct. 1547, the son of an apothecary, he lived for a time in Madrid and then went to Italy. In 1570 he became a soldier, was taken prisoner in 1576 by the Barbary pirates. Returning to Madrid in 1580, he next obtained employment as a collector of tithes. He died in Madrid, April 23, 1616.

A scholarly man, Cervantes wrote a great deal of verse, a number of dramas, and the *Exemplary Novels*, which give a good idea of the life of the time. He lives, however, by his immortal novel, *Don Quixote*, published in two parts in 1605 and 1615. In 1612 and again in 1620 it was translated into English by Thomas Skelton and it has since been translated into nearly every other language of the world. It tells of the extraordinary adventures of the Spanish knight, or hidalgo, Don Quixote de la Mancha.

Cesarevitch Name used in Russia before 1917 for the eldest son of the tsar. It is also the name of a race run at Newmarket in Oct. This was started in 1839 and was named after Alexander II., the Cesarevitch, who was then in England.

Cession Word originally meaning to yield under physical or moral persuasion. It is now applied to the vacation of, or retirement from, an office, the giving up of property or rights, and the handing over of possessions by one country to another.

Cessnock Town of New South Wales, Australia, railway terminus, about 25 m. from Newcastle, near an important coal field. Pop. (1911), 13,800.

Cestodes Scientific name for tapeworm family. Parasitic in intestinal canals of vertebrates, they usually pass their larval and adult life in different hosts. The mature worm throws out egg-bearing segments that pass out, and if swallowed by a specific animal the larval stage proceeds. The consumption of this contaminated food restores the worm to its specific host. Cestodes infesting man include those derived from beef, "measly" pork and freshwater fish. One species matures in dogs, after having lived its larval life in man.

Cetacea Order of aquatic mammals. Unrelated to fishes, they are lung-breathers, simulating fishes in having the fore-limbs converted into flippers, no external hind limbs, fin-like horizontal flukes instead of vertical tails, and dorsal fins of skin without internal bones. They possess layers of oily fat, blubber, and consume invertebrate sea food. The whalebone sub-order, with palates of horny plates, includes the right, Greenland and humpback whales. The toothed sub-order includes cachalot, bottlenose, grampus, dolphins, narwhal and porpoises.

Ceteosaurus Extinct dinosaurian reptile. Its fossil remains, found in the Jurassic oolites, persist into the Wealden beds of the cretaceous period. Examples found at Peterborough and elsewhere show it as a gigantic, small-headed, long-necked reptile, sometimes nearly 70 ft. long and 10 ft. high.

Cetewayo King of the Zulus. He became ruler in 1856 and king in 1872. Differences arose between him and the British authorities in Natal, which increased after 1877 when the Transvaal was annexed. The result was a war in which the Zulus were beaten and their king taken prisoner. After a visit to London in 1882, Cetewayo was restored to part of his kingdom. Almost at once, however, his enemies attacked him, and he was a fugitive on British soil when he died, Feb. 8, 1884. Dinizulu was his son.

Cettinje Town of Yugoslavia, capital of the former Kingdom of Montenegro. It is connected with its port, Cattaro, by a remarkable zig-zag road traversing the northern slopes of Mt. Lovtchen over a 3000 ft. pass. Little more than a walled village, it has a palace, a parliament house, museum and monastery. Pop. 5500.

Ceuta Seaport of Morocco. Opposite Gibraltar, it occupies a site near the classical Abyla, one of the pillars of Hercules. Originally a Carthaginian outpost, it passed to Rome, then to Portugal and in 1580 to Spain. It is now in the administrative province of Cadiz. The chief building is the cathedral in the old town. There is a railway line to Tetuan and steamboats connect with Algeciras. Pop. 24,000.

Cévennes Range of mountains in Central France, in the de-

partments of Lozère and Gard, and runs across the land for about 330 m. The name is also used sometimes to include neighbouring ranges. The highest point is Mont de Lozère (5650 ft.). Coal and other minerals are found and in the south, where are the Cevennes proper, are large forest areas.

Ceylon Island in the Indian Ocean. It has been a British crown colony since 1796, before which it was Dutch and still earlier Portuguese. It is 270 m. long and covers 25,500 sq. m. Colombo is the capital. Other places are Kandy, the old capital, and the seaports of Jaffna, Trincomalee and Galle.

Ceylon is mainly flat, but in the south there are mountains, the highest peak being 8326 ft. high. The island produces tea, cinnamon, rubber, copra and coconuts, as well as plumbago and precious stones. The British system of weights and measures is used and the unit of currency is the rupee. The island has a governor and an executive council. There is also a legislative council, partly elected. The demand for self-government led to the appointment in 1928 of a committee under the Earl of Donoughmore. The recommendations of this committee led to the establishment of a State council elected by adults, and a ministry responsible to it. Pop. (1931) 5,312,548, about half being Buddhists. The inhabitants are called Sinhalese.

Cézanne Paul. French painter. Born Jan. 19, 1839, his earlier work was influenced by Poussin and El Greco. Swayed by the contemporary tendencies represented by Manet and Pissarro, he sought to portray nature in the presence of subtle manifestations of light. Some of his choicest work is now in the Louvre. He died Oct 23, 1906.

Chablis Town of France. Situated on the Serein, 11 m. E. of Auxerre, it is the centre of a district producing vintage wines of excellent quality. The name is used in Britain for French still white wines. Pop. 3020.

Chaco District of S. America, usually called the Gran Chaco. Covering about 200,000 sq. m., it is partly in Argentina, partly in Bolivia and partly in Paraguay. A flat region, a good deal of it is desert, but there are forests and lakes.

Chad English saint. He became Bishop of York about 664, Bishop of the Mercians about 668 and died in 672. St. Chad made Lichfield into his bishopric where the cathedral is dedicated to him. His feast is kept on March 2.

Chad or Tchad. Lake of Africa. On the border of Nigeria, it covers 10,000 sq. m. in the dry season and perhaps double that area in the rainy one. The Chari River flows into it and it contains islands inhabited by tribesmen. Hippopotami, alligators, as well as fish of various kinds, live in the lake. It is partly British and partly French. **Chad Territory** is a French colony covering 398,955 sq. m.

Chaffinch British songbird, a species of finch (*Fringilla coelebs*). The ashy-brown female, usually migrating southward without the male, breeds throughout Britain and N. Europe. The male, 6 in. long, with reddish breast, olive-yellow wings and white, forked tail-feathers, has sharp or sweet call notes. There are two broods of five blotched purple-grey eggs laid in compact, symmetrical nests.

Chagford Village of Devonshire. It stands on the east side of Dartmoor and is a good centre for holiday makers. It is reached from Moreton Hampstead, 3 m. away, on the G.W. Rly. Pop. 1460.

Chagos Group of coral atolls S. of the Maldives in the Indian Ocean. On the direct route from the Red Sea to Australia, the group is administered from Mauritius. Total area 76 sq. m. Pop. about 1000.

Chaillu Paul Belloni Du. French explorer. Born July 31, 1835, he led an expedition into Central Africa, where he spent four years. His book, translated into English as *Explorations and Adventures in Equatorial Africa*, 1861, was regarded by some as fiction owing to its accounts of the strange men and animals encountered, but later it was admitted as true. After another expedition he wrote *A Journey to Ashango Land*, 1867. Chaillu then turned his attention to Russia and a series of journeys there produced several books, including *The Viking Age*, 1889. He died in St. Petersburg, April 29, 1903.

Chain Name given to a series of loops or rings of metal linked together. There are several kinds adapted for special purposes, among these is the open link chain, the individual link being a ring of varying shape welded in large chains or brazed or soldered in others. The stud link chain has the link strengthened by a middle bar or stud, while the pin and bar type has the link formed of two short bars joined at either end by pins.

One of the greatest chains in the world is that used to strengthen the dome of St. Paul's Cathedral, London. It was put in position during the repairs of 1925-30 and weighs 30 tons.

In surveying, the term is used for a measuring chain of 100 iron or steel wire links, and is 22 yards in length.

Chair Seat that developed from the stool by the addition of a back and sometimes of sides. In the Middle Ages chairs were comparatively rare, being only found in the homes of the rich.

In England, London is the centre of the chair-making industry, but a large number are made at High Wycombe. Famous historical chairs are the Coronation Chair in Westminster Abbey and the Byzantine Chair in St. Peter's at Rome.

Chairman Person who presides over a meeting. Every limited company must have a chairman. In each House of Parliament there is a Chairman of Committees who presides when the House sits on a committee. County and district councils have a chairman or president. The mayor acts as chairman of a city or town council.

A chairman calls upon the speakers, keeps them as far as possible to the business in hand, and, if necessary, prevents anything like disorder. If there is voting he is responsible for seeing that it is conducted properly and usually he has a casting vote. He can declare the meeting at an end or adjourn it.

Chaise Light travelling vehicle drawn by one or more horses. After the introduction of railways the vehicle became a pony chaise for elderly and invalid persons.

Chalcedon Greek city in Asia Minor. It stands at the outlet of the Bosporus, opposite Istanbul. It was founded about 685 B.C. by colonists from Megara, but later became a Roman city. It was taken by the Persians and then by the Turks, who carried off the decorations of its

fine buildings to adorn Istanbul. A modern town called Kadikeui stands on the site. Pop. 30,000.

The fourth general council, held here in 451, declared against the heresy of the Monophysites and made Constantinople next to Rome in ecclesiastical importance.

Chalcedony Semi-precious stone. A variety of native quartz mixed with opaline silica, not crystallised but minutely crystalline and sometimes stalactitic, it is found in transparent or translucent masses in veins and rings or as seashore pebbles. This commonest of gem stones occurs in variegated forms, as agate, bloodstone, carnelian, chrysoprase and onyx.

Chaldea Biblical place name. It denoted in O.T. times the marshy sealand S.E. of Babylonia, with headquarters at Bit-Yakin. Its Prince Merodach-baladan II. captured and became king of Babylon, 721 B.C. (Isaiah xxxix., 1). Later a Chaldean or neo-Babylonian dynasty was established by Nabopolassar about 625, and throughout this period, which included Nebuchadnezzar's reign, Chaldea denoted all Babylonia.

Chalfont Name of two villages in Buckinghamshire, **Chalfont St. Giles** and **Chalfont St. Peter.** The former, 3 m. from Amersham, contains the cottage where Milton finished *Paradise Lost.* It is now national property.

Chalgrove Village of Oxfordshire. It is 6 m. from Wallingford and is famous for the Civil War skirmish here on June 18, 1643, in which John Hampden was mortally wounded.

Chaliapin **Feodor Ivanovitch.** Russian bass singer. Born at Kazan in 1873, he was a shoemaker who, through the cathedral choir, reached operatic singing in 1890, meanwhile working on the railway. A Tiflis engagement in 1892 took him to St. Petersburg (Leningrad) in 1894 and to Moscow in 1896. He achieved brilliant successes in London in 1913-4 which were repeated in New York. He was in London, in 1926-7, and again in 1931.

Chalice Sacred drinking vessel used in the Christian sacrament of the communion or eucharist. The early chalices were made of horn, wood and glass, but as wealth increased of gold and silver.

Chalk Earthy variety of limestone. Soft and white, it contains from 91 to 98 per cent. of calcium carbonate, readily soiling the fingers when crumbled. It comprises mostly minute foraminiferous shells laid down in shallow waters across Europe during the cretaceous period. Presenting extensive formations in England, up to 1200 ft. thick, its annual output for industrial purposes is about 6,870,000 tons. It is burned for lime used in making Portland cement and, when levigated, whiting. In addition it is used in the mineral water and oilcloth manufacture. The Downs and other hills in the south of England are of chalk.

Chalk Farm District of London. In the metropolitan borough of St. Pancras, it has stations on the tube railway and the L.M.S., which has extensive yards here. The name is a corruption of Chalcot Farm and the place was once a favourite duelling ground.

Chalmers **James.** Scottish missionary. Born in Argyllshire in 1841, he joined the staff of the Glasgow City Mission. In 1865, after studying at Cheshunt College, he became a Congregational minister and in 1866 went out as a missionary to Raratonga, on the Hervey Islands. He worked there for ten years, and was then sent to New Guinea. On April 7, 1901, he and some followers were murdered by cannibals.

Chalmers **Thomas.** Scottish divine. Born at Anstruther, March 17, 1790, he was educated at St. Andrews and became minister of Kilmeny, Fifeshire, in 1803. In 1815 he removed to Glasgow, where he wrote his *Problems of Poverty.* In 1823 he went back to St. Andrews as Professor of Moral Philosophy and in 1828 became Professor of Theology at Edinburgh University. A leader of the Disruption in 1843, he became the first moderator of the new Free Church and was chosen principal of its college in Edinburgh. He died May 30, 1847.

Châlons Town of France. Chalons-sur-Marne, the capital of the Marne department, stands on the Marne, 107 m. E. of Paris. It is the centre of the trade in champagne, which is stored in galleries cut in limestone hills, and has breweries and boot factories. The chief buildings are the cathedral, several old churches and the town hall. Pop. (1931) 32,307.

Near Châlons, in A.D. 451, was fought the great battle in which the Huns, under Attila, were defeated by the Romans and the Visigoths. It took place on the Catalaunian Fields and was one of the decisive battles of the world.

Chalybeate Waters Natural mineral waters containing minute quantities of iron salts. They are stimulant and tonic and, when sulphated, are astringent and useful for skin disease. When gaseous carbonic acid is present in them they are used by "heart" patients for bathing purposes. The waters at Harrogate and Leamington are chalybeate.

Chamberlain Originally the officer in charge of domestic affairs in royal households or monasteries. In Great Britain one such official became the Lord Chamberlain, a court official who regulates the etiquette of the palace and acts as the official censor of plays.

Corporations sometimes appoint a chamberlain, as in London, where he is treasurer of the corporation, admits persons to the freedom of the city and, in his court, determines disputes between masters and apprentices.

Chamberlain **Arthur Neville.** Born in Birmingham, March 18, 1869, he was the younger son of Joseph Chamberlain and half-brother of Sir Austen Chamberlain. Educated at Rugby, he was in business in the West Indies, afterwards taking part in the public life of Birmingham. In 1915 he was lord mayor of the city. In 1916 he was appointed Director of National Service and in 1918 he entered Parliament as M.P. for a Birmingham division. He was Postmaster-General, Minister of Health and then Chancellor of the Exchequer in the Unionist ministry of 1922-24 and throughout the ministry of 1924-29 was a most energetic and successful Minister of Health. He was Chairman of the Conservative party organisation, 1930-31, and later 1935, and Chancellor again from 1931, retaining that post after the general election of 1935.

Chamberlain **Joseph.** English statesman. Born at Camberwell, London, June 8, 1836, son of a boot

manufacturer, he was educated at University College School, and, after a short period in business in London, went to Birmingham to join a screw-making firm owned by his relatives, the Nettlefolds. He became a partner and, under his direction, the business prospered until in 1874 he retired to devote himself to public life. He was already a member of the town council and the school board and an active and combative advocate of radical ideas. From 1873-76 he was Mayor of Birmingham.

In 1876, as a Radical, Chamberlain was elected M.P. for Birmingham and he retained his seat for W. Birmingham from 1885 until his death. In 1880 he was made President of the Board of Trade under Gladstone. While in office he advocated substantial reforms, not always acceptable to his colleagues. He resigned office with them in 1885, but joined Gladstone's next ministry in Jan. 1886. Refusing, however, to accept Home Rule he resigned in March and became one of the leaders of the Liberal Unionists. His incisive speeches had much to do with the defeat of the Home Rule project.

Chamberlain remained out of office until 1895 when he became Colonial Secretary under Lord Salisbury. He put new life into the administration of the Empire, but his policy just before the S. African War was much criticised. He went to Africa in 1902 and on his return started a campaign in favour of tariff reform. This broke the Unionist party and in 1904 Chamberlain resigned office to be free to preach his ideas. He did this until his health gave way in 1906 and he was an invalid till his death at Highbury, Moor Green, his Birmingham residence, July 20, 1914. He was three times married and left two sons, Joseph Austen and Arthur Neville.

Chamberlain was a remarkably forceful speaker and an unusually powerful debater. His extraordinary energy showed itself in everything he touched. Although he could be, and often was, a bitter opponent, he was a remarkably staunch friend. In Birmingham are several memorials of him, the greatest of which is the university, of which he was the first chancellor.

Chamberlain **Sir Joseph Austen.** British politician. The elder son of Joseph Chamberlain, he was born Oct. 16, 1863, and educated at Rugby and Trinity College, Cambridge. In 1892 he entered Parliament as M.P. for E. Worcestershire, which seat he retained until he succeeded his father as M.P. for W. Birmingham in 1914. His long official life began in 1895 when he was made Civil Lord of the Admiralty. In 1900 he became Financial Secretary to the Treasury, in 1902 Postmaster-General, and in 1903 Chancellor of the Exchequer. He was out of office between 1905 and 1915.

From 1915-17 Chamberlain was Secretary for India in the Coalition ministry, resigning when the Indian Government was censured for its share in the conduct of the expedition to Mesopotamia. In April, 1918, however, he rejoined the ministry and in Jan., 1919, succeeded Bonar Law as Chancellor of the Exchequer and head of the Unionist wing of the coalition. He remained outside the Unionist ministry of 1922-23, but from 1924-1929 was Foreign Secretary under Baldwin. In 1925 he was made a K.G., after the signing of the Locarno Pact.

Chambers Term used for rooms in which barristers do their work before appearing in court. In London, the buildings in the Temple, Lincoln's Inn and Gray's Inn are given up to chambers.

Another kind of chambers are those in the courts of law in London. In these questions preliminary to trials are decided, and applications of all kinds in connection with forthcoming trials are made. Questions of costs are often settled in chambers. In the chancery division the cases in chambers are heard by masters. In the King's Bench division, one of the judges sits in chambers.

Chambers **William.** Scottish publisher. Born in Peebles, April 16, 1800, he was apprenticed to a bookseller in Edinburgh. Soon he set up in business for himself and with his brother, Robert (1802-71), founded the business of W. & R. Chambers. The brothers collaborated in a *Gazetteer of Scotland* and started *Chambers's Edinburgh Journal* which still exists as *Chambers's Journal*. The firm's other ventures were many and included *Chambers's Encyclopaedia*, *Chambers's Biographical Dictionary* and *Chambers's Cyc opaedia of English Literature*, all useful works of reference. William Chambers was twice lord provost of Edinburgh, and gave money to restore St. Giles Cathedral. He died May 20, 1883. The firm of W. & R. Chambers still flourishes in High St., Edinburgh.

Chambord Town of France. It stands on the Cosson, tributary of the Loire, 8 m. from Blois. Its chateau is one of the finest in France. Built by Francis I. it was a royal residence till the Revolution. It was bought by Henry, a grandson of Charles X., who took from here the title of count.

Chambord **Comte de.** French prince. Born in Paris, Sept., 29, 1820, he was a posthumous son of the Duke of Berri and a grandson of Charles X. He fled with his grandfather to England in 1830, when Louis Philippe accepted the French throne. Later he established himself at Graz, where his tutor instilled into him those clerical and legitimist ideas which prevented him from succeeding as Henry V. after the Revolution in 1848. He had two more chances of becoming ruler, in 1871 after the conclusion of the Franco-Prussian War, and in 1873 after the downfall of Thiers; but he refused them both, because he would not recognise the tricolour. When he died, Aug. 24, 1883, the senior branch of the Bourbons became extinct.

Chameleon Genus of reptiles. They differ from true lizards in their telescopic tongues with viscid tips for insect capture, eyeballs moving independently beneath circular lids, opposable toes and prehensile tails. They are famed for their power of changing colour according to their environment, but this power is limited. The common species, 12 in. long, ranges the African and Asiatic Mediterranean coasts. There are three S. Asian species, and fifty others, equally divided between Africa and Madagascar.

The constellation Chameleon lies between the Centaur's Foot and the S. ecliptic pole.

Chamois Animal found in the Alps and other mountain areas of Europe and Asia Minor. It is a kind of antelope and is remarkable for its jumping powers and surefootedness. Its average height is about 2 ft. and it has a brown fur and short curved horns. The skin is used for gloves and other purposes.

Chamonix Mountain valley on the N.W. side of the Mt. Blanc range. The valley, 12 m. long, watered by the

Arve, contains a village, 55 m. from Geneva, 3425 ft. high, favoured by tourists because it is contiguous to the Mer de Glace and six other glaciers. Here De Saussure first ascended Mt. Blanc, 1786. Pop. 2550.

Champagne Before the Revolution a province of France. In the east of the country, it is the district of the Marne and the Seine, and is famous for its sparkling wines. Its chief towns are, Reims, Troyes and Soissons.

There was a good deal of fighting in Champagne during the Great War, especially in 1914 and 1915. In Sept. and Oct., 1915, the French conducted a great offensive in this region, but it produced little but losses.

Champ-de-Mars Open square in Paris. Situated near the Jena Bridge over the Seine, it is 1100 yds., by 550 yds., and was used July 14, 1790, for the first anniversary of the taking of the Bastille. It was the scene of international exhibitions in 1867, 1878, 1889 and 1900. The Eiffel Tower was built at one end. The square commemorates annual assemblies held by the Frankish kings in March, the month of Mars.

Champion One who fights the cause of another. The laws of the Lombards allowed champions to fight for those who could not defend themselves owing to age, illness, youth or sex.

The English kings have their champion. His duty was at the coronation of a new sovereign to ride into Westminster Hall, throw down a gauntlet and challenge anyone who denied the right of the king or queen to succeed. This ceremony took place for the last time when George IV. was crowned in 1821. The office still remains and is held by the family of Dymoke of the holders of the Manor of Scrivelsby in Lincolnshire.

The **Seven Champions of Christendom** are St. George (England), St. Andrew (Scotland), St. Patrick (Ireland), St. David (Wales), St. Denys (France), St. James (Spain), St. Anthony (Italy). To-day, winners of games of all kinds are called champions.

Champlain Lake in the United States and Canada. Situated between Vermont and New York States, it is 110 m. long and covers 488 sq. m. It penetrates Quebec for 6 m., and the Richelieu River carries its waters to the St. Lawrence. It was discovered by Samuel de Champlain in 1609. Large vessels can navigate the lake, in which there are 50 islands.

Champlain **Samuel de.** French explorer. Born in Saintonge he became a soldier and then a sailor. In 1603 he sailed along the St. Lawrence past where Montreal now stands and in 1608 he made a settlement at Quebec and annexed the country for France. In 1629 the English took him a prisoner to England, but he returned to Canada and died at Quebec, Dec. 25, 1635.

Chanak Town of Turkey. It stands at the narrowest part of the Dardanelles on the Asiatic side. Fortified during the Great War it was unsuccessfully bombarded by British and French warships in March, 1915.

Chancel The eastern part of a church, separated usually from the nave by a screen or railing. It is also known as the choir, and is used by the clergy and their assistants in the services.

Chancellor Name of several high officials. In the Roman law courts there were clerks called *cancellarii*, because they sat behind screens or cancelli. Later the Frankish kings used this name for a royal official. In England it took the form chancellor.

The chancellor became important about the time of Edward I., when he took the place of the justiciar as the chief minister. He kept the great seal and when his duties were confined to legal matters, he became Lord High Chancellor.

The exchequer had a chancellor, at first a subsidiary official under the Lord High Treasurer and then the first Lord of the Treasury. In time he became responsible for the country's finances. The change took place early in the 19th century and to-day the Chancellor of the Exchequer is one of the most important members of the cabinet. Other chancellors are those of the Duchies of Lancaster and Cornwall.

There are in Britain chancellors of other kinds. Each university has a chancellor, usually a man of distinction in public life, while its vice-chancellor, the acting head, is one of the resident members. These chancellors are elected for life. Each bishop has a chancellor who is a lawyer and presides over the courts of the diocese. Cathedrals have chancellors, one of the resident clergy. In Germany, the Prime Minister is called the Chancellor.

Chancellor **Richard.** English navigator. In the *Bonaventure* he accompanied Sir Hugh Willoughby's expedition in 1553 in search of a N.-E. passage to India. Separated from his companions by a storm off the Lofoden Islands he found his way to Moscow and there negotiated the first English trading treaty with Russia. Returning from a second visit to Moscow he lost his life in the wreck of the *Bonaventure* off Aberdeenshire, Nov. 10, 1556.

Chancellorsville Village of Virginia. It is 70 m. from Richmond and was the scene of a great battle in the American Civil War, May 1-5, 1863. The Federal Army, under Hooker, was attacked by the Confederates under Stonewall Jackson and Stuart, and forced to retreat across the Rappahannock, with a loss of 16,000 men, and many guns and rifles. Jackson was fatally wounded when returning from a reconnaissance.

Chancery Court of the Lord Chancellor. Its origin dates back to the time of Edward the Confessor, during whose reign royal petitions became so numerous that they were referred to the chancellor. In 1873 the court was made one of the three divisions of the supreme court of justice. The Judicature Act, 1925, gives it jurisdiction over actions in which redress cannot be obtained at common law. The court consists of the Lord Chancellor and six judges, divided into groups of three. The acting head is the master of the rolls.

Chancre Term formerly used to designate any sore or ulcer, but now applied almost exclusively to the primary lesion of syphilis, which used to be called a hard or Hunterian chancre. It appears as a small, hard, translucent swelling at the infected spot.

Chanctonbury Hill on the S. Downs in Sussex. It is about 3 m. from Steyning and just over 800 ft. high. The trees on the summit make it

a conspicuous landmark. There are vestiges of a prehistoric earthwork (Chanctonbury Ring) and of a Roman camp.

Chandos Duke of. English title borne from 1719 to 1789 by the family of Brydges. Sir John Brydges was made Baron Chandos of Sudeley in 1554 and his descendant, James, the 9th baron, was made a duke in 1719. He built a magnificent house at Canons, Middlesex. He died in 1744.

Sir John Chandos was a noted soldier in the time of Edward III. and one of the first of the Knights of the Garter.

Changeling Child substituted for another, usually at birth. There was formerly a belief that babies, before christening, were in danger of being stolen by fairies and that any weakly or peevish child was a changeling.

Chang Tso Lin Chinese politician. Born in Manchuria, he became Governor of Fengtien and later of other provinces, and was, when civil war began, the most powerful man in the northern part of the country. In 1925 he entered Peking and remained supreme there until 1928, when he was driven out by the Nationalist force from Nanking. He was fatally wounded by a bomb on June 21, when returning to Manchuria.

Channel Ferry Service of barges across the English Channel. It was established by the Royal Engineers during the Great War, with a depot at Richborough in Kent. A day and night service was continued from 1914 until the armistice. A train ferry service was also established in 1918.

Channel Islands Group of islands in the English Channel, near the coast of France. It consists of Jersey, Guernsey, Alderney and Sark, and many small islands, including Herm, Brechou and Jéthou. Their area is 73 sq. m. The islands belong to England, but have their own laws and methods of government. Most of the people speak French. Vegetables, fruit and flowers are grown for the English market and cattle rearing and fisheries are carried on. The islands are a favourite holiday resort and can be reached by steamer from Southampton and Weymouth, while there is a regular air service with Southampton and London. Pop. 90,000. *See* ALDERNEY, GUERNSEY, JERSEY, ETC.

Channel Tunnel Proposed tunnel between England and France. The tunnel, about 31 m. long, is to contain twin tubes, through which electric trains would run from a point between Dover and Folkestone to Wissant, near Calais, shortening the journey from London to France by about 1¼ hours. The cost has been estimated at about £25,000,000. In 1876 a company was formed to carry out a similar idea, but the work was stopped in 1882.

In 1930 a committee reported in favour of the project, but suggested that it should be done by private enterprise. The Government, however, decided against it, presumably on the advice of the Committee of National Defence.

Channing William Ellery. American author. Born at Newport, Rhode Island, April 7, 1780, he was educated at Harvard, and was minister of a Congregational church at Boston from 1803 till his death on Oct. 2, 1842. Channing was a Unitarian and his sermons and writings exercised great influence in both America and England.

Chant Form of sacred song sung on a few notes. In the Church of England the psalms are usually chanted. In some Nonconformist churches certain passages of scripture are chanted or sung. Chanting is also part of the service in the Roman Catholic Church. The earliest form was called the Ambrosian because introduced by S. Ambrose of Milan. It was superseded by the Gregorian.

Chantilly Town of France. It stands on the little River Nonette, 25 m. from Paris. Well known for its racecourse, on which the French Derby is run, it gives its name to a kind of lace. Pop. 5100.

Chantilly is famous for its châteaux, one, a beautiful building called the Châtelet, dating from the 16th century; the other, the magnificent Grand Château, built in the 19th century by Henry, Duke of Aumale, a son of Louis Philippe, on the site of a historic structure destroyed at the Revolution. It is built in the Renaissance style round a courtyard and, with its art and other treasures, was bequeathed by the Duke to the Institut de France. Near by is the Château d'Enghien, which dates from 1770.

Chantrey Sir Francis. English sculptor. Born in Derbyshire, April 7, 1781, he began life as a portrait painter in Sheffield. Soon, however, he moved to London, where he became known for his sculptures. In 1818 he was elected R.A. and he died Nov. 25, 1841.

Chantrey's most famous work is perhaps "The Sleeping Children" in the cathedral at Lichfield. His chief statues are "William Pitt" (Hanover Square, London), "Canning and Roscoe" (Liverpool Town Hall), "Dear Jackson" (Christ Church, Oxford), "Viscount Melville" (Old Parliament House, Edinburgh), "Sir Joseph Banks" (British Museum) and "James Watt" and "Sir John Malcolm" (Westminster Abbey). He also wrought some notable equestrian statues.

Chantrey left £150,000 which eventually came into the hands of the Royal Academy to be used for the purchase of works of art. It is known as the **Chantrey Bequest.** In 1904 a select committee of the House of Lords issued its report on the Bequest and made certain recommendations as to its administration. The pictures bought with this money, nearly 200 in number, are in the Tate Gallery.

Chantry Chapel in a cathedral or church. In the Middle Ages it was not uncommon to build a chantry, which often contained the tomb of the dead man, in which masses are regularly sung or chanted for his soul. There are fine chantries in Winchester Cathedral and in Westminster Abbey.

Chanty Song sung by sailors when at work. The leader, or chanty man, sings one or two lines and the rest of the crew join in the chorus, their physical actions emphasising certain words of the song. Some of these sea chanties have become famous, an example being "What shall we do with the drunken sailor." Also spelled "shanty."

Chapbook Little, stitched tract. It consisted usually of a vulgarised version of a popular story or religious treatise and was sold by chapmen or itinerant booksellers. Chapbooks were first printed in France for the populace after the invention of the printing press and were introduced into England early in the 16th century.

Chapel Place devoted to Christian worship. In cathedrals and large

churches a chapel is a part of the building railed off from the main part and provided with an altar. Such are the lady chapels and other chapels in the English and other cathedrals and churches. Some of these were built by a particular family as burial places. An example is the Bathurst chapel at Cirencester. The places of worship in colleges and schools are also called chapels, such as the chapel at King's College, Cambridge, and the one at Eton. At one time Nonconformists used the word chapel for their places of worship, but most of them now prefer the word church.

In printing offices the workmen call their trade union groups and meetings chapels. The head of the group is called the father of the chapel.

Chapel-en-le-Frith Market town of Derbyshire. It is 20 m. from Manchester, on the L.M.S. Rly. The industries include paper making, and near are limestone quarries and coal mines. Pop. 5283.

Chapel Royal Place of worship attached to the royal court. The chief chapel royal is in St. James's Palace, London. The chapels royal have a dean, sub-dean, priests in ordinary and gentlemen and children of the choir. The Savoy chapel, London, is still called a chapel royal. There is a chapel royal at Holyrood. St. George's chapel, Windsor, is a chapel royal.

Chaplain Priest or minister officially discharging specific non-parochial duties. He may be attached to the sovereign, his representatives and defensive forces, or to public or private institutions. There are 36 chaplains to the king at the English court, who form the college of chaplains, and he has chaplains in Scotland. Other important personages, such as lord mayors and mayors, have chaplains. There are chaplains at schools and colleges, at embassies and prisons. The House of Commons has a chaplain. There are Anglican, Roman Catholic and Free Church chaplains in the British Army, Navy and Air Force. In the army they are under the Chaplain General; in the navy under the Chaplain of the Fleet, and in the air force under the Chaplain in Chief of the Air Force. All are ranked as commissioned officers.

Chaplin **Charles Spencer.** American film artist. Born in Camberwell, London, in 1889, he was a son of Charles Chaplin, a variety comedian. He started work early in life in the variety business and eventually played leading parts in Fred. Karno's companies in many of the music-halls and variety theatres of England. From 1910 till the end of 1913 he interpreted comic sketches in the United States. For the next four years he appeared in moving pictures of the Keystone Comedy Co., made at Los Angeles, California. Early in 1918 he formed his own company for producing such pictures and erected large studios at Hollywood. Among the most successful films which he has released are *Shoulder Arms*, *The Kid*, *The Gold Rush*, *The Circus* and *City Lights* (1931). In 1936 he appeared in a new serious film, *Modern Times*.

Chaplin **Viscount.** English politician and sportsman. Born Dec. 22, 1841, the son of a clergyman, Henry Chaplin went to Harrow and Christ Church, Oxford. He inherited Blankney Hall and estates in Lincolnshire and became known on the turf, especially after 1867, when his horse Hermit won a memorable Derby. In 1876 he married Lady Florence Leveson-Gower, a daughter of the 3rd Duke of Sutherland (d. 1881).

In 1866 Chaplin entered Parliament as M.P. for Mid-Lincolnshire; from 1885-1906 he represented the Sleaford division and from 1907-16 the Wimbledon division. In 1885 he took office in the Unionist ministry as Chancellor of the Duchy of Lancaster; from 1886-92 he was President of the Board of Agriculture, and from 1900-5 of the Local Government Board. In 1916 he was made a viscount, a title which passed on his death, May 29, 1923, to his son, Eric. Lord Chaplin was regarded as a protagonist of the agricultural interests and a protectionist of the old school.

Chapman **Arthur Percy Francis.** English cricketer. Born Dec. 3, 1900, he was educated at Uppingham and Pembroke College, Cambridge. He represented both school and university at cricket and in 1920 played for the Gentlemen against the Players. In county cricket he played for Buckinghamshire and then for Kent. In 1922 and 1924 Chapman went to Australia with cricket teams. In 1926 he was chosen captain of England for the last of the five test matches and he was again captain for four of the test matches of 1930. In the interval he had captained the team that, in 1928-29, won four out of five of the test matches in Australia. In 1931 he became captain of Kent. He is a fine batsman and a wonderful fielder.

Chapman **George.** English poet. Born in Hertfordshire in 1559, he went to Trinity College, Oxford. He wrote both comedies and tragedies. The former are not remarkable; the latter, *Bussy d'Ambois*, *The Admiral of France*, etc., dramatisations of contemporary French politics, have recently been interpreted as *dramas à clef* designed to satirise English politicians. His best work is his translations of Homer's *Iliad* and *Odyssey*. He died May 12, 1634.

Chapter Permanent body of canons and prebendaries of a cathedral or collegiate church. It is usually presided over by the dean. In the Church of England the chapter, with the dean, forms the governing body of the cathedral and in theory elects the bishop. The Roman Catholic Church has chapters for its cathedrals.

The place where the chapter meets is called the **Chapter House.** This is often connected with the cathedral by the cloisters. Notable examples are at Salisbury, Lincoln, Canterbury, York, Worcester, Hereford and Westminster Abbey.

Char Fish of the salmon type. It varies in weight from a few ounces to two pounds and frequents English lakes, particularly Windermere, Coniston and others in the North Country. It is also found in the lakes of Scotland and Ireland. It is valued as a table fish.

Charade Kind of riddle, which has developed into an indoor game. It is presented as a dramatic sketch, the answer to which is a single word. Each of the scenes of the sketch represents one syllable or more of the word. Often an additional scene suggests the whole word.

Charcoal Carbonaceous residue obtained by the smothered combustion of vegetable, animal or combustible mineral substances. Wood charcoal, an impure, amorphous form of carbon containing at least 93 per cent., is a porous solid which, when

burned as fuel, is flameless and smokeless. It is an ingredient in gunpowder, and serves also as a filter, a gas absorbent, and non-conductor packing for refrigerators. Used dry it is prescribed for flatulence in cachets in 20-60 gr. doses or in charcoal biscuits. It produces a form of iron called charcoal iron which yields the best or charcoal tinplates. Animal charcoal, or bone black, destroys vegetable dyes and alkaloid poisons.

Charcot **Jean Martin.** French physician. He was born in Paris, Nov. 29, 1825, and took his medical degree in 1853. In 1860 he was appointed Professor of Pathological Anatomy to the Medical Faculty, and two years later became attached to the Salpêtrière, where he established a neurological clinic. His work in nervous and mental diseases became famous, and he was a pioneer in the use of hypnotic methods of treatment. His medical research work also included work on muscular atrophy, and certain affections of the joints in locomotor ataxy have been named Charcot's disease. He died Aug. 16, 1893.

Charcot Land District of the Antarctic Ocean. It lies to the S. of Graham Land and is named after the French explorer, **Jean Baptiste Etienne Auguste Charcot,** who did valuable surveying work in this region in 1903, 1909 and 1910.

Chard Borough and market town of Somerset. It is 15 m. from Taunton and 143 m. from London, on the S. and G.W. Rlys. The manufactures include lace. There is a school dating from 1671 which was refounded in 1928. Pop. (1931) 4053.

Charge Word meaning load or burden. It is applied to the ammunition in a firearm, to the electricity in a battery and to the explosives in blasting operations.

Legally, a charge is a mortgage, *i.e.*, an equitable transfer of a title to goods or property as security for a loan. The word is also used to denote responsibility and, in military and sporting matters, a violent advance.

Charge In heraldry a device upon a coat of arms. It represents either those things which keep their own names (proper), or bear technical names such as chevron, etc. (common).

Chargé d'Affaires Member of the fourth class in the diplomatic service. Those above them are ambassadors, envoys and ministers. Sometimes a chargé d'affaires is the head of a legation, *e.g.*, the British legation in Cuba is under a chargé d'affaires.

Charing Cross District of London. At the west end of the Strand it is the official centre for the measurement of taximeter distances and other purposes. Northumberland Avenue and Whitehall radiate from here and Trafalgar Square is on the north side. Here is Le Sueur's fine equestrian statue of Charles I. The chief building is the station of the Southern Rly. Charing Cross Hospital is in King William St.

The name is that of the village of Charing, or Chering. Here Edward I. erected a cross in memory of his wife, Eleanor. This was pulled down in 1647 and 200 years later a modern one was built. A scheme for removing the station to the other side of the river and making a fine new bridge over the Thames was recommended by a royal commission and accepted by those concerned. In 1930, however, Parliament declined to agree to it, but the idea, was again under consideration in 1931.

Chariot Two-wheeled, horse-drawn vehicle, used in ancient times for war, the chase, and processions. The Greeks and Romans gave up their use at an early date except for racing, but in other countries they were used for war, particularly by the Persians and Britons.

Charity Commission Body set up in Great Britain in 1853. Its function is to supervise and, if necessary, remodel existing charitable organisations, and it has power in certain cases to apply charitable moneys to purposes different from those indicated in a will, where the provisions of the will are obscure. The headquarters are at Ryder Street, St. James's, London, S.W. 1.

Charivari Uproar made by the clanging of pans and kettles and by hissing and groaning directed against some unpopular man or woman. The name *Charivari* has been given to various satirical journals and is the sub-title of *Punch*.

Charlecote Village of Warwickshire. It is about 5 m. from Warwick and is famous for its park. The house, which stands in a 250 acre deer park, was built by Sir Thomas Lucy, the supposed original of Shakespeare's Justice Shallow.

Charlemagne Frankish king and Roman emperor. The elder son of the Frankish King Pepin, he was born about 742. In 768 he and his brother, Carloman, inherited their father's kingdom. In 771 by Carloman's death Charles became King of all the Franks.

Charles was a great soldier. He conquered the Saxons and the Lombards; he fought in Spain against the Saracens and in Germany against the Magyars. He was crowned emperor in Rome in 800. His capital was Aix-la-Chapelle, where, Jan. 28, 814, he died.

Charlemagne was fond of the society of learned men and did a good deal to set up schools. He loved music, was interested in theology, and was a builder of churches and palaces. He was strong in body and mind, with great ambitions, a powerful and determined will, and interests far in advance of his age. His only legitimate son was his successor Louis. His *Life* was written by his secretary and friend Einhard.

Charleroi Town of Belgium. It is situated on the Sambre, 22 m. E. of Mons and 9 m. S.W. of Namur. On a great coalfield, its extensive iron, chemical and glass industries are facilitated by canalised connections with Brussels and N. France.

Charleroi's strategic importance was emphasised in Aug. 1914, when Germany's invading armies fanned out towards Mons, Charleroi and Namur, hoping to envelop the Allied forces. While the British were fighting at Mons, the French were attacked near Charleroi on Aug. 21. The Germans forced their way over the Sambre, entered Charleroi and compelled the army under Laurezac to retreat in some disorder. The engagement lasted until the 24th. Pop. (1931) 28,612.

Charles I. King of Great Britain and Ireland. Born at Dunfermline, Nov. 19, 1600, the son of James VI., King of Scotland, later James I. of Great Britain, he became Prince of Wales in 1616, after the death of his elder brother, Henry.

In 1625 he became king and married Henrietta Maria, a French princess, whose steady adherence to Roman Catholicism led her husband into trouble. Other troubles came through his friendship with the unpopular Duke of Buckingham and still more through his own extravagance and obstinacy.

Having quarrelled with his Parliament, Charles governed without one for 11 years (1629-40), his chief advisers being Wentworth (Earl of Strafford) and Laud. He raised money in various illegal ways and forced a liturgy upon the Scots. In Nov., 1640, the Long Parliament met and Laud and Wentworth were put to death. Two years later the civil war began. At first the king was successful, but after Naseby in 1645 his fortunes quickly declined. He gave himself up to the Scots at Newark in 1646. They handed him over to the English, who kept him a prisoner while negotiations and fighting went on alternately, or sometimes concurrently. Charles was tried before a court set up by Parliament, found guilty and, on Jan. 30, 1649, beheaded at Whitehall. He left three sons, Charles II., James II. and Henry, Duke of Gloucester, and three daughters.

Charles II. King of Great Britain and Ireland. Born in London, May 29, 1630, he was the second son of Charles I. His eldest brother having died in infancy he was made Prince of Wales. In 1646, his father's cause being lost, he took refuge in the Scilly Islands and then in Jersey. In 1647 he joined his mother in Paris, but was in Holland when Charles I. was executed and he became nominally king. In 1650 he accepted the throne of Scotland and went to that country. His army invaded England, but was beaten at Worcester and Charles managed, with great difficulty, to get back to France. For nine years, surrounded by a court of exiles, he lived in France and the Netherlands, generally in needy circumstances.

In 1660, having issued his declaration of Breda, Charles returned to England and was hailed as king. He reigned for 25 years, showing a great deal of wisdom, although by no means without difficulties and humiliations. He kept on good terms with France and by unscrupulous methods maintained a fair amount of personal control at home. In the end he became a Roman Catholic and he died, without legitimate issue, Feb. 6, 1685. His wife was Catherine, a Portuguese princess. His numerous mistresses included the ladies who became Duchesses of Portsmouth and Cleveland, as well as Nell Gwynn and Lucy Walters, the mother of the Duke of Monmouth. Charles is remembered for his amours and his wit; his good temper and his interest in art and science are equally worthy of mention.

Charles Name of seven rulers of the Holy Roman Empire. The first was Charles the Great or Charlemagne (*q.v.*). The second was his grandson, **Charles the Bald.** He got the western part of the Frankish realm in 843, but was not crowned emperor until two years before his death, Oct. 6, 877. **Charles III.,** called the Fat, was emperor from 882 until deposed in 887. He died Jan. 18, 888.

Charles IV. became King of Bohemia in 1346 when his father, John, was killed at Crécy. He was also recognised as king in Germany and in 1355 was crowned emperor. He promulgated the Golden Bull of 1346. He died Nov. 29, 1378, leaving two sons, Wenceslaus and Sigismund. Charles V. was the great emperor who is noticed below.

Charles VI., a son of the Emperor Leopold I. was born Oct. 1, 1685. His early days were spent in trying to make himself King of Spain. In 1711 he succeeded his brother Joseph as emperor and he died Oct. 20, 1740, leaving an only child, a daughter, Maria Theresa. **Charles VII.** became elector of Bavaria in 1726 when his father died. In 1742 he was chosen emperor as a rival to Francis I., the husband of Maria Theresa, but he never really ruled. He died Jan. 20, 1745.

Charles V. Holy Roman Emperor and King of Spain. Born at Ghent, Feb. 24, 1520, he was the elder son of Philip, son of the Emperor Maximilian, and Joanna, daughter of Ferdinand and Isabella of Spain. In 1506 when his father died, Charles inherited the Netherlands, the lands received by Philip from his mother, the heiress of the great Burgundian duke, Charles the Bold. In 1516 he became King of Spain by right of his mother, whose reason had gone, and with that crown secured possessions in Italy. In 1519 he inherited the Austrian duchies from his grandfather, Maximilian. In 1520, lord of this immense realm, he was chosen emperor.

For nearly 40 years Charles, an active and conscientious ruler, was the most powerful man in Europe. Although not a great soldier, he carried on several wars, on the whole successfully. He crushed Francis I. of France, his great rival, and at one time the Pope was a prisoner in his hands. In Germany, however, he could not compose the bitter differences that the Reformation engendered. Again and again he tried to reconcile the warring parties and give some kind of unity to the country. It was only when these efforts failed that he took to arms. At Muhlberg, in 1547, he broke the power of the Protestant princes, but in a few years the defection of Maurice of Saxony forced him to fly for his life. In 1556 he resigned the crown of Spain to his only son, Philip II., and then the Austrian lands to his brother Ferdinand. He retired to Yuste, in Spain, where he died Sept. 21, 1558. Charles married a cousin, Isabella of Portugal. Don John, the hero of Lepanto, was an illegitimate son.

Charles Last emperor of Austria-Hungary. Born Aug. 17, 1887, he was a son of the Archduke Otto. The murder of the Archduke Francis Ferdinand in June, 1914, made him heir to the throne and, on the death of Francis Joseph in Nov., 1916, he succeeded. He reigned until the end of the war, when he abdicated both in Austria and in Hungary. He died in Madeira, April 1, 1922, having made two futile attempts to recover his Hungarian kingdom. Charles married Zita, a Bourbon princess, and had eight children, the eldest, Francis Joseph Otto, inheriting his claims.

Charles Name of ten kings of France. The Emperor Charlemagne (*q.v.*) was the first and the Emperor **Charles the Fat** the second. In their day France was part of the Frankish Empire. **Charles III.,** called the Simple, was King of France from 893 to 922, but lived until 929. **Charles IV.** reigned from 1322 to 1328. **Charles V.,** a son of John II., was king from 1364 to 1380. **Charles VI.,** a son of Charles V., reigned from 1380 to 1422. He became insane, and in his reign Henry V. of England conquered France and succeeded Charles as king.

Charles VII., a son of Charles VI., spent much of his life in reconquering France. In this he was aided by Joan of Arc, and in 1439 was

crowned king. He reigned until his death, July 22, 1461. **Charles VIII.**, a son of Louis XI., became king in 1483. He spent his best years in trying to get possession of Naples and other parts of Italy. He died April 7, 1498. **Charles IX.** was a son of Henry II. and Catherine de Medici. He became king in 1560 and reigned, with his mother directing affairs, until his death, May 30, 1574.

Charles X. was a son of Louis XV. and a brother of the unfortunate Louis XVI. Called the Count of Artois, he left France in 1789 and lived chiefly in Scotland until 1814. He returned when another brother became King of France in that year, and in 1824 himself succeeded to the throne. He was not, however, equal to the task of ruling, and in 1830 he abdicated. He died in Italy, Aug. 2, 1836. His heir was his grandson, the Count of Chambord.

Charles First King of Rumania. Born April 20, 1839, he was a member of the Hohenzollern family. In 1866 he appeared as a candidate for the throne of Rumania, that country having practically separated itself from Turkey. Elected as prince, he governed the country successfully in spite of various obstacles. In 1881 he took the title of king and was recognised as such by the European powers. Charles, or Carol, as he was called, died Oct. 10, 1914. He married the princess known as Carmen Sylva, but, having no son, was succeeded by his nephew Ferdinand.

Charles II., or **Carol II.**, was a son of Ferdinand. Born Oct. 15, 1893, he was married in 1921 to Helen, a princess of Greece. Later he left this lady and contracted another union, at the same time renouncing the succession. In 1927, therefore, his young son Michael succeeded to the throne, but in June, 1930, Charles returned to Rumania and was accepted as king.

Charles Names of four kings of Spain. The first was the Emperor **Charles V.** who was King of Spain from 1518 to 1556 (*q.v.*). **Charles II.**, a son of Philip IV., was king from 1666 to 1700. On his death without heirs a European war broke out for the possession of his vast empire. **Charles III.**, a son of Philip V., was king from 1759 to 1788. He was the third of the Bourbon kings of Spain. **Charles IV.** a son of Charles III., was king from 1788 to 1808 when he abdicated in favour of Joseph Buonaparte.

Charles Name of fifteen kings of Sweden. The first of any importance was **Charles IX.** He was the youngest son of Gustavus Vasa and became king in 1604. He reigned until 1611. **Charles X.**, who was his grandson, became king when Queen Christina abdicated in 1654 and reigned until 1665. He was successful in war against the Poles and the Danes. His son **Charles XI.** had become king on his father's death, but only began to rule in 1692. He was the father of Charles XII. (*q.v.*), the greatest of Swedish kings, who succeeded to the throne on his death, April 15, 1697.

The next king of this name was **Charles XIII.**, in whose reign Norway was united to Sweden. He died Feb. 5, 1818, having recognised the French Marshal Bernadotte as his heir. Bernadotte became king as Charles XIV. (*q.v.*), and his grandson **Charles XV.** reigned from 1859 to 1872.

Charles XII. King of Sweden. Born June 17, 1682, the only son of Charles XI., he became king in 1697. Before he was 21 years old he had proved himself a capable soldier. He defeated the Danes and then the Russians, after which he made himself master of both Poland and Saxony. In 1708 he invaded Russia and in July, 1709, his army was utterly routed at Poltava. The king fled to Turkey and did not return to his own country until 1714. On Dec. 18, 1718, attacking a fortress in Norway, he was killed; it is said that the fatal bullet was fired by one of his own men. His *Life* was written by Voltaire.

Charles XIV. King of Sweden. Jean Baptiste Jules Bernadotte was born Jan. 26, 1763, and entered the French Army. He attracted the notice of Napoleon and married a relative of the Buonapartes. He was at one time Minister of War, but held also high commands in the field, and was made a marshal. In 1810 Bernadotte was selected as heir to the throne of Sweden and became king in 1818. Meanwhile, Norway had been added to Sweden, and he ruled the two countries until his death, March 4, 1844. The present royal family of Sweden is descended from this French soldier.

Charles Austrian prince and soldier, usually called the Archduke Charles. A younger son of the Emperor Leopold II., he was born Sept. 5, 1771. In 1790 he was made Governor of the Austrian Netherlands, but soon after the outbreak of war in 1792, he took command of an army and became the most successful of the Austrian leaders of that time. He won several victories over the French armies between 1796 and 1799, but was defeated when, in June 1799, he invaded Switzerland. In 1805, after a period of retirement, he took command in Italy and in 1809 he defeated Napoleon himself at Aspern. Napoleon, however, was successful at Wagram, after which Charles retired. He lived until April 30, 1847. One of his sons, the Archduke Albert (1817-95), was also a famous soldier.

Charles Duke of Burgundy, called the Bold. Born at Dijon, Nov. 10, 1433, he was the son of Philip the Good, Duke of Burgundy. As Count of Charolais, he waged war against the French king and continued this policy after he became duke in 1467. His aim was to add Alsace, Lorraine and Switzerland to his possessions and to make himself a king. By a trick Louis XI. of France took him prisoner, but released him. Charles then attacked the Swiss, who defeated his troops at Granson and Morat. He then attacked Nancy, where he was killed, June 5, 1477.

Charles is admirably depicted by Scott in *Quentin Durward* and *Anne of Geierstein*. He had no sons, so left his land to his daughter Mary who married Prince (afterwards Emperor) Maximilian. They were the grandparents of Charles V.

Charles Edward Stewart prince, known as the Young Pretender, and to the Jacobites as Charles III. Born in Rome, Dec. 31, 1720, the elder son of James Edward, the Old Pretender, he was educated at the court of the exiled Stewarts in Rome.

The Jacobites decided to attempt a recovery of the throne, and in July, 1745, the young prince landed in Scotland with a few companions. He was soon at the head of an army which followed him to the south. He took possession of Edinburgh, routed the English army at Prestonpans and on Dec. 5 reached Derby. There, however, his advance stopped. He led a retreat to Scotland, and on Culloden Moor was caught by the pursuing English. His army was shattered; he himself owed his life

to the loyalty of his followers, by whose aid he made his way to France.

The rest of his career was uneventful. He lived in France and elsewhere in Europe for some years until his death Jan. 31, 1788. His remains are in S. Peter's, Rome.

Charles Martel Frankish prince. A son of a certain Pepin, he was born about 690 and became a soldier and mayor of the palace. The Frankish kings at that time were feeble folk, and Charles was the real ruler of their kingdom, which he enlarged by conquest. In 732 he defeated a great army of Saracens at Tours, and so won his title of Martel, or hammer. He died Oct. 22, 741. Charles was the grandfather of Charlemagne (*q.v.*).

Charleston Name of several cities in the United States. The largest is a seaport of S. Carolina. It stands at the union of two rivers, the Ashley and the Cooper, and has a good harbour, 7 m. from the sea. The chief industry is the export of cotton and the government has a navy yard here. Charleston was founded in the time of Charles II. and one or two of its old buildings still stand. Here the Civil War began by the bombardment of Fort Sumter by the Northerners in 1861. It was the state capital in 1773-80. Pop. (1930) 62,265.

The Charleston is a dance which became very popular in the United States in 1925 and was soon taken up in Great Britain. It was originally a negro dance.

Charlock (Wild mustard, *brassica sinapistrum.*) Cruciferous plant belonging to the cabbage family. It is found in corn fields and on rough ploughed land; it is an annual, about 2 ft. high with bright yellow four-petalled flowers and rough leaves with toothed edges. The pods are angular and beaked and each contains a row of dark-brown seeds.

Charlotte English princess. She was born in London Jan. 7, 1796, the only child of George IV. and his wife Caroline of Brunswick. She was betrothed to the Prince of Orange, but in May, 1816, was married to Leopold of Saxe-Coburg, who became King of the Belgians. She died in childbirth Nov. 7, 1817.

Charlottenburg Industrial district of Berlin, on the Spree, immediately west of the capital. It derives its name and existence from the castle built here between 1695 and 1707 for Charlotte, the wife of Frederick, first King of Prussia. Its chief industries are chemical products, iron foundries, porcelain, pottery, breweries, candles and soap and it contains also a famous technical high school and the Berlin waterworks. It was a separate municipality until 1920 when it was included in Berlin.

Charlottetown City and seaport of Canada, the capital of Prince Edward Island. It does an import and export trade. The town was named after the wife of George III. Pop. 12,357.

Charlton District of London. In the boroughs of Greenwich and Woolwich, it is 8 m. from London, on the S. Rly. It stands near the river and has become an industrial centre with engineering works, etc. Here is Charlton House, a mansion built from designs by Inigo Jones. Charlton Athletic is a professional association football club.

Charmouth Seaside village of Dorset. It is situated on the mouth of the Char, 2 m. from Lyme Regis and 6 m. from Bridport, on the G.W. Rly. Charmouth was once a Roman station and the surrounding district contains remains of ancient earthworks.

Charnwood Forest District in Leicestershire. It is near Loughborough and covers about 20 sq. m. A hilly region, its highest point is Bardon Hill (912 ft.). The Cistercians have a monastery in the forest, erected in 1845 and called Mt. St. Bernard. Good building stone is obtained in the forest.

Charolais Former division of France. Its capital was Charolles, 39 m. W.N.W. of Macon. The countship of Charolais passed to Philip of Burgundy, who conferred it upon his son, afterwards Charles the Bold. It was united to the French crown in 1771. The district is traversed by the Mountains of Charolais, which rear the renowned Charolais breed of oxen.

Charrington **Frederick Nicholas.** English philanthropist. Born Feb. 4, 1850, he was educated at Brighton College and worked among the poor in the East End of London. He founded the Tower Hamlets Mission and at the Great Assembly Hall, which he built in the Mile End Road, he organised and carried on a great religious and philanthropic work. He stood out as an advocate of temperance. He was elected to the Borough Council of Stepney and from 1889-95 was a member of the London County Council. He died on Jan. 2, 1936.

Chart Map used in navigation. British charts are all prepared by the Hydrographic Department of the Admiralty, and before being sold are officially corrected to date. They show the land as visible to those afloat, including lights and guiding marks, and indicate the depth in fathoms and nature of the sea floor, together with all dangers and helps to navigation. They include ocean, general, and coast charts, harbour plans, and physical, or wind-and-current, charts.

Charter Written document granting privileges or rights. It is usually granted by the sovereign. The most famous is the Great Charter or Magna Carta (*q.v.*), but many others were granted by the early kings. A number were granted to towns, which obtained many privileges in this way. To-day boroughs obtain incorporation by the issue of a charter and the first mayor is called the charter mayor. Any large place can apply for a charter of incorporation, as Walthamstow and other places did after the Great War. A **chartered accountant** is a member of a society that has been incorporated by Royal Charter.

Charterhouse English form of the French chartreuse. The houses established in England by the Carthusian Order were called Charterhouses. The most famous is the one in London. It was dissolved at the Reformation, and on its site in 1611 Thomas Sutton founded a hospital. Connected with it was a school at which Thackeray and other great men were educated. The present buildings include a chapel and a hospital or almshouse where a number of old men live.

Charterhouse School, long in Charterhouse Square, and one of the famous English public schools, was removed in 1872 to Godalming. There it has large and handsome buildings, including a beautiful chapel, and has accommodation for about 700 boys.

Charter Party Agreement by which a shipowner lets the whole or part of a ship to a person called the charterer, for the conveyance of goods on a particular voyage or for a specified period.

It sets out the liabilities of each party to the agreement and must bear a sixpenny stamp.

Chartism Political movement of the 19th century. In 1838 an organisation of reformers in London put forward a charter which contained six suggested reforms. These were the abolition of the property qualification for members of Parliament, payment of members, vote by ballot, manhood suffrage, annual parliaments and equal electoral districts.

Called Chartists, the advocates of these ideas soon became a powerful body. In 1840 they presented a petition to the House of Commons signed by over a million persons. There were riots in 1841 and 1842, after which less was heard of them until 1848. In that year under Fergus O'Connor and Ernest Jones the Chartists were very active. On April 10, 1848, they assembled on Kennington Common to march to Westminster, and the authorities, thoroughly alarmed, enrolled 200,000 special constables under the Duke of Wellington. The meeting, however, was a failure and no procession to Westminster was attempted, though a petition with 2,000,000 signatures, many being fictitious, was taken to Parliament. After this little was heard of Chartism, but during the next 60 years, four of its six demands were granted.

Chartley Village of Staffordshire. It is 8 m. from Stafford, on the L.N.E. Rly. Chartley Hall, once the seat of Earl Ferrers, is a modern house. In its park there was until 1905 a herd of white cattle, said to be the only one of its kind in England.

Chartres City of France. The capital of Eure-et-Loir Department, it is 55 m. from Paris. The ancient Autricum, it grew up round its cathedral which, rebuilt in the 13th century, is one of the most beautiful in the world. The majestic statuary of the triple lateral portals, the south tower, the incomparable stained glass representing 5000 figures, and the crypt are supplemented by the Renaissance sculpture of the choir screen and the 16th-century octagonal spire of the north tower. Pop. (1931) 25,357.

The title **Duke of Chartres** was borne by Robert, a grandson of Louis Philippe. He died Dec. 5, 1910.

Chartreuse Name given to a choice liqueur. It is made by a secret process from sweetened spirit mixed with cordials or alcoholic extracts of various kinds of herbs. It was prepared originally at the Grand Chartreuse Monastery near Grenoble, but is made now by Carthusian monks in Spain. There are two well-known kinds, viz., the yellow and the green.

The **Grand Chartreuse,** the oldest and perhaps the most famous house of the Carthusian Order, is in the mountains, 12 m. from Grenoble in France. The buildings now belong to the State.

Charybdis To the ancients a whirlpool in the Strait of Messina. It was supposed to be caused by a sea monster who lived on a rock there. Opposite was another monster called Scylla who devoured those who escaped from the whirlpool; hence the phrase "Between Scylla and Charybdis."

Chasing Term applied to the art of embossing and engraving in relief in various metals. For this purpose special forms of punches, tracers and other tools are used, although much of the fine native Indian work is done with the simplest of appliances. Benares work in brass is an example of decorative design in flat chasing. The term chasing is used also for the process of cutting screws with a special tool upon a lathe.

Chasseur Light infantry or cavalry man in the French Army. Regiments of these were first formed in 1743 and they did good service in the Great War. They are known as *chasseurs à pied* and *chasseurs à cheval*, and there are also *chasseurs Alpins* and *chasseurs d'Afrique*. The word comes from *chasser*, to hunt.

Chassis Originally meaning a window frame, the word is now widely used for that portion of a motor vehicle which consists of the wheels, frame and machinery, but excludes the body. The chassis and the body are frequently manufactured by different makers, being provinces of the engineer and coachbuilder respectively.

Chastelard **Pierre de Boscosel de-** French poet. He accompanied Mary, Queen of Scots from France to Scotland in 1561. Falling madly in love with her he twice hid himself in her private apartments. For the second offence he was hanged at St. Andrews in 1563.

Chat Name used for several birds of the thrush family. The whinchat and the stonechat are general in Europe, others in Australia and N. America. The yellow-breasted chat has the power of mimicking the songs of other birds.

Chatalja Village near Istanbul. In 1912 the Turks built fortifications through it called Chatalja lines, to protect their capital against the Bulgarians in the first Balkan War. They were attacked in force from Nov. 17 to Nov. 19, when the Bulgarians, unable to make any progress, withdrew.

Château French word for a residence. At first it described a castle, but later came into use for a manor house. The châteaux of France, especially Chambord and others in the Loire district, are famous.

Chateaubriand **Francois René, Vicomte de.** French writer. Born at S. Malo, Sept. 4, 1768, he went to the United States in 1791. In England, he published his *Essai sur les Révolutions* (1797). His most famous book, *Le Génie du Christianisme* (1802), is an apology for the Christian religion from the literary and humanistic point of view. In 1809 he published *Les Martyrs*, which demonstrates the superiority of Christian theology over pagan mythology. Among his later works are *René*, *Le Dernier des Abencérages* and the autobiographical *Mémoires d'Outre-tombe*. From 1822-24 he was French ambassador in London. He died in Paris, July 4, 1848, and was buried on Grand-Bey, one of the islets off S. Malo.

Château Gaillard Fortress of France, once regarded as the strongest of its kind. It was on the Seine, near Les Andelys, and was built by Richard I. when Duke of Normandy. Taken by King Philip in 1204, it fell into decay and only ruins remain.

Château-Thierry Town of France. On the Marne, 60 m. from Paris, it has an interesting old church and the ruins of a castle. Here, from

May 31 to July 21, 1918, there was fierce fighting between Germans and Americans in the final Allied offensive.

Châtellerault Town of France. On the Vienne, 19 m. from Poitiers, its chief features are the 16th century towers which guard the stone bridge connecting the town with its suburb of Châteauneuf. The Duke of Hamilton bears the title of Duke of Châtellerault, given to an ancestor in 1548. Pop. (1931) 17,704.

Chatham City and port of Ontario. On the Thames, it is 65 m. from London, by the C.P.R. and the C.N.R. Pop. (1931) 14,569.

Another Chatham is a city and port of New Brunswick. This is on the Miramichi River with a station on the C.N.R. Pop. 3500.

The Chatham Islands are a group in the Pacific Ocean. They cover 375 sq. m. and belong to New Zealand, 536 m. away. The chief island is Chatham, covering 321 sq. m., and Waitangi is the chief settlement. Pop. 550.

Chatham Seaport, market town and borough of Kent. It stands on the Medway, 34 m. from London, on the S. Rly. An important naval depot, most of its industries centre in the dockyard which covers more than 500 acres and has works for building and repairing warships, as well as barracks, arsenals, etc. The forts are obsolete, but Fort Pitt is used as a school. Upnor Castle dates from the 16th century. There are some fine war memorials. Although a separate municipality, Chatham forms one town with Rochester and Gillingham. Pop. (1931) 42,996.

Chatham Earl of. English statesman. William Pitt, a son of Robert Pitt, was born in Westminster, Nov. 15, 1708, and went to Eton and Trinity College, Oxford. He entered Parliament in 1735 as M.P. for Old Sarum, and there made a reputation by his attacks on the Premier, Sir Robert Walpole. From 1746-57 he was Paymaster-General.

In 1756 Pitt formed, with the Duke of Newcastle, the ministry which carried on the Seven Years' War, and was thus largely responsible for the British victories in Canada, India and on the seas. In 1761 he left office because his colleagues would not declare war on Spain, but in 1766 returned to form a ministry with the Duke of Grafton. He was created a peer as Earl of Chatham, but by now his health was seriously impaired, and in 1768 he resigned.

The last 10 years of his life, passed mainly at Hayes Place, Kent, were marked by his fitful appearances in the House of Lords to speak against the policy of coercing the American colonists. A seizure after one of these speeches ended in his death at Hayes, May 11, 1778. He is buried in Westminster Abbey.

Chatham ranks as one of Britain's greatest statesmen. He was a magnificent orator and a commanding personality, with a range of vision far greater than that of his contemporaries, and his lofty patriotism is unquestioned. *See* HAYES.

Chat Moss District of Lancashire. It is 7 m. from Manchester, and consists of land drained and made valuable. George Stephenson won fame by building a railway line across it. It covers about 12 sq. m., and on it Manchester has an aerodrome.

Chatsworth Residence of the Duke of Devonshire. In Derbyshire, it is 3 m. from Bakewell and stands in an enormous park through which the Derwent flows. It contains some valuable pictures and sculptures. In the Ionic style it was built between 1687 and 1706, but the N. wing was added later. The great palm house was pulled down in 1920.

Chattanooga City of Tennessee, U.S.A. It stands on the Tennessee River, 150 m. from Nashville, and has considerable trade. Pop. 61,900.

The city gives its name to one of the great battles of the civil war fought Nov. 23-25, 1863. Here Grant defeated the Confederates, or Southerners, under Braxton Bragg. The battlefield has been made into a national park.

Chatterton Thomas. English poet. He was born at Bristol, Nov. 20, 1752, and educated at Colston's bluecoat school. He wrote some poems which he attributed to a 15th century writer whom he called Rowley, and submitted them to Horace Walpole in 1769. Walpole, having shown the documents to Gray and Mason, who pronounced them forgeries, returned them. Chatterton committed suicide in London, Aug. 24, 1770.

Chaucer Geoffrey. English poet. The son of John Chaucer, a London vintner, he was appointed in 1357 a page to Elizabeth de Burgh, wife of Lionel, third son of Edward III. Two years later he served under the king in his French campaign and was taken prisoner. For the next 20 years, during the first half of which he was frequently employed as the king's agent abroad, his affairs were prosperous; but shortly after he sat as knight of the shire for Kent in the Parliament of 1386 he was deprived of his offices, and it was not until 1394 that he was granted an annual pension of £20. He died in London, Oct. 25, 1400, and was buried in Westminster Abbey.

Chaucer's first considerable poem, the translation of *The Romaunt of the Rose*, was written about 1369. Between 1370 and 1386 he produced *The House of Fame*, *The Legend of Good Women* and *Troilus and Cresseide*. He completed his great work, *The Canterbury Tales*, between 1386 and 1389. The first collected edition of his works was printed in 1532.

Chauvinism Excessive patriotism, the French equivalent to jingoism. The word came from a patriotic character in *Le cocarde tricolore*, 1831, and another in Scribe's *Le soldat laboureur*. By name Nicolas Chauvin, he was one of Napoleon's veterans who spoke of his master and his deeds in the most adulatory way.

Cheadle Market town of Cheshire. It is 6 m. from Manchester and 3 from Stockport, with stations, Cheadle and Cheadle Hulme, on the L.M.S. Rly. It formerly consisted of three separate villages, Cheadle Hulme, Cheadle Moseley and Cheadle Bulkley. Cotton printing and bleaching are the main industries. Pop. (1931) 18,469.

Cheadle Market town of Staffordshire. It is on the L.M.S. Rly., 13 m. from Stafford. In a coal-mining district it has silk factories and metal works. Pop. 6200.

Cheam District of Surrey. It is 12 m. from London, on the S. Rly. Near is Nonsuch Park, where Henry VIII. began his great palace.

Cheapside Street in London. It runs from S. Paul's churchyard almost to the Bank of England. Before the Great Fire it was the scene of markets, pageants and tournaments. It contained a pillory, two crosses and probably the Mermaid tavern.

Cheddar Village of Somerset. It is 2 m. from Axbridge and 129¾ from London, on the G.W. Rly. It is famed for its caves and its cliffs through which a road has been cut, and for a variety of hard cheese.

Cheese Nutritious article of food prepared from milk. With or without a lactic-ferment starter, the milk curd, or casein, is coagulated by rennet or an acid, separated from the serum or whey, and pressed into solid masses.

Hard cheeses include the chief English varieties, Gloucester, Stilton, Cheddar, Cheshire and Wensleydale, and also the Dutch, Canadian and French Gruyère cheeses. Of soft or cream cheeses the best known is Camembert. Roquefort is made from the milk of ewes; some Swiss and French cheeses are made of goat's milk.

Cheetah Animal of the cat-like carnivorous family of Felidae. It has longer limbs than the leopard, tiger, or lion, with non-retractile, blunt claws, and catches its prey in chase. It is found in Africa, Western Asia, and India, and is easily tamed and domesticated.

Chefoo Treaty port of N. China. It stands at the end of the Shantung peninsula, at the entrance to the Gulf of Chih-li and about 100 m. from Wei-hai-wei. The harbour is protected by a breakwater. The port has a considerable foreign settlement and trades in silk, etc. Pop. (1931) 131,659.

Cheiromancy Art of telling fortunes by examining certain lines and marks on the palms of the hands. It is also known as palmistry.

Cheka Secret police in Soviet Russia. It made its appearance in 1918 to put down opposition to the government.

Cheke Sir John. English scholar. Born in Cambridge, June 16, 1514, he was educated at St. John's College. In 1540 he was elected the first regius professor of Greek in the university, and in 1544 was made tutor to Prince Edward, afterwards Edward VI. Appointed Secretary of State during the brief reign of Lady Jane Grey, he was pardoned by Queen Mary, who, after imprisoning him in the Tower, gave him leave to go abroad in the autumn of 1554. In the spring of 1556, however, he was treacherously abducted between Brussels and Antwerp by emissaries of Philip II. of Spain, and conveyed back to England, where, to avoid being sent to the stake, he abjured his Protestantism and was released. He died in London, Sept. 13, 1557.

Chekov Anton Pavlovich. Russian author. He was born at Taganrog on the Sea of Azov, the son of a small shopkeeper and the grandson of a serf. He took his medical degree at Moscow University in 1884; but practised little save during the cholera epidemic of 1892-93. He wrote short stories, and in 1886 the collection of them won him a popular success. In 1887 appeared his first play, *Ivanov*, followed in 1896 by *The Seagull*, which achieved a great success in 1898 at the Moscow art theatre. His three later plays, *Uncle Vanya* (1899), *The Three Sisters* (1901) and *The Cherry Orchard* (1904) were all produced there. In 1901 he married the actress, Olga Knipper. He died of consumption, July 2, 1904, at Badenweiler.

Chelmer River of Essex. It rises on the Hertfordshire border and flows across the county for 45 m. until it falls into the Blackwater at Maldon. It has been canalised between Chelmsford and its mouth.

Chelmsford City and borough of Essex, also the county town. It is 29 m. from London, on the L.N.E. Rly. It is an agricultural centre, with a cattle market, corn mills, breweries, etc. It is also an engineering centre actively connected with the wireless industry. Pop. (1931) 26,537.

Chelmsford Baron. English title borne by the family of Thesiger. Frederick Thesiger, born April 15, 1794, served in the navy, but afterwards became a barrister. From 1840 to 1858 he was a Conservative M.P., and he was Solicitor-General and then Attorney-General, 1844-46, and Attorney-General, 1852-53. In 1858 he was made a peer and Lord Chancellor, and he was Lord Chancellor again, 1866-68. He died Oct. 5, 1868.

His son, Frederic Augustus Thesiger (1827-1905), the 2nd baron, was a soldier. He commanded the British forces against the Zulus in 1878-79 until superseded by Sir Garnet Wolseley. Frederic John Napier Thesiger became the 3rd baron on his father's death in 1905. He was Governor of Queensland, 1905-09, and of New South Wales, 1909-13, and Viceroy of India, 1916-21, being made a viscount on his retirement. In 1924 he was First Lord of the Admiralty. From 1926 to 1928 he acted as Agent-General (temporary) for New South Wales.

Chelsea Borough of the county of London. On the N. side of the Thames, between Westminster and Fulham, with stations on the district and West London Extension Rlys., it is a popular residential district, especially for artists. The chief buildings are the old church with its interesting tombs and memorials, and the Royal Hospital for disabled soldiers with its great hall, built by Wren. The Physick garden of the Apothecaries' Society is notable.

Chelsea has associations with Henry VIII., Sir Thomas More, Carlyle and other famous men. Crosby Hall has been rebuilt on the site of Sir Thomas More's garden. There is a More chapel in the old church. Carlyle's house in Cheyne Row is a Carlyle museum. There is an important welfare centre built by Lord Melchett in Manor St. Chelsea China was produced in the 18th century. Pop. (1931) 59,026.

Cheltenham Borough, market town and watering place of Gloucestershire. It is 94¼ m. from London, on the G.W. Rly., in a beautiful position near the Cotswold Hills, and its mineral springs attract sufferers from gout and liver complaints. Races are held in the town, which is also a hunting centre. Cheltenham College, opened in 1840, is one of the great public schools; Cheltenham Ladies' College, founded in 1854, has an equally high reputation. The name comes from the little River Chelt. Pop. (1931) 49,385.

Chemin des Dames French road in the Aisne department. Constructed to facilitate coach travelling in the 18th century by ladies (dames) of the royal family, it extends along the Craonne ridge. After their defeat on the Marne, Sept., 1914, the Germans withdrew to the Aisne, securing Craonne heights. Haig's first corps attacked them but, when transferred to the Ypres sector, relinquished the road to the care of the French. Nivelle's offensive in Apr.-Oct., 1917, cleared the centre and by

Nov. 2, the whole road. The Germans drove back the Allied troops and crossed the Aisne, May 27, 1918; but after their defeat in July, a counter offensive, lasting until Oct. 12, finally secured the road.

Chemist One who prepares and sells medicines and drugs. In Great Britain, since 1868, every person practising as a chemist must pass certain examinations and have his or her name on the register of the Pharmaceutical Society.

A consulting or analytical chemist analyses food and other substances, and experiments in the hope of producing fresh compounds. Many are employed by large industrial firms,

The government chemist is a public official whose duty it is to analyse specimens of food and drink submitted to him. His offices are 13 Clement's Inn Passage, London, W.C.2, and the Custom House, E.C.3.

Chemistry Science dealing with the composition of matter, the laws of chemical change, and the relation between the properties and composition of substances. The chemical changes which occur permanently affect the character and properties of substances, and are distinguished from those effects brought about temporarily by physical forces such as heat, electricity and magnetism.

Chemistry had its origin in the cult of alchemy, which was concerned with the search for the philosopher's stone, the elixir of life and the transmutation of metals. The experimental work of the alchemists led to many discoveries, and, in comparatively recent times, the pure science of chemistry emerged. The names of Stahl, Lavoisier, Boyle and Priestley in the 18th century and Dalton in the 19th are associated with the foundations of the modern science.

Inorganic chemistry treats of the origin, properties and changes of all elements except carbon; mineralogical chemistry deals with the composition of minerals and rocks, while agricultural chemistry is concerned with the problems of soils, etc.

The second great division, **organic chemistry**, treats of the innumerable compounds of carbon.

Biochemistry is a highly specialised section concerned with the chemical problems of living things.

Physical chemistry is the third great division, dealing with the physical properties of substances in relation to chemical changes, thus linking chemistry to physics.

Chemistry now forms part of the curriculum at the universities. It is fostered by the **Chemical Research Board**, with a laboratory at Teddington, and the **Chemical Society**, Burlington House, London, W. The **Institute of Chemistry**, at 30 Russell Square, London, W.C., consists of fellows (F.I.C.) and associates (A.I.C.) admitted after examination. There is also a society of chemical industry in London.

INDUSTRIAL CHEMISTRY AS A CAREER. Chemists are now employed constantly in almost every productive industry. Those who intend to adopt this profession must receive systematic training in chemistryc and allied subjects. The best posts are obtained by those who have obtained degrees or diplomas as a result of full time training at a university or college. Juniors who have matriculated may obtain posts as assistants with commencing salaries of from £50-£100 per annum; they may then receive the necessary training by evening classes.

Newly qualified chemists are being offered salaries of about £250 per annum, or more in the cases of those who have shown a special aptitude for research.

As in other professions, the prospects are good for those with keen interest in science and good personality.

The official organisation for the profession is The Institute of Chemistry of Great Britain and Ireland, 30 Russell Square, London, W.C.1. Fuller particulars as to training, prospects, etc. may be obtained from the Registrar.

Chemnitz City of Saxony, Germany. It is 56 m. from Leipzig and specially famous for its textile factories and engineering works. It stands in a coal-mining district and its school of mines is celebrated. The fortifications have become promenades and the abbey grounds a pleasure garden. Pop. 335,982.

Cheops King of Egypt. He was the second monarch of the fourth dynasty. The Chembis (or Chemmis) of Diodorus, he built the Great Pyramid as a sepulchre. His date is given as 3733-3666 B.C.

Chepstow Urban district and river port of Monmouthshire. It stands near the mouth of the Wye, 15 m. from Monmouth and 132 from London, on the G.W. Rly. Part of its fine old castle remains. The church of S. Mary is partly Norman. In 1916 Chepstow was made a national shipyard and extensive works were erected. Pop. (1931) 4303.

Cheque Negotiable instrument in common use for making payments. It is defined by the Bills of Exchange Act, 1882, as "a bill of exchange drawn on a banker payable on demand." It must bear a twopenny stamp. If crossed, *i.e.*, with two parallel lines drawn across the face either with or without the words "and Co.," it must be paid into an account.

Cheques are endorsed on the back by the payee. They can be for any amount, but the banker need not meet one unless he has funds with which to do so. It is his business to see that the signature of the customer is genuine and he may be held liable for negligence in this matter. Before 1918 the stamp on a cheque was a penny.

There are various devices to prevent the forgery of cheques, one being a machine which, using two colours of indelible ink, forces the words into the paper, making any alteration practically impossible. A fireproof paper has also been invented for cheques.

Chequers Official residence of the Prime Minister of Great Britain. It is 3 m. from Princes Risborough. The house stands in a park of 1500 acres and contains some relics of Cromwell. A Tudor building, it was inherited by Sir Arthur Lee, later Viscount Lee of Fareham, who, in 1917, presented it to the nation.

Cherbourg Seaport and naval station of France. It is 239 m. by railway from Paris, at the end of the Cotentin peninsula. It has two harbours, one naval and the other commercial. There are large docks and works for the building and repairing of warships, as well as barracks, storehouses, hospitals, etc. An immense breakwater forms a roadstead for transatlantic and other large liners. Cherbourg was strongly fortified in the 19th century. Pop. 37,461.

Cherokee Race of American Indians. Originally in Virginia, they were, about 1780, driven S. to the Carolinas and Georgia. The whole nation, all of whom

are Christians, were removed in 1838 to Indian territory. They number about 40,000.

Cherry Tree of the rose order. A native of Europe and Asia, there are wild and cultivated varieties. They grow well in Kent. There are several varieties, the best for eating purposes being the white hearts. Cherries are imported from France and Belgium. The morello cherry is used for making cherry brandy. The wood of the cherry tree is used for walking sticks.

CHERRY BRANDY. Liqueur made by steeping morello cherries for six months or more in brandy. The cherries must be dry and clean, and each one pricked with a needle. Allow a dozen blanched bitter almonds and 3 oz. of sugar to every pound of fruit. Half fill each bottle with fruit before adding the brandy, cork well and store in a cool dry place till the liqueur is ready for use.

Chertsey Market town and urban district of Surrey. It is on the Thames, 19¾ m. from London, on the S. Rly. It has a trade in agricultural produce. In the Middle Ages Chertsey had a large Benedictine abbey of which a few remains exist. Pop. (1931) 17,130.

Cherubim The second of the nine orders of angels, of which seraphim are the highest. They are described in Ezekiel i. 5-13, and their representation in the Ark of the Lord (Exodus xxv) and in Solomon's Temple (1 Kings vi) was seemingly a permissible infraction of the second commandment. The word is the Hebrew plural of cherub, and means "fulness of knowledge."

Chervil Biennial plant with small white flowers. It has long been used as a potherb for flavouring, as it has large leaves with an agreeable smell resembling parsley. A bulbous variety produces a fleshy root similar to the parsnip. It grows in the E. of Europe and the W. of Asia.

Chervonetz Russian monetary unit. Instituted under the U.S.S.R., in 1922 as part of the New Economic Policy. The chervonetz equalled 10 pre-war roubles, or £1 1s. 1½d., and notes were issued, interchangeable 25 per cent. in money, and 75 per cent. in goods or securities.

Cherwell River of England. It rises at Charwelton in Northamptonshire. At Oxford it is called the Cher and joins the Thames. It is 30 m. long.

Chesapeake Bay Opening of the Atlantic Ocean. It penetrates north for about 200 m., and washes the shores of Maryland and Virginia. About 12 m. wide at the entrance, it widens to about 40, and receives many rivers, including the Potomac, Rappahannock, James, Susquehanna and York. Baltimore, Newport News, Portsmouth and Norfolk are on its shores.

On Sept. 5, 1781, there was an indecisive naval battle in the bay between the English and the French.

The *Chesapeake* was the name of the U.S. frigate captured after a fight with the British frigate *Shannon* off Boston June 1, 1813.

Chesham Urban district and town of Buckinghamshire. It stands on the little River Chess, 26 m. from London, on the L.N.E. Rly. The industries are concerned with the making of wooden articles, and there are flour mills. Pop. (1931) 8809.

Cheshire County of England. It lies between Derbyshire and Wales with the Mersey separating it in part from Lancashire. In the N. it is almost a suburb of Manchester and Liverpool, in the centre and S. an agricultural district, and in the E. a moorland area. In the centre are salt mines and meres are numerous in the south. The district between the Dee and the Mersey is called the Wirral. The county covers 1025 sq. m.

Chester is the county town. Industrial centres are Birkenhead, Crewe, Stockport, Stalybridge and Hyde. Wallasey is chiefly a residential town. Macclesfield, Knutsford, Runcorn and Congleton are smaller places. Middlewich and Northwich are the salt towns. Apart from the Dee and the Mersey the chief rivers are the Weaver and the Bollin. Cheshire was long a palatine county and owed much to its situation on the borders of Wales. The Prince of Wales bears the title Earl of Chester. The Cheshire Regiment, which has its depot at Chester, is the old 22nd of the line. Pop. (1931) 675,190.

Cheshunt Urban district of Hertfordshire. It stands on the Lea, 14 m. from London, on the L.N.E. Rly. It is a market gardening centre. The chief buildings are the great house where Wolsey lived and the college used by the Countess of Huntingdon's connection for training ministers until it was sold to the Church of England in 1905. The connection built a new college at Cambridge, giving to this the name of Cheshunt College. Pop. (1931) 14,651.

Chesil Bank Shingle bank in Dorsetshire. Joining Portland to the mainland, 16 m. long, it is 20-40 ft. high and 170-200 yards wide. Of considerable size at Portland, the shingle diminishes towards the land, where the bank is fine gravel and sand.

Chess Game played upon a chequered board divided into 64 squares, with 32 chessmen equally apportioned between two opposing players. Each player is equipped, in contrasting colours, light and dark, with king, queen, two bishops, two knights, two rooks or castles and eight pawns. Each piece can be moved in a way peculiar to itself, the queen having the widest range of movement. The contest simulates military strategy and tactics. Any exposed piece is liable to capture and removal from the board, except the king, which cannot be removed. The purpose of each player is to bring the opposing king into an exposed position from which he cannot retire; this checkmate ends the game.

Devised in India and passed to Persia, chess was brought by the Arabs through Spain to Europe. Certain medieval changes revolutionised the game, which has since produced a succession of brilliant masters. In 1935 Dr. Max. Enwe (Dutch) defeated Dr. Alekhine, world chess champion since 1927.

Chest Upper compartment of the body, called by biologists the thorax. Separated from the lower or abdominal compartment by a concave membrane or diaphragm, it is a closed, conical box (the backbone and breastbone being united at the sides by the ribs) containing the heart, lungs, gullet, windpipe, bronchial tubes, important nerves, blood-vessels, thoracic glands, muscles and fat, all enclosed by the skin. The normal chest measurement of adult man is from 33 to 40 in. Malformations of the chest cause it to be long, flat, barrel shaped, triangular or pigeon breasted,

rickety or hollowed. The Royal Chest Hospital is in City Rd., London, E.C. 1.

Chester City and river port of Cheshire, also the county town. It stands on the Dee, 179 m. from London and 16 from Liverpool, and is served by the G.W., L.M.S. and Cheshire Lines Rlys, and by canals. The cathedral is a magnificent building embodying various styles of architecture. The 14th century walls, the most perfect in England, completely encircle the city. Another notable feature is the shopping centre known as the Rows, where the shops are reached by stairways from the street. Many old houses still stand. The finest, Stanley Palace, was, in 1928, given to the city by the Earl of Derby. Another is God's Providence House.

The town hall is modern, as are the school of art, and the Grosvenor Museum. The King's School is an old foundation with new buildings. There are a city cross and remains of the castle, part of the site of which is occupied by the assize court and the barracks. Races are held on the Rodee, where the Chester Cup is a notable event. The city has some manufacturing industries. Pop. (1931) 41,438.

The *Chester* was the name of a light cruiser that took part in the Battle of Jutland.

Chesterfield Borough and market town of Derbyshire. It is 12 m. from Sheffield, on the L.M.S Rly. It has a Gothic church (All Saints) with a twisted spire. In the Stephenson memorial is a museum of engineering. There are engineering works, textile factories, coal mines, and canal communication with the Trent. The River Rother flows through the town. Pop. (1931) 64,146.

Chesterfield Earl of. English title borne by the family of Stanhope since 1628. The first earl was Sir Philip Stanhope, a Nottinghamshire landowner, and the title passed in 1883 to Henry Scudamore Stanhope, who belonged to a younger branch of the family, and became the 9th earl. His son, the 10th earl, was lord steward, 1910-15. Most of the estates have been sold.

Chesterfield House, in South Audley St., London, was built by the famous 4th earl in 1750. Bought from Lady Burton in 1919 by Viscount Lascelles, later Earl of Harewood, it was again for sale in May, 1932.

Chesterfield 4th Earl of. English statesman and author. Philip Dormer Stanhope was born Sept. 22, 1694, and educated at Cambridge. In 1716 he became M.P. for St. Germans and acted with the Whigs. In 1726 he succeeded his father, and in 1728 was sent to the Netherlands as ambassador. In 1733 Walpole deprived him of his office of Lord High Steward, and he was henceforward one of that statesman's bitterest opponents. In 1745-46 he was Lord Lieutenant of Ireland, and from 1746 to 1748 a Secretary of State. He retired in 1748 and lived a secluded life until his death, March 24, 1773.

Chesterfield won a high reputation as an orator and writer, but little of his work is now remembered except the *Letters to his Son* and the *Letters to his Godson*. The son was his natural son, Philip Stanhope, who died in his father's lifetime. The Earl is the subject of a scathing letter from Dr. Johnson, who dedicated to him the plan of his *Dictionary* and received in return but scant acknowledgment.

Chester-le-Street Urban district of Durham. It stands near the River Wear, 6 m. from Durham. on the L.N.E. Rly. The chief industry is coal mining and the chief building the old church with memorials of the Lumleys. Near are Lumley and Lambton castles. Pop. (1931) 16,639.

Chesters Estate in Northumberland on the line of Hadrian's Wall. It contains ruins of Cilurnum, the second largest Roman stationary fort in the country. The museum in the park has a fine collection of Roman remains. In 1930 the estate was sold.

Chesterton Gilbert Keith. English author. Born in Kensington in 1874, he was educated at S. Paul's School, London, and studied art at the Slade School. He began his literary career in 1900 with a volume of poems, and during the next 30 years produced books and articles in great numbers marked by a delightful vein of paradox.

A student of literature he wrote *The Victorian Age in English Literature*, and monographs on Browning, Dickens, Shaw, and Chaucer; his novels include *The Napoleon of Notting Hill*, *The Flying Inn*, *Manalive*, *The Poet and the Lunatics*, and the series of detective stories associated with the name of Father Brown; he is a fine poet, and in *Magic* he proved himself a dramatist. He was, too, a constant contributor to the daily and weekly press, notably in *The Illustrated London News*, *The New Witness*, and his own *G. K.'s Weekly*. His versatility is shown by his *Short History of England*, his articles in defence of Christian faith and morals, such as *The Superstition of Divorce*, and the illustrations of some of his books. In 1922 he became a Roman Catholic.

Chestnut Fruit tree allied to the beech. The sweet or Spanish chestnut is extensively cultivated and the trees reach to 100 ft. The nuts will ripen in England, but they are largely imported, and are eaten raw, roasted, boiled or as *marrons glacés*. The chestnut which grows freely in England is the **horse chestnut**. The fruit of this is not edible.

Chetwode Sir Philip Walhouse. English soldier. Born Sept. 21, 1869, he was educated at Eton and joined the 10th Hussars in 1889. He served in S. Africa, 1899-1902, and in 1914, having in 1905 succeeded to the family baronetcy, was appointed to command a cavalry brigade on the western front. The command of a division followed, and in 1916 he went to Egypt, where he led a mounted force. In 1917-18 he commanded an army corps under Allenby, and he had a large share in the conquest of Palestine. From 1919-20 Chetwode was Military Secretary at the War Office; 1920-22 Deputy Chief of the General Staff; 1922-23 Adjutant-General, and 1923-27 Commander at Aldershot. He was made Chief of the General Staff in India in 1928 and Commander-in Chief there in 1929.

Chevalier Albert. English comedian. A son of the French master at Kensington Grammar School, he was born March 21, 1861, and had French, Italian and Welsh blood in his veins. For some years he was an actor on the legitimate stage, associated with the Kendals, the Bancrofts, John Clayton and John Hare. In 1891 he started as a coster comedian at the Pavilion music hall, and played also at the Oxford, the Tivoli and the Canterbury. Later, becoming author and composer, he toured with his own entertainment in England and America, and gave over 1000 recitals at the small Queen's Hall,

London. His last appearance (1922) was made in a play called *My Old Dutch*, based by himself and Arthur Shirley on his own famous song. He died July 10, 1923.

Chevalier Maurice. French actor. He started as a boy with small engagements on the music hall stage in Paris. In 1913 he appeared at the Folies Bergères, but military service soon interrupted his career. In the Great War he was made prisoner by the Germans, but he escaped to reappear in Paris and to make his London debut with Elsie Janis. He then became a cinema actor. Recent films are *The Merry Widow*, *The Man from the Folies Bergères* and *The Beloved Vagabond*.

Chevening Village of Kent. It is 3 m. from Sevenoaks and 22 from London, on the S. Rly. Chevening Park is the seat of Earl Stanhope. Pop. 1000.

Cheviot Hills Range of hills in Northumberland and Roxburghshire. They extend for about 38 m. along the borders of England and Scotland. The highest point is Cheviot, 6 m. from Wooler, which reaches 2676 ft. The Tyne, Till and other rivers rise in the Cheviots. The hills are suitable for sheep rearing, and a special breed found there are famous for their wool, which is called cheviot, and is used to make tweed cloth.

Chevron Mark in the shape of the letter V, worn by sailors, soldiers, airmen and policemen on the sleeve of the coat to indicate rank or good conduct. A sergeant in the British army wears three chevrons, a corporal two, and a lance-corporal one above the elbow. Chevrons given for good conduct or long service are worn below the elbow. The chevron is also one of the ordinaries in heraldry. The Chevron Club exists for non-commissioned officers in the army and similar ranks in the navy, marines and air force. Its house is at 74 St. George's Square, London, S.W.

Chevy Chase English ballad of the 15th century. It gives an account of the battle of Otterburn between the English and the Scots in the Cheviot Hills.

Chewing Gum Masticatory preparation much used in the U.S.A. It is insoluble, its chief purpose being to cleanse the mouth and keep it moist. Consisting usually of a natural gum or resin called chicle, obtained from the bully tree, it is flavoured, often with mint, and sweetened. The supply is obtained mainly from Guatemala.

Chiang Kai-Shek Chinese politician. A soldier, he became a follower of Sun Yat Sen, and was made head of the military school. In 1925 he was chosen Commander-in-Chief of the forces directed from Nanking, and he led these to the capture of Pekin and to other victories over the northerners. In 1928 he was chosen President of the Republic, and in 1930 conducted, simultaneously, campaigns against the Communists in the south and the northerners who still refused to accept his rule. The latter in 1932 set up the independent state of Manchukuo (formerly Manchuria) under the protection of Japan, and in 1935 Japan still further increased her power in No. China. In 1936, however, there were signs of an improved relationship between the two countries.

Chianti Name of a popular Italian wine. Made from grapes grown in Central Italy, particularly in Tuscany, it is similar in type to claret or Beaujolais, and contains usually about 11 per cent. of alcohol. The name comes from the hills on which the vine is grown.

Chiaroscuro Italian word meaning the appropriate distribution of light and shade in a work of pictorial art. Rembrandt, alike in his paintings and in his etchings, may be regarded as the great master of chiaroscuro.

Chiastolite Variety of the mineral, andalusite. It forms a constituent of the Skiddaw slates and some metamorphic rocks. It is a silicate of alumina, and is distinguished by the curious cruciform design, seen when a crystal is cut across, and due to wedge-shaped patches of carbonaceous matter included in the crystal.

Chicago City of Illinois, United States, the second largest in the country. It stands on the S. side of Lake Michigan and is one of the greatest distributing centres, especially of foodstuffs, in the world, and a great railway centre. Electric lines serve the city and suburbs. The Michigan River runs through it. The city, which covers a vast area, is surrounded by a belt of forest land.

The chief thoroughfare is Michigan Avenue with buildings that rival those of New York. These include the Wrigley Building, the Masonic Temple and the offices of the *Chicago Tribune*. The Field Museum is one of the richest in America. In 1930 the Temple of Commerce was opened. In Lincoln Park is the Academy of Sciences. Both the University of Chicago and the North Western University have fine buildings. Soldiers' Field is a memorial of the Great War.

Chicago's printing works are important, but the preparation of food is the chief industry. Immense numbers of cattle and pigs are handled in the stockyards. It is a great wheat market, with considerable shipping. Land is continually being reclaimed from the lake. In 1931 the city's finances were in a bankrupt condition and thousands of teachers and municipal employees were unpaid. A World's Fair was held in 1933 to celebrate the city's centennial anniversary, and to illustrate the progress of science and culture throughout the world. It was called "The Century of Progress Celebration." The city grew up round Fort Dearborn, built by settlers, in 1804. Pop. (1930) 3,376,438.

Chichester City and borough of Sussex. It is 70 m. from London on the S. Rly, and 2 m. from the sea. A canal runs to Chichester harbour. The cathedral has a notable spire and detached belfry. The cattle markets are important, and it has a brewing industry. Pop. (1931) 13,911.

The title of **Earl of Chichester** has been borne since 1801 by the family of Pelham. The Earl's seat is Stanmer Park, Lewes, and his eldest son is called Lord Pelham.

Chickenpox Acute infectious disease of childhood. It is most common between the ages of two and six. Doctors call it varicella. Usually epidemic and believed to be due to a very minute micro-organism, it is characterised, after little preliminary feverishness, by a skin eruption chiefly on the trunk. The vesicles, sometimes oval, reach their full growth in a day. They are filled with a clear fluid that after three or four days dries up, leaving a scaly crust which falls away, seldom ulcerating. It is always mild.

Treatment.—If the temperature is raised, keep the patient in bed, and in any case he must be isolated. Apply calamine lotion or

boracic powder to relieve itching, and above all, prevent scratching of the face. Even if the child does not seem ill, a doctor should be called in at the first sign of a rash to diagnose the trouble. Incubation period is 14-16 days.

Chickpea Annual leguminous plant (*cicer arietinum*). Cultivated in India, Egypt and the Mediterranean basin for food, it is also called gram. It is bushy and bears two-seeded pods. It exudes viscid drops containing oxalic-acid crystals which are used in domestic medicine. The peas are ground into bread flour, parched, boiled, or given to cattle.

Chickweed Name given to several weeds, mostly species of *arenaria*. It is given as a food to canaries and other cage birds. The name is also given to the herb called stitchwort.

Chicory Plant cultivated in Britain and other European countries. It has a long fleshy root which, when dried, roasted and ground, is used to impart additional bitterness, colour and body to coffee.

Chicoutimi Town of Quebec, Canada. It stands on the Saguenay River, 227 m. from Quebec. There are timber mills and the neighbourhood is visited for fishing and hunting. Pop. 11,877.

Chiffchaff (*Phylloscopus collybita*). Small song bird allied to the wood wren. It is a common summer visitor to England, especially in the S.W. of the country. Olive green in colour shading to yellowish white on the under parts, it frequents woods and the margin of pools and brooks where it feeds on insects and larvae. It derives its name from its song, which is a repetition of two notes.

Chignecto Bay of Canada. An area of the Bay of Fundy, it runs between Nova Scotia and New Brunswick and forms Shepody Bay and Cumberland Basin. It is 30 m. long and about 8 wide. The piece of land uniting Nova Scotia and New Brunswick and separating two areas of the Atlantic, is called the **Isthmus of Chignecto.** It is about 24 m. across and along it a railway line (C.N.R.) runs. A proposal has been made to cut a canal across the isthmus.

Chigwell Village of Essex. It stands on the edge of Epping Forest, with stations, Chigwell and Chigwell Lane, on the L.N.E. Rly. The old King's Head Inn is mentioned as the Maypole in Dickens's *Barnaby Rudge*. Pop. 2950.

Chigwell School, founded in 1629, is now a public school. It has modern buildings, playing fields and accommodation for 200 boys.

Chilanga Since 1929 the capital of Northern Rhodesia. It is a station on the railway line to Broken Hill.

Chilblains An irritating inflammation most commonly occurring on the toes and fingers. Feeble circulation, caused either directly by tight gloves and shoes, or indirectly by lack of exercise, low vitality, or some definite disease, is the cause.

Treatment.—Paint the chilblains with collodion, Paschki's paint, or an ointment consisting of chlorate of calcium 3 drachms, pure vaseline 3 oz. Lactate of calcium in the form of an elixir may be taken three times daily in teaspoon doses. Avoid alcohol and excess of salt in the diet. Low vitality can be treated by ultra-violet rays.

Child The age at which a boy or girl ceases to be a child varies in different countries. In Great Britain the Children Act of 1908 fixed it at 14, although for some purposes 16 is the dividing line.

Since the early 19th century special laws have been passed for the protection of children. Their hours of labour have been limited by Factory Acts, while Education Acts have made it compulsory for them to attend school. Other laws have made cruelty to children an offence and a society for the prevention of cruelty to children has come into existence.

The Children Act of 1908 increased the responsibilities of parents and guardians. It established special courts to try cases where juvenile offenders are concerned and provided that those sent for punishment should be kept apart from criminals. Children are not allowed to buy cigarettes, nor to enter public houses. A further measure for the protection of children was passed in 1932.

It is possible, under a law passed in 1926, for a child to be legally adopted. Before this a child could be adopted, but legally it was not the child of the adopter. The Home Office has a children's branch with inspectors to see that the laws about them are observed. Allowances are given to payers of income tax in respect of children.

Especially in Britain and America much attention is given to studying problems connected with the welfare and education of children. There is a Child Study Society at 90 Buckingham Palace Road, London, S.W.

Chile Republic of South America. It consists of a strip of land on the Pacific coast line some 2600 m. long, but not more than 100 wide. It stretches from Peru in the N. to Tierra del Fuego, part of the republic, in the S. The N. is a tropical desert; the central part fertile and productive, and the S. barren and unfertile. As the Andes run through the land much of it is mountainous. Herein is Aconcagua, the highest peak in S. America. The total area is 285,133. sq. m. Santiago is the capital. Valparaiso, Concepcion and Antofagasta are other large towns. Pop. (1930) 4,287,445.

The chief product is nitrate, but copper and other minerals are mined. Many of the inhabitants are engaged in agricultural pursuits. There are railways between the chief towns and a line crosses the Andes. The monetary unit is the gold peso worth 6d. There is a central bank created in 1925.

After being for three centuries a Spanish possession, Chile declared its independence in 1810 and obtained it in 1818. It is governed by a President elected for six years and a ministry who form the executive. The legislature consists of a senate of 45 members and a chamber of deputies of 132, both elected by all adults who can read and write. The senators are elected in groups of five for eight years; the deputies for four. The Roman Catholic Church was disestablished in 1925.

In 1929 the long dispute between Chile and Peru was settled. This went back to the war between the two countries in 1879-83, at the end of which the Chileans, who were victorious, obtained from Peru the provinces of Tacna and Arica. The arrangement was, that in ten years the people therein should decide their own fate, but this was not done. In 1929, after long negotiations, Tacna was given to Peru and Arica to Chile. In June, 1932, there was serious trouble in Chile and a Communist

government was established. This only lasted a few days, but there were further risings.

Chile Pine Evergreen coniferous tree native to mountainous regions in S. Chile (*araucaria imbricata*). Popularly called monkey puzzle, it yields durable timber; the oval cones are roasted for food. It sometimes grows to a height of 150 ft. It was introduced into Britain in 1796.

Chilham Village of Kent. It is 5 m. from Canterbury and 65 from London, on the S. Rly. It has a fine old church and a castle built in Norman times. Pop. 1232.

Chili Fruit pod of a S. American herb, the capsicum. It is used to make red, or cayenne, pepper, chili vinegar, and chili paste.

Chillingham Village of Northumberland. It stands on the Till, 4 m. from Wooler. Chillingham Castle, the seat of the Earl of Tankerville, was built in the 14th century, but in its present form dates from the 17th. In the park a herd of wild cattle is still maintained, though the castle has been closed.

Chillon Castle in Switzerland. It stands on a little island at the E. end of the Lake of Geneva and was once used as a prison by the Dukes of Savoy. Here Francis de Bonivard was imprisoned. Byron's poem, *The Prisoner of Chillon*, has made the castle known to millions.

Chiltern Hills Range of hills in Oxfordshire and Buckinghamshire. They extend in a N.E. direction for about 45 m. touching Hertfordshire. Wendover Hill and Ivinghoe Beacon, both just over 900 ft., are the highest points. There is some lovely scenery in the district which includes Ashridge, Hampden, Chequers and other places of interest.

Chiltern Hundreds Three hundreds in Buckinghamshire, Desborough, Burnham and Stoke. They owe their importance to their connection with parliamentary procedure. In the olden days stewards of the Chiltern Hundreds were appointed to keep the district free from robbers. A small salary was paid to them, but in course of time the office became a sinecure. It is still retained, however, and a member of Parliament who wishes to resign does so by accepting the office of Steward of the Chiltern Hundreds. Legally a member cannot resign his seat. If, however, he accepts a position of profit under the crown he vacates it.

Chimaera Fish nearly related to the ray. It is found in European seas and off the Pacific coast of North America. Remarkable for a skin often almost devoid of scales, it is usually about 4 ft. in length, and is a great menace to the herring industry.

Chimaera In Greek mythology a female hybrid monster. She resembles in the forepart a lion, in the middle a goat, and in the rear a dragon. She was killed by Bellerophon after devastating Caria and Lycia. The name is now most frequently used to denote a fantastic idea, and in botany to denote graft-hybrids.

Chimborazo Mountain of Ecuador, S. America. An extinct volcano, it is in the W. branch of the Andes Range and is 20,498 ft. high.

Chimney Part of a building through which smoke is conveyed from a fireplace to the outside air. Before the 12th century braziers were used for domestic purposes and the smoke was let out through a hole in the roof. The grouping of chimneys into one mass of masonry began in the 15th century.

The **chimneypiece** or framework around the fireplace is often highly decorative, in wood or marble. Some Jacobean chimneypieces are notable for their craftsmanship, and later the brothers Adam designed some very fine ones.

The business of sweeping chimneys is carried on by persons trained to it. At one time chimneys were cleaned by small boys, called climbing boys, a practice made illegal in 1842.

Chimpanzee Popular name of the smaller of the two African anthropoid apes, which, more than any other animal, resembles man. Often attaining a height of 4½ ft., it dwells in forests, eating fruits and vegetables, and building large nests in the trees. Its superior intelligence over other animals has been proved by scientific experiments. In 1930 a black female chimpanzee, something of a rarity, was obtained for the Zoological Gardens, London.

China Republic of Asia, one of the largest countries in the world. It covers 1,532,815 sq. m., and is divided into 18 provinces. In addition there are dependencies covering a further 2,381,140 sq. m., making a total of 4,278,352 sq. m. These include Tibet, which is practically independent, and Mongolia, which is only a little less so. The population is about 460,000,000, of whom at least 430,000,000 live in China proper. This total includes 200,000 Japanese and 100,000 of other nations.

China has three great rivers, along which her trade has flowed for many centuries. The Yang-tse-Kiang is 3200 m. long and divides the country into two parts. The Hoang ho, or Yellow River is to the N. and the Si Kiang to the S. The land is a vast plain, with great mountain masses. One separates China from Mongolia; another divides the basin of the Yang-tse-Kiang from that of the Hoang ho.

The capital is Nanking. Pekin, the old capital, now Peiping, is much larger, as are the great ports of Shanghai, Tientsin and Canton. A number of ports are open by treaty to foreign trade; in these treaty ports Great Britain and other nations have concessions, or areas under their own rule, but since 1927 some of these have been returned to China, and proposals made for returning the others.

China produces a vast quantity of rice and other foodstuffs, chiefly for home consumption. The chief export is silk. The railways are unsatisfactory, but many good motor roads have been made. The customs duties are collected by an independent body, the Chinese Maritime Customs, under an Englishman. The currency is on a silver basis, the chief coins being the tael and the dollar, the value of each of which varies, as do the weights and measures.

A very old country, China has been ruled by emperors of many different dynasties. The last of these, the Manchus, ceased to rule in 1902, since when China has been a republic. For some years the government was conducted from Pekin, but in 1927 a group of nationalists from the south transferred the capital to Nanking and set up a new government, consisting of five councils, executive, legislative, judicial, examination and control. Chiang Kai-Shek was chosen president in 1928.

The northerners did not accept this new authority and the civil war, which had been going on for some years, continued. The government at Nanking gained some successes, but could not make its power effective in many of the provinces, in some of which there were strong communistic outbreaks, and in nearly all of which there was a certain amount of disorder. Lin Shen became president in 1932. In the same year the north-eastern provinces (Manchuria) and Jehol proclaimed themselves an independent state (Manchukuo) under the protection of Japan. In 1935 Japan's authority in No. China was further strengthened, but 1936 showed signs of improvement in Sino-Japanese relations.

Meanwhile the Chinese government asked a revison of the treaties which gave foreigners a privileged position. Several countries revised these treaties and Great Britain expressed a willingness to abandon her exceptional position as soon as law and order had been firmly established. Meanwhile, as evidence of good faith, Britain returned Wei-hai-wei to China. Great damage was done by an earthquake in 1933. *See* MANCHURIA.

China Clay Essential ingredient in the manufacture of china. It was first sent to Europe from China in the 18th century by a French missionary. It gives plasticity to the paste from which porcelain is made and is used also in the arts as a filler for paper and for dressing fabrics.

The English pottery industry obtains the greater part of its supply from large deposits in Devonshire and Cornwall. It is also found in Saxony. Its other name is kaolin.

Chinaware Name originally applied to fine pottery produced in China, and later to any vitreous, translucent ware classed as porcelain. It excludes such fabrics as Wedgwood and all other stonewares; majolica, Delft and all other earthenwares.

As invented in China it comprises a hard-paste body of china stone and kaolin or china clay, besides china stone and lime glaze, both fired at one operation, breaking with a conchoidal fracture and unscratchable by steel. It was reproduced at Meissen in 1713, and at Plymouth in 1768. Meissen methods were imitated in Vienna in 1718, and Copenhagen in 1772.

The best French and English chinaware is an artificial porcelain which is scratchable by steel. It is made of a soft paste of frit and white clay, and is seen in the porcelain of Sèvres and St. Cloud, as well as in the English china from Chelsea, Bow, Derby, and Worcester. Bone porcelain, which contains bone ash, was introduced by Spode in 1880, and all later English china is of this kind, Minton and Copeland being notable.

Chinchilla South American rodent. It is about 10 ins. long and is found in the Alpine zones of the Andes from Peru to Chile. It has large ears, a lovely tail, and very soft grey fur, for which it is trapped.

Chinese White Artist's pigment. It is prepared by boiling metallic zinc and condensing the oxidised vapour into powder. It is excellent for water colour painting, but lacks toughness with oils. It has better colour, finer texture and greater covering power than zinc white, which is prepared from zinc ore and coal.

Chingford Urban district of Essex, near Epping Forest, 10 m. from London. The Metropolitan Water Board has a large reservoir here. Pop. (1931) 22,051.

Chinkiang Treaty port of China. It is on the Yang-tse-Kiang, where that river is joined by the Grand Canal. Railways and good roads connect it with Shanghai, about 30 m. away. There were disturbances here in 1927, when damage was done to the British concession. The Chinese Government paid compensation and the concession was handed back to China. Pop. (1931) 199,776.

Chinon Town and river port of France. It is picturesquely situated on the Loire, 31 m. from Tours. Its castle, of which there are some remains, was a royal residence.

Chioggia Island, city and seaport of Italy. It is 15 m. from Venice and is connected with the mainland by a bridge, 100 ft. long. The chief industry is fishing. In 1379 the Genoese Fleet was defeated here by the Venetians. Pop. 36,100.

Chios Island of Greece. In the Aegean Sea, 8 m. from the coast of Asia Minor, it is 32 m. long and covers 320 sq. m. The scenery is beautiful and the soil very fertile, grapes, oranges and other fruits growing in profusion. Pop. 75,680.

Chios, the capital, is on the E. coast. It has a harbour, a cathedral and the ruins of a citadel. Chios claimed to be the birthplace of Homer. Pop. 22,000.

Chipmunk Name given in America to the ground squirrels belonging to the genus *tamias*. The chipmunks possess internal cheek pouches, and the fur on their backs is marked by alternate light and dark bands.

Chippendale **Thomas.** English furniture maker. A Worcestershire man by birth, Chippendale set up for himself as a cabinetmaker about 1750 and soon made a high reputation. He borrowed ideas from France, but gradually developed his own distinctive style, lightness and grace of line. Later cabinetmakers have all produced chairs and cabinets modelled on those of Chippendale. He died in Nov., 1779.

Chippenham Borough and market town of Wiltshire. It stands on the Avon, 13 m. from Bath, on the G.W. Rly. An agricultural centre it has cattle and cheese markets; other industries are bacon curing and flour milling, and engineering. Pop. (1931) 8493.

Chipping Campden Market town of Gloucestershire. It is 9 m. from Evesham and the station is Campden on the G.W. line, a mile away. The church of S. James is a beautiful perpendicular building with a fine tower. Pop. 1700.

Chipping Norton Borough and market town of Oxfordshire. It is 13 m. from Banbury, on the G.W. Rly. Pop. (1931) 3,489.

Chirk Village of Denbighshire. It is 9 m. from Wrexham, on the G.W. Rly. The little River Ceiriog and the Ellesmere Canal pass by it. Near by are collieries and slate quarries. Its castle, the seat of Lord Howard de Walden, was long the home of the Myddelton family. The first castle was built in the 11th century, the present one in the 14th and restored in the 17th century. Pop. 2576.

Chislehurst Urban district of Kent. It is 12 m. from London, on the S. Rly., and is a residential area. Its common is large and beautiful; adjoining is Pett's Wood, acquired as a memorial to William

Willett, the pioneer of daylight saving. Beneath it are immense caves open to the public. Camden Place was the home of Napoleon III., who died there. Pop. (1931) 9876.

Chiswick Urban district of Middlesex. It stands on the Thames between Hammersmith and Brentford, 5 m. from London, on the S. and District Rlys. The chief church is S. Nicholas, with an old tower and a graveyard in which Hogarth is buried; the chief thoroughfare is the Mall with historic associations. Chiswick House, the property of the Duke of Devonshire, where both Fox and Canning died, was bought in 1929 by the district council and the grounds are now a public park. Hogarth House is a museum. It forms part of the urban district of Brentford and Chiswick. *See* BRENTFORD.

Chitral State on the Indian frontier. Under British protection, in the Malakand agency, it covers 4500 sq. m., and is ruled by the Mehtar. Chitral is the capital. In 1895 a small British garrison was attacked in a fort here. Travelling by different routes, two relieving forces set out, and on April 20, after a siege of nearly seven weeks, the garrison was relieved.

Chlorates Salts formed by the action of chloric acid upon bases, distinguished by their great solubility in water, and the evolution of oxygen when heated, leaving a residue of a chloride. Potassium chlorate is used in medicine as a refrigerant and stimulant in throat complaints, also in the manufacture of fireworks, matches and detonators. Sodium chlorate is used in the production of aniline black.

Chlorimetry Term used in chemistry for the process by which the available amount of chlorine is estimated in a bleaching agent such as chloride of lime. By the volumetric method, a standard solution of thiosulphate of sodium is titrated with a known acid solution of bleaching powder and potassium iodide.

Chlorine Element having its atomic weight 35.5 and denoted by the symbol Cl. It is a greenish-yellow heavy gas with an irritating suffocating odour. It combines directly with most metals forming chlorides, and to its strong affinity with hydrogen is due its bleaching properties. Chlorine is used as a disinfectant, and as a bleaching agent for cotton and linen.

Chlorite Name given to a group of silicates of alumina and magnesia occurring as dark olive-green rock-forming minerals. The varieties of chlorite occur in granular masses, or as soft pliable scales in other minerals such as quartz. Chlorite schist is so named from the plentiful occurrence of this mineral in the rock.

Chloroform Heavy colourless liquid with an agreeable ethereal odour and sweet taste, also known as trichloromethane. It is prepared by the action of bleaching powder upon alcohol or acetone, with subsequent purification of the crude product with sulphuric acid. Chloroform is soluble in alcohol, ether and oils, and slightly so in water. It is a solvent of most resins, many alkaloids, rubber, etc. It is much used as an anaesthetic.

Chlorophyll Green colouring matter of plants. It can be extracted by ether or alcohol, but is never obtained absolutely pure. It contains green and yellow pigments and chemically is related to the colouring matter of the blood.

Choate **Joseph Hodges.** American statesman. Born at Salem, Mass. Jan. 24, 1832, he was educated at Harvard and became a lawyer. For more than 30 years he was engaged in important cases in the New York courts and in the Supreme Court at Washington. A Republican in politics, he was ambassador to London, 1899-1905, and represented his country at the peace conference at The Hague in 1907. He died in New York, May 15, 1917, leaving a reputation for wit and oratory.

Chobham Village of Surrey. It is 5 m. from Woking and is famous for its common and its ridges, a range of low hills about 4 m. from the village, and the Gordon Memorial home for boys.

Chocolate Preparation from the cacao bean and sugar. It is used as a food, or, mixed with milk and water, as a drink. First sold in London in 1657, its high price confined its use to the rich.

Chocolate for eating began to be made when the import duties on the cacao bean were reduced in 1853. In the 20th century it became enormously popular and firms at Bristol, York and Birmingham became very large concerns. Chocolate is also imported from France and Switzerland.

Choir Body of singers in a cathedral or church. In the Church of England and Roman Catholic churches the choir consists of men and boys, as in the monastic houses of the Middle Ages.

In Nonconformist churches the choirs are composed of men and women.

The word choir is also used for the part of the church in which the clergy and the choir sit.

Choking Choking from swallowing of food may usually be relieved by vigorous thumping between the shoulder blades. If this fails gag the mouth open with a piece of wood and pass the fingers down the back of the throat to hook up the foreign body or to push it onward towards the stomach.

In the case of a child, hold it upside down and shake it if slapping on the back is not efficacious. If a large or sharp object has been swallowed, give the patient bread and milk or porridge, and summon a doctor.

If hot liquids or stinging insects have been swallowed, causing swelling in the throat, apply hot flannels to the front of the neck and take sips of cold water and of olive oil.

Cholera Malignant infectious disease due to toxins formed intestinally by bacterial vibrios. It is endemic throughout Asia and virulent epidemics develop from time to time. These are governed by the degree of atmospheric humidity, and often reach other countries through their ports. Cholera is combated with increasing success by destroying the vibrio bacilli with permanganates and fortifying the blood, dehydrated by the frequent evacuation of watery "rice-stools" with saline solutions. Opium is unnecessary. Non-malignant European or British summer cholera occurs as choleraic diarrhoea and infantile cholera.

Chopin **Frédéric François.** Polish composer and pianist. He was born near Warsaw, Feb. 22, 1810, and first appeared in public at the age of nine. In 1831 he settled at Paris, where he knew most of the literary and artistic celebrities of the time, and was

one of the many lovers of George Sand, the novelist. As a pianist, in which branch of his art Liszt alone approached him, he was among the first to use the thumb freely on black keys. As a composer for his instrument he was unique, employing largely dance forms and rhythm, particularly the mazurka. He died in Paris, Oct. 14, 1849.

Chord Simultaneous occurrence of a number of musical sounds. Musicians divide groups into consonant and dissonant groups. A common chord is the combination of any sound with its third and perfect fifth.

Mathematically a chord is the shortest distance between the front and rear edges of a plane. It is the straight line joining the extremities of an arc; hence, in aeronautics, it is the line traced from the leading edge to the trailing edge of a wing.

Chorea Nervous disease usually occurring before puberty, oftener with girls than boys. It may arise in association with hereditary predisposition, fright, ill-usage, malnutrition or educational strain. It is believed to be a cerebral or brain form of rheumatism. The symptoms may develop insidiously. They take the form of convulsive muscular movements in face or limbs, which may be local or general. It is also called S. Vitus' dance.

Chorley Borough and market town of Lancashire. It is 9 m. from Preston on the L.M.S. Rly. The little River Chor passes through it and there is a canal. Astley Hall, an Elizabethan house, is now public property. The principal industries are cotton weaving, calico printing and the making of machinery. Near is Duxbury Hall, the old seat of the Standish family. Pop. (1931) 30,795.

Chorley Wood Urban district of Hertfordshire. It is 20 m. from London, on the Metropolitan Rly. It is beautifully situated amid the Chiltern Hills, and has a fine common. Pop. (1931) 3296.

Chorus Originally in Greek drama an enclosed space for dancing. Later the persons singing the praises of Dionysus were styled the chorus. The introduction of a separate actor performing dialogue with the chorus led in time to definite tragedy and comedy with consequent subordination of the chorus. In Elizabethan drama the person styled chorus recited prologue and epilogue and explained the play.

Musically a chorus is (*a*) a composition sung by a number of people either in parts or unison; (*b*) a collection of persons employed to sing choruses; (*c*) the refrain of a song in which the community may join.

Chosen Name given by the Japanese to Korea, (*q.v.*).

Chouans Name given in 1792-95 to the royalists of Brittany. Mainly peasants, who maintained a revolt against the first French Republic until they were crushed by La Hoche in 1795, they are described by Balzac in his novel *Les Chouans*.

Chough Bird of the crow family. It has red legs and glossy black plumage and is found in many parts of the Old World. The Cornish chough, with its red beak, is now rare in England, but still lives in the mountainous areas of Europe and N. Africa. A smaller variety is the Alpine chough.

Chow Chow Domestic dog. A native of China, it was at one time very popular in England. It has a heavy coat with a ruff round the neck and may be black or white, blue or red in colour.

Chrism Sacred ointment used for the rites of baptism, confirmation and ordination, the consecration and blessing of churches, altars, chalices and baptismal water. In the Roman Catholic Church it comprises olive oil and balm; in the Eastern Church wine and spices are added.

Christ Name meaning "the anointed." It comes from the Greek and was given to Jesus because He was the anointed, the expected one sent by God to save the people. The Hebrew equivalent is Messiah. *See* JESUS CHRIST.

Christadelphians Name meaning brotherhood of Christ and applied to a religious community. Founded in 1848 by John Thomas, who, after studying medicine in London, went to Brooklyn. He gained many adherents in America and England, and the sect spread to several English speaking countries.

Christchurch Borough of Hampshire. At the junction of the Avon and the Stour, it is 104 m. from London, on the S. Rly. It is famous for its church, which has been restored. It was once the church of the priory. Pop. (1931) 9183.

Christ Church City of New Zealand. A railway junction in South Island, 8 m. from its port, Port Lyttelton, it is the capital of the Canterbury district, and a centre for the wool, mutton and other produce of the region around. The city was founded in 1850. Pop. (1931) 127,300.

Christ Church College of Oxford University, founded by Cardinal Wolsey and called Cardinal's College, but in 1546 refounded by Henry VIII. The finest buildings are the hall and the quadrangle on S. Aldate's. The cathedral church serves as the college chapel. The dean of the college is also dean of the cathedral. The Fellows are called students and the college is called the house.

Christian Name of ten kings of Denmark. **Christian II.** (1481 1559) was King of Sweden, Norway and Denmark, but his people revolted and he was an exile in the Netherlands and then a prisoner until his death on the island of Alsen. **Christian IV.** (1577-1648), who was King of Denmark and Norway, founded Christiania and took part in the Thirty Years' War.

Christian IX., a son of the Duke of Schleswig-Holstein, was born, April 8, 1818, and chosen King of Denmark in 1852, the Royal House being then in danger of extinction. He succeeded to the throne in 1863 and reigned until his death, Jan. 29, 1904. Schleswig-Holstein was taken from Denmark at the beginning of his reign. Christian was the father of Queen Alexandra. His other children were Frederick VIII., who succeeded him; George, who became King of Greece; Dagmar, who married the Tsar Alexander III., and another daughter who married the Duke of Cumberland.

Christian X. King of Denmark. Born Sept. 26, 1870, the eldest son of Frederick VIII., he became king, May 12, 1912. In 1898 he married a princess of Mecklenburg and they have two sons.

Christian Danish prince. A son of the Duke of Schleswig-Holstein, he was born, Jan. 22, 1831, and became a

soldier. In 1866, Schleswig-Holstein was seized by Prussia and he settled in England and married Helena, a daughter of Queen Victoria. Known as Prince and Princess Christian, they lived in England until their death. The prince died, Oct. 28, 1917 and his widow, Jan. 9, 1923. Their elder son, Prince **Christian Victor**, died on active service in S. Africa, Oct. 29, 1900.

Christiania Former name of Oslo, (*q.v.*), capital of Norway.

Christianity Universal religion, originating in the life and teachings of Jesus of Nazareth. He was a village carpenter, brought up in an atmosphere of Jewish ethical monotheism, and was crucified as a political malefactor. The Galilean disciples became the apostles of a movement which a philosophical Gentile convert, Paul of Tarsus, interpreted to the Greco-Roman world, emphasising its universality and the central mystery of the Resurrection.

The story of Jesus and the apostolic age enshrined in the New Testament, with the Hebrew Old Testament, formed the potent scriptures of the new religion, which became associated under the early fathers with formal creeds and sacraments. The foundation of the empire at Constantinople by Constantine in the 4th century coincided with the beginning of State recognition, which was followed by the division of the Western from the Eastern Churches and the medieval struggle for supremacy between Church and State. In the 16th century the growing demands for intellectual freedom introduced the Protestant Reformation, subsequently marked by diverse communions.

Something like a third of the inhabitants of the world own a nominal adherence to Christianity. Its largest branch, the Roman Catholic Church, numbers about 331,500,000: the Greek, or Eastern Church, 144,000,000, and the various Protestant communions 207,000,000.

Christian Science The religion, or interpretation of the Christian religion, discovered and founded by Mary Baker Eddy in 1866. Christian scientists regard it as the restoration and divinely promised fulfilment of the religion taught and practised by Christ Jesus. It is defined by Mrs. Eddy as "the law of God, the law of good, interpreting and demonstrating the divine Principle and rule of universal harmony." (*Rudimental Divine Science*, p. 1.)

One of the leading points of Christian Science is that God is the Life, Mind and Soul of Man, yet that man, as the reflection of God, possesses perfect identity and individuality. Christian Science defines man as the image, likeness or reflection of God. Acknowledging God as the origin of all that really is, Christian Science does not find an origin for aught else, but consistently denies that anything which is not of God can have an origin or real existence.

The prevention and cure of disease is within the mission of Christian Science for the same reason that it was within the mission of original Christianity. Christian and scientific treatment of disease depends on the distinction between absolute or real being and the human or mortal concept of man. Freedom from disease follows the absolute knowing of the truth concerning God and man.

The original, standard, and only textbook on Christian Science Mind-healing is *Science and Health, with Key to the Scriptures*, by Mary Baker Eddy, first published in 1875.

Christmas Annual festival celebrating the birth of Jesus Christ. It has been kept throughout Christendom on Dec. 25, since about the year 400. Dec. 25, or Christmas Day, and also the day following, called Boxing Day, are bank holidays; Christmas Day is also a quarter day in England and Ireland. Christmas is traditionally a time for feasting, giving presents, and general goodwill. The puritans in the 17th century objected to the keeping of Christmas, but this objection has now disappeared, although in Scotland it is observed far less than in England, the holiday taking place at the New Year instead. There are special postal arrangements for Christmas Day in England and Wales.

Christmas Name of two islands. One is in the Indian Ocean, about 190 m. from Java. It was annexed by Britain in 1888, and is governed as part of the Straits Settlements. It is about 12 m. long and covers 62 sq. m. It has rich deposits of phosphates.

The other, also a British possession, is a large atoll in the Pacific Ocean. It was discovered by James Cook in 1777 and annexed by Britain in 1888. Over 100 m. in circumference, it contains vast quantities of coconuts. It became part of the Gilbert and Ellice Islands Colony in 1919.

Christmas Rose (*helleborus niger*). Hardy perennial of the order *ranunculaceae*. It blooms out of doors in mid-winter, has handsome foliage and white blossoms about 2 ins. in diameter. Varieties of *helleborus orientalis*, known as Lenten roses, bloom later and have flowers of white, crimson and shades of rose colour.

Christopher Saint and martyr. He lived in the 3rd century. According to one legend he was sentenced to death by a Roman official, but the arrows, when aimed at him rebounded and wounded the Roman. The saint thereupon allowed himself to be beheaded so that his blood might heal his persecutor.

Christopher is the patron saint of ferrymen and travellers. The Roman Catholic Church keeps S. Christopher's day on July 25.

Christ's Hospital English public school. It was originally one of three royal hospitals founded in London in 1553 by Edward VI. and was devoted to orphans, for 400 of whom it provided a home and education. The popular name of Bluecoat School is derived from the dress, which for boys is a blue gown, knee breeches and yellow stockings.

For long the school, at which Lamb and Coleridge were pupils, was in Newgate St., London. In 1778 the girls were removed to Hertford, but the boys remained in London until 1902. They then went to new buildings at West Horsham, with accommodation for 800 boys.

Chromatic Musical scale comprising a succession of notes outside the diatonic scale. It is usually written with sharps ascending and flats descending, but more correctly only with accidentals involving no change of key.

Chromite Black or brownish-black mineral. It is composed of the chromates of iron, alumina and magnesia, and used as the chief ore of the metal chromium. It is associated with serpentine rock in which it occurs in large masses, or as concretions and veins. In New Caledonia, from the decomposed

serpentine, the chromite is washed out to form a black sand on the seashore. Southern Rhodesia is one of the chief sources of the supply of chromite.

Chromium Metallic element whose atomic weight is 52.1 and symbol Cr. It is a hard steel-grey metal, very infusible, non-magnetic and very resistant to corrosion by ordinary atmospheric agents. Chromium readily alloys with other metals and its addition to steel gives great hardness, toughness and resistance to corrosion, hence its use in stainless steel. Electroplating with chromium has many advantages over nickel plating. Many of the chromium compounds are of great economic importance.

Chromosphere Rose-coloured gaseous envelope outside the photosphere or incandescent surface of the sun. It is itself enveloped by the silvery aureole called the corona. Owing to the intense glare of the photosphere its enveloping layers are imperceptible to the naked eye except during total eclipses, but are observable spectroscopically at all times. The chromosphere, a gaseous cloak at least 5000 m. thick, with irregular prominences, contains more than 25 metallic and non-metallic elements, notably helium, hydrogen and calcium.

Chronicles Books of Old Testament. Originally one, they formed with Ezra-Nehemiah a continuous history, emanating from a post-exilic compiler in the 3rd century, B.C. They review all Old Testament history from Adam to the Cyrus decree terminating the Jewish captivity in 538 B.C. Condensing into tribal and priestly genealogies the period preceding Saul's death, they treat sacerdotally the histories of David, Solomon and the Judæan kings and recapitulate, sometimes textually, the books of Samuel and the Kings.

Chronograph Instrument which records the passing of time. One type is the stop watch used in timing races. In this a button is pressed at the start and again at the finish to ascertain the duration of the race.

Chronology Time scale or system of reckoning time in the mass. The calendar is a prominent example.

The basic principle is the observation of recurring natural phenomena. Different systems exist in the various sciences. Astronomers use a clock which records light years, based upon the velocity of light. In history an inch on a 12 in. scale may be taken to represent 1000 years, while in archeology the same measurement may indicate the passing of 25,000 years. In history a list of dates is a chronology. Our knowledge of ancient chronology owes much to the work of the younger Scaliger.

Chronometer Timekeeping instrument used on ships for ascertaining longitude. The first satisfactory chronometer was invented by John Harrison between 1729 and 1760. The modern chronometer is like a large watch, poised to remain horizontal in spite of the ship's movements, and is capable of remarkably accurate time-keeping in all ordinary variations of temperature. Admiralty chronometers are periodically tested at Greenwich Observatory, where Harrison's chronometer may be seen.

Chrysalis Common name for the pupa or larval deposit of *lepidoptera* (butterflies and moths). It is a small mass of matter which contains the eggs of the insect and increases in size, becoming furry in appearance, and is finally transformed into a caterpillar which, in turn, becomes either a moth or a butterfly.

Chrysanthemum Ornamental flower of the natural order *compositæ*. A hardy plant with both perennial and annual species, it came to Europe from China. Early flowering chrysanthemums bloom from July to October; late kinds in the open in September and October, and indoor varieties in November and December.

Annual chrysanthemums with light feathery foliage and flowers of white, yellow, orange, etc., with coloured markings, can be easily grown from seeds planted outdoors in April or May where they are to bloom.

Chrysolite Name given to the yellow or green transparent forms of the mineral olivine. This is a silicate of magnesia and iron, and is found in tabular crystals or occasionally in rounded masses in igneous rocks. Chrysolite is imported for jewellery from the East.

Chrysostom John. Christian saint and preacher. He was born at Antioch, the son of a Roman soldier, and, by the influence of his mother, became a Christian. He lived as a hermit, but in 386, being then about 30, he was ordained. In 398 he was made archbishop, or patriarch, of Constantinople, when his eloquence won for him the name of Chrysostom, or golden-mouthed. His attacks on wickedness in high places led to his banishment in 403. He was soon recalled, but was again in disgrace when he died, Sept. 14, 407. He wrote the prayer in the Anglican Prayer Book said just before the end of both morning and evening prayer.

Chub Fish of the same genus as roach and dace. Common in England and other European countries, it often attains a length of 2 ft. and a weight of from 5 to 7 lbs. It is readily caught with a fly, but having little flavour and many bones is not popular for eating.

Chubb Charles. English locksmith. About 1800 he set up in business in Winchester, moved to Portsmouth, and then settled in London and began to make safes, for which both he and his brother, Jeremiah, took out many patents. With his sons he founded the firm of Chubb & Sons, large works were opened in Wolverhampton, and in 1882 the firm became a limited company.

When Charles Chubb died in 1845 his son, John (1816-72), succeeded as its head and then came George Hayter Chubb. A leading Wesleyan, he was made a knight in 1885, a baronet in 1900, and a baron, as Lord Hayter, in 1927.

Church Urban district of Lancashire. It is just outside Accrington, on the L.M.S. Rly., and is served by a canal. There are chemical works and coal mines. Pop. (1731) 6185.

Church Richard William. English divine. Born at Lisbon, April 15, 1815, he was in 1871 appointed Dean of S. Paul's, and, declining the archbishopric of Canterbury, remained in London until his death at Dover, Dec. 9, 1890. A strong high churchman and a fine preacher. Church is also known as a writer of unusual charm. He wrote for *The Guardian*, and was the author of *Bacon* and *Spenser* in the "English Men of Letters" series. His *Life of S. Anselm* is a classic, and he also wrote a history of the Oxford Movement.

Church Word used by Christians for a body of believers and for the building in which they meet. In its widest sense the Church is made up of all who accept the authority and teaching of the New Testament. A few Nonconformist bodies do not use the word, probably owing to its sacerdotal associations, *e.g.*, the Society of Friends and the Plymouth Brethren.

THE CHURCH AS A CAREER. The Church needs men. For many years the number of men offering themselves as candidates for holy orders has been steadily declining. For those who feel that their vocation lies in the Ministry, the call of the Church is an urgent one.

Women are not permitted to enter the ministry of the Church of England or the Established Church of Scotland. They may become ministers of the Free Churches. They may also become Deaconesses of the Church of England.

The Church of England. The training for the ministry usually takes the form of three years at a university and a period of one and a half to two years at a Theological College. Alternatively the candidate may proceed direct to a non-graduate Theological College for a post-matriculation three years' course. The fees of a Theological College vary from £100 to £140 for the college year. Candidates for holy orders will find many funds from which they can gain help towards their training.

The rank and file of the clergy receive stipends of anything from £200 to £400 per annum, which will increase with preferment.

Information and advice may also be sought from the Central Advisory Council of Training for the Ministry, The Church Assembly, 8 Dean's Yard, Westminster, London, S.W. 1.

The Free Churches. There is a wide field of labour to be found in the service of the Free Churches—the Baptist Church, the Congregational Church, the various branches of the Methodist Church, and the Presbyterian Church of England.

Most of these have their own theological colleges which require a good standard of education for admission. The Church of Scotland prefers that training should be carried out in one of the Scottish Colleges. Information may be sought from the National Council of the Evangelical Free Churches, Memorial Hall, London, E.C. 4.

The Catholic Church. An aspirant to the priesthood will naturally seek the counsel of his spiritual adviser, who will, in turn, bring the aspirant to the notice of the Bishop of the Diocese in which he resides, or, alternatively, to the Superior of the Religious Order towards which he feels particularly called. He will be submitted to various tests as to fitness: spiritual first of all, mental, and then physical.

Chosen candidates are sent for training usually to a diocesan seminary, or (occasionally) to a Catholic University abroad. Two years are spent in philosophical studies before the theological course begins.

Secular priests, while they do not take the vow of poverty taken by members of the Religious Orders, are many of them more or less bound to observe it. Priests in charge of parishes depend for their support upon the freewill offerings of their parishioners; assistant priests, as a rule, live in the same house with the parish priest and are provided with their board and lodging.

A priest must work for some years as assistant before being appointed to the sole charge of a parish. He must be willing to work wherever his ecclesiastical superior may send him.

Church Army Religious and philanthropic organisation. It was founded in 1882 by the Rev. Wilson Carlile to spread the teaching of the Church of England among the outcasts of Westminster. The officers and sisters are paid small salaries. The institution's activities now include the establishment and conduct of employment bureaux, emigration schemes and the distribution of food and clothing. The headquarters are at 55 Bryanston St., London, W.1.

Churches of Christ Christian denomination. In the British Isles it has 186 churches and 16,000 members; also 19,000 scholars in Sunday Schools. The headquarters are in Manchester and it exists in Australia and other parts of the British Empire.

Churchill Seaport of Canada, on the W. side of Hudson Bay, at the mouth of the River Churchill. It is a rly. terminus, and the Canadian Government has built a harbour for the export of grain, with elevators and other accessories. The port was first open for trade in 1931. It occupies the site of Fort Churchill built as a trading station by the Hudson Bay Co.

Churchill **Lord Randolph.** English politician. Born Feb. 13, 1849, Randolph Henry Spencer Churchill was a son of the 7th Duke of Marlborough. From Eton he went to Merton College, Oxford, and in 1874 was elected Conservative M.P. for Woodstock. In the Commons he was a leading figure in the Fourth Party and a caustic and ready speaker. Outside, his aggressive style of oratory made him a popular idol. In some ways his views were more democratic than those of his leaders. In 1885 he took office as Secretary for India, and in 1886 became Chancellor of the Exchequer. In less than a year, however, he resigned. He died Jan. 24, 1895.

Churchill married an American lady, Miss Jerome, who, as Lady Randolph Churchill and then Mrs. Cornwallis-West, was a prominent figure in society. They had two sons, Winston, who wrote his father's *Life*, and John.

Churchill **Winston.** American novelist. Born in St. Louis, Nov. 10, 1871, he was trained for the navy and given work on *The Army and Navy Journal*. Having edited *The Cosmopolitan Magazine*, he made a name in 1899 with a novel, *Richard Carvel*, which was followed by *The Crisis*, 1901; *The Crossing*, 1903; *Coniston*, 1906; *The Inside of the Cup*; and *The Dwelling Place of Light*.

Churchill **Winston Leonard Spencer.** English politician. Born Nov. 30, 1874, elder son of Lord Randolph Churchill, he went to Harrow and Sandhurst and entered the army in 1895. In the same year he went as a war correspondent to Cuba and saw active service on the Indian frontier and in the Sudan. He was in S. Africa (1899-1900) as correspondent for *The Morning Post*.

Having left the army, Churchill entered Parliament in 1900 as Unionist M.P. for Oldham. He changed his party sooner than accept tariff reform, and in 1906 was returned as a Liberal for N.W. Manchester. He entered the ministry as Under Secretary for the Colonies in 1905, but was soon (1908) in the Cabinet as President of the Board of Trade. In 1910 he became Home Secretary, and in 1911 First Lord of the Admiralty, a post he held when the

Great War broke out. By this time, having been defeated in Manchester in 1908, he was M.P. for Dundee. In 1915 he left the Admiralty and went to command a battalion in France, but in 1917 he returned to politics as Minister of Munitions; in 1919 he became Secretary for War, and in 1921 Secretary for the Colonies. He left office with Lloyd George in 1922 and was out of Parliament until 1924, when he returned to the Unionist Party, and was elected M.P. for Epping. From 1924 to 1929 he was Chancellor of the Exchequer. In 1930 Churchill, as his views on India differed from those of the other Unionist leaders, took up an independent position in Parliament.

Churchill's abilities include the gift of writing vivid and interesting prose, seen in *The River War*, 1899, and *The Life of Lord Randolph Churchill*, 1906; but perhaps most of all in the four volumes of *The World Crisis*, 1923-28, his account of the events of the Great War and the peace. A one-volume edition was published in 1931. In 1930 he issued *My Early Life*, and in 1933 appeared the first volume of *Marlborough: His Life and Times*.

Churching of Women Rite of the Christian Church. It takes the form of a thanksgiving by women after childbirth, as set forth in the Prayer Book of the Church of England. In the Roman Catholic Church and the Greek Orthodox Church the service is also observed.

Church Lads' Brigade Organisation for the training of boys, associated with the Church of England. There are about 1300 companies and 60,000 members. The headquarters are Aldwych House, Catherine St., London, W.C. 2.

Church Rate Rate levied in former days for the upkeep of the Church of England. It was voted by the parish meeting and became compulsory. In the 19th century, as Nonconformity grew stronger, objections were raised to it, and in 1868 it was abolished.

Church Stretton Market town and pleasure resort of Shropshire. It is 163 m. from London and 13 m. from Shrewsbury, and is beautifully situated on the slopes of Longmynd. Pop. 1670.

Chutney Pickle or relish introduced into England from the East. It is prepared from sweet fruits, such as mangoes and raisins, to which certain acidulous flavours from lemons and sour herbs, hot seasoning, peppers and spices, are added.

Chuvash One of the Russian union of Soviet republics. Founded in 1925, it covers about 7200 sq. m. and lies about 500 m. E. of Moscow. Cheboksara is the capital. Pop. 900,000.

Cibber Colley. English actor and author. Born in London, Nov. 6, 1671, the son of a sculptor he became an actor and a popular dramatist, although his plays were adaptations rather than original pieces. One was *Love's Last Shift* and another *The Non-Juror*, based on Molière's *Tartuffe*. Cibber was Poet Laureate from 1730 until his death, Dec. 11, 1757. He left an *Autobiography*. Pope derided him in the *Dunciad*.

Cicada Large winged insect. It is found in greatest numbers in the tropics and noted for its long life; one American species is said to live for 17 years. It is also famous for the loud shrill call of the males.

Cicatrix Latin word meaning "a scar." It is the pathological name for the mark or scar left by a wound or sore. In botany the scar left on a tree or plant by the fall of a leaf is called a cicatrix.

Cicely Perennial umbelliferous plant (*myrrhis odorata*). The sweet cicely is a native of Britain, growing to a height of 2 or 3 ft. in mountain pastures, and sometimes used as a pot herb. The stem bears large thrice pinnate leaves and white flowers, clustered in downy umbels. The whole plant is characterised by its sweet aromatic flavour.

Cicero Marcus Tullius. Roman orator, statesman and writer. Born at Arpinum, Jan. 3, 106 B.C., he studied oratory in Greece and in 77 entered public life in Rome. For some years he made a high reputation in the law courts. In 63 he was one of the consuls and during his term of office crushed the conspiracy of Catiline. In 58 he was banished on the ground that he had executed the conspirators without a trial. He went to Tusculum, but in 16 months was recalled.

During the civil war Cicero decided to support Pompey, but after the battle of Pharsalus he abandoned politics. After Cæsar's murder in 44, Cicero denounced Antony and was proscribed. He refused to leave the country, and Antony had him killed on Dec. 7, 43.

Cicero left a mass of writings and founded the prose style which has been used by all great writers of the West for 2000 years.

Cid Campeador Spanish hero. Ruy Diez, born at Bivar, near Burgos, was historically a valiant Castilian warrior when Christian and Moor were struggling for the mastery in Spain. His names, Arabic and Spanish, mean "lord conqueror." He fought for Christian and Moor indifferently, captured Valencia and there reigned until his death in 1099. Spanish poetry is filled with romances about his exploits.

Cider Fermented juice of apples. After fermentation in open casks it is filtered and freed from impurities. Cider may contain from 4 to 7 per cent. of alcohol and a varying percentage of sugar. Special apples are cultivated for cider making, classified as sweet, bittersweet and sour, and these are blended according to requirements.

In England cider is made in Devon, Somerset and Herefordshire, and in Kent. It is also made in Normandy and Brittany. Cider cannot be sold without a licence.

Cimabue Giovanni. Italian artist. He was born in Florence about 1240 and died in 1302. Founder of the Florentine school, his pictures express a sense of life, and his desire for the natural and beautiful gave a decided impulse to his pupils, among whom was the celebrated Giotto.

Cimiez Pleasure resort of France. It stands on a hill behind Nice, and has the remains of an amphitheatre and an old monastery.

Cinchona Genus of rubiaceous evergreen trees, valuable for the medicinal qualities of the bark. The red cinchona bark contains quinine and other valuable alkaloids. The name comes from the Countess Chinchon, the wife of a Viceroy of Peru in the 17th century, who was cured of a fever by the use of the bark.

Cincinnati City of Ohio, on the N. side of the river, it is a manufacturing town, with rly. and canal

communications. The city is laid out with wide, straight streets crossing each other at right angles, with many sky-scrapers. The business quarter of the city lies on the low ground near the river; the residential quarters are on the adjacent hills. Bridges connect it with towns on the Kentucky side of the Ohio. Pop. (1930) 451,160.

Cincinnatus Roman hero. In 460 B.C. he was consul, but returned to his farm when his period of office was over. In 458, when Rome was invaded, he was called from the plough to become dictator. He defeated the enemy and returned once more to his farm. In 439, at the age of 80, he was again made dictator, but he died in the same year.

Cinematography Term applied to the art of photographing a moving object and projecting upon a screen a series of pictures in rapid sequence, giving an appearance of movement of the object. The effect is due to persistence of vision. Much experimental work in cinematography was carried out in the later part of the 19th century, culminating in the researches of Edison, who, in 1889, demonstrated the working of his kinetoscope, which had been made possible by the use of a newly introduced photographic film.

From this instrument, which was more of the nature of a peepshow, gradually evolved the modern cinematographic apparatus with its special camera and projector, and the power to produce the pictures upon a large screen. The ordinary motion picture has been supplemented by colour photographs, and in 1928 the use of photo-electric apparatus made possible the reproduction of sound in the talking film, an innovation which is revolutionising the cinema industry.

A method of taking moving pictures in relief was discovered in 1933, though owing to technical difficulties it was not immediately practicable.

The widespread use of motion pictures has brought about special technique in production with an environment quite different from that of the theatre. Apart from its use for recreation, the film has an important educational and scientific value.

The preparation of cinema films is now one of the world's great industries; it probably ranks fourth among British trades. The world's centre for film making is Hollywood, a suburb of Los Angeles in California; in England the chief centre is at Elstree and Boreham Wood, but there are also large studios at Shepherd's Bush, Ealing and elsewhere.

The opening of cinema houses in Great Britain on Sunday has caused much controversy. Some local authorities, the London County Council, for example, permitted them to open, but others did not. When they were open the proceeds were given to charity. In 1930 a judicial decision at Brighton laid it down that Sunday opening was illegal because admission fees were charged. An act of parliament, therefore, legalised Sunday opening for a year where it existed, and a new measure was introduced in 1932. This, too, allowed Sunday opening in the 96 areas where it existed. In other areas the local authorities can apply to Parliament for permission to open. At the same time it was suggested that part of the money received should go to the maintenance of a National Film Institute.

THE CINEMA AS A CAREER. What is true of the stage is more emphatically the case with regard to acting for the cinema. Romantic stories of fabulous salaries and meteoric rises to fame are heard on every hand, and young people are too prone to believe that that way greatness lies. The aspirants are consequently far more numerous than prospective or even possible vacancies. The strictest inquiry should be made before any contract or binding agreement is entered into.

Cineraria Flowering plant. Varieties of 2 species of *Senecio* are cultivated, *S. cineraria* in the garden and *S. cruentus* in the greenhouse. The latter has tall (the stellate varieties) and dwarf forms.

Cinna Lucius Cornelius. Roman statesman. Elected consul in 87 B.C. at the time when Sulla and Marius were disturbing the city with their strife, he endeavoured to get Marius recalled, but was deprived of his consulship by the senate and forced to leave Rome. Afterwards, with the aid of Marius, he got together a large army, marched upon Rome, captured the city and massacred Sulla's friends. He was slain by his own soldiers.

Cinnabar Sulphide of mercury (HgS). Found sometimes finely crystallised, with adamantine lustre, but oftener massive with dull lustre, it is the main source of quicksilver. It is mined at Almaden in Spain, and also in Italy, Hungary, California, Mexico, China and Peru.

Cinnamon Inner bark of an evergreen tree. It is used as a spice in cooking and, medicinally, in treating colds. The best cinnamon grows in Ceylon, where the bark is thin and smooth and of a light yellowish-brown colour.

Cinquefoil Word meaning five leaves, applied to a perennial herb of the *Rosaceae* order. Clover is a familiar example. In architecture and heraldry an ornamental design is based on its leaf.

Cinque Ports Group of seaports on the coast of Kent and Sussex, originally Dover, Sandwich, Hastings, Romney and Hythe. Later Winchelsea and Rye were added. Deal, Ramsgate, Faversham, Folkestone, Margate and Tenterden were associated with them. They were given certain privileges retained until 1835, in return for supplying the king with ships in time of war. There is still a warden of the Cinque Ports at Walmer Castle, Deal. In May, 1931, the courts of brotherhood and guestling met at Romney.

Cintra Town of Portugal. It is 15 m. from Lisbon and is picturesquely situated on a rock. The palace dates from the 14th and 15th centuries. The convent is cut in the rock and the cells are lined with cork. Near is Monserrate, long the residence of Sir Frederick Cook. Pop. 6000.

Cipher Symbol 0, nought or zero. The word has been applied to all forms of secret writing, also known as cryptography. Cipher writing was in use among the Romans. Caesar's system, the simplest and commonest form, consisted merely of writing for each letter the letter which came three places after it in the alphabet, thus D for A.

Other systems include the writing of words backwards, the use of key words, and arbitrary symbols. Of the latter, Bright's *Characterie* (1588) was the first example, and modern shorthand systems are the latest development.

Circe In Greek mythology an enchantress and the daughter of Helios. She

transformed the companions of Odysseus into swine when they were shipwrecked on her island, but Odysseus, rendered immune by the root *moly*, drank her potion unharmed.

Circle Plane figure whose circumference is everywhere at a constant distance from its fixed central point, or the peripheral line of such a figure. The constant distance is the radius; a line drawn from the circumference through the centre to the opposite point is the diameter. The linear relation of circumference to diameter is denoted by the symbol π; this is a ratio represented in practice by 3.1416, approximately 3⅐. The area of a circle equals the diameter squared multiplied by 0.7854.

Circuit Division of the country for legal purposes. It comes from the Latin *circum* around, and *ire* to go, and originated with the journeys of the judges round the country. To-day England and Wales, outside the London area, are divided into eight circuits: Midland, Western, Oxford, South-Eastern, Northern, North-Eastern, North Wales and Chester, and South Wales. In each are circuit or assize towns in which a judge of the high court sits twice or thrice a year to hear cases of importance, both civil and criminal. Scotland is divided into two circuits and the Irish Free State into eight.

Circuit In electricity, a term applied to the closed path traversed by an electric current. Its strength of flow is governed by Ohm's law, which states that the current is directly proportional to the electromotive force in the circuit and inversely proportional to the resistance of the circuit.

Circular Note Cheque, drawn in foreign currency, which may be obtained from a banker in exchange for an equivalent sum in English money. Circular notes are used by travellers when abroad, being handed with an explanatory letter from the banker to the banker's foreign agent who supplies the cash required. They are issued by banks and tourist agencies.

Circumcision Religious rite. The word comes from the Latin and means to cut round. It is performed on boys, usually in infancy, the foreskin being cut. It is practised by the Jews, Mohammedans and certain savage people, as an aid to health and cleanliness and may have originated as a purification rite. It may require to be performed as a surgical operation if the foreskin is too tight or long.

The Feast of the Circumcision is kept on Jan. 1, because Jesus Christ was circumcised on the eighth day after birth.

Circus Roman place of amusement, circular in shape and at first used for chariot races. The largest was the famous Circus Maximus at Rome, which was nearly 2000 ft. long. There are remains of the Circus Maxentius on the Appian Way.

In the 18th century, in England, its chief attractions were feats of horsemanship, but gradually acrobats were introduced, and the clown became indispensable. Of such circuses Astley's, which later became Sanger's, Hengler's and Barnum's were notable. Some, such as Astley's, were held in a fixed place; others travelled about the country.

A notable circus is that arranged by Capt. Bertram Mills every year at Olympia, London.

Cirencester Market town and urban district of Gloucestershire, 21 m. from Cheltenham, on the G.W. Rly., and the Thames and Severn canal. A Roman town, it was named Corinium, and the museum of antiquities is called the Corinium Museum. The town has an agricultural trade and brewing and bacon curing industries. It is also a hunting centre. Near is Cirencester Park, covering about 3000 acres, the seat of Earl Bathurst, the Royal Agricultural College and Redcomb College, a public school. Pop. (1931), 7200.

Cirrhosis Replacement of tissue cells by fibrous tissue typically seen in the case of the liver. There it leads to chronic inflammation and enlargement followed by hardening of the organ. The most common cause is the abuse of alcoholic liquors. Jaundice gradually sets in, in severe cases, fatal. If checked in its early stages by suitable treatment and abstinence from alcohol, arrest of the disease may be effected.

Cissbury Ancient British camp. It is 3 m. from Worthing and covers 60 acres on a hill 600 ft. high. About 50 pits have been unearthed, dug by flint miners in the neolithic age and about 40 ft. deep. Horn picks and flint implements have been found.

Cist Prehistoric coffin formed of four or more unhewn slabs with one or more capstones. Originating in the neolithic age, when it was placed at the bottom of a pit, or on the level covered by a tumulus, it developed into the dolmen, the rock-cut hamber and, under Egyptian influence, the sarcophagus.

Cistercian Monastic order of the Roman Catholic Church. Founded at Citeaux in France in 1098 by some Benedictines who were dissatisfied with the laxity that had crept into their order, they adopted the rule and dress of S. Benedict. The order was suppressed in the 18th century, but revived in the 19th. The habit is white with a black cowl and hood.

The Cistercians were very strong in England before the Dissolution. They were noted especially as sheep farmers and architects. In their northern houses, especially in Yorkshire, they kept large flocks of sheep. The abbeys which they built are unsurpassed for beauty anywhere, as the ruins at Fountains, Melrose, Furness and Tintern prove.

Citric Acid Constituent of many fruit juices ($C_6H_8O_7$). It occurs in currants, gooseberries, raspberries, and especially lemons, 20 gallons of lemon juice should yield 10 lb. of citric acid crystals. These are readily soluble in water, with an agreeable, sour taste, and are used in preparing effervescent draughts, also in the form of lime juice and as an antidote for scurvy.

Citron Fruit of the citron tree, *citrus medica*. The smooth stemmed tree, with oval leathery leaves, is cultivated in the Mediterranean basin, the West Indies and elsewhere. It may grow to a height of 15 ft., and yields a large fruit without boss, whose thick, fragrant rind is esteemed for candying. The lemon is probably a sub-species.

Citrus Genus of aromatic, evergreen trees and shrubs of the rue order. There are about 30 species, all of Asiatic origin, and include the orange, lemon, citron, lime, limetta, shaddock, pumelo and cumquat. Important areas in California and S. Africa are devoted to citrus culture.

City Name given to a municipality of a certain type. It comes from the

Latin *civitas*, and meant at first a community of citizens. In France and England the custom grew up of calling places cities which had a bishop, and this use persists, with exceptions, to-day. Most cities are the seats of bishops, but a certain number, *e.g.*, Leeds and Nottingham, which have been made cities by the king, are not. In the United States and Canada a place automatically becomes a city when it reaches a certain population.

The word City is also used for the original London which has its own corporation and police force. Its livery companies are the city companies. The older part of Paris is the *cité*. The word is also used in France for a suburb.

Ciudad Rodrigo City of Spain. It is 56 m. from Salamanca. Pop. 8,400.

Standing near the frontier of Portugal, it was strongly fortified in the 18th century. The French captured it in 1810 and its recapture by the British and Portuguese in 1812 was one of Wellington's outstanding successes.

Civet Fatty musky substance from the posterior glands of a genus of carnivorous mammals called civet cats (*viverra*). Employed in aromatic pastilles and Oriental incenses, its use in European perfumery tends to decline. The cat from which it chiefly comes is the African species, which is about 2 ft. long. The other five species are Asiatic. All have slenderer bodies, longer tails, shorter legs and sharper muzzles than the true cats.

Civil Engineer Term used in contradistinction to that of military engineer, the nature of the work being concerned with all branches of civil construction. This includes the designing and building of bridges, tunnels, dams and reservoirs and foundations, the construction of roads, docks, harbours and canals, also the problems of irrigation and reclamation of land.

Civil engineering is taught at most of the universities and colleges, and some give degrees in the subject. The directing body of the profession is the Institution of Civil Engineers at Great George St., London, S.W.1.

Civilisation Term designating a stage of human society. At first serving to distinguish generally the higher states from those of savagery and barbarism, the intensive study of human origins introduced new lines of demarcation. The starting point of civilisation is nowadays usually associated with one or other primary invention, such as writing, metallurgy, pottery or the domestication of animals and plants. But prehistoric periods are recognised as having had their social stages also, and one may therefore speak of stone age, bronze age or early iron age civilisation. The form of culture associated with a nation is called its civilisation.

Civil Law Term applied in most countries to that branch of law which governs the relations of the citizens one to another. It is thus distinguished from the canon law, which deals with ecclesiastical matters, the criminal law, and specialised branches such as commercial and international law. The phrase originated in Roman times.

Civil List Name given to the annual payments made to the king and other members of the royal family. It is settled at the beginning of each reign. George V. and his Queen received a civil list of £470,000 a year, the Duke of York £25,000, the Duke of Gloucester and Prince George £10,000 each, and Princess Mary £6000. The Duke of Connaught receives £25,000 a year. The death of King George V. (Jany. 20, 1936) and the accession of King Edward VIII. necessitate a new civil list.

In 1931 King George surrendered £50,000 a year as his contribution to national economy, and other members of the royal family made proportional sacrifices.

Civil list pensions are pensions granted to persons distinguished in science, art and literature, or their dependents in needy circumstances. A sum of £1200 is given each year.

Civil Service Service given by those employed by the state to carry on its work, other than members of the army, navy and air force. Each civilised country has its civil service, and the conditions of entry, pay, etc., vary considerably.

In Great Britain the civil service numbers something like 300,000 men and women, including those employed in the post office.

THE CIVIL SERVICE AS A CAREER. Those who secure posts in the departments of state have a position for life, good hours, good holidays, and according to their service and ability, good pay; but it should be remembered that entry is not easy and that a high standard of work is required.

The Civil Service offers many fine opportunities to both men and women, whether in the Post Office, the Ministry of Labour, the Ministry of Health, the Board of Education, or the Home Office. Positions in one of these departments are to be had in every town throughout the country as well as in London.

The Colonial and Indian Civil Service and the Consular and Diplomatic Services remain closed to women in this country.

The normal method of entry to the civil service is by open competitive examinations held under the direction of the Civil Service Commissioners. Definite age limits are set according to the department.

Full particulars of these examinations, including the subjects and age limits prescribed for the several classes of appointment, can be obtained on application by letter addressed to the Secretary, Civil Service Commission, Burlington Gardens, London, W. 1.

Civil War Any war between parties in the same country. The Romans had their civil wars, as later had France and other countries that arose out of the empire. In England the Barons' War and the Wars of the Roses were civil wars, but the term Civil War, or Great Civil War, is usually reserved for the struggle between Charles I. and the Parliamentarians that began in 1642 and lasted until 1649. The greatest of all civil wars was that between North and South in the United States; called the American Civil War, it lasted from 1861 to 1865.

Clachan Gaelic plural word meaning "stones," the singular being clach. It was applied to a small village or cluster of houses, and still survives as part of the name of certain villages in Ireland and Scotland. An example is Clachandysart.

Clackmannan County of Scotland. The smallest in the country, it lies between the Firth of Forth and Perthshire, and covers only 55 sq. m. Its chief rivers are the Devon and the Black Devon, and in the north are the Ochil Hills. Clackmannan is the county town; other places are Dollar, Alva, Alloa and Tillicoultry. Pop. (1931) 31,947.

Clacton Urban district and watering place of Essex. It is 70 m. from London, on the L.N.E. Rly., and can be reached by a frequent service of steamers and motor coaches. Pop. (1931) 15,851.

Clairvaux Village of France. It stands on the Aube, 35 m. from Troyes, and the word means clear valley (*claris vallis*). In 1115 S. Bernard founded here a Cistercian abbey, which flourished until the French Revolution.

Clairvoyance Term used to denote all forms of supernatural perception of events, other than telepathy, where the knowledge is acquired from another mind. The term is used particularly in connection with spiritualism to indicate the supernormal acquisition of knowledge concerning persons on another plane of existence, usually through a clairvoyant, or medium.

Clam Bivalve mollusc, the shell of which closes like a vice. They are found in the Atlantic Ocean off both the American and European shores. The clam is used for food, especially in the United States; also as a bait for fishing.

Clan Social group recognising a common ancestry. It was most developed in Scotland, where, for centuries, especially in the north, the country was divided among the various clans, Campbells, Macgregors, Gordons and others. Each was ruled by a chief who had the power of life and death over the clansmen, who usually served him with remarkable loyalty. The land was held by him as being the common property of the clan.

The feuds between the clans were a feature of Scottish life. The clan spirit was much in evidence during the Jacobite risings of 1715 and 1745, but after that it decayed rapidly, one reason being that in 1748 the chieftains were deprived of their powers. Each clan had its tartan and badge, which are worn ceremoniously to-day. About 60 clans retain their historic continuity. The clan system also prevailed in Ireland and other parts of the world.

Clan-na-Gael Irish secret society. It was founded in Philadelphia in 1881 by Fenians who wished to make Ireland independent. After a period of great activity it died away. The term means "clan of the Gaels."

Clanricarde **Earl of.** Irish title long borne by the family of de Burgh, or Burke, and now by the Marquess of Sligo. In 1543 Ulick de Burgh, a great landowner in Connaught, was made Earl of Clanricarde. Two succeeding earls were made marquesses, but in both cases the newer title died out and the older one passed to another branch of the family.

John, the 14th earl (1802-74), was a Conservative politician and ambassador in S. Petersburg. He married a daughter of George Canning and was made a marquess in 1826. His son, **Hubert George de Burgh,** the 2nd marquess (1832-1916), was known for his resistance to the policy of land purchase. He died April 12, 1916, leaving his great wealth to his nephew, Viscount Lascelles, later Earl of Harewood. His marquessate lapsed, but the earldom passed to the Marquess of Sligo.

Clapham Southern suburb of London. It is 5 m. from London, in the borough of Wandsworth, on the Southern and tube railways. The common is a large open space. The district is famous as the home of the Clapham sect, a group of rich and influential evangelical churchmen who included Wilberforce, and the father of Lord Macaulay. The populous district of **Clapham Junction,** with its important railway junction, is in the borough of Battersea. **Clapham Park** is a residential district.

Clapperton Island in the Pacific Ocean. About 600 m. from Mexico, it is uninhabited, but is valuable for its guano. Claimed by France, the United States and Mexico, its ownership was submitted to arbitration. In 1930 the arbitrator, the King of Italy, decided in favour of France.

Clapton District of London. To the north-east of the city, it is in the borough of Hackney on the L.N.E. Rly. Here is a track for greyhound racing. **Clapton Orient** is a popular Association football club.

Claque Organised body of professional applauders in the French theatre, hired to receive a play with approbation. The name is derived from the French *claquer,* to clap the hands. Members of the claque could be hired, not only to clap, but also to laugh or cry, as the occasion demanded.

Clare Italian saint. She was born at Assisi, July 16, 1194, and was soon influenced by the preaching of S. Francis. In 1212 she took the vows of poverty, chastity and obedience and became the first woman member of the Franciscan order. Her life was passed as the head of a house for nuns opened near Assisi, its members being called after her, the Poor Clares. She died Aug. 11, 1253, and was canonised in 1255.

Clare County of the Irish Free State. In the province of Munster, it covers 1330 sq. m., and has a long coast line on the Atlantic. Off the coast are the Aran and other islands. The chief river is the Fergus, and there are several ranges of hills. Sheep and cattle are reared, and there are some fisheries. Ennis is the county town. Pop. (1926) 95,064.

Clare Town of Suffolk. It stands on the Stour, 25 m. from Bury S. Edmunds, and 62 from London, on the L.N.E. Rly. A castle, of which some ruins remain, was built here in Norman times and was the seat of the powerful earls of Clare. The town has an agricultural trade. Pop. 1340.

Clare **Earl of.** English title. The last peer of the earlier creation was killed at Bannockburn in 1314. In 1564 John Holles was made Earl of Clare and his descendants held the title until 1711. From 1711 to 1768 it was held by Thomas Pelham, Duke of Newcastle, the Prime Minister who was related to the Holles family.

In 1795 **John Fitzgibbon** was made Earl of Clare. He was a barrister and a member of the Irish Parliament. Having been Attorney-General, he was made Lord Chancellor of Ireland in 1789, and helped to bring about the union of the British and Irish Parliaments in 1800. He died Jan. 28, 1802, and his title became extinct in 1864.

The Earls of Clare are perpetuated in several ways. **Clare College,** Cambridge, owes its name to Elizabeth, a sister of Gilbert, Earl of Clare, who gave money to it in the 14th century. **Clare Market** in the Strand, London, which existed until almost the end of the 19th century, was founded about 1657 by John Holles, Earl of Clare.

Clare **John.** English poet. A labourer's son, he was born July 13, 1793, at Helpstone, near Peterborough. He earned a precarious living in several ways and soon

began to write poems. By good fortune one of them was noticed, with the result that his volume, *Poems Descriptive of Rural Life and Scenery*, was published in 1820. Other volumes, *The Shepherd's Calendar* and *The Rural Muse*, followed, but their success was not great. The poet's mind gave way, and in 1837 he was put into the asylum at Northampton, where he died, May 20, 1864.

Claremont Estate near Esher in Surrey. It is 14 m. from London. Sir John Vanbrugh built the house, which was bought for the Princess Charlotte and later became the home of Louis Philippe, who died here. The Duke and Duchess of Albany made it their home on their marriage and the widowed Duchess lived here until her death in 1922.

Clarence **Duke of.** English title. Taken from Clare in Suffolk, and first given to Lionel, a son of Edward III., who married the heiress of Clare, the title several times became extinct. The last Duke was Albert Victor, elder son of Edward VII. He was born Jan. 8, 1864, created a duke in 1890, and died Jan. 14, 1892.

Clarence House is the London residence of the Duke of Connaught. It was built in 1825 for William IV., then Duke of Clarence, and adjoins St. James's Palace.

Clarendon Village of Wiltshire. It is near Salisbury. The early English kings had a palace here, and here the Constitutions of Clarendon were issued in the 12th century. Pop. 300.

Clarendon **Constitutions of.** Laws issued by Henry II. in 1164, when he was living at Clarendon. They were 16 in number and were intended to curb the exceptional privileges of the clergy. They never came into force, but were important because they led to a renewal of the quarrel between the king and Thomas Becket. Henry withdrew them after the archbishop's murder.

Clarendon **Earl of.** English title borne by the family of Villiers. In 1661 it was given to Edward Hyde, the Lord Chancellor and historian, and it remained in his family until the 4th earl died in 1753. The heiress of the family married the ambassador, Thomas Villiers (1709-86), and in 1776 he was made Earl of Clarendon. **George, the 4th earl** (1800-70), was Lord Lieutenant of Ireland, 1847-52, and Foreign Minister in 1853-55, during the Crimean War in 1865-66, and under Gladstone in 1868-69. He died Jan. 27, 1870. **George, the 7th earl,** was chairman of the British Broadcasting Co. until appointed Governor-General of S. Africa in 1930. The Earl's eldest son is called Lord Hyde.

Clarendon **Earl of.** English statesman and writer. Edward Hyde was born Feb. 18, 1608, at Dinton, near Salisbury, the son of a landowner there. He went to Oxford and became a barrister, and in 1640 entered Parliament. Though he objected to the unconstitutional acts of Charles I., he remained loyal to the King. In 1643 he was made Chancellor of the Exchequer.

After the death of Charles, Hyde went abroad and was then closely associated with the royal family. In 1658 Charles II. made him his Lord Chancellor, and from the Restoration in 1660 to 1667 he was the King's chief adviser. He made many enemies, and in 1667 was compelled to resign. To escape impeachment he went abroad and remained in France until his death at Rouen, Dec. 9, 1674. He is buried in Westminster Abbey.

In his exile Clarendon wrote his *History of the Great Rebellion*. Although strongly partisan, this is an invaluable guide to the history of the times, while many of its passages are among the noblest examples of English prose.

Clarendon Code Four laws passed between 1661 and 1665, so-called because the Earl of Clarendon was then the chief adviser of Charles II. Intended to strengthen the position of the Church of England, the laws were as follows: (1) The Corporation Act of 1661, by which every member of a municipal corporation must take the sacrament according to the rites of the Church of England at least once a year. (2) The Act of Uniformity of 1662, which made it necessary for all clergymen to be ordained by a bishop and to use the Prayer Book. (3) The Conventicle Act of 1664, which made all religious services, except those of the Church of England, illegal. (4) The Five Mile Act, which forbade all expelled clergymen to live within 5 miles of a corporate town, unless they had taken an oath to be loyal to the established order.

Claret English name for the red wines of Bordeaux. They come from about 60 vineyards in the Medoc district of the Gironde.

Clarinet Single-reed wind instrument. The six finger holes in its cylindrical tube, which is bell-shaped at the bottom, give its fundamental scale.

Extra holes controlled by keys emit other sounds.

The clarinet acts like a stopped organ pipe, and gives only the odd upper partials of the harmonic series. This involves such complexity of fingering that clarinets are made pitched in convenient keys.

Clarion Trumpet with a high-pitched note. Hence the popular use of the word for a clear loud call.

Another clarion is an organ reed stop.

Clark **Francis Edward.** American divine. Born in Quebec, Sept 12, 1851, he founded the World's Christian Endeavour Union. He died May 25, 1927.

Clarke **Sir Edward George.** English lawyer. Born in London, Feb. 15, 1841, the son of a jeweller, he was largely self-educated. In 1880 he was elected Conservative M.P. for Southwark, and was later returned for Plymouth, a seat he held until 1900. From 1886, when he was knighted, until 1892 he was Solicitor-General. Clarke was M.P. for the City of London in 1906, resigning because of his free trade views. He published his *Autobiography* in 1918, and died April 26, 1931.

Clarkson **Thomas.** English anti-slavery leader. Born, March 28, 1760, he became interested in the slavery question while at Cambridge, henceforward devoting his life to secure abolition. It was Clarkson who influenced Wilberforce (*q.v.*), whose advocacy of abolition in parliament was supported by Pitt, Burke and Fox. Clarkson travelled extensively, both to gather evidence, and to enlist the sympathy of foreign statesmen. His health gave way in 1794, but he continued to write for the cause, seeing slavery legally abolished by parliament in 1807. He became vice-president of the Anti-Slavery Society, which was formed in 1823. He died, Sept. 26, 1846.

Classics Writing of the first rank, pre-eminently in ancient Greece

and Rome. The great Greek classics include the writings of Homer, Thucydides and the great dramatists Aeschylus, Euripides, Sophocles and Aristophanes, as well as Aristotle and Plato. Latin classical writers include Livy, Tacitus, Virgil, Seneca, Cicero and others. Supreme works of any age are also known as classics.

Claudius Name of two Roman emperors. Claudius I. was born at Lugdunum (Lyons) in 10 B.C. After the murder of Caligula, he was proclaimed emperor by the praetorian guards. He was governed by his favourites, and his infamous wife, Messalina, whom at length he put to death. He then wedded his niece, Agrippina, who, to ensure the throne to her son Nero, poisoned him in 54 B.C.

Claudius II. succeeded Gallienus as emperor in 268 and died in 270. He was called Gothicus, and his reign was chiefly marked by his victories over the Goths and other barbarians.

Claud Lorrain French landscape painter, was born at Chamagne, in Lorraine. He lived in Freiburg and Rome, and returned to France, but settled in Rome in 1627, where he worked under the protection of Pope Urban VIII., and quickly became famous. His landscapes are in the Italian classical tradition, and have beautiful light and cloud effects, although the figure-drawing is poor. His "Fête Villageoise," and "Un Port de mer au Soleil Couchant," are now in the Louvre, and his book of sketches of his pictures, *Libri di Verità* now belong to the Duke of Devonshire. He died Nov. 21, 1682.

Clausewitz Karl von. German soldier. Born June 1, 1780, he entered the Prussian army. In 1812 he entered the Russian service. Again in Prussia he served in the Waterloo campaign, and in 1818 was appointed head of the military academy. He died at Breslau, Nov. 18, 1831.

The teaching of Clausewitz was that war must be conducted with all the skill and ruthlessness possible, and must aim at the total destruction of the enemy. His ideas are set out in his famous *Vom Kriege (on War)*, which has been translated into English and other languages.

Claustrophobia Medical term for a certain kind of anxiety neurosis. It is characterised by a morbid fear of being in a confined space. Treatment is by psycho-analysis.

Clavichord Keyboard stringed instrument. It made music by the contact of tangents of brass with metal strings. These tangents also mark off the vibrating lengths of strings from the belly bridge.

Clavicle One of the important bones of the vertebrate skeleton. In man the clavicle, or collar bone, is curved and extends from the breastbone to the top of the shoulder blade.

Clay Earthy substance comprising essentially silica, 46.3 p.c.; alumina, 39.8 p.c.; and chemically combined water, 13.9 p.c. It is tenacious, plastic when wet, and when heated to 300°C. loses its plasticity irrecoverably. Sometimes formed of weathered volcanic rock in place, it has mostly been deposited as mud derived from disintegrated granites. Clays provide fireclays, pipe clays, pottery clays and clays for brick-making.

Clay Cross Urban district and market town of Derbyshire. It is 5 m. from Chesterfield on the L.M.S. Rly. Coal mining is the staple industry. Pop. (1931) 9843.

Claymore Name applied to the double-edged broadsword formerly used by the Highlanders of Scotland. It possessed a cross hilt of which the guards were turned down.

Clayton-le-Moors Urban district of Lancashire. It is 6 m. from Blackburn. Its industries are concerned with the cotton trade. Accrington, on the L.M.S., is the railway station. Pop. (1931) 7910.

Clayton, with a station (Clayton Bridge), on the L.M.S. Rly., is a northern suburb of Manchester. Another Clayton, on the L.M.S. Rly., is near Bradford, Yorkshire.

Clear Island and cape in the County of Cork, Irish Free State. About 4 m. from the mainland it has an area of roughly 1500 acres, and a pop. of 595. Cape Clear is the most southernly point of Ireland.

Clearing House Institution for the purpose of settling accounts between its members by the payment of balances only. The London clearing house settles all differences between the banks arising out of cheque and other transactions. The total amounts owing to and from are set off one against another, and the account is settled by a transfer of the difference. The office is in Post Office Court, Lombard St., London, E.C.

Cleat Wedge-shaped piece of wood used to prevent a rope slipping, or to act as a step, *e.g.*, when fastened to a ship's mast. The name is also applied to a wooden or metal implement for belaying ropes, and to the wedges on a ship's side which catch the shores of a dry dock.

Cleator Moor Market town and urban district of Cumberland. It stands on the Eden, 4 m. from Whitehaven, on the L.M.S. Rly. It is a mining centre and has blast furnaces for the iron ore found on the moorland near. Pop (1931) 6582.

Cleavage In geology a term used to denote the tendency of certain rocks to split into plates or slabs along planes independent of the planes of bedding.

In mineralogy, cleavage is applied to the tendency of mineral crystals to split along definite planes bearing some constant relation to the faces of the crystal.

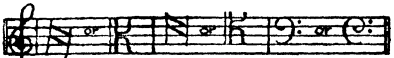
Cleckheaton Market town of Yorkshire (W.R.). On the L.M.S. Rly., it is 6 m. from Bradford. The chief industries are the manufacture of woollens and coal mining. Pop. 12,500.

Clee Range of hills in Shropshire. They are near Ludlow and extend for about 10 m. Brown Clee (1790 ft.) is the highest point.

Cleethorpes Urban district and watering place of Lincolnshire. It stands on the Humber estuary, about 3 m. from Grimsby, with which it is connected by tramways. It is 158 m. from London, on the L.N.E. Rly. Pop. (1931) 28,624.

Nearby is the village of Clee, whose beautiful old church has a Saxon tower and a Norman nave.

Clef Term used in music. The clefs, which are placed at the beginning of a staff, determine the absolute pitch of certain notes, and therefore, together with the position on the staff, of all the notes. They are marked as follows:



G or Treble Clef. C (Alto) Clef. C (Tenor) Clef. F or Bass Clef.

Cleft Palate Imperfect development of the roof of the mouth, present at birth. It results from failure of the process forming the nose to unite with the two sides of the upper jaw, as it normally does before birth. If the gap extends forward it produces hare lip. The malformation can usually be remedied by an operation in early life.

Cleisthenes Athenian statesman. He was the author of the law called ostracism, which enabled the public assembly to decree by a secret ballot the banishment of any citizen who appeared dangerous to the state. He lived about 510 B.C.

Clematis Genus of hardy and half-hardy plants of climbing habit of the natural order *ranunculaceae*. The wild clematis of the hedgerows is familiar as travellers' joy or old man's beard. Many hybrid varieties are in cultivation, mostly derived from *C. viticella*, a native of S. Europe and parts of Asia, and *C. languinosa*, a large flowered lilac-coloured species of Chinese origin. The popular *C. jackmani* with deep velvety purple blooms is derived from these two.

Clemenceau Georges. French statesman. Georges Eugène Benjamin Clemenceau was born Sept. 28, 1841. In 1871 he was a member of the National Assembly. Between 1871 and 1876 he was engaged in municipal work in Paris, ending as President of the Municipal Council. From 1876 to 1893 he was a member of the Chamber of Deputies. He opposed Boulanger and supported Dreyfus, the vehemence of his activities winning for him the name of "the tiger" and involving him in several duels. In 1880 he founded *La Justice*, the first of his several journals; the others were *Le Bloc*, *L'Aurore* and *L'Homme Libre*.

Early in 1906, having been a senator since 1902, Clemenceau became minister of the interior. Later, in 1906, he was made premier, a post he held until 1909. His term of office was notable for the establishment of the Entente Cordiale, following the trouble with Germany in 1908, and the separation of church and state. He was active in opposition for nine years until, in 1917, he was called upon to save his country. He saw the war brought to a successful conclusion, and presided over the peace conference at Versailles. He resigned in Jan., 1920, and lived in retirement until his death, Nov. 24, 1929.

Clemenceau wrote a novel which appeared in England as *The Strongest*. His two books dealing with the events of 1914-20 appeared just before his death.

Clemens Samuel Langhorne. *See* MARK TWAIN.

Clement Name of fourteen popes. **Clement I.**, or Clement of Rome, was the fourth Bishop of Rome. **Clement II.** was pope in 1047. **Clement III.** was pope from 1187 to 1191. **Clement IV.**, a Frenchman, was pope from 1265 to 1268. **Clement V.**, also a Frenchman, was pope from 1305 to 1314; he was the first pope to live at Avignon. **Clement VI.**, another Frenchman, was pope 1342 to 1352. **Clement VII.** was a Medici; he reigned from 1523 to 1534.

Clement VIII. was pope from 1592 to 1605, and **Clement IX.** from 1667 to 1669. **Clement X.** was pope from 1670 to 1676, and **Clement XI.** from 1700 to 1721. **Clement XII.** was pope 1730 to 1740. **Clement XIII.**, pope from 1758 to 1769, was followed by **Clement XIV.**, pope from 1769 to 1774. This pope in 1773 suppressed the Jesuits.

Clement's Inn Formerly one of the London chancery inns. It existed in the 15th century and was attached to the Inner Temple until its abolition about 1800. Its name comes from the Church of S. Clement Danes, and the name is still used for a block of buildings near that church in the Strand. The Inn is the Shepherd's Inn of Thackeray's *Pendennis*.

Cleon Athenian demagogue. He gained great influence over the people and was appointed commander of the army. He gained a victory over the Lacedaemonians in Sphacteria, but afterwards he was defeated by Brasidas and slain. Cleon is bitterly attacked by Aristophanes in the *Knights* and other plays, and his name has become proverbial for a demagogue. He lived about 400 B.C.

Cleopatra Queen of Egypt. A daughter of Ptolemy Auletes, she was born in 69 B.C. and became, in 51 B.C., joint ruler of Egypt. In 48 B.C. she was driven out, but Caesar, having become her lover, restored her. After his death she became the mistress of Mark Antony, which led to war between Antony and Octavian, afterwards the Emperor Augustus. Antony was defeated, and after his death Cleopatra killed herself.

CLEOPATRA'S NEEDLES are two great obelisks built at Heliopolis about 1500 B.C., and later removed to Alexandria. In 1878 one of these was brought to London and erected on the Victoria Embankment. It is 68½ ft. high. The other, a little higher and much heavier, was erected in Central Park, New York, in 1879.

Clerestory Upper storey of a building which is pierced with windows for admitting light uninterrupted by adjoining roofs. It is chiefly used in the naves, choirs and transepts of Gothic cathedrals and large churches.

Clerkenwell District of London. It is to the north-east of the city and part of the borough of Finsbury. The most interesting building is the gatehouse of the priory of S. John of Jerusalem, a religious house that stood here in the middle ages. It is now the chancery of the modern Order of S. John of Jerusalem. Clerkenwell is known as a centre of the jewellery and watch-making trades.

Clerk-Maxwell James. Scottish scientist. Born in Edinburgh, June 13, 1831, he went to Trinity College, Cambridge, where he was second wrangler. He was in succession professor at Aberdeen, at King's College, London, and at Cambridge, where he died Nov. 5, 1879. Mathematical physics was his main study. His ideas on the connection between light, heat, magnetism and electricity, carried forward by others, have led to remarkable results.

His great work is *A Treatise on Electricity and Magnetism*, 1873.

Clermont-Ferrand City of France. It stands near the Allier River, 112 m. from Lyons, and is the capital of the department of Puy-de-Dôme. The buildings in Clermont include the beautiful Gothic cathedral. Ferrand is a busy manufacturing centre. Clermont is a market for the produce of Auvergne. The two towns are connected by a long avenue bordered with trees. In 1195 at the Council of Clermont, Pope Urban II. proclaimed the first crusade. Pop. (1931) 103,143.

Clevedon Urban district, market town watering place of Somerset. It is on the Bristol Channel, 15 m. from Bristol, on the G.W. Rly. Clevedon Court was the home of Tennyson's friend, Arthur Hallam, and his family have associations with the village and church. Pop. (1931) 7033.

Cleveland Hilly district of Yorkshire. In the north of the county, it extends from the Tees almost to Whitby. The highest point is nearly 1500 ft. It is famous for its iron ore, the working of which has made Middlesbrough a great industrial town. The district gives its name to a breed of horses and to a hunt.

Cleveland City and port of Ohio, United States. It stands on the south side of Lake Erie at the mouth of the River Cuyahoga, 375 m. from Chicago. The industries include iron and steel works, oil refineries, motor car works and clothing factories. Cleveland has many parks and open spaces. Pop. (1930) 900,429.

Cleveland **Duke of.** English title. Its first holder was Barbara Villiers, mistress of Charles II., created duchess in 1670. The daughter of Viscount Grandison and wife of the Earl of Castlemaine, she bore the king three sons who became dukes of Cleveland, Grafton and Northumberland, and died at Chiswick, Oct. 9, 1709. The Cleveland title became extinct in 1774. In 1833 it was given to William Henry Vane, descended from a daughter of the first duke, but it again became extinct when the 4th duke died in 1891. The duke's seat was Raby Castle, Durham, now the seat of Lord Barnard.

Cleveland **Stephen Grover.** American president. Born in New Jersey, March 18, 1847, he became a notable reformer, and in 1884, and again in 1892, he was elected to the presidency as a Democrat. During his second term of office the trouble with Great Britain about the boundary of Venezuela occurred. Retiring in 1897 he died at Princeton, June 24, 1908.

Cleves District of Germany, round the town of Cleves, which is near the frontier of the Netherlands, 45 m. from Düsseldorf. It covers about 850 sq. m. The town is a pleasure resort. Pop. 180,000.

Clew Bay Opening of the Atlantic Ocean. In Co. Mayo, Irish Free State, it pierces the land for about 14 m. There are many small islands in the bay and Clare (*q.v.*), a larger one, at its entrance.

Clewer District of Berkshire. **Clewer Within** is part of the borough of Windsor. Here are the headquarters of the Clewer Sisterhood. Founded in 1849 as the community of S. John the Baptist, it conducts schools, hospitals and homes for fallen women. **Clewer Without** is outside the borough.

Cliché In stereotype printing a papier maché mould made from set type. From the mould a casting is made, and with this the actual printing is done.

The word is more widely used for hackneyed expressions which, possibly striking at first, become stale and threadbare with use.

Clifden Market town and seaport of Co. Galway, Irish Free State. It stands on Ardbear Bay, 50 m. from Galway, on the Gt.S. Rlys. Its trade is chiefly in fish. Pop. 800.

The Irish title of **Viscount Clifden** was given in 1781 to James Agar, a landowner of Kilkenny. In 1899 it was inherited by Thomas C. Agar-Robartes, 2nd Baron Robartes, whose estates are chiefly in Cornwall.

Cliff-Dwelling Habitations of primitive peoples in Western Colorado, Arizona, Utah and New Mexico. They were constructed of lime and stone, in the hollow surface of a cliff, accessible only by ladder or ropes from below, and invisible from above. They were built by people of Pueblo origin. The most famous are in the Mesa Verde Canyons, and the Cliff Palace has 150 rooms, and 23 ceremonial chambers.

Clifford Name of a great English family. Taking its name from Clifford in Herefordshire, it is now represented by Lord Clifford of Chudleigh, the holder of a title dating from 1672. The first lord, Thomas Clifford (1630-73), was one of the chief advisers of Charles II., being a member of the cabal and lord treasurer. The family seat is Ugbrooke Park, Devonshire. The barony of de Clifford, which dates from 1299, is now held by the Russell family.

Clifford **John.** English divine. Born at Sawley, Derbyshire, Oct. 16, 1836. In 1858 he became minister of a Baptist chapel in Praed Street, removing in 1877 to Westbourne Park. Clifford was one of the leading Nonconformists of his time, a fervent politician and the leader of the passive resistance to the education measure passed in 1902. He died Nov. 20, 1923.

Clifford's Inn Former London Chancery Inn. Attached to the Inner Temple, it became a centre for lawyers in 1344 and remained so until dissolved in 1902. The hall built in 1767 still stands. The inn was behind S. Dunstan's Church in Fleet Street, and the buildings on its site are still called Clifford's Inn.

Clifton Suburb of Bristol. To the west of the city, it stands on the Avon and has a noted suspension bridge, opened in 1864. Formerly a popular pleasure resort, it is now a residential district.

At Clifton is **Clifton College**, a public school for boys, founded in 1862. It has accommodation for about 800 boys, and ranks as one of the great public schools.

Another Clifton is a village near Nottingham. It stands on the Trent and is famous for Clifton Grove, a beautiful avenue of trees overlooking the river. Clifton Hall has been for centuries the seat of the Clifton family. The barony of Clifton, dating from 1608, is held by Elizabeth A. M. Bligh. The eldest son of the Earl of Darnley is called Lord Clifton.

Climate Average succession of atmospheric conditions which, regarded individually, constitute weather. These conditions embrace variations of temperature, moisture and pressure. The sun's

ecliptic path conveniently delineates five climatic zones: the torrid or tropical, between the tropics, 23½° N. to 23½° S.; the arctic, north of the circle, 66½° N.; the antarctic, south of the circle, 66½° S.; and the intermediate north and south temperate zones.

Clinic Institution at which people attend for diagnosis, advice or treatment for illness. First founded in London in 1696 for the provision of medicines for the poor, clinics have greatly increased in number, particularly in the U.S.A., and their activities now include preventive as well as curative functions. The London School of Clinical Medicine is at the Dreadnought Hospital, Greenwich.

Clinical medicine deals with the treatment of patients at the bedside.

Clinometer Instrument used in calculating the position of distant, and even invisible objects, and in setting gun sights to the correct angle. Other forms are used by airmen and surveyors.

Clinton Name of a famous English family. In 1299 John de Clinton became a baron. One of his descendants was made Earl of Lincoln in 1572. This title became merged in that of Duke of Newcastle, whose family name is Pelham-Clinton. In 1692 the barony of Clinton fell into abeyance, but in 1721 it was revived and later came to the family of Hepburn-Stuart-Forbes-Trefusis. The family estates are in Devon.

SIR HENRY CLINTON was a soldier and an M.P. In 1778 he was appointed to command the British forces in N. America, but after the surrender of Yorktown he resigned. He died at Gibraltar, where he was governor, Dec. 23, 1795. His son, another Sir Henry Clinton (1771-1829), was a leader at Waterloo.

Clio One of the muses in Greek mythology. She was the goddess of history.

Clipper Long, slender, sailing vessel, with rectangular sails and three backward-sloping masts. It was developed by American builders from French principles in the first half of the 19th century. Clippers were renowned for their speed. The *Cutty Sark*, engaged in the China tea trade, is perhaps the most famous of these vessels.

Clipstone Village of Nottinghamshire. It is in Sherwood Forest, 5 m. from Mansfield, on the river Maun. King John had a palace here and there was a camp here during the Great War.

Clitheroe Borough and market town of Lancashire. It stands on the Ribble, 38 m. from Manchester, on the L.M.S. Rly. The industries include cotton mills and paper making works. Clitheroe had a castle, of which ruins remain. Near is Pendle Hill. Pop. (1931) 12,098.

Clive **Catherine.** English actress. Born in London in 1711, she joined Garrick in 1746. She married, in 1731, a barrister named George Clive, and is always known as Kitty Clive. She died Dec. 6, 1785.

Clive **Robert.** English soldier. Born, Sept. 29, 1725, at Styche, near Market Drayton, he received a desultory education, and in 1743 went to India as a writer in the E. India Co. In 1746 he helped to defend the fort against the French, and soon his daring and resource made him a leader. In 1751, with a few men, he captured Arcot, which he held during a long siege and then gained other successes which established the power of Britain in that region.

From 1753 to 1755 Clive was in England, where he was hailed as a conqueror. Again in India, he was sent to regain Calcutta after the tragedy of the Black Hole, and in July, 1757, won his greatest victory at Plassey.

After Plassey, Clive made his nominee, Mir Jaffier, nawab of Bengal and himself ruled the country until 1760, when he returned to England, entered Parliament and in 1762 was made an Irish peer. In 1765 he went back to India as governor for the E. India Co. On Nov. 22, 1774, Clive shot himself.

Cliveden Residence in Buckinghamshire. It stands on the Thames, 3 m. from Maidenhead and is famous for its woods. The first house was built for George Villiers, Duke of Buckingham. The present one was built from designs by Sir Charles Barry, and was bought from the Duke of Westminster by Mr. Waldorf Astor, afterwards Viscount Astor. His son, the 2nd viscount, closed the house in 1931.

Clock Mechanical instrument for keeping time. Its mechanism consists of a train of wheels actuated by a spring or other means, and provided with a device to render its speed uniform.

Clocks were known in the 13th century, but were probably invented much earlier.

One of the largest is Big Ben at Westminster, but a larger one has been placed on the building on the Embankment, London, erected by Shell Mex, Ltd. Many are wonderful pieces of mechanism and some, notably one at Wells, have been in use for centuries. Of domestic clocks the grandfather clock is popular as an antique. Standard time is recorded on a clock at Greenwich Observatory.

Clockmaking is a highly skilled art. The **Clockmakers' Company**, one of the London livery companies, dates from 1631. Its collection of old clocks and watches, with books about them, is in Guildhall.

Clog Dance Lancashire dance. In it the skilful toe-and-heel tapping of the wooden soles makes sound patterns of varying rhythm and volume. There is also a negro clog dance.

Clogher Village of Tyrone, N. Ireland. It stands on the Blackwater, 80 m. from Dublin, and has a railway station. At one time it had a bishop, and sent members to Parliament. The cathedral still stands. The word Clogher means golden stone.

Cloisonné Method of enamel decoration. The designs are outlined upon the base with soldered metal fillets, and the cells filled with enamel paste or powder, the whole being vitrified in the furnace and ground smooth. It passed from Celtic into Byzantine art, and was adopted after 1838 for Japanese enamels.

Cloister Four-sided enclosure attached to monastic, cathedral and collegiate buildings. The arcades are often magnificently vaulted and adorned with traceried windows, sometimes glazed. Notable examples may be seen at Westminster Abbey, Magdalen College, Oxford and Canterbury, Salisbury and Gloucester cathedrals.

Clones Market town and urban district of Monaghan, Irish Free State. It is 65 m. from Belfast on the Gt. Northern of Ireland Rly. There are remains of the old abbey and of a round tower. Pop. (1926) 2365.

Clonmacnoise Village of Ireland. It stands on the

Shannon, 8 m. from Athlone, and its ruins show it to have been one of the most important ecclesiastical centres in the country. An abbey was founded here in 540, and there are remains of it as well as of seven churches and two round towers. The remains of a castle are further proof of its early importance.

Clonmel Borough of Tipperary, Irish Free State; also the county town. It stands on the Suir, 28 m. from Waterford, on the G.S. Rlys. The west gate is a feature of the town, and there are remains of the castle. Pop. (1926) 9,050.

Clontarf Seaside resort of Dublin, Irish Free State. A summer resort on Dublin Bay, it is famous as the scene of the great battle in which Brian Boru defeated the Danes in 1014.

Close Enclosed piece of land. In England it is chiefly used for the piece of land round a cathedral. In it are the houses of the dean, canons and other members of the staff. In Scotland a close is a passage leading to a group of dwellings.

Close Time Time during which birds or animals must not be killed or taken. It usually covers the breeding season and varies with the habits of the animal.

Closure Word used for a system for ending debate in Parliament before all who wish to speak have done so. The idea was borrowed from France and was introduced into the British Parliament in 1882 to prevent members who did not like a bill delaying its progress by making long speeches, sometimes for hours at a time.

Cloth Woven fabric. The materials may be animal, vegetable or asbestos fibre and metallic wires. The unqualified word usually denotes wool or hair fabrics, each trade, however, applying it to its own speciality. Richard I. prescribed 2 yds. as the standard width of woollens; Flemish influence brought about the recognition of half-width or narrow cloth. Broadcloth nowadays implies fine quality as well.

The **Clothmakers' Company** is one of the twelve great livery companies of London. It dates from 1528 and has a fine hall in Mincing Lane. It has an income of over £80,000 a year, and has done a good deal for technical education in Bradford.

Bartholemew Fair in London was sometimes called **Cloth Fair** because cloth was the chief article sold. The **Cloth Hall** is a feature of some of the towns in the Netherlands.

Clothyard English measure of length. It was merely the yard of 36 in. used for measuring cloth. As the shaft of an arrow was generally a yard long, the arrow was often called a clothyard.

Cloud Mass of watery particles suspended in the air at considerable heights. The earliest classification of cloud forms, Luke Howard's (1803) comprised cirrus or cat's-tail cumulus or heaped, stratus or high fog, three double compounds of these, and one of all three, nimbus or rain-cloud. This classification, expanded by adding alto-cumulus and alto-stratus, was adopted by the International Meteorological Conference in 1891.

Cloudberry Species of wild berry resembling a mulberry. The plant is of low growth with rough, erect stems about 8 in. in height. The fruit is orange yellow and of a slightly acid flavour. Found in N. Europe and other cold regions, it grows in Great Britain only on high moorlands in the north and in parts of Wales.

Clough **Arthur Hugh.** British poet. Born Jan. 1, 1819, he was educated at Rugby and Balliol College, Oxford. From 1849-52 he was warden of University Hall, London, and in 1853 was appointed an inspector under the Board of Education. He died at Florence, Nov. 13, 1861. Clough's best-known poem probably is "Say not the struggle naught availeth." He was a friend of Carlyle, Emerson and Matthew Arnold.

Clough's sister, **Anna Jemima Clough,** was the first principal of Newnham College, Cambridge. She died Feb. 27, 1892.

Clove (*Eugenia carophyllata*). Pungent aromatic spice, the dried, unexpanded bud of an evergreen shrub of the natural order *myriaceae*. The volatile oil of cloves is used medicinally as a carminative and digestive stimulant. Supplies are obtained from Zanzibar and the W. and E. Indies, especially Amboyna from which the earliest supplies came.

Clovelly Seaside resort of Devonshire. It is a noted beauty spot on Barnstaple Bay, 11 m. from Bideford. The main street descends 400 ft. by steps to a little cove. Pop. 640.

Clover Genus of leguminous herbs (*trifolium*) native to the north temperate regions. Of the 170 species 18 are native to Britain. Several are cultivated for fodder, especially red, *T. pratense*, white or Dutch, *T. repens*; crimson or Italian, *T. incarnatum*; and alsike or Swedish, *T. hybridum*. They play an important part in the rotation of crops on British farms as they collect nitrogen and add it to the soil.

Clovis Frankish king. A son of Childeric I., he succeeded his father in 481, and is regarded as the founder of the Frankish realm, of which he made Paris the capital. He became a Christian, and died in 511.

Clowne Village of Derbyshire. On the L.M.S. Rly, it is 152½ m. from London and is in a coal-mining district. There is a cattle market. Pop. 5880.

Cloyne Market town of the Irish Free State. It is 15 m. from Cork, and has a 14th century cathedral and a round tower. The Anglican bishopric was united with that of Cork in 1835. There is still a Roman Catholic bishopric. Pop. 700.

Club Organisation for social, political or kindred purposes. There were associations of men resembling clubs in Greece and Rome. In England the most famous is that called simply The Club, which gathered round Dr. Johnson.

To-day the best-known clubs are the London clubs with their magnificent houses in Piccadilly, Pall Mall and the adjacent streets. Some, such as the Carlton and the Reform, are political; others, such as Brooks' and White's, are social; others are for members of the services and for university men. The chief is the Athenaeum. Clubs for women, of which the Lyceum and the Forum are notable, are a modern departure.

In addition there are a large number of social and political clubs for working men. Others are benefit clubs, which exist to provide members with clothing, holidays, Christmas fare and so on, payment being made by

weekly contributions. A further class are those associated with athletics, rowing, golf, tennis and other sports.

In 1930 there were 11,780 clubs registered in England and Wales. Of these 2827 were trade union clubs, 1321 were Conservative clubs, 1696 were athletic clubs, and 726 were golf clubs.

Club Foot Deformity of the foot, either hereditary or the result of infantile paralysis. It usually takes the form of a shortness with the heel drawn up. Byron had a club foot, but was a marvellous swimmer.

Clumber Nottinghamshire, seat of the Duke of Newcastle. It is about 3 m. from Worksop. In 1929 the beautiful house was closed and some of the art treasures taken to Nottingham Castle.

Clumber gives its name to a variety of spaniel.

Clun Town of Shropshire. It stands on the river of the same name, 9 m. from Craven Arms, and was a borough until 1886. There are slight remains of a castle. Pop. 1900.

The River Clun rises in Clun Forest, a tract of land on the borders of Wales, and joins the Teme at Leintwardine in Herefordshire. Its length is 18 m. The forest, one in name only, covers 12,000 acres.

Cluny Town of France. It is 12 m. from Mâcon and has an agricultural trade. In 910 a Benedictine abbey was founded here. The monks had a stricter rule than other Benedictines, and in time the Cluniacs, as they were called, ranked as a distinct order which, by the 16th century, had some 2000 houses, and there were 35 in England, Bermondsey and Lewes having Cluniac priories.

The church at Cluny was at one time the largest in Christendom and its library one of the most noted.

Cluster System of stars having some physical association. Star clusters congregate mostly towards the Milky Way. Some are irregular, *e.g.*, the familiar Pleiades. Many have a globular form.

Cluster Cup Stage in the life history of an order of minute fungi. They are chiefly parasitic on living plants in the form of rust and mildew. Wheat rust (*puccinia graminis*) throws off special spores which are carried to barberry leaves. These develop beneath the epidermis, barberry cluster cup, or barberry fungus, comprising cup-shaped membranes enclosing accidium spores which, on reaching the wheat plant, again repeat the life history.

Clutch Mechanical device for disconnecting parts of machinery, such as the gears of motor-cars.

Clwyd River of Denbighshire, Wales. It enters the Irish Sea at Rhyl, and is about 30 miles in length. The vale of Clwyd is a fertile valley noted for its scenery.

Clydach Industrial centre of Glamorganshire, 5 m. from Swansea, on the River Tawe. Here, refining works for metals have been opened.

There are several other villages named Clydach in Wales. A river in Brecknockshire, a tributary of the Usk, also bears this name.

Clyde River of Scotland. It rises in Lanarkshire and flows mainly north for 106 m. until it widens out and becomes the Firth of Clyde. Its course is marked by some lovely scenery, especially near Lanark, where are Cora Linn, Stonebyres Linn and other falls.

As far as Glasgow the Clyde can be ascended by the largest vessels, and its banks, with shipbuilding yards and engineering works, form one of the greatest industrial areas in the world. It is connected with the Forth by the Forth and Clyde canal and a ship canal between the two rivers is proposed.

The Firth of Clyde extends from Dumbarton to Ailsa Craig, 65 m. away. In it are Bute, Arran and other islands.

Clyde Lord. Scottish soldier. Colin Campbell was born in Glasgow, Oct. 20, 1792. In 1808 he entered the army and served in Walcheren, right through the Peninsular War and in America during the war of 1812-14. In 1842 he was in China and he fought against the Sikhs in 1848-49, and was knighted. In 1854 Campbell led the Highland Brigade in the Crimea, winning fame at the Alma and Balaclava. In 1857 he left for India to command the troops there during the mutiny. He relieved Lucknow and saw the end of the rebellion. In 1858 he was made a baron, being also a field-marshal. He died at Chatham Aug. 14, 1863.

Clydebank Burgh and river port of Dumbartonshire and Renfrewshire. It stands on the north bank of the Clyde, 6 m. west of Glasgow, on the L.M.S. and L.N.E. Rlys. It has extensive docks, shipbuilding yards and engineering works. Other products include sewing machines, chemicals and soap. The burgh was formed by a union of several villages, among them Dalmuir, Kilbowie and Yoker, which became large industrial areas in the 19th century. Pop. (1931) 46,963.

Clydesdale Valley of the Clyde, a district in Lanarkshire. It is fertile, famous for its orchards, and gives its name to a breed of horses, much used for dragging heavy loads. There is a village called Clydesdale, and the eldest son of the Duke of Hamilton bears the title of Marquess of Clydesdale.

Clynes John Robert. English politician. Born at Oldham, March 27, 1869, he entered a cotton mill in early life. He was made an organiser of the general labourers' union, of which later he was president. In 1906 he was elected Labour M.P. for the Platting division of Manchester. In 1921-22 he was chairman of the parliamentary Labour Party. Clynes began his official career as parliamentary secretary to the ministry of food in 1917, and in 1918, when he was made a P.C., he became food controller in the coalition ministry. In the first Labour Government (1924) he was Lord Privy Seal and deputy leader of the Commons; in the second he was Home Secretary, 1929-31. In 1931 he lost his seat in the Commons, regaining it in the general election of 1935.

Clytaemnestra In Greek legend, the sister of Helen and wife of Agamemnon. While her husband was commanding the Greek forces at Troy she had an amour with Aegisthus and, when Agamemnon returned, she slew him in the bath. In revenge, she and Aegisthus were afterwards put to death by her son, Orestes.

Cnossus Ancient city of Crete. Situated on the river Caeratus, 3 m. from the harbour of Candia, its legendary association with the minotaur and the labyrinth has been elucidated by the researches of Sir Arthur Evans. The architectural details and

the treasures of fresco painting, ceramics, sculpture and metal work have revealed a civilisation of the most wonderful kind. Its modern name is Katsabas.

Coach Large covered vehicle on four wheels. Coaches were first made at Kocs, in Hungary, and introduced into England and France in the 16th century for the wealthy. They were drawn by two, four, six or eight horses. The coach of the Lord Mayor of London gives a good idea of their appearance. Early in the 17th century coaches were used for ordinary travelling, and soon mail and stage coaches were in general use.

Large motor vehicles which carry passengers are called **motor coaches.** As a pastime driving a coach and four horses survives. Two clubs, the Four in Hand and the Coaching, exist to further it and each holds an annual meeting in Hyde Park, London.

At one time the building of coaches was an important industry in Long Acre, London. The **Coachmakers' Company,** one of the London livery companies, dates from 1677 and has a hall in Noble Street.

Coadjutor Term applied to a person appointed to assist a bishop. In the Roman Catholic Church a coadjutor bishop is usually appointed with the intention that he shall succeed the one he assists.

Coal Carbonaceous material forming stratified deposits in the earth. It represents the remains of ancient land vegetation which has undergone slow chemical change, chiefly reducing the oxygen and increasing the carbon content up to 75 or 90 per cent. In the lignites and brown coals the mineralisation is at its lowest, and these consist of earthy or compact masses giving a brown or black streak. They contain a greater proportion of volatile matter, with 60 to 75 per cent. of fixed carbon and are very inflammable.

Common coal is black, compact, less inflammable than lignite, and contains 75 to 85 per cent. of carbon with a lower proportion of volatile matter.

Steam coals are less bituminous, burn well with a large flame and little smoke. Anthracite, the most mineralised of coals, consists almost entirely of carbon, and has a sub-metallic lustre; it gives out little or no smoke. Large supplies come from Pennsylvania. South Wales is the chief source of the British supply.

The world's total production of coal in a single year is about 1,050,000,000 tons, the United States producing 390,000,000 tons, Great Britain 219,000,000 tons, and Germany 116,000,000 tons. The rest of the world produces little more than 300,000,000 tons, chiefly in France, Poland, Russia, Japan, Belgium and India. Various estimates of the world's coal reserves have been made, but none are very reliable as new fields are discovered from time to time, and it is found possible to work at greater depths. There are believed to be enormous deposits untouched in Canada, S. Africa, China, Japan and elsewhere.

The chief British coalfields are Lanarkshire, Northumberland, Durham, Yorkshire, Nottinghamshire, Derbyshire, Lancashire, Warwickshire, Staffordshire and South Wales. A new field has been found in Kent. The number of workers is about 957,000. The manufacturing industries take 70,000,000 tons a year, householders take 40,000,000 tons, gas works 17,000,000 and railways 14,000,000. The collieries themselves take about 20,000,000 tons and much of the balance is exported abroad.

To an unusual extent the industry of coal mining in Great Britain is regulated by the state. In 1908 the working hours of the miners were limited to eight a day. During the Great War a government coal controller was appointed. In 1919, to avert a threatened strike, a royal commission was set up under Sir John Sankey to inquire into the conditions of the industry. A reduction of hours and an increase of wages were advised and carried out, but the nationalisation of the mines, also advised by the majority, was not accepted. However, a welfare fund for the miners was instituted and a department of mines, now part of the Board of Trade, was formed.

On March 31, 1921, government control of the mines ceased and at once a strike which lasted for three months began. The agreement provided for a system of profit sharing, and for three or four years the industry was fairly prosperous and contented, but in 1925, the employers, faced with increased competition from France and Germany, declared their inability to continue the existing rates of wages. To keep the miners at work the Government promised a subsidy, while a royal commission under Sir Herbert Samuel inquired into the position. This reported early in 1926. It declared against the subsidy, but made various proposals for reforming the industry. The men refused to accept its findings and on March 1 they ceased work, the strike lasting until Nov. 30. The men then accepted the owners' terms, each district making its own arrangements. The law limiting the hours of work to seven a day was repealed and other legislative changes made to give effect to the settlement.

In 1930 the Labour Government passed into law a measure which provided for marketing and amalgamation schemes, and reduced the hours of work to 7½ daily. The principle of a quota for each district was introduced. There was further legislation in 1932. In Dec., 1935, and Jan., 1936, Britain was threatened with another national coal strike, which, however, was averted when, on Jan. 23, the miners agreed to accept the proffered terms. These included a wage increase ranging from *5d.* to *1s.* per day.

COAL-GAS.—When coal is distilled, volatile products evolve, leaving coke. Coal-gas and coal-tar are two of these. When the volatile products are cooled, coal-gas is left. After purification, it consists of a mixture of gases, divisible into three classes, one of which contains the illuminants, ethylene, propylene, butylene, acetylene, allylene, and benzene. Coal-gas is obtained from any bituminous coal, and is used widely for lighting and many industrial and commercial purposes.

COAL-TAR.—Dark, viscid oil, obtained as a by-product during the distillation of coal. Benzol is obtained up to 140° C., and in 1856 it was discovered that aniline dyes could be prepared from benzol. Two more redistillations, up to 170° C. produce solvent and burning naphtha. From 170°-230° naphthalene and carbolic acid are given. From 230°-270°, creosote oil and lubricating oil are formed, and later, anthracene oil, anthracene, lamp-black, pitch and coke. These products in turn are used largely in the making of drugs, perfumes, explosives, dyes, disinfectants, and motor-car fuel.

COAL-OIL.—An important landmark was established in 1935 with the first commercially successful attempt to produce petrol from coal. Experiments were begun as early as 1910 by

Bergius in Germany, and it was by development of the Bergius process of hydrogenation that the present results were obtained. The process is carried out at the Imperial Chemical Industries' works at Billingham.

Coalbrookdale District of Shropshire. It stands on the Severn, 11 m. from Shrewsbury and 143 from London, on the G.W. Rly. Its coal mines and ironworks are less productive than formerly.

Coalition In politics, a working arrangement between two or more parties, usually made in order to carry on the government. In Great Britain there was a coalition between Fox and Lord North in 1783. In 1895 the Conservatives and Liberal Unionists united. In 1915 a coalition government was formed to carry on the Great War and another coalition under Lloyd George lasted from 1916 to 1922. In Canada there was a coalition ministry for the same purpose under Sir R. L. Bordon. The British national ministry formed in 1931 was not a true coalition.

Coalport Village in Shropshire. It gives its name to a type of porcelain. Works were established at Caughley, in the same county, about 1750. In 1790 they came into the possession of John Rose, who, in 1814 moved them to Coalport. He also acquired the Nantgarw & Swansea Works Rose invented a new leadless glaze about 1820. The factory is still in operation.

Coalville Urban district of Leicestershire. It is 5 m. from Ashby-de-la-Zouch and 113 m. from London by the L.M.S. Rly. The chief industries are collieries, foundries and tile making. Pop. (1931) 21,886.

Coast Boundary between land and sea. It has varied greatly through repeated elevation and depression, being subject to increasing, weathering, river deposition and beach transport. Continental coasts are those in which the sea impinges upon the solid land, marine coasts those formed of soft materials sorted out by the sea. Coast scenery is governed by the relation of hard to soft rock, dip of strata and valley pattern imposed by crustal movements, presenting such types as fiord coasts, lagoon coasts and ironbound coasts.

In England the coast is crumbling away in parts of Norfolk, Suffolk and the Isle of Wight. In other areas the sea is receding.

Coastguard Body of men engaged to patrol the coast. In Great Britain they are recruited from the navy and under the direction of the Board of Trade. They have stations at various points along the coast which is divided into districts, each under an inspector. The men were originally employed to stop smuggling and this they still do as well as render aid in case of shipwreck.

COAST LIFE SAVING CORPS. Voluntary organisation created in 1932. Originally raised to help the coastguard service, it was made up of three main branches, the first including the members of existent life saving appliance companies and brigades, numbering between 4000 and 5000 men. The second branch consists of watchers, as required at places where there are no coastguard stations, and at coastguard stations when relief is needed. Finally, there is an intelligence section, which includes all persons who volunteer to assist the coastguard in an emergency, as with motor cars, telephones, etc.

Coatbridge Burgh of Lanarkshire. It is 9 m. from Glasgow, on the L.M.S. Rly. It stands on the great Lanarkshire coalfield and has blast furnaces and works for smelting tin and producing iron, steel and tinplate. Pop. 43,900.

Coates **Albert.** English musical conductor. He was born, April 23, 1882, in St. Petersburg. Educated in England, he returned to Russia, and conducted Imperial Opera at St. Petersburg for five years. In 1919 he was conductor to Sir Thomas Beecham at Covent Garden. Later he was conductor of London Symphony Orchestra, and Royal Philharmonic Society, and Director of Philharmonic Orchestra, Rochester, New York, from 1923-25, when he returned to England. He wrote the opera, *Samuel Pepys*, in 1929.

Coates **John.** British singer. Born at Bradford, June 29, 1865, he was educated at Bradford Grammar School. He first appeared in London as a tenor singer at the Savoy Theatre in 1894, and first sang in royal opera in 1901. He has sung in America, France, Germany, South Africa and Australia. After seeing service in France in the Yorkshire Regt., resumed his musical career in 1919. In 1928 he celebrated the 50th anniversary of his first appearance as a boy vocalist.

Coates **Joseph Gordon.** New Zealand politician. Born in 1878, he was elected to the House of Representatives in 1911, and in 1917 went to France on active service. In 1919 he was made minister of justice and later took charge of railways and other departments. In 1925 he succeeded W. F. Massey as premier, retaining that post until the end of 1928. In the Coalition Cabinet which assumed office in 1931 he was Minister of Public Works until 1933, and thereafter Minister of Finance and of Customs.

Coati Genus of arboreal mammals inhabiting Central and South America. With flexible, upturned snouts, and long tails, they feed upon birds, lizards and insects, which they hunt in troops. Some are tamed and kept in captivity.

Coat of Arms Heraldic achievement of an individual or community. It is borne on a shield or escutcheon, generally with crest and motto, and sometimes badge and supporters. Their use, fostered by the need for distinguishing warriors when acting together, especially during the Crusades, expanded rapidly. The practice of embroidering them on the surcoat over the armour originated the term coat of arms.

Arms are granted in England by the College of Arms and in Scotland by the Lyon King-at-Arms. Fees amounting to over £100 are charged. Corporations, schools, and other corporate bodies can obtain coats of arms in the same way.

Coats Name of a famous Scottish family. James Coats began to make thread at Paisley before 1800 and the business was continued by his sons, Peter and Thomas. It soon became the largest of its kind in the world. In 1890 it became a public company and absorbed the rival firms of Clark, Chadwick and others. Peter Coats (1808-90) had a son, James, who, in 1905, was made a baronet. Of the sons of Thomas Coats (1809-83) one became Sir Thomas Glen-Coats, Bart. (1846-1922) and another, George (1849-1918), became Baron Glentanar.

L

Coats Land Antarctic region. It is on the southern edge of the Weddell Sea. It was discovered in 1903 by Dr. Bruce and named after the Paisley family who provided the funds for his expedition.

Cobalt Metallic element. It is widely distributed in nature in association with nickel, copper and arsenic, chiefly in the minerals *cobaltine*, smaltine and an earthy variety of wad. Cobalt is a greyish-white, hard, tenacious and malleable metal of economic importance only in the form of its alloys and compounds.

Cobalt Steel is of value for making magnets and the valves of internal combustion engines. Various compounds of cobalt are used as pigments and in making varnishes. The chief supplies come from Ontario, but cobalt is also found in Australia, S. Africa and other parts of the British Empire. Its chemical symbol is Co, and its atomic weight 58·95.

Cobalt Town of Ontario, Canada. It stands on Cobalt Lake in the north of the province, 330 m. from Toronto, with which it is connected by railway. Silver, cobalt and nickel abound. Pop. 5600.

Cobbett **William.** English reformer. Born at Farnham, Surrey, March 9, 1762, in 1802 he started his *Weekly Political Register* in which he advocated a number of reforms. In 1810 he was sent to prison and fined £1000 for denouncing flogging in the army. He was elected M.P. for Oldham in 1832, and died near Guildford, June 18, 1835. Cobbett's most popular book is his *Rural Rides* —a description of England as he saw it.

Cobden **Richard.** English politician. Born at Heyshott, Sussex, June 3, 1804, from 1847 to 1857 he was M.P. for the West Riding of Yorkshire and from 1859 to 1865 for Rochdale. When in Manchester Cobden became the leader of a little group who agitated for the repeal of the corn laws which came about in 1846. For nearly 20 more years Cobden worked assiduously for the causes of free trade and peace, which he believed were closely linked. So earnest was his advocacy of free trade that since his day Cobdenism has been a synonym for it. He died in London, April 2, 1865.

To press forward Cobden's ideas the **Cobden Club** was founded in 1866. Its address is 69 Victoria St., London, S.W. 2.

Cobham Village of Surrey, sometimes called Church Cobham. It stands on the Mole, 19 m. from London, on the Southern Rly. There are an old church and a water mill 700 years old. Pop. 5100.

Another Cobham is a village in Kent. It is 4 m. from Gravesend and has an old church with some notable crosses. There was a college of priests here in the 14th century and there are remains of this, as well as some 16th century almshouses.

Cobham **Sir Alan John.** English airman. Born, May 6, 1894, he was educated at Camberwell. He went to France in 1914 and in 1917 received a commission in the Air Force. When peace came he joined an aircraft firm. Among his long flights were those from London to Rangoon and back, 1924; London to Cape Town and back, and London to Australia and back, 1926. He won the King's Cup in 1924, the Britannia Trophy in 1925 and 1926, and was commander pilot of the first flying boat expedition round Africa. Knighted in 1926, he has published several books on his experiences.

Cobham **Viscount.** English title. It dates from 1718 when Sir Richard Temple of Stowe was made a viscount. His sister, the wife of Richard Grenville, succeeded to the viscountship, which passed to her descendants, the Earls Temple, afterwards created Marquess and Duke of Buckingham. In 1889, when the last Duke of Buckingham died, the viscountship passed to a distant relative, the 5th Baron Lyttleton, a descendant of a sister of the 1st viscount.

Lord Lyttleton, who then became the 8th Viscount Cobham, was a noted cricketer. He died in 1902, when his son, James Cavendish Lyttleton, became the 9th viscount. The family seat is Hagley Hall, Worcestershire.

There is a barony of Cobham revived in 1916 for a member of the Alexander family.

Coble Flat-bottomed fishing boat used on the Northumbrian coast. It has three pairs of oars and a lug-sail. It is used mostly in the cod and turbot fishery.

Coblenz City of Germany. Situated at the confluence of the Moselle and the Rhine, 57 m. above Cologne, it is dominated by surrounding hill forts and by Ehrenbreitstein across the Rhine. There is a trade in wine. In 1918 the city was occupied by American troops. Pop. (1925) 58,322.

Cobnut Fruit of several species of hazel (*Corylus*). The parent form *C. avellana*, is native to Britain. The red and white filberts of Kent are famous.

Cobourg Port and market town of Ontario. Situated on Lake Ontario, it is 73 m. east of Toronto. It is a summer resort and there are a few manufactures. It has a station on the C.N. Rlys. Pop. 5,834.

Cobra Genus (*Naja*) of venomous snakes able to dilate the neck into a hood. The best known, the Indian black snake, *N. tripudians*, bears a binocular mark on the neck. The king cobra, or hamadryad (*N. bungarus*) is larger and fiercer, but rarer. The African *N. haje* is the Cape spitting snake and the Egyptian asp.

Coburg Town of Bavaria. It is 34 m. from Bamberg on the river Itz. Coburg was the capital of the Duchy of Saxe-Coburg-Gotha, which, owing to the marriage of Queen Victoria and Prince Albert, was closely associated with England. The ducal palace is now a museum. Pop. 24,000.

Coca (*Erythroxylon coca*). Bolivian and Peruvian shrub of the flax order. The leaves produce a tingling sensation when chewed, followed by deadening of the sensation of hunger. S. American Indian tribes have for centuries used the leaves for mastication. The plant now grows in the W. Indies and S. Asia. It yields the alkaloid cocaine.

Cocaine Alkaloid extracted from coca leaves. First separated in 1860, the hydrochloride serves as a local anaesthetic in dentistry and minor operations. It is sometimes taken to relieve pain, but even a small dose may induce the habit of taking the drug, while large doses will cause death. So pernicious is the habit of taking cocaine that the League of Nations has attempted by international action to stop the traffic in it.

Cocco (*Colocasia antiquorum*). West Indian name of the Polynesian taro.

The rhizomes beaten, are fermented and baked as bread.

Coccoliths Minute, saucer-shaped bodies. They are found in immense quantities in deep-sea deposits associated with similar rod-like bodies called rhabdoliths. They have been detected in limestones back to the Cambrian period, especially in chalk.

Cochin China French colony in Indo-China. Since the French occupation in 1867 it has had a Lieutenant-Governor. Its area is 26,476 sq. m., the capital Saigon, and its pop. (1931) 4,467,352.

Cochineal Dye used in cooking for crimson tints. It is obtained from the body of a female insect which inhabits Mexico and Peru.

Cochran **Charles Blake.** English showman. Born in Sussex, Sept. 25, 1872, he went to the United States and became an actor. In New York he gained a good deal of experience about stagecraft and theatrical work generally, which he turned to good account on his return to London. He made a reputation by the spectacular display of *The Miracle* at Olympia in 1900 and its elaborate revival at the Lyceum in 1932, and was responsible for some important boxing and other contests. In 1925 he published *The Secrets of a Showman.*

Cockatoo Family of birds of the parrot order. Inhabiting Australia and the Malay archipelago, but not New Zealand, they have recurved crests which can be erected at will. Their coloration is mostly white, tinged with yellow or red. The Australian sulphur-crested cockatoo is popular as a pet.

Cockatrice Mythical monster. It was supposed to possess a deadly touch, at which plants withered, and an evil eye reputed to kill men and animals. Hatched by a serpent from a cock's egg, it could be killed by the sound of the crowing of a cock.

Cockayne Imaginary land. The "land of cakes," it was the favourite scene of mediaeval French and Italian fables, sometimes by way of ridiculing the equally mythical Avalon, or Island of the Blest.

Cockburn **Sir Alexander James Edmund.** British lawyer. Born Dec. 24, 1802, he was educated at Cambridge and became a barrister. In 1847 he entered Parliament as M.P. for Southampton. In 1850 he became Solicitor-General in the Liberal ministry and from 1851 to 1856 he was Attorney-General. In 1856 he was made Chief Justice of the Common Pleas and in 1859 Lord Chief Justice. He tried the Tichborne case and represented Great Britain in the *Alabama* arbitration. He died Nov. 20, 1880.

Cockchafer (*Melolontha*). Popular name of a genus of lamellicorn beetles. The brown elytra make a whirring sound in flight. The two destructive British species include the common cockchafer (*M. vulgaris*) which is far more injurious to crops elsewhere in Europe. The rose chafer (*Celonia aurata*) is green.

Cockermouth Urban district and market town of Cumberland. It is 32 m. from Carlisle, on the L.M.S. Rly. There are a church, a grammar school, and the ruins of a castle in which Mary, Queen of Scots, was imprisoned. Pop. (1931) 4789.

Cocker Spaniel Breed of dog. A heavily built type of field spaniel, it has short, stout limbs, pendent ears and long, silky coat; this is black in modern English, liver or liver-and-white in the smaller or Welsh variety. It is readily trained to start game in woodland or marshland, and owes its name to its service in woodcock shooting. It gives notice by barking.

Cock Fighting Sport of pitting game-cocks against one another. It was introduced into Europe during the Persian wars, and was a favourite mediaeval diversion, although forbidden by Edward III. and Henry VIII. Charles II. had a cockpit in Whitehall, London.

The sport has been illegal in England since 1849.

Cock Lane London thoroughfare in Clerkenwell. It is notorious for an imposture called the Cock Lane Ghost in 1762. A certain William Parsons and his wife, intent on blackmailing a neighbour, contrived, through the 11-year-old daughter, Elizabeth, some mysterious noises and a luminous figure. Crowds, including Samuel Johnson, visited the house. The authors were exposed and punished.

Cockle Family of bivalve molluscs. The typical genus, *Cardium*, has equal convex shells, heart-shaped in profile, with radial ribs and scalloped edges. The common British *C. edule*, raked out of the sand at low water, is boiled and eaten.

Cockney Colloquial name for a person born in London, more strictly within the sound of the bells of S. Mary-le-Bow, Cheapside.

Cock of the Rock Genus of perching birds of the chatterer family (*Rupicola*), also called cock manikin. The three species, inhabiting Peru and Ecuador have compressed semi-circular, helmet-like crests. The plumage is collected and used for millinery purposes.

Cockpenny Fee formerly paid at various grammar schools, notably in Lancashire and Yorkshire, at Shrovetide. In return the master provided gamecocks for the day's diversions.

Cockpit Enclosed arena in which cock fighting took place. It was a round building, lit *from* above, *and* in the middle was the arena, about 20 ft. in diameter.

Also the cabin on warships where wounded men were treated. In the cockpit of the *Victory* Nelson died, at the Battle of Trafalgar in 1805. It is also used for the part of an aeroplane fuselage which contains the airmen.

Cockroach Reddish-brown insect, short-winged, flat-bodied, with leathery integuments and long antennae. The female carries her eggs in a horny capsule. The larvae are white. The cockroach belongs to the *Blattidae* and is voracious and odoriferous. Arsenic or phosphorus, mixed with flour or oatmeal, is useful for killing them.

Cock's Comb Annual plant with small oval leaves and a ridged head of red bloom somewhat resembling a cock's comb in shape. A native of Asia, it grows in British gardens.

Cocktail Popular apéritif. Most varieties contain spirits, bitters and flavouring matter. The cocktail originated in the United States and now nearly every large

hotel has a cocktail bar, while cocktail parties have become a form of entertaining.

Cocles Horatius. Roman legendary hero. With two comrades he defended a bridge over the Tiber against Porsena's army of invaders. When it had been broken down he swam back across the river. He was given as much land as he could plough in a day.

Cocoa Corruption of the word cacao, the name of a tree. The seeds provide the raw material from which cocoa powder is manufactured. The world's output of cacao beans is about 520,000 tons, chiefly from America and Africa. The average consumption in Great Britain and Northern Ireland is 2.9 lb.

Cocoanut Palm (*Cocos nucifera.*) Tree of great economic importance. It is cultivated in many tropical countries, flourishes near the sea and is the source of many valuable products. The outer husk of the fruit furnishes coir for matting, ropes, brushes, etc. The kernel is edible, and, when dried, forms copra, which is the source of coconut oil used in making soap, candles and margarine. The refuse makes oil cake for cattle.

Cocoon (French, *cocon*, a small shell). Case which some larvae of the lepidoptera make and use as a shelter in which to pass their pupal stage. The cocoon of the silk moth yields silk.

Cocos Islands Group of coral islands in the Indian Ocean. The islands, about 20 in number, are 1,161 m. from Singapore. They produce coconuts and are noted for their crabs. Discovered by Captain Keeling in 1609, they were annexed by Great Britain, and since 1903 have been governed as part of Singapore. Near here, in Nov., 1914, the *Sydney* destroyed the German cruiser *Emden*. Pop. (1931) 1142.

Cod Fish which frequents the North Atlantic Ocean. It averages 3 ft. in length, but sometimes reaches 6 ft. The cod is a very valuable food and the cod fishery an important industry. It is chiefly found off the shores of Newfoundland and in the North Sea. The fishing season lasts from March to Oct. The liver yields cod liver oil, and isinglass is another product. In 1930 259,927 tons of cod were landed in the United Kingdom and Ireland, its value being £3,454,480.

Code Collection of laws or rules. It may be a systematic restatement in a convenient form of existing law, such as several issued during the Roman Empire, pre-eminently that by Justinian, whose code has profoundly affected the modern world. It may be a complete body of statute law displacing previous legislation, such as the **Code Napoléon**, or the Indian penal code.

There are also codes of words and ciphers to facilitate telegraphic communication, codes of signals, and codes for international collections, such as the Strickland code for the systematic naming of animals.

Codicil (Latin, *codicillus*, a little book). Name applied in English law to the supplement added to his will by a testator who desires to alter or add to the provisions of the main document. *See* WILL.

Cody **Samuel Franklin.** British airman. Born in the United States in 1861, he settled in England in 1896 and was naturalised. He was employed at Aldershot in the early days of aviation and experimented with man-lifting kites. In 1908 he flew in a machine he had made and remained in the air for 27 minutes. He was killed while flying at Huntingdon, Aug. 7, 1913.

Cody **William Frederick.** American showman. Born in Iowa, Feb. 26, 1845, He served as a scout with the Federal armies during the civil war, and against the Indians. In 1883 Cody started a travelling show, which was very popular in Great Britain and other parts of Europe. He died at Denver, Jan. 10, 1917. Cody won the name of Buffalo Bill by killing buffaloes when engaged to supply meat.

Co-Education Instruction and training of the sexes together. They are so taught in junior schools and at colleges and universities, but the term co-education is usually reserved for the teaching of boys and girls between the ages of about 10 and 16 in the same establishment and in the same way.

Coercion Application of force, to compel a person or persons to a certain line of action, which is usually distasteful. **Coercion Acts** are acts of parliament passed from time to time by the British Government for the enforcement of law and order in Ireland. They were followed by much disorder, which reached a climax in the Phoenix Park murders. The Act of 1882, directed against public assemblies, the Act of 1887 and others passed at various times, including that of 1920, which set up tribunals to suppress crime, have been called Coercion Acts.

Coffee Genus of evergreen trees and shrubs. They grow in warm countries and produce berries, the beans of which are ground to make a popular beverage. The plants are extensively grown in Brazil, Arabia, and elsewhere.

The first coffee came from Arabia, but Brazil is now the main source of the world's supply.

Coffee House Place for providing coffee and other refreshments. The first coffee-houses in England were opened in Oxford in 1650 and in London in 1652. The modern coffee house is a rival to the public house and is controlled by temperance reformers.

Coffer Fish (*Ostracion*). Genus of tuft-gilled fishes allied to the file fishes. The body is encased in a mosaic-like cuirass of six-sided bony plates, sometimes with ridges, and with horns projecting above the eyes. There are no ribs.

Cognac Town of France. Situated 25 m. west of Angoulême, it was the birthplace of Francis I., who concluded here a treaty against Charles V. in 1526; it was also a Huguenot stronghold. The finest French brandies, known as cognac, are distilled here. Pop. 19,500.

Cohesion Physical force binding together molecules of the same material as distinct from the adhesion of molecules of different materials. Upon cohesion matter depends for hardness, tenacity, elasticity, malleability and ductility.

Cohort Name given in the Roman army to a unit of infantry. The term is also used in biology for a group of allied families of plants or animals.

Coif Close fitting cover for the head in mediaeval times. Later it was worn as a nightcap, and also by English serjeants-of-law as a mark of their profession.

Coil Wire wound spirally or otherwise for creating a magnetic field when electric currents are passed through it, an inserted iron bar being magnetised. **Induction coils**, in which a lower voltage current in a primary coil, induces a higher voltage current in an outer secondary coil, are used in telephony and for medical and other purposes. **Choking coils** steady rapid fluctuations in alternating currents. **Resistance coils** offer definite resistance to the passage of current. **Search coils** carried by aircraft assist landing in fog.

Coin Metallic unit of exchange. Coinage as a medium of exchange and measure of value replaced the cumbrous method of barter, and its issue is an exclusive privilege of Government. It is of two kinds: standard money of intrinsic value such as the gold sovereign, and token money whose intrinsic value is normally less than its nominal value, such as the silver currency.

Gold, silver, bronze and nickel are the chief metals used for coins.

In Great Britain the silver coins are for 6d. 1*s*., 2*s*. and 2*s*. 6*d*. Threepenny pieces are occasionally seen. Bronze coins are the penny, the halfpenny and the farthing. In the British Empire New Zealand uses the British coinage. Australia, S. Africa and the Irish Free State use the same units, but with their own designs. Canada has the dollar and various cent pieces and India the rupee.

In Great Britain in 1930 the number of coins struck at the royal mint was 185,090,208, of which 73,847,176 were for Imperial, 27,797,032 for colonial and 83,446,000 for foreign use.

Coir Outer covering of the shells of coconuts. It is an extremely strong fibre which is made into yarns used in the manufacture of coconut matting and coarse brushes.

Coke Product obtained by heating coal in confined ovens for eliminating its volatile constituents. It comprises up to 90 p.c. of carbon, with gases and incombustible ash; sulphur is a frequent impurity. Coke burns with intense heat, without smoke or spark, and is sometimes used as a domestic fuel, usually in closed grates.

Coke **Sir Edward.** English lawyer. Born at Mileham Norfolk, Feb. 1, 1552. He entered the House of Commons in 1589 and was made speaker in 1593. In 1594 he was chosen attorney-general, in which capacity he prosecuted Essex, Raleigh and others. In 1606 he became chief justice of the common pleas and in 1613 chief justice of the King's Bench.

As a judge, Coke resisted the claims of James I. to make extensive use of the royal prerogative. In 1617 he was dismissed, and became a champion of the rights of Parliament. In 1621 he was imprisoned, but on his release he helped to frame the Petition of Right. Coke died at Stoke Poges, Sept. 3, 1634. His chief work is his *Institutes*.

Colbert **Jean Baptiste.** French statesman. Born at Rheims, Aug. 29, 1619, he was made minister of finance by Louis XIV. in 1661, and for over 20 years was the leading statesman. He died Sept. 6, 1683.

Colchester Borough, market town and river port of Essex. It stands on the Colne, 52 m. from London, on the L.N.E. Rly. There are some manufactures, shipping and corn and cattle markets. The town is also a military centre and is famous for its oysters, the beds being the property of the corporation. The Norman castle has an enormous keep and contains a museum. There are considerable ruins of two religious houses.

As Camalodunum, Colchester was an important Roman city—probably the most important after London. Pop. (1931) 48,607.

The title of **Baron Colchester** was borne by the family of Abbot from 1817 to 1919 when the third baron died. Charles Abbot, the first baron, was Speaker of the House of Commons from 1802 to 1817.

Cold Absence of heat. This being radiant energy, molecular movement is held to cease at −273° C., the temperature of absolute cold. Helium is liquefied within 2¼° of this absolute minimum. In medical practice cold applied to the body subdues pain, lessens inflammation and feverish temperatures, arrests bleeding and stimulates by cold bathing. Prolonged exposure to cold, reducing the oxygenation of the blood, may result in death. Cold is used in food preservation and storage. An attack of catarrh is often called a cold.

COLDS. A cold indicates an inflamed condition of the mucous membrane lining the respiratory tract, causing hoarseness, running at the nose, sore throat, etc. It is infectious and will spread throughout the household unless every care is taken.

Treatment.— Quinine has a preventive value, and, if taken in time, will often prove effective. A hot mustard bath with a hot drink of whisky and water, lemon or black currant juice, etc., and rest in a warm bed will also prove beneficial in the initial stages. An aperient should be taken and the bowels kept open during the course of a cold.

A Cold in the Head can best be relieved by inhaling menthol in boiling water, or by the use of a nasal douche.

A Cold in the Chest should be treated by rest in bed in a warm room, by steam kettles, hot applications to the front and back of the chest (turpentine stupes, thermogene wool, linseed poultices, etc.), and by hot, demulcent drinks.

Colds should never be neglected, since many ailments start with what appears to be a common cold. Patent cold or cough mixtures should never be given to children. Chronic sufferers should consult a doctor as vaccine inoculation is sometimes advised, or there may be some cause such as enlarged tonsils, or adenoids which require removal.

Cold Harbour Village of Surrey. It is 4 m. from Dorking and has a large and picturesque common. Among other English villages of this name is one near Harpenden.

Cold Storage Method of preserving perishable food. It consists in maintaining the atmosphere at a suitable temperature, often at or below zero. Refrigeration has played an important part in the foreign meat trade, enabling frozen carcases to be sent to great distances. Ice safes are also much used by retail butchers, and the invention of an electrical method is extending refrigeration to domestic use.

Coldstream Burgh of Berwickshire, Scotland. It stands on the Tweed, 13 m. from Berwick. Before the bridge was built here in 1766 the river was crossed by a ford. Hasty marriages, as at Gretna Green, were celebrated at Coldstream. Pop., (1931) 1233.

Coldstream Guards Oldest regiment of the

British army. One of the five regiments of foot guards, it dates from the time of Cromwell's new model army, and takes its name from the village of Coldstream. Charles II. made it a regiment of foot guards. The Coldstreamers have a long record of active service dating from 1678 to the Great War. The headquarters are in Birdcage Walk, London, S.W.1, and the motto is *Nulli Secundus*.

Colenso Village of Natal, S. Africa. It stands on the Tugela, 15 m. from Ladysmith, with which it is linked by railway. There was fighting here when the British were trying to relieve Ladysmith, and the village was captured Feb. 20, 1900.

Colenso **John William.** English divine. Born at St. Austell, Cornwall, Jan. 24, 1814, and educated at Cambridge he became famed as a mathematician and writer of popular books on algebra and arithmetic. Having been ordained, he had a living in Norfolk from 1846 to 1853, when he was made Bishop of Natal. In S. Africa he compiled a Zulu grammar and dictionary. He died at Durban, June 20, 1883.

Coleoptera Order of insects comprising the beetles. The fore wings are modified into a pair of stiff, horny sheaths called elytra—found also among earwigs—encasing the transparent, membraneous hind-wings. These are the flight organs, and when inactive they generally fold transversely beneath. In the many beetles lacking hind-wings, the elytra are sometimes fused together; in oil beetles they overlap. About 150,000 species are named.

Coleraine Urban district and seaport of Londonderry, N. Ireland. It is on the Bann, 4 m. from its mouth and 61 from Belfast, and is a centre of salmon fishing. Linen is manufactured and there is some shipping. Pop. (1926) 7800.

Coleridge **Baron.** English judge. Born at Ottery St. Mary, Devon, Dec. 3, 1820, John Duke Coleridge went to Eton and Balliol College, Oxford, and became a barrister. In 1865 he was elected M.P. for Exeter as a Liberal. In 1868 he was made Solicitor-General; in 1871 Attorney-General; in 1873, Chief Justice of the common pleas; and in 1880, Lord Chief Justice. He died June 14, 1894. Lord Coleridge's barony, created in 1873, passed to his son **Bernard** (1851-1927). He was a Liberal M.P., 1885-94, and a judge of the high court, 1907-23.

Coleridge **Hartley.** English poet. He was born Sept. 19, 1796, at Clevedon, Somerset, being the eldest son of S. T. Coleridge. After an early education under Southey he went to Oxford. He produced several books, but is only remembered by some poems and as the son of his father. He died on Jan. 6, 1849.

A sister, **Sara** (1802-52), wrote some books and married a cousin, Henry Nelson Coleridge.

Coleridge **Samuel Taylor.** English poet and philosopher. Born at Ottery St. Mary, Devon, Oct. 21, 1772, and educated at Christ's Hospital, London, and Jesus College, Cambridge, his radical opinions and his debts led to his departure from the university without a degree, and for a short time he was a soldier. Having published his first poems, he became associated with Southey and Lamb. He then married (1795), and lived for a time at Clevedon and in Bristol. He moved to Nether Stowey, became a unitarian preacher and made friends with Wordsworth.

From 1804-06 he travelled in Europe. He then lived at Keswick, but his later years were passed in London. He lectured occasionally and wrote a good deal, but his power of sustained effort was seriously weakened by his habit of taking opium. However, this was partly overcome before the end, and Coleridge appeared as a talker of unusual brilliance. He died June 23, 1834, and was buried at Highgate.

Coleridge's intellectual gifts were of a very high order. His *Table Talk* shows one aspect of his genius; his *Aids to Reflection* and *Confessions of an Enquiring Spirit* another; and his *Biographia Literaria* that of a literary critic whose influence was very great indeed. His lectures on Shakespeare and Milton are remarkable efforts. *The Rime of the Ancient Mariner* is his greatest creative achievement. His other poems include the unfinished *Christabel*.

Colesberg Town of S. Africa. In the Cape Province, it is 608 m. from Capetown and 307 m. from Port Elizabeth. It stands high and is the centre of cattle and sheep farming. There was a good deal of fighting in this region in 1899-1902. Pop. 1000.

Colet **John.** English scholar. Born in London about 1467, he studied at Oxford and abroad and was then ordained. He was dean of S. Paul's from 1505 until his death, Sept. 16, 1519. Colet, one of the leaders of the Renaissance in England, founded S. Paul's School.

Colic Severe abdominal pain due to spasm of an involuntary muscle. A symptom of disease, not a disease itself, it may arise from indigestible food, associated with constipation or diarrhoea. The relief afforded by pressure distinguishes it from inflammation. Lead colic is caused by lead-poisoning: one form, Devonshire colic, is due to cider acting on leaden drinking vessels.

Treatment.—Massage of the abdomen, warm applications, teaspoon doses of dill water, and 1 teaspoonful of olive or castor oil. Gallstone colic and kidney colic in adults calls for immediate medical attention. Apply hot fomentations until arrival of doctor.

Coligny **Gaspard de.** Huguenot leader. Born of a noble Burgundian family, Feb. 16, 1519, he led the Huguenots, fought on their side in the civil war, and in 1569 became commander of their forces. On Aug. 24, 1572, the admiral was murdered in Paris, one of the victims of the massacre of S. Bartholomew. Coligny's daughter, **Louise,** married William the Silent, Prince of Orange.

Colinton Suburb of Edinburgh. It is 4 m. from the city, on the L.M.S. Rly. Here are barracks and also the new gaol.

Colitis Inflammation of the colon or large intestine. It is a localised form of enteritis or intestinal inflammation, usually marked by diarrhoea. Mucous colitis, a chronic inflammatory condition of the mucous membrane, is often accompanied by neurasthenia. Ulcerative colitis may be dysenteric, caused by a known amoeba, or known bacilli, or non-dysenteric, a form frequently chronic in Britain; this lasts for two, three or four months, and is unassociated with specific micro-organisms.

Regulated diet and frequent irrigation are essential to keep it in check.

Coll Island of Scotland. One of the Hebrides, it belongs to Argyllshire and lies 10 m. from Ardnamurchan Point. It is 13 m. long and covers about 25 sq. m.

Collar Band worn round the neck : of cloth, jewels, precious metal or chain mail.

Collars are badges of certain callings, *e.g.*, those of the clergy. The sailor's large collar was originally designed to protect the clothing from the greasy pigtail then worn.

The collar bone is a bone in the upper part of the human body, more correctly called the clavicle (*q.v.*).

Collateral Word meaning situated at the side or parallel. The word has several applications in law. Collateral relations are those not in the direct line. Collateral security is an additional security for the fulfilment of an obligation or contract, and is surrendered or discharged when that fulfilment is completed. Thus a bill of exchange for a debt or mortgage may be fortified by a collateral deposit of shares.

Collation Term meaning bringing together. In bibliography, it denotes the minute comparison of MSS. or editions of books one with another, in bookbinding assembling the unbound members for binding. In monastic custom reading and discussing edifying works, followed by a light meal was called a collation. The word is used sometimes for a meal.

Collect Concise prayer, varying according to day, week or season. Of 82 collects in the Book of Common Prayer, 57 were translated from the Sarum breviary. The remainder were added by the compilers or revisers of 1549, 1552 and 1661.

Collection Word meaning the offertory or taking of money from those assembled at a religious service. The examinations held in the Oxford colleges at the end of each term are called Collections.

Collectivism Term first used when Mikhail Bakunin described himself as a collectivist anarchist. A congress at Havre in 1880 adopted a collectivist programme, demanding the state ownership of all means of production, to secure for the community as a whole an equitable distribution of the fruits of their associated labour. It is loosely used as a synonym for socialism.

College Organised association of persons having common rights, duties or pursuits. Colleges grew up in the older universities as places of abode for students and teachers. The most general use of the word, however, is for an educational establishment between a university and a school, colleges of agriculture, mining and so on.

A third kind of college is an association of professional men, as the Royal College of Physicians, the College of Nursing, the Royal College of Music. In the United States the persons elected to choose the president form the electoral college. In Rome there is a college of cardinals.

In England a collegiate church is a church free from the authority of a bishop. It is governed by a dean, canons and prebendaries. Westminster Abbey and S. George's Chapel, Windsor, are examples.

College of Arms Corporation of English heralds controlling matters affecting armorial bearings and pedigrees, also called the Herald's College. Endowed by Richard III. in 1483, its headquarters are in Derby House, Queen Victoria Street, London, E.C. It deals with all matters affecting the grants and use of coats of arms and armorial bearings.

Collie Breed of sheep-dog common in Scotland and N. England. Lighter and more elegant than the old English breed, with small ears whose tips fold back, it is keen-witted, with snappy temper, trained to protect and herd sheep. The rough-haired variety has a thick, soft undercoat and neck frill; the smooth-haired a short, stiff, flat coat. Utilised as domestic pets, collies are often crossed with black-and-tan setters, and should average 22-24 in. in height.

Collie Town of W. Australia, 124 m. south of Perth. It is in the centre of a coal field. The name is also that of a river which passes the town. Pop. (1931) 3446.

Collier **Jeremy.** English divine. Born Sept. 23, 1650, he was educated at Ipswich and Caius College, Cambridge. Ordained in 1679 he became rector of Ampton, Suffolk. He was twice in prison and in 1696 was outlawed. He associated with non-jurors, and in 1713 was ordained as one of their bishops. He died April 26, 1726, supporting the Stuarts to the last. His *Short View of the Immorality and Profaneness of the English Stage*, 1698, is his most notable work.

Collier **John.** English painter. He was born in London, Jan. 27, 1850, the second son of the 1st Lord Monkswell. Educated at Eton and Heidelberg, he studied art at Munich, Paris and the Slade School, London. His paintings show a keen sense of accurate detail, skill in composition and drawing, and a fine sense of colour. His problem pictures attracted much attention. He died in 1934.

Collings **Jesse.** English politician. Born at Lympstone, Devon, in 1831, he settled in Birmingham, where in 1878 he was mayor. In 1880 he became Liberal M.P. for Ipswich, and from 1886 to 1918 represented a Birmingham division. Collings is best known for his association with Joseph Chamberlain and for his advocacy of the cause of the agricultural labourer, for whom he demanded "three acres and a cow." He died in 1920.

Collingwood Town and port of Ontario. It stands on Georgian Bay, 90 m. from Toronto, on the C.N. Rly. From here steamers go to ports on Lakes Superior and Huron. Pop. 5900.

Collingwood **Baron.** English sailor. Born in Newcastle, Sept. 26, 1750, Cuthbert Collingwood saw fighting in the American War of Independence, and on June 1, 1794, commanded the *Barfleur* against the French, and was a leader in the Battle of Cape St. Vincent. As Nelson's lieutenant at Trafalgar, in the *Royal Sovereign* he led the second line and on Nelson's death took command of the fleet. In 1805 he was made a peer. He died March 7, 1810.

Collins **Michael.** Irish politician. Born in 1890, he was educated at Clonakilty and King's College, London. In 1916 he was imprisoned for sharing in the Easter Rebellion, and in 1918 was elected, as a Sinn Feiner, M.P. for South Cork. He organised the Irish Volunteers, and was head of the republican army during the warfare of 1920-21. In 1921 he helped to negotiate the treaty with

Great Britain, and he became finance minister in the provisional government. As commander-in-chief of the Free State Army, he was conducting the war against the rebels when he was killed, Aug. 22, 1922.

Collins **William.** English poet. He was born Dec. 25, 1721. Educated at Winchester and Oxford, his short and desultory life was passed chiefly in London. Some of his poems are remembered, especially his *Odes*. He was a friend of James Thomson. He died at Chichester, June 12, 1759.

Collins **William Wilkie.** English novelist. Born in London, Jan. 8, 1824, he passed a few years in business before becoming a barrister. He then took to literature, and became famous in 1860 with his novel *The Woman in White*, which first appeared serially in *Household Words*. Other novels were *No Name*, *The Moonstone*, *The New Magdalen* and *Armadale*. *Hide and Seek* and *The Dead Secret* were less popular. Collins died Sept. 23, 1889.

Collin's father, **William Collins** (1788-1847), was a noted painter. In 1820 he was made an R.A., and he died Feb. 17, 1847. His younger son, **Charles Allston Collins** (1828-73), was a painter and a writer. He married a daughter of Charles Dickens, who was closely associated with his brother Wilkie.

Collodion Cotton Variety of nitrocellulose soluble in ether-alcohol. It is prepared from purified cotton waste immersed in a comparatively weak nitric acid and sulphuric acid bath. This produces pyroxylin, used for blasting gelatine, artificial silk, celluloid and photographic films.

Colloid Substance in a finely divided state, intermediate between the microscopical limit of visibility and the molecular state. These limits are approximately one ten-thousandth and one millionth of a millimetre respectively. Sugar and salt solutions, being molecularly dispersed, pass through membranes rapidly; gelatines and other so-called colloids, in coarser states of agglomeration, diffuse but slowly. This colloidal state of matter begins with cytoplasm, the ultimate basis of life. Utilised for preventing flocculation of lubricants and photographic films, it also prevents human milk from coagulating.

Collusion Secret understanding between two or more persons to prejudice another's rights, or by bogus action to seek results otherwise unattainable. Actions for divorce are dismissed if collusion is proved.

Colman Name of many Irish saints. The most famous was S. Colman of Connaught, who was born about 605 and became a monk of Iona, and in 661 Bishop of Lindisfarne. He died at Innisboffin, Mayo, on Aug. 8, 676. S. Colman founded many churches and monasteries.

Colman **George.** English dramatist. He was born in Florence in 1731 and educated at Westminster School and Christ Church, Oxford. In 1760 his first play, *Polly Honeycomb*, appeared in London, and in 1761 *The Jealous Wife* was produced by his friend, David Garrick. Colman was manager of two London theatres, Covent Garden, 1767-74 and the Haymarket, 1777-85. With Garrick he wrote *The Clandestine Marriage*. He translated the *Comedies* of Terence. He died Aug. 14, 1794.

Colman **Ronald.** English film actor. Born at Richmond, Feb. 7, 1891, he entered the army in 1909 and saw service in the Great War. In 1919 he married Thelma Ray, and in 1920 he went to America and became famous. Among the pieces in which he appeared are *Beau Geste*, *Bulldog Drummond* and *Arrowsmith*.

Colmar Town of Alsace, France. It is 39 m. from Strasbourg. Except between 1871 and 1914, when it belonged to Germany, Colmar has been part of France since 1673. Before that time it was a free city. There is a trade in wine and timber. Pop. 46,518.

Colne Borough and market town of Lancashire. It is 35 m. from Manchester, on the L.M.S. Rly. An interesting building is the cloth hall, dating from the time when the town was a centre of the woollen industry. To-day the chief industry is the manufacture of cotton goods. Pop. (1931) 23,790.

Colne Name of two English rivers. One in Essex has a length of 35 m. before it falls into the sea at Mersea. Colchester stands on it, and it is famed for its oyster beds and its yachting.

The other Colne rises near Hatfield and flows for about 35 m. to the Thames at Staines. Sometimes called the Coln, it divides Middlesex from Buckinghamshire. Another Coln is a small river in Gloucestershire, a tributary of the Thames.

Colney Hatch District of Middlesex. to the N.E. of the city, just outside the County of London. Here is a mental hospital maintained by the London County Council. It was opened in 1851, and can accommodate 2000 patients.

Cologne City and river port of Germany. It stands on the Rhine, and is the third largest city in the country. Its fine old buildings include the cathedral, one of the finest Gothic edifices in the world.

There is also a Roman Catholic cathedral at Deutz, an historic town hall and other buildings that date from the time of the Hanseatic League. There are a university, refounded in 1919, and several technical and other schools. The city has some noble squares and parks.

Cologne has many manufactures and there is a large trade along the river. It is an important railway junction. In 1918 it was occupied by British troops, who remained until 1925. Pop. 700,222.

Colombes Suburb of Paris. It lies to the north-west of the city. Races are held here and there is a stadium in which international football matches are played, and other sporting events take place.

Colombia Republic of S. America. In the north of the continent, it covers 447,536 sq. m., and has a coastline on both the Pacific Ocean and the Caribbean Sea. Bogota is the capital; other centres are Medellin, Barranquilla, Cartagena, Cali, Cucuta and Bucaramanga. The western part of the country is traversed by three great ranges of the Andes, and the highest point is nearly 19,000 ft. The people live mainly near the coast and the interior is largely unexplored and uncultivated. The chief rivers are the Magdalena and its tributary the Cauca. The chief product is coffee; bananas are grown for export. Gold is worked, and there are other minerals.

The country is governed by a president, elected for four years, and a congress of two

houses. Until 1819 Colombia was a Spanish possession. It was then united with Venezuela and Ecuador to form a republic. Later it was itself a republic called New Granada. Its present name was taken in 1863. Panama was a province until separated in 1903. Pop. (1928) 7,851,000.

Colombo Capital and chief port of Ceylon. Situated on the west coast, its fine artificial harbour encloses 660 acres of water. A port of call for vessels trading with India, the Far East and Australasia, it has extensive coal and oil depots. The industries are chiefly concerned with the preparing and marketing of tea and other products of the island. Pop. (1931) 284,155.

Colon Part of the large intestine. It extends from caecum to rectum. Beginning in the lower part of the abdomen on the right side, it passes upward as the ascending colon, across as the transverse colon, and drops along the left side as the descending colon. It is lined with a mucous membrane. Inflammation of this membrane is called colitis.

Colon Seaport of the republic of Panama. Situated on an island near the Caribbean entry of the Panama Canal, it is a distributing centre for imports and local produce. Founded as the Atlantic terminal of the Panama Railway in 1850, its first name was Aspinwall. The climate has been improved by measures taken by the United States authorities. The American settlement of Cristobal adjoins it, and the pop. of the two was (1930) 33,460.

Colon Standard monetary unit of Salvador and Costa Rica, worth about 2s.

Colonel Military title. It was in general use in the French and English armies in the 17th century, if not earlier, being then given to an officer who raised his own regiment. Cromwell was at one time a colonel.

To-day a colonel ranks between a major-general and a lieutenant-colonel. Each regiment of the British Army has a colonel-in-chief, an honorary position, sometimes filled by a member of the royal family. The rank is shown by a crown and two stars.

Colonial Office Department of the British Government responsible for the affairs of the colonies. The colonial office came into existence in 1854. In 1925 the office of secretary for dominion affairs was created, but until 1930 the post was held by the colonial secretary. The Colonial Office is in Whitehall. The secretary is assisted by a parliamentary under-secretary, a permanent secretary and a large staff of civil servants.

Colonisation Act of founding settlements abroad. In the ancient world the great colonising races were the Phoenicians and the Greeks, who established colonies round the Mediterranean. The Romans did a certain amount of colonisation.

A new era in colonisation began with the discovery of America. In this movement the French, British, Dutch, Spanish and Portuguese nations took the largest part. Each founded a colonial empire, and for nearly 300 years wars about these possessions were almost incessant. France and Spain in the course of time lost their empires, and Portugal lost most of hers. The Netherlands retained a good deal, and Britain, although a valuable portion was lost in 1783, became the owner of the greatest colonial empire ever known.

In the 19th century France made up for her losses in America by acquiring a vast colonial empire in Africa, where Britain added to her already extensive area. Germany became a colonising power, though neither a successful nor a permanent one. With the partition of Africa towards the end of the 19th century the work of colonising the vacant spaces of the earth may be said to have ended.

Colonna Name of a famous Italian family. One member was made pope as **Martin V.** in 1417. A later member, **Prospero Colonna** (1452-1523), was a successful soldier who fought in turn for France, Spain and the Pope. **Pompeo Colonna** was also a soldier and in 1517 was made a cardinal, but this did not prevent him from helping Charles V. to capture and plunder Rome in 1527.

Vittoria Colonna, a daughter of the house, won fame by her poems and her friendship with Michelangelo and other noted men. Left a widow in 1525, when her husband was killed at Pavia, she entered a convent and died in Rome, Feb. 25, 1547.

Colonnade Row of pillars in architecture, much used in ancient times, particularly in Rome, Syria, Pompeii and elsewhere. A modern example is the colonnade projecting in front of the National Gallery, London. Another is the colonnade in front of S. Peter's, Rome.

Colonsay Island of Scotland. One of the Hebrides, it belongs to the county of Argyll. It covers about 12 sq. m., but is sparsely populated. S. Columba founded a college here.

Colony Settlement of a state in a country outside that state's geographical boundaries. Colonies are usually acquired by governments by conquest, discovery or cession. The word is also used for a group of persons who live in a foreign country.

British colonies are divided into crown colonies and self-governing colonies.

Colophon Concluding note in some MSS. and many early printed books. It gave such details as name of author, scribe or printer, date and place of production, sometimes adding pious expressions. After the introduction of title pages it dwindled to a decorative tailpiece, or the word finis, and then vanished. It has been revived by publishers in modern times.

Colorado Western state of the United States. Bounded N. by Wyoming, N.E. by Nebraska, E. by Kansas, S. by Oklahoma and New Mexico, and W. by Utah, it occupies 103,948 sq. m. It is traversed by the Rocky Mts., where 180 summits exceed 12,000 ft. There are 14,350,743 (1932) acres of national forests, 8,448,684 acres under crops, and 19,338,377 acres under pasture. Colorado is rich in minerals and produces gold, silver, zinc, lead, coal and a great quantity of oil.

It became a state in 1876. Denver is the capital and the largest town. Others are Pueblo and Colorado Springs. Colorado is governed by a general assembly of two houses. It sends two senators and four representatives to Congress. Pop. (1930) 1,035,791.

Colorado River of N. America. It is formed by the union of the Green and Grand rivers, rising in Wyoming and Colorado respectively, and flows through the arid plateau between the Rocky Mts.

and the Sierra Nevada before falling into the Gulf of California. It is 2,200 m. long and is famous for the cañons or gorges in its course. These have a total length of 1000 m., the chief being the Grand Cañon in Arizona.

Colorado Beetle Potato pest. The beetle, *leptinotarsa decemlineata*, now general in the U.S., completely destroyed potato and other solanaceous crops until controlled by poisonous powders (containing paris green) dusted or sprayed on the foliage.

Colosseum Amphitheatre in Rome. It was finished in A.D. 80 and held about 50,000 people. Its length was 600 ft. and its width 500 ft.; the arena was 285 ft. by 185. The building was used for gladiatorial and other shows, and in it many Christians were martyred. Considerable remains still stand.

Colossians Epistle to the. Twelfth book of the New Testament. It bears evidence of having been written by the Apostle Paul during his captivity in Rome about A.D. 62, and addressed to the citizens of Colossæ, a once flourishing city in Asia Minor.

Colossus Statue, especially of gigantic or colossal proportions. The Colossus of Rhodes, overthrown by earthquake about 224 B.C., was one of the Seven Wonders of the World. Nero erected in his Golden House a colossus of himself which Hadrian afterwards removed to the Colosseum. The Colossi of Memnon at Thebes are two seated sandstone statues, 70 ft. high, of Amenhotep III.

Colour Sensation or class of sensations arising from stimulation of the optic nerve. This is effected normally by light rays emanating from luminous bodies or reflected from non-luminous bodies. These light rays, varying in wavelength, furnish in combination the white colour of sunlight, which is resolvable through a prism into the rainbow band from violet to red, bounded by ultra-violet, such as X-rays, and infra-red or heat rays. An object's perceived colour depends upon its power of absorbing some light waves and reflecting the rest. If it absorbs none or nearly none, it appears white; if all, or nearly all, black; if all except the red, red and so on.

Colours Flags or standards of a regiment. In the British Army at one time these were carried into battle, usually by an ensign, and formed a rallying point. The last notable appearance of colours in battle was in the Zulu War of 1879. Each regiment has two colours, the king's and the regimental, the latter recording the honours. Regimental colours of the past may be seen in cathedrals and churches, *e.g.*, at Winchester.

Colours In sports the cap and blazer worn by those who have represented their college or school at a certain sport. At the older universities blues are the equivalent of colours elsewhere. In horse racing each owner has his colours, which are registered and worn by his jockey. Similarly there are distinguishing colours at greyhound races.

Colston Edward. English merchant. Born at Bristol, Nov. 2, 1636, he became wealthy through trading with the W. Indies. In 1710-13 he was M.P. for Bristol. He died at Mortlake, Oct. 11, 1721. Colston gave a great deal of money to build schools and almshouses and for church purposes. The Colston Hall, Bristol, was built in his honour.

Coltsfoot *Tussilago farfara*. Herb of the composite order. It is native to Britain, Europe, W. Asia and N. Africa. Its yellow heads appear before the leaves, which are densely covered beneath with hair. The leaves are smoked for asthma and yield an extract used as a cough remedy, as in coltsfoot rock.

Columba Irish saint. Born in Donegal, Dec. 7, 521, he became a monk. He settled in Iona and from his religious house there monks were sent out to convert Scotland and the N. of England to Christianity. Columba died June 9, 597. He was canonised and his feast is kept on June 9.

Columbarium Sepulchral chamber. Like a dove cot, it had rows of wall niches for preserving cinerary urns. Their use has been revived since the reintroduction of cremation.

Columbia District containing Washington, capital of the United States of America. Situated 40 m. S.W. of Baltimore, it occupies 62 sq. m. of land and 7 sq. m. of water surface, mostly on the N.E. side of the Potomac River at the head of tidal navigation. Washington city covers one-fifth of the land, including the river-port city of Georgetown, now W. Washington, and several suburbs and villages. Pop. 540,000. *See* WASHINGTON.

Columbia is also the name of the great university of New York. It dates from 1754 and has now about (1932) 25,866 students.

Columbia River of N. America. Rising in the Rocky Mts. in British Columbia, it soon crosses into the United States, flows through the State of Washington and forms the northern boundary of Oregon before falling into the Pacific. Its length is about 1400 m. The Columbia is famous for its salmon.

Columbia is the name of the capital of S. Carolina. It is on the Congaree River, 130 m. from Charleston, and is a manufacturing centre. Pop. 39,500.

Columbine (*Aquilegia vulgaris*). Perennial herb of the buttercup order. Native to N. temperate regions, its stem bears finely divided leaves and panicles of flowers, with five petaloid sepals and five short-spurred, blue or purplish-white petals. These have been developed by hybridisation into handsome, long-spurred, vari-coloured garden favourites.

Columbine Traditional female character in Italian and English pantomime comedy. Columbine, the graceful dancer, is the daughter of Pantaloon, and courted by Clown and Harlequin. She returns Harlequin's love and the wiles and pathetic tales by which she keeps his truant affections form the basis of some pretty byplay.

Columbus Christopher. Discoverer of America. Born in Genoa about 1451, he went to Portugal, married a lady of rank and conceived the idea of a voyage to the west. The kings of England and France declined to help; in Spain, however, Ferdinand and Isabella aided him to fit out an expedition.

With 88 men in three ships he left Palos on Aug. 3, 1492, and on Oct. 12 he sighted the Bahamas. He landed there and then went on to Cuba, and Haiti, after which, having

lost one of his three ships, he returned to Spain. Columbus made three other voyages to America. In 1493 he took 1500 men to the W. Indies, in 1498 he landed in S. America, but was fetched home in disgrace, and in 1503 he was in Central America and the W. Indies, where Spanish settlements had been made. Columbus died at Valladolid, May 25, 1506, and his remains were taken first to San Domingo and thence to Havana, whence, in 1898, they are believed to have been removed to Seville.

Column In architecture an upright body designed to support another. Usually a shaft, resting on a base and surmounted by a capital, it may bear a statue or a memorial.

There are some fine modern columns in London, Paris and other cities. In London there are the Duke of York's Column in Waterloo Place, and the Nelson Column in Trafalgar Square; in Paris Napoleon's, in the Place Vendôme, and the July Column in the Place de la Bastille.

Colwall Village of Herefordshire. It is 3 m. from Ledbury, on the G.W. Rly. Races are held at Colwall Park. Pop. 2000.

Colwick Village of Nottinghamshire. On the Trent, it is 2 m. from Nottingham. The hall, once the home of Byron's Mary Chaworth, is now an hotel and races are held in its grounds. The church has some interesting tombs. The village gives its name to a kind of cheese. Pop. 1100.

Colwyn Bay Watering place of N. Wales. On the coast of Denbighshire, it is 220 m. from London, on the L.M.S. Rly. With Old Colwyn, which lies inland, it forms an urban district. Pop. (1931) 20,885.

Colza Variety of golden-yellow, semi-drying oil. It is extracted from the crushed seeds of a cruciferous plant allied to the swede, which is extensively cultivated for that purpose in parts of Europe. It is a well-marked commercial variety of the class known as rape oils, and is now an important lubricant. The cake, left after the oil has been expressed, is a nutritious cattle food.

Coma Condition of profound stupor from which the sufferer cannot be effectively roused. Stertorous breathing and strong heart action may be present. Primary coma is usually caused by apoplexy, concussion or other head injury, and alcoholic or narcotic poisoning. Secondary coma, induced by diabetes, uraemia, meningitis and other diseases, is often fatal.

Combination Acting together. The combination laws were Acts of Parliament passed in 1799 and 1800 to make trade unionism illegal. Their provisions included imprisonment for any working man who combined with another to obtain higher wages or shorter hours. Owing to the efforts of Francis Place the laws were repealed in 1824. Combination is now allowed, although it is illegal if against public policy. It takes the form of trade unions among the employed and of combines among the employers. *See* TRADE UNION.

A **COMBINE** is a union of business firms. The tendency to form combines has been very marked since the Great War. They tend to lower working costs and to organise large selling plans. In the United States, where they are known as trusts, legislation has been passed against them.

Combustion Process of burning material substances. It comprises essentially oxidation of the substances, by combination with atmospheric oxygen, accompanied by heat. The rapidity of the combustion is governed by the rate of oxidation; rusting of iron proceeds so slowly that the heat evolved is imperceptible. When substances such as greasy rags, slowly oxidising, reach the temperature of their ignition point the resultant combustion is called spontaneous.

Comedy Type of drama. It originated in the festivals of Greece. The first great comedies were those of Aristophanes. To Dante, the word meant a great drama dealing with life and death. Balzac later used it in much the same sense.

In the 17th and 18th centuries came the comedy of manners, of which Molière was the greatest exponent, represented in England by the works of Congreve and Sheridan. To-day a comedy is little more than a farce, or burlesque; when accompanied by music it is called a musical comedy. A comedian is an actor who plays humorous parts.

Comenius **Johann Amos.** Moravian theologian, philologist and educational reformer. He was born in Bohemia March 28, 1592. Expelled from Bohemia he settled at Lissa, Poland, where he became bishop. His most famous works are the little treatise *Janua Linguarum Reserata* (The Gate of Languages Unlocked), which was completed by *Orbis Sensualium Pictus*, a kind of encyclopædia in which the words are accompanied by explanatory pictures. He died in Amsterdam, Nov. 15, 1670.

Comet Earliest British passenger steamship. Built by Henry Bell (1767-1830) at Greenock in 1811, it plied between Glasgow and Greenock thrice weekly between 1812 and 1820. It was a paddle steamer 42 ft. long, equipped with a 3 horse-power engine.

Comet Luminous celestial body moving about the sun. Bright comets contain a nucleus, an enveloping haze or coma, and usually a tail of luminous matter, so tenuous that stars seen through it lose no brilliancy. Some comets move in elliptical orbits and return at calculable intervals, ranging from the 3¼ years of Encke's to the 76 years of Halley's; others, moving parabolically, may never return. Biela's, with a 6¾-year period, has disappeared since 1852.

Comfrey Genus of rough, erect, tuberous-rooted perennial herbs of the borage order. They are native to Europe and W. Asia. The common British comfrey (*S. officinale*) has been naturalised in N. America; the other (*S. tuberosum*) is cultivated ornamentally.

Comines **Philippe de.** French historian. He was born about 1417, and held a high position under Louis XII. He died at Argenton, Oct. 18, 1511.

Comines is famous as the author of some *Mémoires*, a good and reliable account of the history of France under Louis XI., and to a lesser extent under Charles VIII. They have been translated into English.

Commandant Military officer in charge of a school, base or fort. The word is used also for the woman at the head of organisations of women auxiliary to the forces, such as the V.A.D.

Commander British naval officer. Senior to a lieutenant-

commander and junior to a captain, he may command small vessels or be an executive officer under the captain on large vessels. His sleeve badge is three bands, the uppermost looped. Commanders of the navy and wing-commanders of the R.A.F. rank with lieutenant-colonels in the army.

In the Royal Victorian Order the third-class is commander (C.V.O.), and the second-class knight commander (K.C.V.O.). There are also commanders, knights-commander and dames-commander, in the Order of the British Empire. In the Orders of the Bath, S. Michael and S. George and the Star of India there are knights-commander. The caliph was called the commander of the faithful.

Commander-in-Chief Officer of the British and other armies. For many years Great Britain had a permanent commander-in-chief, but now one is only appointed in time of war. India has still a commander-in-chief. During the Great War there was a commander-in-chief for each theatre, Sir John French and then Sir Douglas Haig filling this post on the Western Front, and Sir Ian Hamilton, Sir Stanley Maude and others elsewhere.

Commentary Collection of memoranda. They were made in Rome for historical material or records, Caesar's *Commentaries* being an example. Nowadays the term denotes a systematic work, comprising annotations and elucidations of great literature. There are numerous commentaries on the books of the Bible.

Commerce Trade or interchange of commodities. In certain countries there is a Ministry of Commerce, in Great Britain the Board of Trade. Degrees in commerce are given at London, Birmingham and other universities.

CHAMBERS OF COMMERCE are unofficial bodies found in every large town. They exist for the promotion of trade interests.

Commissariat Section of a military force, whose function is to arrange the provision of supplies of food. In Britain the commissariat is the Royal Army Service Corps.

Commission Act of placing a charge or trust upon a person. It also describes the charge entrusted, and the document setting forth the authority.

A body of persons appointed to act for another person or body is called a commission. Such are the **royal commissions** appointed to report to the king upon a certain matter. The scope of their inquiry is laid down in the terms of reference. Other commissions are permanent bodies set up by Parliament, such as the Development, Charity and other commissions.

The percentage on sales or purchases by which an agent in commerce is often remunerated is also called a commission.

The magistrates of the counties and boroughs of England, who are appointed by a commission from the king, are known collectively as the **commission of the peace.**

A **commission of array** was a method adopted in England in the 13th century and later for raising soldiers. The king gave a commission to a man to raise a certain number of men in a certain area.

Commission Authority by which an officer of the navy, army or air force holds his position. Commissions are granted by the King, through the Secretary of State or other official, to qualified persons. All the higher officers of the services are commissioned officers.

At one time commissions were bought, but since 1870 they have been given to those who have succeeded in a competitive examination. The successful candidates then pass a period in study at Dartmouth and Greenwich for the navy; Sandhurst and Woolwich for the army; and Cranwell for the air force. They are then commissioned to a ship, regiment, battery or other unit.

Commissionaire Attendant at the entrance of public buildings, offices, etc. In England they usually wear a uniform. Many are drawn from the **Corps of Commissionaires,** established by Sir Edward Walter in 1859. They are men who have served with credit in the navy, army or air force and the strength of the corps is about 500. Its headquarters are at 419a Strand, London, W.C.

Commissioner Member of a commission or the holder of a commission from the King. The First Commissioner of Works is a member of the government. Special commissioners of income tax are persons who decide questions relating to the tax.

In law a **commissioner for oaths** is a solicitor before whom one can take an oath. A commissioner of assize is a barrister who temporarily takes the place of a judge on circuit. The head of the Metropolitan Police is called a commissioner. The representatives of Australia, Canada, the Irish Free State and the other Dominions in London are called high commissioners.

Commitment In English law a written document for the conveyance of a person to a place of custody, and for his detention there for a definite period or until he complies with an order, *e.g.*, payment of a fine. It is usually issued after the summoning or appearance of the person named at court to answer a charge.

Commodore Temporary rank in the British Navy. It is given to an officer holding a position somewhat in advance of his actual rank. There are two classes, first and second.

Air Commodore is the title of a high officer in the Royal Air Force.

Commodus **Lucius.** Roman emperor. Born Aug. 31, 161, a son of Marcus Aurelius, he patched up peace with the German tribes. He reigned as a tyrant and gave himself up to gladiatorial displays and debaucheries, and was strangled by favourites in 192.

Commoner Term denoting in the United Kingdom: (1) Any person not a peer; (2) Any member of the House of Commons—the elder Pitt was called the Great Commoner; (3) Any student at Oxford or Cambridge not being a scholar or exhibitioner; (4) Any person with joint rights in common land.

Common Good In Scotland, property that belongs to a burgh. In some cases it produces a large annual income which can be applied to purposes other than those for which the rates are levied.

Common Law Law common to the whole of the kingdom as distinct from specialised branches, such as statute law or mercantile law. Many of its rules

'e been established by ancient usage and end on precedent.

ɔmmon Pleas Court of. Old English law court. ing to the increase in the number of pleas the reign of Henry II., five justices were ointed to hear the pleas of the people. der the Magna Carta the court was fixed manently at Westminster. Under the licature Act, 1873, its functions were trans- ed to the King's Bench Division of the h Court.

ɔmmons In Great Britain land that is owned by the public. In ly times common land was attached to a age or manor on which the villagers had the ıt to put animals to graze. There are relics hese rights in various places to-day. The is of the manor enclosed a great deal of ımon land in the 15th and 16th centuries; n the beginning of the 18th century much enclosed by Acts of Parliament. At first, h Act dealt with a single enclosure, but r a time, general enclosure Acts were passed. as been estimated that 5,000,000 acres of ımon land were enclosed or converted into vate property until 1860. In 1866 enclosures e forbidden in the London area, and in 6 elsewhere. To-day commons are looked r by the local authorities. The Commons Footpaths Preservation Society exists to tect the rights of the public in this matter, offices are at 71 Eccleston Square, London, V. 1.

ɔmmons House of. In Great Britain and Canada the name given he House of Parliament elected directly by people. In England the House began in the h century when the representatives of the nties and boroughs separated themselves n the lords, and were called the commons. y had little power at first, but gradually erted themselves. Their present power is mainly to their control of finance, finally ablished by the Parliament Act of 1911. practical purposes the House of Commons ɔmnipotent in legislation. In Canada the ate is more of a check than is the House of ds in England.

The number of members in the English House Commons was at one time 670, but since establishment of the Irish Free State it been 615. Women have been eligible for tion since 1918. England elects 492 mbers; Wales 36; Scotland 74; and N. land 13. London sends 62 members and 12 sent by the universities. The President of House is the Speaker; his deputy is the irman of Committees. The control of iness is in the hands of the Prime Minister his assistants. Ministers and their followers on the Speaker's right; members of the position on his left. The Canadian House of mmons consists of 245 members, and its cedure is modelled on that of the British ise.

ɔmmonwealth Term used for a country which has ɔmocratic form of government. In England, period between the execution of Charles I. Charles II.'s restoration was called the nmonwealth. The term still officially de- ates Massachusetts, Pennsylvania, Virginia Kentucky. In 1900 the Commonwealth of stralia was formed by federation.

British Commonwealth of Nations is a current n used in preference to British Empire.

The **Commonwealth Fund** is an American efaction due to Mrs. S. V. Harkness. By it British students can spend two years at American universities. There are 38 fellowships, each worth £600 a year.

Commune Word meaning much the same as municipality or corporation. In France to-day the commune is an administrative district, with a council elected by all adults and presided over by a mayor. There are communes of the same kind in Italy and Belgium.

The **Commune of Paris** has on two occasions played an important part in national affairs. In 1791-92 its action led to some of the great events of the French Revolution; in 1871, after the Germans left Paris, a commune was proclaimed and civil war broke out.

Communion Holy. Participation in the sacrament of the Lord's Supper (1 Cor. x). In the Roman Catholic Church it takes the form of the Mass. In the High Church section of the Church of England it is called the Eucharist. High Churchmen, like Roman Catholics, believe in the doctrine of the real presence (*q.v.*). To Lutherans, Nonconformists and other Christians, the taking of the communion is symbolic only.

Communism In its more general aspects Communism is a social-economic theory deriving from the teaching of Karl Marx, its doctrinal basis the *Communist Manifesto* written by Marx in 1847, and its ultimate aim a completely classless society in which the principle of "from each according to his abilities, to each according to his needs" will be consistently applied.

Modern Communism gained great political importance as the creed of the governing party which obtained power under the leadership of Lenin (*q.v.*) in the second phase of the Russian Revolution (Oct., 1917). It was constituted a world movement by the establishment of the Third (or Communist) International in 1919, and national Communist parties have been formed in most of the countries of the world.

There is a **Communist Party** in Great Britain, with an organisation at 16 King St., Covent Garden, London, W.C. 2. It holds an annual congress, and at the general election of 1931 its candidates secured 75,000 votes.

Commutation Process of exchanging one thing for another. Its most common use is for the payment of a sum of money to discharge a recurring obligation. Thus, a person who owns land subject to the old Land Tax can commute it by making a single payment. Sometimes the State, instead of paying a pension indefinitely pays a sum of money to close its liability.

Commutator Device in a dynamo by which an alternating current is converted into a continuous one.

Como Lake and city of Italy. The lake, about 30 m. from Milan, is 31 m. long and covers 56 sq. m. The Adige flows through it. Its surroundings make it a region of unusual beauty and a popular pleasure resort.

The city of Como stands at the south end of the lake. The chief industry is silk manufacture and it is a tourist centre. Pop. 48,699.

Comorin Cape. The extreme southern point of India, in the state of Travancore. It is low and sandy, and has the village of Comorin at the apex of the headland, where the temple of Kanniyambal, the "virgin goddess" receives many pilgrims.

Comoro Group of islands belonging to France. To the N.E. of Mada-

gascar, they cover about 750 sq. m. and are mountainous. The chief products are sugar, vanilla and copra. Pop. 119,305.

Companion of Honour British order. Instituted in 1917, it is limited to 50 members, and is conferred for conspicuous national service. Companions use C.H. after their names. The badge, a plaque with mounted knight, and an oak-tree supporting the Royal Arms, centres an enamelled blue oval bearing the motto "In action faithful and in honour clear," affixed to a crown suspended on a gold-edged carmine ribbon.

Company Association of persons for trading. Trading companies existed in England in Elizabethan times, and some became chartered companies. The E. India Co. was a company of this kind.

An Act of 1862 allowed a body of traders to form themselves into a company with limited liability. In 1908 the law was consolidated, and a new class of company created. These are private companies enjoying the protection of the limited liability system; but they cannot offer their shares to the public, nor can they have more than 50 shareholders. In 1928 a new Companies Act provided, among other things, that directors must give more information to shareholders in the balance sheets.

Company Word in very general use for an association of any kind. A body of actors is called a company, and the crew of a vessel is the ship's company. In the British infantry, the battalions are divided into companies.

Compass Mathematical instrument for describing circles and for measuring distances.

In music, the term compass is applied to the range of notes, from the lowest to the highest, that can be produced by a voice or instrument.

MARINER'S COMPASS. This consists essentially of a magnetic needle mounted upon a pivot over a card having the cardinal points marked upon it. The British Navy has a compass department at Dilton Park, Langley, Bucks.

Compass Plant Popular name of two distinct composite plants growing on N. American prairies. Their lower leaves, standing vertically, tend to grow with edges set north to south, the sides catching the morning and evening sun. The native rosinweed (*Silphium laciniatum*) first received the name. *Lactuca scariola*, allied to the cultivated lettuce, was introduced later.

Compensation Reparation for loss or injury. By law compensation must be paid if property is damaged by riot. Tenants of agricultural property are entitled on leaving to compensation for any improvements made by them, and since 1927 tenants of business premises have had a similar right. If property is taken by a railway company or a local authority, compensation must be paid and it can also be obtained if a man's business is damaged in this way.

Compensation can be obtained also if a person or his property is injured while travelling in a public vehicle. A considerable body of law deals with compensation to workmen injured in the course of their employment. *See* WORKMEN'S COMPENSATION.

The Compensation Fund is a fund raised from the owners of public-house licences. It is used to compensate those whose licences are taken away, except in cases of misconduct.

Competition Act of striving for something which another simultaneously seeks.

In the domain of economics it is the prevalent method employed for stimulating production and adjusting the operation of the forces of supply and demand, locally or internationally. Unfettered competition is restricted by the varying measures of self-protection adopted by states, by factory legislation or wage regulation, by industrial combinations and rules and by international trusts.

Compiègne Town of France. It stands on the Oise, 52 m. from Paris. The chief buildings are the 18th-century palace, two old churches, S. Antoine and S. Jacques, and a 16th-century hôtel de ville. Pop. 17,852.

Near the town is the forest of Compiègne, which covers nearly 60 sq. m. On Sept. 1, 1914, during the Retreat from Mons, there was some fighting here between the British and the Germans.

Complement What is needed for completion. It may be the angle needed to complete a right angle, *e.g.*, 60 deg. complements 30 deg.; the colour needed to obtain white light, *e.g.*, orange complements blue. The complement of a ship is its crew.

Compline Last of the canonical hours; nine o'clock. Introduced in early monastic foundations, it is retained in the Roman Catholic Church, usually combined with vespers. It is sometimes used in the Church of England, and in 1931 the Archbishop of York suggested it should have a regular place in the revised time-table for public worship.

Composition Word meaning to put together. It may be a piece of music or an essay. In graphic art it is the balance and arrangement of parts of a picture. In law it refers to an arrangement made by an insolvent person with his creditors. He compounds, or makes a composition to pay them a certain sum in the £. It is illegal for a debtor to make a composition with some of his creditors only.

Compost Mixture of materials designed to enrich the soil. Mineral, vegetable and animal ingredients are used in varying proportions, such as peat, dung, fish, fibrous loam, leaf sweepings, coarse river sand, road drift, stable refuse, lime and wood ashes.

Compound Substance produced by the chemical combination in definite proportions of two or more elements. Compounds are identified by formulae disclosing their compositions: Thus H_2O, symbolising the compound water, states that each molecule contains two atoms of hydrogen and one of oxygen. Compounds acquire their own identity and properties, and are thereby distinguished from mechanical mixtures.

Compounding Making an agreement. Legally, to compound felony, *i.e.*, to refrain from prosecuting a person for an offence in return for a sum of money is an offence against the law. Another kind is legal. This is an arrangement by which the landlord, and not the tenant, pays the rates on property.

Compressed Air Air mechanically reduced in bulk at a pressure exceeding that of atmospheric air, to which the relaxation of the extra pressure restores it. The expanding air is utilised in

operating mining drills, lifts, pumps, railway brakes, torpedoes, and hammers. Pneumatic tubes transmitting postal and other matter combine compressed air release with exhaustion.

Compressibility Quality of being reducible in bulk. Inversely proportionate to the pressure, it is sometimes measured by the unit of atmospheric pressure, 14.7 lb. per sq. in. It varies in different substances, gaseous, liquid or solid.

Compton Edward. English actor. Born in London, Jan. 14, 1854, in 1881 he organised the Compton Comedy Co., and was a leading member of his profession for many years. He died July 16, 1918. Compton's children included the actresses Fay and Nell Compton, and the novelist who took the name of Compton Mackenzie.

Compton Henry. English bishop. He was born at Compton Wynyates, Warwickshire, in 1632. At first a soldier, he was ordained in 1662. In 1674 he was made Bishop of Oxford and in 1675 Bishop of London.

In 1686, James II. suspended him. Compton was one of those who invited the Prince of Orange to take the throne, and he crowned William and Mary in Westminster Abbey. He remained Bishop of London until his death at Fulham, July 7, 1713.

Compton Wynyates Residence of the Marquess of Northampton. It is near Kineton, in Warwickshire, and one of the most perfect specimens of Tudor domestic architecture. Built about 1529 it is notable for its tower, chapel, panelled great hall, secret staircases, priest's room, and gardens.

Comptroller Variant of controller. It is borne by the comptroller and auditor general who is responsible for seeing that all payments made by the Treasury have been authorised by Parliament. He cannot be dismissed except by Parliament. His office is on Victoria Embankment, London, E.C.

There is a Comptroller of the Royal Household, a political office held by a member of the government.

Compurgator Name given in England in Anglo-Saxon times and later to a man who swore that another was innocent of a crime. A man could clear himself if he could get a certain number of his neighbours to swear to his innocence. These were the compurgators.

Comrie Village of Perthshire. A tourist resort, it is 7 m. from Crieff, on the L.M.S. Rly. Pop. 2200.

Comte Isidore Auguste Marie François Xavier. French philosopher. Born at Montpellier, Jan. 19, 1798, he was educated there and in Paris. He came under the influence of S. Simon, and in 1830 published the first volume of his *Cours de Philosophie Positive*. His life was embittered by poverty and quarrels with friends. He died Sept. 5, 1857. *See* POSITIVISM.

Comyn Scottish family. It took its name from Comines in Belgium and one of its members crossed to England with William the Conqueror. For some 200 years the Comyns were powerful and prominent. William Comyn was Chancellor of Scotland in 1133, and in the 12th century the Comyns were earls of Buchan, Athole, Angus and Montcith. The Black Comyn was one of the regents of Scotland in 1286 and in 1290 claimed the throne, but without success. The Red Comyn was killed by Robert Bruce in 1306 at Dumfries.

Concerto Musical composition in sonata form for a solo instrument with orchestral accompaniment. In the 17th century concerto often meant sonata, as Bach's Italian Concerto. Corelli, in 1686, introduced the secular concerto for concert use.

Conchology Study of the shells of molluscs. The acquisition and arrangement of shells as objects of interest and beauty preceded systematic study. The shapes of shells are enhanced in importance and interest when compared with those of fossil forms.

Conciliation Method employed for settling industrial disputes. In 1896 an Act established a system of councils for this purpose, consisting of employers, employed and neutrals. To-day there is a principal conciliation officer at the Ministry of Labour and there is an Industrial Court at 5 Old Palace Yard, London. S.W.1.

Conclave Locked room, or the assembly of persons within it. Specifically the word denotes the secret meeting of Roman Catholic cardinals to elect a Pope. In the 13th century the civil magistrates confined the electors until a choice was made. In 1928 it was decided to build a palace in the Vatican for conclaves.

Concord Township of Massachusetts. Situated 17 m. N.W. of Boston, it was the scene of a skirmish, April 17, 1775, between British and provincial troops, which inaugurated the American War of Independence. It was the birthplace of Thoreau, and has associations with Emerson. Among the picturesque old houses still standing are some associated with Hawthorne and his writings. Pop. (1930) 7,477.

Another Concord is the capital of New Hampshire, and a railway centre. Pop. 23,000.

Concordance Classified arrangement, usually alphabetical, of the words in a book, with citation of, and reference to, relevant passages. The earliest English concordance of the New Testament was Gybson's, 1535. Complete English Bible concordances include Marbeck's, 1550, Cruden's, 1737, and Young's, 1879.

Concordat Formal compact between Church and State, specifically between the See of Rome and temporal sovereignties, for the regulation of ecclesiastical affairs. After the Papal States were incorporated with the Italian Kingdom in 1870 the Pope lost all temporal jurisdiction until a concordat created the Vatican city in 1929.

Concrete Constructional material of broken brick, stone, etc., mixed with sand and a cementing agent in definite proportions in water. It furnishes, when set, a durable, strong artificial stone. Used in Rome and mediaeval Europe, the invention of Portland cement enhanced its importance.

Concrete comprises a matrix, sometimes lime, but usually Portland cement, together with sand and an aggregate of coarser materials, in proportions varying from 1 : 1 : 2 to 1 : 4 : 9. In reinforced concrete the mass is formed round strengthening cores of steel rods, corrugated or expanded bars, wire mesh or netting. Concrete is sometimes dumped for dock or bridge foundations in immense bags, or as blocks.

Concubinage Cohabitation without legal marriage. Such unions, recognised among the Jews and other Semitic peoples, for relieving barren marriages, were also recognised in Greece and Rome, but conferred no legitimacy on the children.

Concussion After a severe blow or fall, a dazed appearance, loss of memory or speech or unconsciousness may occur. Keep the patient perfectly still and quiet, in bed if possible, in a dark room. Beyond keeping him warm, do nothing, but procure medical aid as soon as possible. Do not give stimulants.

Condé Town of France. Near the Belgian frontier where the Haine falls into the Schelde, it is a coal mining centre. There was fighting here in the early days of the Great War. *See* MONS.

Condé gave its name to a famous family, a branch of the Bourbons. Louis de Bourbon, who was made Prince of Condé before his death in 1569, belonged to the same family as King Henry IV. and like him was a Huguenot. His grandson Louis, called the Great Condé, born Sept. 8, 1621, was a great soldier. After winning several victories over the Spaniards, he became a rebel against his king. He then entered the Spanish service, but returned to France in time to lead her armies against William III. He died Sept. 11, 1686. The last Prince of Condé, Louis Henry Joseph, committed suicide Aug. 27, 1830.

Condenser Appliance for concentrating matter. The exhaust steam of steam engines condenses in water-cooled or air-cooled coils. In cotton ginning, condensers compress lint for handling; in woollen manufacture they condense roll-carded fibre into slubbing. In sugar making condensers prepare clarified juice for vacuum pans; in electricity they accumulate the product of two conducting surfaces, as in Leyden jars.

Condor American vulture. (*Sarcorhampus gryphus*). Among the largest birds of flight, spanning 10 ft. or more, it has black plumage with white round the neck. It is found in the Andes.

Condottieri Italian word denoting leaders of mercenary military companies, often applied to the soldiers also. In the 14th century an Englishman, Sir John Hawkwood, was a leader of condottieri in Italy.

Conduction Transmission of heat from points of high temperature to points of low temperature, or of electricity from points of high potential to points of low potential, without sensible movement in intermediate particles.

Conductor Leader or director of a chorus or orchestra. Italian choir leaders in the 16th century used a roll of paper called a sol-fa, or a baton when conducting. In later years the conductor was seated at the harpsichord and combined with the leading violinist to set the time and co-ordinate the vocal and instrumental performers. In 1820 Spohr inaugurated the modern practice whereby the conductor faces the musicians, beating time and controlling the performance with the baton or by hand. Famous conductors include Sir C. Hallé, Sir F. Cowen, Dame Ethel Smyth, Malcolm Sargent, Sir Henry Wood, and Toscanini.

Conduit Channel for flowing fluids. Water conduits are nowadays often reinforced concrete ducts. Conduits protect electrical wiring systems in buildings, and accommodate underground gas and hydraulic mains, telegraph, telephone, light or power cables. Sub-trolly conduits enclose the conductors of sub-trolly electric railways.

Coney Island Pleasure resort of New York. It is 5 m. long and lies off the shore of Long Island. Part of the borough of Brooklyn, it is reached by railway and steamer. There are three beaches, W. Brighton, Brighton and Manhattan. W. Brighton is perhaps the most popular pleasure resort in the world.

Confectioner One who makes or sells sweetmeats, pastries and other preparations whose fundamental ingredient is sugar. Till the 18th century, druggists monopolised such preparations. Later separate industries developed in England. All are subject to the Sale of Food and Drugs Acts, and the industry supports four trade journals in London.

Confederation Alliance of states for defined common purposes. Theoretically it is distinct from federation as it emphasises individual independence. The United States passed from confederation to federation in 1789. To-day there are federations, such as the United States, Germany and Australia, but strictly speaking no confederations.

Confessio Tomb of an early Christian confessor or martyr. Sometimes an altar surmounted the grave, the name including both and also the subterranean crypt. The sacred relics, if removed to another place, were deposited in a confessio beneath the high altar. This occurred at S. Peter's, Rome, whose high altar stands over the saint's tomb.

Confession Disclosure of sin in the ear of a priest in order to receive absolution. Auricular confession prevails in the Roman Catholic and Greek Churches. It became obligatory once a year at least after the fourth Lateran Council in 1215. The Council of Trent declared it essential. The Protestant churches reject confession, but the Anglo-Catholic party in the Church of England favour it. The apartment occupied by the priest when hearing confessions is called the **confessional.**

A **confession of faith** is a statement of belief, or creed. Such are the Westminster Confession and the Confession of Augsburg.

In law a confession is a statement by an incriminated person acknowledging guilt, directly or indirectly. If elicited through threat or inducement by a person in authority such statements are not admissible as evidence.

Confirmation Religious ceremony administered by a bishop in Episcopal and Lutheran churches after due instruction. In the Roman Catholic Church it ranks as a sacrament. In the Anglican churches confirmation is a fulfilment of the baptismal vows and a necessary preliminary to partaking of the sacrament. The form of service is prescribed in the Prayer Book.

Confucianism System of teaching based on ancient Chinese classics. These were edited or transmitted by K'ung-fu-tze, 551-478 B.C., whose name was Latinised by Jesuit missionaries as Confucius. On the religious side it perpetuates national animism and ancestor worship. The classics include also the *Confucian Analects*, summarising the master's sayings and the con-

versations of his greatest interpreter, Mang-tze (Mencius), 372-289 B.C.

In the 1st century A.D. Buddhism and Taoism rivalled Confucian teaching, which nevertheless secured state recognition. The republic abandoned the traditional relation of the emperor to heaven in 1912, and Confucianism is now but one of the cults tolerated in China. The number of adherents of this faith is estimated at 350,000,000.

Conger Edible marine fish of the eel family (*C. vulgaris*). It is scaleless, wide-mouthed with close-set cutting teeth, and continuous dorsal fins, greyish-white below and pale-brown above. It sometimes exceeds 8 ft. in length and 100 lb. in weight. It is found in British waters, in the Mediterranean and in the seas around Australia and Japan.

Congleton Borough and market town of Cheshire. It stands on the Dane, 158 m. from London and is served by the L.M.S. Rly. and a canal. It is an industrial and agricultural centre. Pop. (1931) 12,885.

Conglomerate Rock formed of water worn pebbles. It is consolidated into pudding stone with sand, clay or a calcareous, siliceous or ferruginous cement. The enclosed pebbles vary from inches up to 20 ft. across.

Congo Belgian. Colony in Central Africa. It occupies a good part of the basin of the Congo River. The area is 918,000 sq. m. Leopoldville is the capital and the colony is under a Governor-General who also administers Ruanda and Urundi, which are mandated territories. The colony has railway connection with Capetown, Beira and Benguela. Its mineral wealth, especially copper, is large. The agricultural products are palm oil, cotton and cacao. A nature reserve, the Albert Park, has been established. Pop. 8,903,265.

Congo River of Central Africa. It rises in British territory between Lakes Tanganyika and Nyasa, and feeds Lakes Bangweulu and Mweru. Emerging thence as the Lualaba and crossing the Belgian Congo Highlands to Nyangwe, it traverses, as the Congo, the great equatorial forest region, receiving the Ubungi, Kasai and other streams. Long navigable stretches, such as Stanley Falls to Leopoldsville, 1068 m., are separated by impassable rapids. Ocean-going vessels can ascend 86 m. to Matadi. The river's total length is 3000 m. and it drains 1,425,000 sq. m.

Congregationalism Protestant religious body. It originated in England about 1550, when certain communities claimed to worship under their own ministers, independent of ecclesiastical authority. Early in the 17th century, owing to persecution, some of them fled to the Netherlands, and from there a party went to North America.

In England in 1662 the Act of Uniformity ejected many clergymen from the established church and a number of these became ministers of independent congregations. In the 19th century these began to draw together and became known as Congregationalists. In 1832 the Congregational Union of England and Wales was founded; later, unions were formed elsewhere. In 1875 the Memorial Hall in Farringdon Street, London, E.C., was opened as their headquarters. Their foreign mission work found expression in the London Missionary Society.

The denomination has training colleges for ministers in London, at Oxford (Mansfield College), Nottingham, Cambridge (Cheshunt College), Manchester, Bristol, Edinburgh and elsewhere.

Congress Chief legislative body of the United States and other countries. In the United States it consists of two houses sitting at Washington, the House of Representatives, which consists of 435 members elected by the states according to population, and the Senate of 96 members, two from each state. The two houses sit separately, but the consent of both is necessary to legislation. Senators are elected for six years and representatives for two. Ministers are not members of Congress and its legislation may be pronounced invalid by the Supreme Court. The president can veto its legislation, but Congress can overcome this by passing the vetoed measure again by a two-thirds majority. The library of Congress is one of the largest in the world.

Congress Meeting or assembly. It has been used since the 17th century for meetings of the representatives of different countries, chiefly when peace treaties were discussed. Important congresses of this kind were the Congress of Vienna (1814-15) and the Congress of Berlin (1878-79). There are religious, social and industrial congresses, such as the Church Congress and the Trade Union Congress.

Congreve **William.** English dramatist. Born in Yorkshire in 1670, he was educated at Trinity College, Dublin. Two of his comedies, *The Old Bachelor* and *The Double Dealer* appeared in 1693, and a tragedy, *The Mourning Bride*, in 1697. His supreme comedies, *Love for Love*, 1693, and *The Way of the World*, 1700, are the nearest to Molière in English literature. He died Jan. 19, 1729, and was buried in Westminster Abbey.

Conisborough Town of Yorkshire (W.R.). It stands on the Don, 5 m. from Doncaster, on the L.N.E. Rly. The chief industry is coal mining. The town has ruins of a castle. Pop. (1931) 18,179.

Coniston Lake in Lancashire. In the S. of the Lake District, it is 5½ m. long. Near are the Coniston Fells and the Old Man of Coniston, a peak 2630 ft. high. Near the lake is the village of Coniston, which is the terminus of a railway from Foxfield. Here, at Brantwood, Ruskin lived, and he is buried in the churchyard. The village has a Ruskin museum. **Coniston grit** and **Coniston limestone** are terms used by geologists to describe formations found in the Lake District.

Conjuring Art of deceiving the senses by tricks or illusions. The tricks are sometimes accomplished by mere manual dexterity or sleight of hand, but they are more often aided by momentary weakening of the spectator's attention by the performer's patter, or by movements of a wand. Mechanical apparatus is needed for a large class of illusions. The most famous exhibitions of this kind are those associated with Maskelyne in London. Robert Houdin and Charles Bertram were noted performers.

Connaught (or **Connacht**). One of the four provinces of Ireland. It consists of five counties in the west—Galway, Mayo, Sligo, Leitrim and Roscommon—and covers 6870 sq. m. Wholly in the Irish Free State, it is the most thinly peopled part of Ireland.

Connaught Duke of. British title. It dates from 1874, when Arthur William Patrick Albert, third son of Queen Victoria, was made duke. He was born May 1, 1850, and entered the army, seeing service in Canada, 1870, and Egypt, 1882. He became a field-marshal and held several high commands. From 1911-16, he was Governor-General of Canada. The duke married in 1879 Louise, daughter of Frederick Charles, Prince of Prussia. She died March 14, 1917. Of their three children, two were daughters, Margaret, who married Gustavus Adolphus, later King of Sweden, and died May 1, 1920, and Patricia, who married the Hon. A. R. M. Ramsay.

The duke's only son, Arthur Frederick Patrick Albert, was born Jan. 13, 1883, and entered the army. In 1913 he married a cousin, Alexandra, Duchess of Fife, and from 1920-25 he was Governor-General of South Africa.

Connecticut State of the United States. In New England, it covers 4965 sq. m. The rivers include the Connecticut, Thames and Farmington. It is thickly populated. Tobacco and fruit are grown; marble and slate are quarried. Hartford is the capital, but New Haven and Bridgeport are larger.

One of the 13 original states, Connecticut sends two senators and six representatives to Congress. Its local government consists of a Senate and a House of Representatives. Pop. (1930) 1,606,903.

Connemara District of the Irish Free State. It is the western part of Co. Galway and is a wild and thinly populated area. It is hilly, with heights of over 2000 ft. and lakes amid the hills.

Conning Tower Armoured structure on a warship used for observation and steering. In a submarine the conning tower is fitted with hatches at the bottom and on a level with the bridge for use when submerging.

Conrad Joseph. English novelist. Teodar Jozef Konrad Korzeniowski was born Dec. 6, 1857, in the Ukraine, and spent his early years there and in Poland. He then became a sailor and served on French and English vessels, qualifying in 1884 as a master. In 1894 he settled in England and was naturalised. In 1895 he published *Almayer's Folly* which placed him in the front rank of creative artists. His stories, which deal largely with the sea and seamen, include *The Nigger of the Narcissus*, *Lord Jim*, *Typhoon* and *Nostromo*. In his later period he wrote *Chance*, *Victory*, *The Arrow of Gold*, *The Rescue*, *The Rover* and the unfinished *Suspense*. *The Mirror of the Sea* and *A Personal Record* are largely autobiographical. Conrad died Aug. 3, 1923.

Conscience Sense or knowledge that one's conduct is right or wrong. According to one theory it is the eternal moral law acting on the mind of the individual. According to another it is the accumulated experience of the ages.

A **conscience clause** is a clause in an Act of Parliament which allows persons liberty of conscience in religious and other matters. Clauses of this kind allow persons who object to vaccination to obtain exemption from the law compelling the vaccination of children. Education Acts contain clauses allowing persons who do not believe in religion to withdraw their children from school during religious instruction.

The term **conscientious objector** is generally used for one who objects to military service because war is contrary to his religious or other beliefs. In Great Britain the laws enforcing compulsory military service in 1916-17 allowed exemption to conscientious objectors under certain conditions. The Representation of the People Act, 1918, disfranchised conscientious objectors from voting for five years, unless they had performed work of national importance.

Conscience money is money sent voluntarily for the payment of taxes when payment has previously been evaded.

Conscription Enrolment for military purposes by lot. It was introduced into England in 1757, for completing the county quotas of men raised by the lords lieutenant. Substitution was allowed. This militia ballot still remains suspended from year to year. France introduced conscription by lot for men between 20 and 25, substitution being allowed in 1798. It was again introduced in 1818, but replaced after 1872 by universal compulsory military service.

Compulsory conscription provided the vast armies raised in the Great War. It was introduced into Prussia in 1808, and during the 19th century most of the European nations adopted it. Great Britain introduced compulsory service in Jan. 1916, and later extended its scope. It was also introduced into Canada and by the United States after her entry into the war. After the war, Germany and Austria, prevented from maintaining large armies, abandoned compulsory service, as did Great Britain and her Dominions. France, Italy and other countries, however, still retain it.

Consecration In ecclesiastical practice the rite of setting apart persons, buildings and things for the service of God. In the Church of England and the Roman Catholic church the priest consecrates the bread and wine at the communion service. All buildings intended for religious worship are consecrated by a bishop, as is land set aside for burials.

Consent Legal and other term meaning agreement. In English law consent is an essential part of a contract, and the courts will regard with suspicion any consent in which there is an element of compulsion. English law has fixed 16 as the age of consent for cases of sexual intercourse. A girl under that age cannot legally consent to the act, which is therefore a criminal offence. It has been proposed to raise the age of consent above 16.

Conservancy Body of men who look after rivers. Usually the members are elected by county councils, landowners and others interested in keeping the rivers from flooding and their waters from contamination. The most important is the Thames Conservancy Board. It was set up in 1857 and has offices on the Thames Embankment.

Conservative Name of a political party in Great Britain, now officially known as Unionist. As a party label it took the place of Tory early in the 19th century, and towards the end, owing to the adherence of the Liberal Unionists opposed to Home Rule for Ireland, was changed to Unionist.

The **Conservative party** stands for conserving, or preserving, the institutions of the country especially the crown and the established church. It is in general suspicious of large reforms and

is the party with agricultural interests. It enjoyed political power under Sir Robert Peel (1841-46), formed three short ministries under Lord Derby and was in power under Lord Beaconsfield (1874-80) and Lord Salisbury (1895-1902).

The **Conservative Club** is a London club confined to members of the party. Its house is at 74 St. James's Street, S.W.1.

Conservatoire School for the intensive study and conservation of the art of music. Notable conservatoires are at Paris, Berlin and Leipzig.

Conservator One who preserves from injury or violation. Edward III., in 1327, appointed for each county conservators of the peace. In 1414 conservators were appointed in each port outside the jurisdiction of the Cinque Ports, to safeguard maritime trade.

To-day the word is used chiefly for persons elected to look after rivers. *See* CONSERVANCY.

Consett Market town and urban district of Durham. It is on the Derwent, 16 m. from Newcastle-on-Tyne, on the L.N.E. Rly. It is in a coal mining area and there are large iron works. Pop. (1931) 12,251.

Consideration Something given or accepted as a *quid pro quo*; in contract law, an act, forbearance, or the promise thereof, offered and accepted as an inducement. In English law no contract, unless in writing, is valid or enforceable unless there is a consideration.

Consistory Court for trying ecclesiastical causes. In England there is one in each diocese. It is presided over by the diocesan chancellor and hears appeals from the archdeacon's court. Appeals from its decisions lie to the court of the archbishop and the Privy Council. Under the Clergy Discipline Act, 1892, clerical offences against morality are tried by special consistories, with assessors to assist. Papal consistories are secret consultations with the college of cardinals for various purposes. The Lutheran, Dutch Reformed and French Reformed churches have consistory courts.

Console Name applied originally to a kind of table, supported on brackets or legs, designed to be placed against a wall. Popular in France from the time of Louis XIV. to that of Napoleon, console tables were richly decorated and of graceful shape.

Consolidated Fund Fund into which part of the British national revenue is paid and from which certain payments are made. It was established in 1786 and was called consolidated because it consolidated moneys hitherto paid into several funds. To-day the receipts from customs, excise, stamps, etc., are paid into it. Payments to the civil list, the charges for the national debt and the salaries and expenses of the judges, are paid from the consolidated fund.

Consols Shortened form of consolidated annuities, representing an important section of the British national debt. Before the Great War the national debt consisted chiefly of consols, but to-day, of the total debt of nearly £8000 million, only £276,000,000 is in 2½ per cent. consols and £354,000,000 in 4 per cent. consols.

Consort Generally, a partner or associate. The word is most frequently applied to a wife or husband, and particularly to the wife or husband of a monarch, who is known either as the queen consort or prince consort.

Conspicuous Gallantry Medal Silver medal given to warrant officers and men of the navy and marines for gallantry in action. It dates from 1874 and is known as C.G.M. The ribbon is blue, white and blue in equal stripes.

Conspiracy In law a combination of two or more persons to procure unlawful objects, or to procure lawful objects by unlawful means. It is a misdemeanour punishable by imprisonment and a tort for which damages can be claimed.

Conspiracy and combination were for a long time regarded as almost identical. By the common law of England it was a conspiracy, and therefore illegal, for workmen to combine to go on strike. The repeal of the Combination Acts of 1824 made combinations legal.

Constable Title derived from the Roman count of the stable. The lord high constable of England was one of the great offices of state, but it has long fallen into disuse, except at coronations, when it is revived. France had a constable who discharged important duties, and the office, purely honorary, still survives in Scotland. The Tower of London and Windsor Castle have constables, and at one time most castles had.

To-day a policeman is a constable. Each force has a chief constable at its head and the members are police constables. Special constables are men to assist the police in times of special need.

Constable **John.** English painter. Born at East Bergholt, Suffolk, June 11, 1776, he studied in London at the R.A. schools. In 1819 he was elected A.R.A. and in 1829 R.A. His reputation began in France and it was a few years before he was equally popular in England. He died in London, March 31, 1837.

Constable is one of England's great landscape painters. Some of his best works reproduce scenes from his home country; "Dedham Vale" and "The Valley Farm," for example. Others rightly regarded as masterpieces are "The Hay Wain," "The Cornfield," "Hampstead Heath" and "Salisbury Cathedral." He also painted some portraits. Several Constables are in the National Gallery, London. Others are in the Louvre and the Metropolitan Museum, New York.

Constance Second largest Alpine lake. It lies between Germany and Switzerland, is 46¼ m. long and covers 205 sq. m. The Rhine flows through the lake, on the bank of which are several towns and pleasure resorts, including Lindau and Bregenz. Friedrichshafen is on the German side.

Constance Town of Baden, Germany. Situated 30 m. from Schaffhausen, at the point where the Rhine emerges from the lake. Constance was once a free city and its bishop was a powerful prince. In 1414 a church council was held here and at it John Huss was sentenced to death. Although he had received a safe conduct, he was burned in the city in July, 1415. Pop. 27,500.

Constans Name of two Roman emperors. Flavius Julius Constans was the youngest son of Constantine the Great. He received of his father's empire Africa, Illyricum and Italy in 337. He then defeated

his brother, Constantine II., and acquired Britain, Gaul and Spain in 340. He died in 350.

Flavius Heraclius Constans succeeded his father, Constantine III., in 642. He opposed the growing Mohammedan power, and effected substantial improvements in military and naval organisation, but warred unsuccessfully with the Lombards. He was murdered in 668.

Constanta Port of Rumania, also spelt Constantza. It is on the Black Sea, 140 m. from Bucharest. It is Rumania's chief seaport and from it much oil and grain are exported. Pop. (1930) 58,258.

Constantine City of Algeria. Situated 40 m. from its port, Philippeville, it stands on a limestone plateau. There are some Moorish remains. Textile goods, ornamental leather and metal work are produced. Constantine the Great rebuilt and renamed it. Pop. 93,750.

Constantine Name of ten Roman emperors, the first of whom was **Constantine the Great** (*q.v.*). His second son, **Constantine II.** (337-340) reigned over Britain, Gaul and Spain. **Constantine IV.,** Pogonatus or Bearded (668-685), overcame a Saracen siege of Constantinople by the recently invented Greek fire. **Constantine V.** (741-755) secured the condemnation of image worship by a council. **Constantine VII.,** Porphyrogenitus or Born in the Purple (912-959), was a liberal patron of learning. Under **Constantine IX.** (1042-1055) the Western and Eastern churches definitely separated. Under **Constantine X.** (1059-67), the Magyars occupied Belgrade, and Turkish tribes reached Macedonia. **Constantine XI.,** Palaeologus (1448-53), the last East-Roman emperor, fell at the taking of Constantinople by the Turks in 1453.

Constantine King of Greece. The eldest son of George I., he was born in Athens, Aug. 3, 1868. In 1889 he married Sophia, a sister of the Emperor William II. and in 1913 he became king. He declared himself neutral when the Great War broke out, but his sympathy with the Germans led to trouble and in 1917 he was deposed in favour of his son, Alexander. He lived for a time in Switzerland, but returned to Greece and recovered the throne in 1920. On Sept. 22, he again abdicated and he died Jan. 11, 1923.

Constantine Roman emperor called the Great. Flavius Valerius Aurelius Constantinus was born at Naisses, the modern Nish, about 288. His father was Constantius Chlorus, on whose death he became emperor. It was necessary, however, for him to deal with his rivals before he could be said to rule. One of these, Maxentius, was killed in battle near Rome in 312. On this occasion Constantine is said to have seen the cross in the sky with the words " in this sign thou shalt conquer." The result was that the Christians were tolerated, the emperor himself became attached to their faith and the momentous union between the Christian church and the Roman state began. By defeating Licinius at Adrianople in 323 Constantine became ruler of the whole Roman Empire. He presided over the council of Nicaea in 325 and in 330 transferred the capital from Rome to Byzantium. He died at Nicomedia, May 22, 337.

Constantinople Former name of the Turkish city of Stamboul, or Istanbul (*q r.*).

Constantius Name of three Roman emperors. Flavius Valerius Chlorus, the Pale (250-306), was adopted by Maximian and granted the caesarship of Britain, Gaul and Spain in 292. He recovered Britain after the revolt of Carausius and Allectus in 296, followed Maximian as Augustus in 305 and died at York, being succeeded by his son, Constantine the Great.

Flavius Julius Constantius (317-361), Constantine the Great's third son, received the eastern empire. The death of his brothers and the usurper Magnentius gave him the west also. **Constantius III.** was an Illyrian soldier. He suppressed the Attalus rising in 416, then married Placidia, sister of Honorius, and reigned with him for seven months. He died in 421.

Constellation Group of fixed stars usually associated with an imaginary figure, such as a bear or a lion. The naming of prominent star groups, such as Ursa Major and Orion, traceable to the pre-Semitic population of the Euphrates valley, passed to the Greeks, who recognised 48 such groupings, including the twelve zodiacal signs. The southern sky was similarly mapped out by 16-18th century astronomers. There are now recognised 28 northern, 12 zodiacal and 49 southern constellations.

Constipation Incomplete or irregular evacuation of the bowels, arising from functional causes, debility or disease. The condition causes a species of auto-intoxication or poisoning of the system, producing headache, lassitude, loss of appetite, coating of the tongue, and severe indigestion. Chronic constipation invariably affects the general health and may lay the foundation of many serious complaints.

Treatment.—Lead a natural, healthy life with plenty of outdoor walking exercise. Avoid excess of food, two good, regular meals being the ideal. Avoid eating between meals, but drink several tumblerfuls of water daily between meals and not during them. Introduce into the daily menu such natural foods as fresh fruit, salads, and green vegetables, wholemeal bread, prunes, etc.

Aperients, however mild, should not be taken habitually, and castor oil should not be given in cases of constipation. Good aperients are cascara, senna, Epsom salts, sulphate of magnesia, etc. Medicinal paraffin, merely acting as a lubricant, is more suitable for prolonged use.

Constituency Body of persons entitled to elect representatives to a legislative body.

Constituent Assembly

Body assembled to formulate a constitution. During the French Revolution the States General, constituting themselves a National Assembly in 1789, elaborated a constitution. After the Great War constituent assemblies met in Germany, Czechoslovakia and other countries.

Constitution Assemblage and union of the essential parts of a body or system. It may be of natural origin, as with the universe, stars and living bodies, or a system of principles and rules, either recognised by prescriptive usage or written, governing a state or association.

The **British constitution** comprises the collective principles of public policy whereby Britain is governed. It has developed from age to age by successive compacts between the

crown and the parliament, until the supremacy of the latter, as representing the people, has been established.

The **Constitution of the United States** is contained in a document, the terms of which cannot be changed without special procedure. The British constitution is unwritten.

The **Constitutional Club** is a London club, chiefly for Unionists. It is at 28 Northumberland Avenue. **Constitution Hill,** London, runs from Hyde Park Corner to Buckingham Palace.

Consubstantiation Doctrine that in the eucharist Christ's body and blood, being ubiquitous, are necessarily present and coexistent with the elements, which nevertheless may or do retain their nature as bread and wine. It was taught by some mediaeval schoolmen and adopted by Luther. The Council of Trent rejected it, reaffirming the Roman doctrine that the eucharistic elements are transubstantiated into the body and blood of Christ.

Consul Ancient Rome's two chief magistrates. When the line of kings ended in 509 B.C., the two praetors elected were also called consuls. At first patricians, the Licinian law (367 B.C.) required one to be a plebeian. Holding office for one year, they presided over the senate. Under the empire their authority declined, but the office lingered until A.D. 541. The title was revived in 1799 when Napoleon was styled First Consul in France.

Consul Official commissioned by a state to protect the interests of its subjects in a foreign country. British consuls report to the Foreign Office, under which they act, rendering services also to the mercantile marine for the Board of Trade. The general division comprises consuls general, consuls, vice-consuls, consular agents and attachés.

The British consular service has members all over the world. They assist British traders and travellers, and in special cases, can celebrate marriages or take evidence for a lawsuit. In London, all the great countries of the world have consulates where persons who wish to travel to those countries must go to get their passports put in order.

Like an embassy a consulate is regarded as the soil of the country there represented.

Consumption In economics a term used for the use and therefore the disappearance of the products of industry. An example of useful consumption is the provision of coal to a furnace; an example of wasteful consumption is the drinking of considerable quantities of liquor. Industrialists have devoted their attention to stimulating production, leaving consumption to look after itself. After the Great War, however, the world's productive power seeming so much in excess of its consumptive capacity, more attention was given to the problem of consumption.

Consumption Old name for the disease known as tuberculosis (*q.v.*). It is a disease affecting any organ of the body and is so called because, by it, the tissues are gradually consumed or burned away.

Contagion Communication of disease by personal contact. Communicable diseases are indiscriminately designated contagious or infectious. They include smallpox, whooping cough, mumps, typhus and tuberculosis. Scarlet fever is better designated infectious than contagious. Infection is communicable through wearing a previous sufferer's clothes, breathing air contaminated by his exhalations, handling his utensils, or by carriers (*q.v.*).

Contagious Diseases Acts were passed in the 19th century to control and regulate the prostitutes in military areas in the United Kingdom and India. Their aim was to protect the soldiers from venereal diseases. They were repealed in 1886, on the ground that state regulation of vice was undesirable.

Contempt of Court In English law a phrase meaning any disobedience of the orders of a court of law. It includes unseemly behaviour in the court itself. It is contempt of court for a newspaper to comment upon a case that is being heard; or for anyone to assault a person who is employed by the court to deliver a writ or summons. Another kind is to disobey an order for the payment of money. In all these cases the judge can send the offender to prison.

Continent Continuous land mass, in contact with continuous water masses called oceans. The land surface of the earth comprises five great masses: (1) Eurasia, including Europe, 3,750,000 sq. m. and Asia, 17,000,000 sq. m.; (2) Africa, 11,500,000 sq. m.; (3) America, including North America, 8,000,000 sq. m. and South America, 6,800,000 sq. m.; (4) Australia, 3,000,000 sq. m.; (5) Antarctica, 5,000,000 sq. m.

Continental System Napoleonic plan for a blockade, designed to exclude British merchandise from Europe. The British command of the sea, the Peninsular War and Russia's break with France ended his attempt to ruin Britain's trade.

Continuation School In Great Britain an institution providing instruction for children after leaving an elementary school. The Board of Education after 1902 encouraged county and county borough councils to set up continuation schools in connection with technical schools. Acts from 1918 onwards obliged local education authorities to establish part time continuation schools. Continuation schools exist in the United States, Germany and elsewhere.

Contour In surveying, a curve of equal elevation or depression on a map. The coast line is the datum level from which all contour lines are measured.

Contraband In time of war materials and commodities which international law forbids subjects of neutral states to supply to belligerents. Materials of direct application to hostile use are absolute contraband and are distinguished from articles fit for such use, which are conditional contraband. Ammunition is absolute contraband; copper and cotton are conditional. There were many cases of seizure during the World War.

Contract Agreement to perform a certain action. This is a very important branch of English law. It is not necessary to put a contract into writing, though in many cases this is desirable. A contract requires two main conditions to be valid. These must be offer and acceptance and the acceptance must be absolute, not conditional. The acceptance must also be definite. Silence does not give consent to a contract. A contract

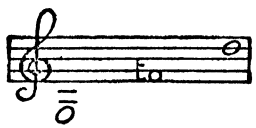
must be for a consideration, unless it is made under seal.

CONTRACT NOTE. The document sent by a stockbroker to his client, giving details of a transaction. It must be stamped.

Contract Bridge Form of bridge first played in America. It is governed by an elaborate set of rules, but the general principles are the same as those of auction bridge (*q.v.*). The chief differences are that tricks scored in excess of the number contracted for do not count towards game and that, after having won a game, the winning side is vulnerable for the rest of the rubber. To be vulnerable means that its points, both for winning and losing, are greator than those of its opponents. Points are given to players for fulfilling their contract, whilst those who fail to do so lose points.

Contractor Person or firm contracting with a government, public body or private party to construct works or supply commodities for a certain price. There are usually time limits, sometimes with penalties for any breach of the terms. Firms who undertake government contracts must be on the King's Roll of those who employ ex-service men. Members of such firms, if members of the House of Commons, must resign their seats on receiving a government contract.

Contralto In music a female voice approximating to the male alto. It has an average compass of from



Control Superintendence and authority over someone or something. In Great Britain certain authorities are called **boards of control.** One is the Board of Control for Lunacy and Mental Deficiency. Its members, called commissioners, are chiefly medical men; its offices are at Caxton House West, Tothill St., London, S.W.1. It was set up in its present form in 1913. In 1915, a board of control was set up to supervise the sale of intoxicating liquors in certain areas, the chief being the one in and around Carlisle.

Controller Device for regulating power and speed in electric cars and rotating turrets. On trains of cars a multiple controller brings all motors under simultaneous control.

Another kind of controller is a person in control of a business or department. In the public service there is a controller of stamps, and during the Great War there was a food controller and controllers of wool, timber, paper and other supplies.

Convener One who convenes or calls a meeting. In Scotland the term is used for chairmen of county councils and presidents of committees.

Convent Assembly of persons gathered together in retirement from the world, and also the building housing them. A convent is now a Christian nunnery where devout women spend their lives in prayer and works of charity and education.

Conventicle Term used before and after the Reformation for a secret or unauthorised gathering for religious worship, or for its place of meeting. It applied especially to Wycliffite and Presbyterian meetings or meeting places.

Convention Term denoting a formal meeting, or formal agreement after a conference. Convention parliaments are those summoned without the king's writ. The meetings of the political parties that choose the candidate for the U.S. presidency are called conventions. In 1932 both the Republicans and the Democrats held their conventions in Chicago.

Agreements between states on matters of non-political interest are usually called conventions, such as those concerning fisheries between Great Britain and the United States. Conventions negotiated at international conferences regulate postal services, telegraphs, sugar bounties, copyright, patents, trade marks, the slave trade, the succour of wounded in war, and international courts.

Conversion In law an act by which a person interferes with the property or possessions of another in a manner inconsistent with the other's right of ownership. The remedy is by an action in the courts.

In financial matters conversion is making a change in the form of a security. Consols were converted from a 3 per cent. into a 2½ per cent. stock in 1887. In July, 1932, the British Government announced the conversion of £2,084,000,000 of 5 per cent. War Loan to 3½ per cent.

Conversion In theology a change of spiritual attitude from one religion or church to another. In a more intimate sense it denotes a radical personal change, sudden or gradual, from an attitude of self-seeking and enmity towards God to one accepting God's proffered grace.

Converter Oval-shaped iron retort lined with refractory materials into which molten iron is poured to be converted into steel. It was invented by Sir H. Bessemer, who lined it with acid materials, such as clay-bound quartz. The usual capacity is from 20 to 25 tons. Basic-lined converters are also used for the extraction of copper.

Conveyancing Act of effecting by written documents the transfer of real property, or modifying the interests therein. By the Conveyancing Act of 1881, and its amendments this profession, formerly monopolised by barristers, is open to solicitors. Conveyancing counsel assist the chancery court by investigating titles. Stamp duties are charged on the conveyance of property. These work out at about 1 per cent. on the purchase price, but half duties only are charged on properties worth less than £500.

Conveyer Mechanical contrivance for transporting materials in bulk. Such devices may consist of tubes through which rotating worms convey liquid or solid materials. Other types are flexible or metallic bands or belts, push-plates, travelling troughs and tilting buckets.

Convocation Assembly summoned by constituted authority. At Oxford University it is the governing body.

The convocations of Canterbury and York are assemblies for ecclesiastical purposes. Each consists of an upper house, composed of the bishops, and a lower house in which are deans, archdeacons and proctors representing

the beneficed clergy. In 1886 a house of laymen was added.

Convolvulus Typical genus of twining herbs. Gardeners cultivate the European *C. althaeoides* and *C. tricolor*, calling the latter convolvulus minor. The tropical American *ipomaea purpurea* or morning glory, is called convolvulus major. Both yield handsome blue, crimson, striped and white blooms. *See* BINDWEED.

Convoy Troops or warships which accompany supplies or merchant vessels to afford them protection in time of war.

Convulsion Involuntary contraction and relaxation of muscle in rapid alternation, usually accompanied by unconsciousness. Convulsive fits are symptoms of many disease states, requiring professional aid. Three-fourths of the deaths from nervous diseases in children within their first year are due to convulsions. They may arise from teething, irritation or worms, and are commonly treated by warm baths with cold cloths to the head. In adults they frequently accompany epilepsy, hysteria and cerebral congestion.

Conway River of North Wales. It rises in the mountains of Merionethshire and flows between the counties of Denbigh and Caernarvon to Beaumaris Bay. It is 30 m. long, and flows through some of the most beautiful scenery in Wales.

Conway Borough, market town and seaport of Caernarvonshire. At the mouth of the River Conway and sometimes called Aberconway it is 224 m. from London and 13 from Bangor on the L.M.S. Rly. The town is famous for its castle. Pop. (1931) 8769.

Conway Training ship. She is moored at Rocky Ferry, Birkenhead, and is used for the Mercantile Marine Service Association. The first ship used for this purpose was H.M.S. *Conway*, a 28 gun frigate. Later the frigate *Winchester* and the battleship *Nile* were used as part of the Conway establishment to train boys for the service.

Cony Name used for rabbit skin when made into fur. Spelt coney, it is used in the Bible for a rabbit-like mammal of the ungulate order, the Syrian hyrax.

Cooch Behar State of India. It is in Bengal and is governed by a maharajah, who has a salute of 13 guns. The chief town is also called Cooch Behar. The state covers 1300 sq. m. Pop. 592,500.

Cook James. English seaman and explorer. He was born at Marton, Yorkshire, Oct. 27, 1728. His earlier years were spent in the merchant service, but in 1755 he entered the navy and four years later was appointed to command a sloop. He surveyed and charted the estuary of the St. Lawrence and the coasts of Newfoundland and Labrador. In 1768 he was appointed to command a scientific expedition to the South Seas. During his voyage, which lasted two years, he explored the Society Islands, circumnavigated New Zealand and charted the coasts, and surveyed the whole east coast of Australia.

Soon after his return to England, Cook sailed on his second and greatest voyage, in which he practically completed the exploration of the southern hemisphere, determined the position of Easter Island, discovered New Caledonia, Norfolk Island and the Isle of Pines, and disproved the hypothesis of an antarctic continent, as then understood. On his return in 1775, he was promoted port captain, elected a fellow of the Royal Society and awarded the society's gold medal.

Captain Cook's last voyage was undertaken to discover the north-west passage. On his way he discovered the Hawaiian Islands and surveyed the west coast of N. America up to the Bering Strait and beyond. His farther progress being stopped by ice, he returned to Hawaii, where he was killed by the natives, Jan. 17, 1779.

Cook Sir Joseph. Australian politician. Born in England in 1860, he became a miner in Staffordshire. In 1885 he settled in Australia and joined the Labour Party there. A member of the New South Wales legislature, 1891-1901, he was Postmaster-General, 1894-98, and minister for mines and agriculture, 1898-99. In 1901 he entered the Commonwealth parliament, becoming leader of the Free Trade party. Leaving the Labour Party, he was minister for defence under Alfred Deakin in 1909-10, Prime Minister in 1913-14, in 1917-20 minister for the navy in the coalition ministry, and treasurer 1920-21. In 1919 he was Australian representative at the Versailles peace conference. Knighted in 1918, he left political life and was High Commissioner in London, 1921-27.

Cook Thomas. English business man. Born at Melbourne, Derbyshire, Nov. 22, 1808, he was a temperance advocate and in 1841 he arranged with the Midland Counties Rly. for a special train to carry people from Leicester to a temperance meeting at Loughborough. This led to similar overtures and Cook became a tourist agent, acting for the Midland Rly. Excursion trains were run to the exhibition of 1851 in London, and soon the business of Thomas Cook & Son was founded. In 1865 its headquarters were moved to London, and in time it had branches all over the world. For long the chief office was in Ludgate Circus, but in 1928 it was moved to Piccadilly. Cook died July 19, 1892.

Cook Islands Group of nine islands in the Pacific Ocean. Between 155° and 166° E. and about 20° S., they were discovered by Captain James Cook in 1777. They are partly volcanic and partly coralline. The soil is fertile and the climate good. The chief island is Rarotonga. Others are Mangaia, Atutaki, Atiu, Mauke and Mitiaro. The group also includes the Hervey Islands, Savage Island and Palmerston Island, and the whole of the islands are sometimes grouped as the Hervey Archipelago.

The group was proclaimed a British protectorate in 1888 and annexed by New Zealand in 1901. The natives are mainly Polynesians of Samoan descent. The principal products are coconuts, copra and fruits. The total area is 280 sq. m. Pop. 13,900.

Cookery Art of heating food to render it nutritious, digestible and palatable. There are six ways of cooking meat:—grilling, roasting, baking, boiling, frying and stewing. Stewing requires immersion of the meat in warm liquor and the slow cooking of it to transform its juices into rich gravy. All the other methods aim at the retention of the juices by sealing the meat by the intense heat first applied to its surface. Grilling and roasting are the most primitive and satisfactory methods; boiling is the most economical. Baking is roasting in a closed oven. Frying requires immersion in hot oil or fats.

The National Society's Training College for Teachers of Domestic Science, Berridge House,

West Hampstead, N.W. 6, and the National Training School of Cookery, Buckingham Palace Road, S.W.1, are the principal London training institutions. Cookery is taught also in the domestic science or homecraft sections of the Polytechnics and technical institutes in most large towns.

Cookham Riverside town of Berkshire. It stands on the Thames, 27 m. from London, on the G.W. Rly. It is a boating and fishing centre, and there is a lock. Pop. 5850.

Cookstown Market town and urban district of Co. Tyrone, Northern Ireland. It is 53 m. from Belfast, on the Gt. Northern (Ireland) Rly. There is agricultural trade and linen is manufactured. It has chemical works. Pop. 3700.

Cooktown Seaport of Queensland. There are sugar plantations in the neighbourhood, and pearl fishing is carried on. It is about 1000 m. from Brisbane and is the terminus of a railway line that serves the mines in the interior. Pop. 1257.

Coolgardie Town of Western Australia. It is 360 m. to the west of Perth by railway. The gold mines around, opened in 1892, are much less productive than formerly. Coolgardie is, however, an important railway junction on the transcontinental line.

Coolidge **John Calvin.** Thirtieth President of the U.S.A. He was born at Plymouth, Vermont, July 4, 1872. He studied law and was admitted to the Bar in 1897, and after various legal and political appointments, became Governor of Massachusetts in 1919, when he dealt firmly with the Boston Police Strikers. In 1921 he was made Vice-President of the U.S.A. and in 1923 President. He was re-elected for 1925-29. During his term of office, portions of the national debt were paid off, income tax was reduced, and the country was very prosperous.

Coombe District of Surrey. It is 2 m. from Kingston-on-Thames and 10 m. from London, on the S. Rly. With Malden (*q.v.*) it forms an urban district. **Coombe Abbey** in Warwickshire is the seat of the Earl of Craven.

Coonamble Town of New South Wales. In an agricultural district, it has an experimental farm maintained by the state. Ostriches are reared. It is about 375 m. by railway from Sydney. Pop. 3820.

Cooper Term used for a maker of barrels. The Coopers' Company, one of the London livery companies, dates from 1501. Its hall is in Basinghall Street.

A different use of the word is for **cooperage.** This means selling drink and tobacco that have not paid duty to fishermen at sea. It was done by Dutch ships called koopers, but has been largely stopped by international agreement. By English law it is illegal.

Cooper **Gladys (Lady Pearson).** English actress, born Dec. 18, 1889, at Lewisham. She first appeared as Bluebell in *Bluebell in Fairyland* in 1905, and in London in 1906, as Lady Swan in *The Belle of Mayfair.* Her chief successes have been in *Diplomacy, The Naughty Wife, Magda, Iris,* and *The Last of Mrs. Cheyney.* She married Sir Neville Pearson in 1928.

Cooper **James Fenimore.** American author. Born at Burlington, N.J., Sept. 15, 1789, he was educated at Yale. He served on a merchant ship and later in the U.S. Navy. Cooper wrote more than 30 novels, dealing chiefly with Red Indian life. They include *The Last of the Mohicans, The Pathfinder* and *The Deerslayer.* He died at Cooperstown, New York, Sept. 24, 1851

Cooper **Samuel.** English painter. Born in London in 1609, he was called "Vandyke in little," and became the greatest miniature painter of the time and perhaps of all time. His works, which include portraits of Charles II., Catherine of Braganza, Cromwell, Milton and others, are characterised by boldness and freedom of style. He died in London, May 5, 1672.

Cooper **Sir Astley Paston.** English surgeon. Born in Norfolk, Aug. 23, 1768, he studied at S. Thomas's Hospital, London, and under John Hunter. In 1800 he became surgeon to Guy's Hospital, and 13 years later was appointed professor of comparative anatomy at the Royal College of Surgeons. He made many advances in surgery, specialising in hernia and other abdominal complaints, and in recognition of his work was made a baronet in 1820. He died Feb. 12, 1841.

Cooper **Thomas.** English Chartist and poet. Born in Leicester, March 20, 1805, in 1841 he became prominent in the Chartist movement, and in 1843 for advocating strikes was sent to prison for two years. Hitherto a free thinker, in 1856 he began to lecture on Christian evidences. He died at Lincoln, July 15, 1892. While in prison Cooper wrote *The Purgatory of Suicides, The Paradise of Martyrs* and an *Autobiography.*

Cooper **Thomas Sidney.** English painter. Born in Canterbury, Sept. 26, 1803, he studied in London, and at Brussels from 1827 to 1830. He was elected R.A. in 1867, and in 1882 presented an art gallery to his native city. His animal pictures are well known. Examples are in the National Gallery, Tate Gallery and Wallace Collection. Cooper died Feb. 7, 1902.

Co-operation Acting together for mutual benefit. Co-operation in agriculture, which takes the form of setting up creameries, bacon factories, etc., to deal with the produce of a group of farmers, is one form. There are also co-operative societies for the building of houses.

In the narrower sense co-operation is used for the movement started by Robert Owen in 1821. His idea was that a body of consumers should band themselves together to supply their own wants and so eliminate the capitalist. In 1844 a few of his followers opened a store in Rochdale, the profits taking the form of a dividend. Non-members were supplied with goods, but received a lower dividend.

The Rochdale society soon numbered 5000. Similar stores were opened in Leeds, Derby, Oldham, Nottingham, Halifax, Manchester, Bolton, and elsewhere, and the movement spread to the south. Some of the societies soon had a chain of shops and auxiliary establishments. Management was in the hands of committees elected by the members.

Despite many failures and much default, the movement grew. In 1864 a central purchasing agency, which became the Co-operative Wholesale Society, was established.

In Great Britain there are 1135 retail societies, 92 productive societies and 3 wholesale societies. The turnover of the retail societies for 1934 was

over £207,000,000. The wholesale societies, which own factories for making clothing, and other industrial establishments have a yearly turnover of about £100,000,000. The dividends of the retail societies average about 1s. 10d. in the £ or just under 10 per cent. The co-operators hold an annual congress and conduct a weekly paper, *The Co-operative News*. They have secured the return of several members to Parliament.

Cooper's Hill District of Surrey. It is near Staines, overlooking the Thames. Here in 1870 a college was opened for training candidates for the engineering service in India. It was closed in 1906.

Coot (*ulica atra.*) Water fowl belonging to the rail family. It is widely dispersed throughout northern Europe and Asia. The plumage is uniform black, but the males are distinguished by a light bare callosity on the head, from which the bird is sometimes called the bald coot. The coot breeds in inland waters, but in winter usually resorts to estuaries and other waters such as the Broads and Southampton Water.

Cootamundra Town of New South Wales. It is 260 m. from Sydney, a railway junction and an agricultural and mining centre. Pop. 3350.

Coote **Sir Eyre.** British soldier. Born in Co. Limerick in 1726, as a captain in the 39th foot he served with distinction in the advance on Calcutta and at the battle of Plassey. In 1759 he commanded the forces at Madras, and next year defeated the French under Lally at Wandiwash. He was knighted, and in 1779 went out to India as commander-in-chief, achieving his great triumph in 1781 by the overthrow of Hyder Ali. He died at Madras, April 28, 1783.

Copal Resin used in the manufacture of varnish. It is obtained from various sources, the most important commercially being *trachylobium hornemannianum*, which yields what is known as Zanzibar, or East African copal. It is both raw and in the fossil state, the latter being more valuable.

Co-partnership Arrangement whereby workers, over and above standard wages, share in net profits and in the control of and responsibility for an undertaking.

In 1930 there were in existence 491 schemes of this kind with 238,000 employees concerned. They distributed on the average £9 18s. to each co-partner. There is an Industrial Co-partnership Association with headquarters in London.

Cope Liturgical vestment. Once the cope was a *cappa*, or raincoat worn by clergy and laity alike. Now it is semi-circular, richly decorated and held in place by a morse or a piece of silk fastened across the breast. Anglican bishops wear the cope at important ceremonies.

Cope **Sir Arthur Stockdale.** English portrait painter. A son of C. W. Cope, R.A., he was born Nov. 2, 1857, educated at Norwich Grammar School and Wiesbaden, and received his training at the Royal Academy Schools and Paris. In 1876 he began exhibiting at the Royal Academy and in 1910 was elected R.A. His numerous works include portraits of King George and King Edward. In 1917 he was knighted.

Cope **Sir John.** English soldier. He entered the army about 1720 and served abroad in 1742. During the Jacobite rebellion in 1745 he was made commander-in-chief of the English forces and met the rebels at Prestonpans. His troops fought so badly that a court of inquiry was held, but he was exonerated. He died July 28, 1760.

Copenhagen Capital of Denmark. It is situated mainly on the east coast of the Island of Zealand, and with its southern portion, called Christianshavn, on the adjacent Island of Amager, began to assume importance in the 12th century, but it was not until the middle of the 15th that it passed into the possession of the crown and became the capital. Christian I. founded the university in 1479. Pop. (1931), 771,168.

There are several palaces; one, the Rosenborg, is now an art gallery and museum. The Charlottenborg is also public property. The city hall is a fine edifice and the Thorwaldsen is one of several museums. Of the many churches, the most noted are the cathedral and the Frederick and Holmen's.

Copenhagen is Denmark's banking and financial centre and the headquarters of its literary, educational and artistic activities. The chief industries are connected with shipping. Its industries include textiles, watches, clocks, porcelain, brewing, distilling and sugar refining.

The most celebrated incident in the history of Copenhagen is the battle of April 2, 1801, when a British fleet under Hyde Parker, with Nelson as second in command, was despatched to force Denmark's withdrawal from the "armed neutrality." By a daring manœuvre of his division of the fleet, Nelson gained a brilliant victory, and the object of the expedition was achieved.

Copernicus **Nicolaus.** Polish astronomer. Born at Thorn, Feb. 19, 1473, he studied mathematics at Cracow, canon law and astronomy at Bologna and medicine at Padua. From 1507 to 1513 he lived at Heilsberg, and later Frauenberg, where he elaborated his treatise *De Revolutionibus Orbium Coelestium*, which demonstrated the true relations of the earth to the sun and planets. Copernicus was reluctant to publish the whole work. The summary, however, made such a deep impression, that at last, in 1540, he consented to publication. He died May 24, 1543.

Copper Metallic element. Its chemical symbol is Cu and atomic weight 63.1. Of reddish colour, it is malleable and ductile, but nearly as tenacious as iron. It was known and used by man long before the discovery of iron. Bronze, which is the alloy of copper with tin, was the first compound metal, and in the manufacture of weapons was not completely superseded by iron until comparatively late in historic times. The name copper points back to the time when Rome drew most of its copper supplies from Cyprus, hence, *aes Cyprium*, which was colloquially shortened to *cyprium* and later corrupted into *cuprum*.

Copper is found in two forms—native or virgin copper and copper ores. The former, of which the largest deposits are in the Lake Superior region, consists of metallic crystals practically identical with smelted copper. The latter, which are numerous and widely distributed, include the oxides cuprite and melaconite, the carbonates malachite and chessylite, and the sulphides—most valuable of all the ores—chalcocite, chalcopyrite, erubescite and tetrahedrite. The United

States produces nearly half of the total world output of copper. According to the most recent returns available in 1933, this amounted to 1,430,000 tons. Of the other copper producing areas, Chile, Canada, Mexico, Spain, Japan and Australia are the most important. Recently work has been started on vast deposits in Rhodesia. Great Britain was for over 2000 years one of the great sources of copper and tin, but has now practically exhausted her supplies.

Copper Age Term used by archaeologists for the period in which man used implements made of copper. It is supposed to follow the stone age, and to be followed by the bronze age. Its date was somewhere about 2000 B.C.

Copperhead Poisonous snake of N. America. During the American Civil War the name was applied by Lincoln's supporters to those Northerners who advocated an agreed peace with the South. Hence it came to be a nickname for the Democratic party.

Coppermine River of the north-west territories, Canada. It flows into Coronation Gulf. It was first explored by Sir John Franklin in 1821. It is nearly 500 m. long, and consists largely of a series of lakes and rapids.

Copra Dried coconut kernel. It yields an oil used for the manufacture of margarine, soap, candles, etc.

Coprolites Fossilised excrements of extinct saurians and fishes. They are valuable as manure, by reason of their richness in calcium phosphate. East Anglia is rich in such deposits. To prepare the manure they are ground to powder and treated with sulphuric acid.

Copts Name of a Christian sect in Egypt. The Coptic community represents, not only the indigenous Christianity, but also the ancient race of Egypt.

The Copts form about one-fourth of the total population of Egypt, but hold a position of great influence in the business and professional life of the country. The Coptic language, which bears the same relation to ancient Egyptian as modern Greek to classical Greek, is no longer in use, save to a limited extent in the services of the church.

The Coptic Church has an ancient ritual, not unlike that of the Greek Church. It does not use the crucifix or reserve the sacrament Its head is the patriarch of Alexandria under whom are bishops in Egypt and Abyssinia.

Copyhold Method of holding land. On English manors much land was held on conditions laid down on the rolls of the manor and this was called copyhold. The conditions were usually a payment of some kind or a service to the lord of the manor, perhaps the payment each year of a fowl, or the performance of some days of work on the lord's land. Gradually these services were changed into money payments, but the land was still called copyhold. It was a less complete form of ownership than freehold, but more complete than leasehold. This form of land tenure was abolished by the law of Property Acts of 1925.

Copyright The sole right to reproduce a book, play, picture, photograph, piece of music, or any other artistic work, or any substantial part thereof. In Great Britain the existing law was established by the Act of 1911, under which copyright of a book exists for the lifetime of the author and 50 years after his death. The provisions that deal with music and musical contrivances, such as gramophone records, are very elaborate.

In cases of an infringement of copyright an author can ask the court for an injunction to prevent publication of the offending book, or can claim damages. Copyright can be transferred from one person to another.

By the Berne convention of 1908 certain countries recognise one another's copyrights. To obtain protection in the U.S.A. a British author must have an edition of his work set up in type in that country and published simultaneously.

Coquelin Family of French actors. Benoit Constant Coquelin was born Jan. 23, 1841, made his début in Molière's *Dépit Amoureux* and by rapid steps became France's leading actor. He toured America with Sarah Bernhardt, visited London in 1892, 1902 and 1908, and died in Paris, Jan. 27, 1909.

Coquelin's brother, **Ernest Alexandre Honoré Coquelin**, was born May 16, 1848. His career was also brilliant until his death, Feb. 8, 1909.

Coracle Primitive fishing boat. Observed in British waters at Caesar's invasion, it was a portable, skin-covered wicker frame, with thwart and paddle. Covered with tarred canvas, it is still seen on the Teify and the Dee.

Coral Formation of carbonate of lime, consisting of the skeletons of marine polyps. The principal species are found in tropical seas and shallow waters, mainly between the 28th N. and 28th S. parallels of latitude.

The formations include fringing reefs, which extend from the shore seawards only a short distance; barrier reefs, which are of similar structure, but on a much larger scale; and atolls, which are ring-shaped reefs often surmounted by islets.

Coram **Thomas.** English philanthropist. Born in 1668 at Lyme Regis, he became a sailor. His interest in foundlings led to the opening of the Foundling Hospital in Hatton Garden, London. Later it was moved to Guildford St. and then into the country. He died March 29, 1751.

Cor Anglais (or English Horn) Wind instrument of the reed species. It has a globular bell at the bottom, and its compass is two octaves and a fifth.

Corbett **James John.** American pugilist. Born at San Francisco in 1866, he became a professional boxer. He defeated J. Choynski in 1889, J. L. Sullivan in 1892, thereby gaining the world's championship, and Charles Mitchell in 1894, but was defeated by Robert Fitzsimmons in 1897. In 1891 he fought 61 rounds with Peter Jackson, the fight ending in a draw. He retired after Aug., 1903, when he was defeated in the 10th round by J. J. Jeffries.

Corbridge Town of Northumberland. It is situated on the north bank of the Tyne, 4 m. from Hexham on the L.N.E. Rly. The site of the Roman station of Corstopitum is near. Pop. 2415.

Corday **Charlotte.** French revolutionary. Marie Anne Charlotte Corday d Armont was born of good family, July 27, 1768, near Séez, Normandy. She conceived it her duty to rid France of Marat, and stabbed him in his bath. She was guillotined, July 17, 1793.

Cordelier Member of a political club that existed during the French Revolution called a Society of the Friends of the Rights of Man and of the Citizen, and founded in the Cordeliers district, Paris, 1790. It popularised the motto, "Liberty, Equality, Fraternity," and was influential in establishing the worship of Reason. The Convention decreed its extinction in 1795.

Cordillera Name first applied to the S. American Andes, and then to their extension through Mexico. It is nowadays specifically used for the mountain systems between the Rocky Mts. and the Sierra Nevada.

Cordite Smokeless propellant of the British forces. Originally devised by an Ordnance Committee, in 1891, it is nowadays the variety, cordite D, which comprises guncotton, 65 per cent., nitro-glycerine, 30 per cent., mineral jelly, 5 per cent. Pressed into waterproof cylindrical rods, varying in thickness from 1 mm. upwards, it is used in rifle cartridges and heavier ammunition.

Córdoba City of Argentina. It is 435 m. from Buenos Aires. It has a 17th century cathedral, a church built earlier by the Jesuits, a university founded in 1613 and an observatory. It is a railway junction and a prosperous commercial city, with manufacturing and other industries. Pop. (1931) 253,182.

Cordon French word for line or cord. It denotes the sky-blue scarves of certain orders of chivalry, and thence a person eminent in any profession, such as a *cordon bleu* in cookery. It denotes also a line of posts surrounding any area for preventing ingress or egress.

Cordova City of Spain, also called Cordoba, and standing on the Guadalquivir, 82 m. from Seville. It was founded by the Carthaginians, but the Moors made it famous. The mosque, now a cathedral, is one of the chief examples of their art. There is an old bridge across the river as well as several colleges. Cordova is the capital of a province in which coal and copper are mined. Pop. (1931) 106,045.

Cordwainer Maker of shoes of Cordova leather. The Cordwainers formed a company, now one of the London livery companies. The hall is at 7 Cannon Street, E.C., and the company supports a technical school at Bethnal Green.

Corduroy Stout cotton fustian made with a pile so cut as to leave a ridged surface in the direction of the warp. A corduroy road is a path made over swampy ground by fastening logs together; it is so called on account of its ridged appearance.

Corelli Marie. English novelist. Born on May 1, 1864, from 1886 to 1917 she produced novels which were widely read because of their bearing on the religious and social questions of the day. For many years she lived at Stratford-on-Avon, and she died April 24, 1924. Her most popular books were *The Romance of Two Worlds, The Sorrows of Satan, The Mighty Atom, The Master Christian* and *God's Good Man.*

Corfe Castle Village of Dorset. It is 4 m. from Wareham and 117¼ from London, on the S. Rly., and is in the district called the Isle of Purbeck. It is famous for its castle, now a ruin, the scene of the murder of King Edward the Martyr in 978. Pop. 1400.

Corfu Northernmost of the greater Ionian islands. Lying off the coast of Albania and Epirus, it is 40 m. long and covers 270 sq. m. It is mountainous in the north. Olives, pomegranates, figs and grapes are grown. Anciently called Corcyra, it offered hospitality to the Serbian Government and troops during the Great War; the pact of Corfu, 1917, laid the foundations of Yugoslavia.

Corfu, the capital, on the east coast, has a fine harbour. Pop. 32,221.

Corgi Welsh dog coming from Pembrokeshire and Cardiganshire. Those from Pembrokeshire have long tails and the others short ones. The Pembrokeshire variety are either red or red and white, whereas the Cardiganshire are any colour except white, and are slightly heavier. The weight of the corgi is from 18 to 25 lbs. The head and contour of body is foxy, but the limbs are of sturdier build than those of the fox. The coat is smooth but harsh. Corgis make excellent workers for sheep and are good tempered and hardy.

Coriander Fruit of an umbelliferous plant found in South Europe, Asia Minor and parts of England. The plant has pinkish flowers and its fruit, smooth and globular, is used in medicine, confectionery and liqueurs as a carminative and aromatic factor. Its tender leaves and shoots are useful in soups and salads.

Corinth City of Greece. Situated between the Gulf of Corinth and the Saronic Gulf, it was about 3 m. from the sea, on which was its harbour. Founded about 1000 B.C., it was a great trading centre and naval power, and famous for its culture. The city's most famous building was the Acrocorinth, or citadel, on a hill 2000 ft. high.

The rivalry between Athens and Corinth led to the Peloponnesian War in 431. In 146 B.C. the Romans destroyed the city, but Julius Caesar rebuilt it. Visited by S. Paul, and famous for its Christian church, it was wealthy and splendid, but was damaged by barbarian invaders. It existed under Byzantine and Turkish rule until destroyed by an earthquake in 1858. A new city, New Corinth, was erected on the gulf. Much excavation work has been done on the site of the old city.

The **Gulf of Corinth** divides the southern part of Greece from the mainland. Lepanto, as well as New Corinth, stands on it and it is sometimes called the Gulf of Lepanto. The Isthmus of Corinth is the narrow strip of land that divides the gulf from the Gulf of Aegina. Its greatest breadth is only 8 m., and it is cut by the **Corinth Canal**, opened in 1893.

Corinthian Name used in the 18th century for a man of wealth and position who was also a patron of sport. There is a good picture of the Corinthian in Conan Doyle's *Rodney Stone.*

The **Corinthian Football Club** is a leading amateur club playing the association game. It was founded in 1882, and its members are drawn from the universities and public schools.

Corinthians Epistles to the. Seventh and eighth books of the N.T. The Apostle Paul wrote the first from Ephesus, apparently in A.D. 57, to the church founded by him at Corinth. He reproved factious rivalries, offered counsel on moral questions, rebuked disorders at the eucharist, wrote an imperishable hymn of love, and established the doctrine of the Resurrection. The second letter, sent from Philippi in A.D. 58

expounds the grandeur of the apostolic mission, warns against heathen dangers, and describes his life's martyrdom.

Coriolanus **Gaius Marcius.** Roman patrician hero. Legend makes him a Roman who was exiled because of his unpopularity. He then joined the Volscians and led their army to attack Rome, but spared the city on account of the entreaties of his wife and his mother. On his return to the Volscian capital he was killed.

Cork Evergreen oak of the Mediterranean region (*quercus suber*). It is cultivated in Spain, Portugal and parts of France, and the bark is very useful as it is impervious, compressible and elastic. The trees can be stripped every 10 years or so for about 150 years. The first stripping produces the virgin cork, useful for tanning. Later strippings are done carefully with curved knives. The cork is then boiled or steamed, scraped and pressed before being cut into sheets.

Cork County of the Irish Free State. In the south of the country and the province of Munster, it covers 2890 sq. m. The coast is indented and includes Bantry Bay and the harbours of Cork and Kinsale. Much of the area is mountainous, but the soil is very fertile and the country is noted for its dairy produce. Oats, potatoes and barley are also grown. Cork is the chief town; other places are Fermoy, Youghal, Bandon, Mallow, Skibbereen, Clonakilty, Kinsale and Queenstown (Cobh). The chief rivers are the Lee, the Bandon and the Blackwater. The county is served by the Gt. Southern Rlys. Pop. (1926) 287,257.

Cork Seaport and city of the Irish Free State; also the capital of the province of Munster and of the county of Cork. It stands on the Lee, 11 m. from its entrance into Cork Harbour and on the Gt. Southern Rlys. It is 166 m. from Dublin. The chief buildings are the Anglican and Roman Catholic cathedrals. The city is the market for the produce of a large district and has a considerable import and export trade. The city is well provided with quays. There are several public parks and promenades including the Mardyke. Brewing, distilling and bacon curing are industries and there are some manufactures. The chief paper is *The Cork Examiner*. Race meetings are held regularly. The city's patron saint is S. Finbar. There were serious disturbances in Cork in 1919-20. Pop. (1926) 78,490.

Cork Harbour is 8 m. broad and a mile wide at the entrance. The harbour has docks, dry docks and accommodation for liners at Queenstown (Cobh). Other places on its shores are Passage West and Middleton.

Cork **Earl of.** Irish title held since 1620 by the family of Boyle. Sir Richard Boyle, a Kentish man, was born, Oct. 13, 1566, and educated at Cambridge. About 1590 he went to Ireland, where he bought the estates of Sir Walter Raleigh, chiefly in County Cork. In 1620 he was made an earl, and in 1631 became lord treasurer. He helped to crush the Irish rebellion in 1641-42. He died Sept. 15, 1643.

The title passed later to John Boyle, who was already Earl of Orrery. Since then these two earldoms have been united. The earl's eldest son is called Viscount Dungarvan.

Cormorant Widespread genus of diving birds with all four toes webbed (*Phalacrocorax*). Of the 30 species the black cormorant (*p. corax*) known in Britain and all round the northern hemisphere, is 36 ins. long with 14 tail feathers. The green cormorant or shag (*p. graculus*), is somewhat smaller and has only 12. Cormorants have been trained to catch fish in the Far East from time immemorial, the fish being stored in the throat pouch. This sport was introduced into Europe in the 17th century.

Corn Cereals used as foodstuffs. It has the special significance of wheat in Great Britain and of maize in North America.

CORN LAWS—Laws dealing with the supply of wheat, oats, barley and other cereals. In Great Britain laws were passed early in the 19th century to protect the farmer by placing a duty on imported corn. Later this was arranged on a sliding scale, varying with the price obtained at home. If the price was low the duty was high; if the price rose the duty fell. This policy made bread dear and there was soon an agitation to remove the duties. The Anti-Corn Law League worked for this end, and in 1846 Sir Robert Peel abolished the duties as from 1849. For a further 20 years a small registration duty was charged.

In 1917 a **Corn Protection Act** fixed minimum prices for wheat and oats, this being part of the plan to help agriculture and give the agricultural labourer a minimum wage of 25s. a week. The law was repealed in 1921.

Corn (Latin, *cornu*, a horn.) Thickening of the outer layers of skin which in time press upon the sensitive lower part. It is usually caused by friction and pressure of ill-fitting shoes and can be relieved by salts, hot water, plastering and paring, and cured by removing its cause.

Corn Cockle (*Agrostemma githago.*) Herb of the carnation-pink order. A native of Europe and W. Asia, it is perhaps a quasi-cultivated variety of Anatolian origin. It has been introduced into N. America. Common in British cornfields, it is hairy, with much divided leaves and long-stalked, solitary pale purple flowers with woolly sepals.

Corncrake (*Crex pratensis.*) Bird of the rail family, also called the landrail. Essentially migratory, it spends the summer in the Arctic regions and the winter in Africa. A timid bird, it only flies reluctantly. Its plumage is tawny-brown, and it utters an unmelodious cry.

Corneille **Pièrre.** French dramatist. Born June 6, 1606, in 1629 his play, *Mélite*, was successfully produced in Paris. His greatness was seen in *Le Cid*, 1636, and in the four succeeding dramas, *Horace*, *Cinna*, *Polyeucte* and *La Mort de Pompée*. His comedy, *Le Menteur*, was equally successful. He died in Paris, Oct. 1, 1684. Corneille is regarded as the first of the great French dramatists, preparing the way for Racine and Molière.

Cornelia Name of a celebrated patrician clan in ancient Rome.

Cornelia, the mother of the Gracchi was noted for her devotion to and pride in her sons. She was a daughter of Scipio Africanus. Another Cornelia was a wife of Julius Caesar.

Cornelius Roman centurion of Caesarea. He was received by the Apostle Peter into the Christian Church. A full account is given in Acts x.

Cornell American University at Ithaca, New York, founded in 1865,

and named after Ezra Cornell, one of the chief subscribers. It was opened in 1868 and is for women as well as men. Physical training is compulsory during the first two years of a student's residence, and athletics form an important branch of the curriculum. Cornell has (1932) 6,056 students.

Cornet Brass musical instrument resembling the trumpet. It is fitted with pistons, and pitched in B flat.

Cornet Former rank of the British army. Before 1871 the junior officers of cavalry regiments were known as cornets. The Elder Pitt was in his early days "a cornet of horse." In the infantry the corresponding rank was ensign. The Boers used the word for officers when the Transvaal and Orange Free States were independent.

Cornflour Finely ground Indian corn. It is used with boiling milk and sugar for puddings, cakes and sweet sauces, and for thickening soups, gravies and sauces.

Cornflower Herb of the composite order (*Centaurea cyanus*). As developed by gardeners, it is a showy, hardy annual, with double blue, white, pink, double pink, terra-cotta or purple flowers. It grows to about 2 ft. high.

Cornhill London thoroughfare. It runs from the Poultry to Leadenhall St. In olden times it had a weigh house and a prison, and here was the standard used as a measure of distance. In Cornhill are the churches of S. Michael and S. Peter.

CORNHILL MAGAZINE. A journal founded in 1860 by the publisher, George Smith, whose business was then at 65 Cornhill. Since 1917 it has been owned by John Murray, Ltd.

Cornice Moulded projection crowning or finishing the structure to which it is attached. In classical architecture, it is specifically the uppermost part of the entablature. Gothic cornices sometimes comprise rows of corbels, with or without arched supports to the parapet.

Corn Laws Name given to certain Parliamentary Statutes relating to the importation and exportation of corn. In 1773 Burke first introduced a duty on foreign corn, when the home price became high, and in 1815 corn had to be 80s. per quarter, before foreign corn could be imported, which caused great distress. Peel tried in 1836-1843 to right matters with a sliding scale, but was converted to Free Trade by Cobden and Bright in 1849, and corn laws were abolished. In 1903 a tax of 1s. per quarter was imposed and repealed, and then Chamberlain imposed 2s. with preferential duty for the colonies.

Cornucopia Latin word meaning horn of plenty. The story goes that it was given by Zeus to the goat Amalthaea who had nursed him. It could be filled with whatever its possessor wished.

Cornwall County of England. In the extreme south-west, it is a peninsula, with the sea on three sides. It is 75 m. long and covers 1356 sq. m. Much of it is hilly, the highest point being Brown Willy. The coast, especially on the north, is extremely rugged and in it are many bays and headlands. The former include Plymouth Sound and Mount Bay; the latter the Lizard and Land's End. The Scilly Islands belong to the county, which sends five members to Parliament. The railways are the G.W.R. and the S.R. The rivers, all short, include the Camel, Fowey, Tamar, Looe, Fal and Lynher. Bodmin is the county town and Truro the seat of the bishop. Other towns are Launceston, Redruth and Camborne. Watering places are Falmouth, Penzance, St. Ives and Newquay. The county contains also many small towns which once sent members to Parliament; such are Penryn, Grampound and St. Germans. Herein, too, are Looe, Helston and Newlyn. Tin and china clay are mined, as is some copper. Fishing is another industry. Owing to the mild climate, fruit, flowers and vegetables are extensively grown. The foliage is almost tropical in its beauty and variety.

Cornwall has a distinct life of its own, and at one time had its own language. It is full of traditions of the past and almost every place has its saints and legends. It was the land of King Arthur, and in modern times the scene of the stories of Sir A. Quiller-Couch. There are many remains of early man, as well as castles and ruins of later date at Tintagel, Launceston and elsewhere. As the Duchy of Cornwall, its duke being the heir to the throne, it retains some of its old privileges. Pop. (1931) 317,951.

The county regiment is the Duke of Cornwall's Light Infantry. This was raised in 1702 and has a long and honourable record, notably during the Great War. The regimental depot is at Bodmin where is its war memorial.

Cornwall Town and river port of Ontario. It is 68 m. from Montreal near the rapids of the St. Lawrence which are avoided by the Cornwall canal. It is served by the Canadian Pacific, Canadian National and New York Central Rlys., and from here steamers go along the St. Lawrence and the Great Lakes. Pop. (1931) 11,126.

Cornwall **Barry.** Pseudonym of Bryan Waller Procter, English poet and dramatist. He was born at Leeds, Nov. 21, 1787. In 1821 he produced a tragedy, *Mirandola*, which was performed at Covent Garden. Among his poems are *The Flood of Thessaly* and *English Songs*. He died Oct. 5, 1874.

Cornwall **Duke of.** Title borne by the Prince of Wales. It is given to him when he is made prince, and with it he becomes the owner of large estates in Cornwall, Devon and London. The estates include tin mines and property on and near Dartmoor. The London property is in Kennington and Lambeth. The estates are managed by a council of which the prince is president. In 1926 the revenue amounted to £246,000. The first duke, Edward, the Black Prince, was created in 1337. As duke the Prince appoints the high sheriff of Cornwall. On the accession of Edward VIII. in Jan., 1936, the title became vacant.

Cornwallis **Earl.** English title borne from 1753 to 1852 by the family of Cornwallis. In 1661, Sir F. Cornwallis was made a baron, and in 1753 Charles, the 5th baron, was made an earl. His son, Charles Cornwallis (1738-1805), was the soldier who was forced to surrender with his troops at Yorktown in 1781. From 1786 to 1793 he was Governor-General of India, and from 1798-1801 Lord Lieutenant of Ireland. In each country he put down a dangerous rising. In 1793 he was made a marquess and he had again become Governor-General of India when he died, Oct. 5, 1805. The marquessate became extinct when his son Charles died in 1823. The earldom passed to a kinsman, James Cornwallis (1742-1824) Bishop of Lichfield, and became extinct on his son's death in 1852.

In 1929 Fiennes Stanley Wykeham Cornwallis, a Kentish landowner, was made Baron Cornwallis.

Cornwell John Travers. English sailor. Born in 1899 at East Ham, he went from the Walton Row council school to the naval training school at Devonport. On the cruiser *Chester*, which was engaged at the Battle of Jutland, May 31, 1915, he was sight setter for the gun which was hit by an enemy shell shortly after the battle began, when eight out of the gun crew were killed or wounded. He, too, was wounded, but he stood steadily by his gun at a most exposed post, awaiting orders till the action was over. He was taken to Grimsby Hospital, where he died 24 hours later. Beatty recommended him for the V.C., which was awarded after his death. He is buried in Manor Park Cemetery, London.

Corolla Botanically, the inner protective whorl of floral leaves, or petals. It is polypetalous when these are free, gamopetalous when more or less united into a tube. It may be regular or irregular, two-lipped, or may simulate bells, urns, wheels and salvers. Often brightly coloured, it sometimes closes at night or in rain.

Coromandel Name of the eastern seaboard of India from the Kistna mouth to Point Calimere. It lacks natural harbours, and landing is effected by catamarans (*q.v.*).

Another Coromandel is a town of New Zealand. A gold mining centre, it is on the Thames Peninsula opposite Auckland. Pop. 2000.

Corona Inner appendage to the floral envelope in some flowering plants. In the genus *narcissus* it is a brightly coloured tube protecting the stamens, varying in length according to species. In the daffodil it is trumpet-shaped. In the passion flower order it becomes a membranous tube, or rows of coloured threads.

Corona Silvery aureole enveloping the sun's chromosphere. Imperceptible to the naked eye, except during total eclipses, it is observable spectroscopically at all times. A faintly luminous polar haze expands at the equator to a thickness of 6,000,000 m. or more, gradually fading to invisibility. It is in a state of constant change, and is apparently related to the phenomena of sun spots. Due in part to light reflected from the chromosphere it contains a luminous gas, provisionally called coronium.

Coronation Ceremony of placing the crown on the head of the sovereign. It has been almost universally practised in Christian countries since the end of the Roman Empire. The rulers of the restored Roman Empire were crowned at first by the Pope in Rome; later at Aix la Chapelle. Since the time of the Anglo-Saxons, the English kings have been crowned in Westminster Abbey. Scottish kings were crowned at Scone, Charles II., in 1651, being the last. The ceremony usually takes place about a year after the accession. Seated in the chair of S. Edward, the sovereign takes the coronation oath. The Archbishop of Canterbury places the crown upon his head. He is anointed and is then invested with the robes and emblems of high office. The queen consort, if there is one, is crowned by the Archbishop of York.

The Coronation Stone is a stone placed under the seat of S. Edward's chair. It was used at Cashel at the coronations of the Kings of Munster and later taken to Scone. In 1296 Edward I. took it to Westminster, where it has since remained. Tradition says it is the stone on which Jacob laid his head at Bethel.

Coronel Seaport of Chile, on the Bay of Arauco, 20 m. from Concepcion. Near here, on Nov. 1, 1914, the Germans, under Von Spee, destroyed a small English fleet under Sir C. Cradock. The Germans were much the stronger in gun power. The British lost about 1200 men, and the ships *Good Hope* and *Monmouth*; the German ships were unharmed.

Coroner English official. The conditions relating to the office, a very old one, were revised by the Coroners' Amendment Act of 1926. This requires coroners to be barristers, solicitors or legally qualified medical practitioners of at least five years' standing. The coroner's duties are to inquire into the cause of all deaths occurring in his district from violence, unnatural or unknown causes. If, at the inquest, any one is found guilty of murder or manslaughter, the coroner commits him for trial. Since 1927 he can sit without a jury, except in certain cases.

Coroners were first appointed about 1200, to look after the royal revenues. These duties have now been transferred to others, but they retain the right to inquire into cases of treasure trove. In Scotland similar duties are discharged by the procurator fiscal.

Coronet Minor crown. Coronets are worn by peers and peeresses and those who bear courtesy titles, although in practice these are only seen on ceremonial occasions, such as the opening of Parliament.

Corot **Jean Baptiste.** French artist. Born in Paris, July 16, 1796, he exhibited regularly in the Salon, and in 1867 was made an officer of the Legion of Honour. His landscape paintings rank with those of Hobbema, Claud and Constable. Examples are to be seen in the National Gallery, the Wallace Collection and the Louvre. Corot died Feb. 22, 1875.

Corporal Non-commissioned or warrant officer in the British army and navy. The corporal is next below the sergeant and below him is the lance corporal. He wears two chevrons or stripes on the left sleeve. In the navy the ship's corporal is an assistant to the master-at-arms.

Ecclesiastically, the corporal is a cloth on which the chalice and the bread are placed at Holy Communion.

Corporal Punishment Punishment on the body. Legally this can be given by parents, teachers and others to children, but if the person punished is injured, the parent or teacher can be brought before a magistrate and punished. In most schools for boys, corporal punishment can be inflicted, but only by the headmaster. In the public schools the prefects have the right of inflicting it.

Corporal punishment by means of the cat-o'-nine-tails can be ordered by a judge in cases of offences against women and girls and of robbery with violence. For minor offences, the magistrates can order boys to be birched.

Corporation In English law, a body of persons who enjoy most of the rights of an individual. A corporation is a distinct legal entity, the rights and obligations of which are distinct from those of its separate members. A limited company is, and a single person may be, a corporation, *e.g.*, the Bishop of London, but the name is most

popularly used for the body which is elected by the ratepayers of a city or town, *e.g.*, the corporation of the city of London or of Leeds.

CORPORATION ACT. Act passed in 1661 but not repealed until 1823. By it all members of a municipal corporation, *i.e.*, a town council, must take the sacrament at least once a year in the Church of England.

CORPORATION DUTY. A tax levied in Great Britain on the property of corporations, which, as they never die, cannot pay death duties. It is at the rate of 5 per cent. on the annual income and was introduced in 1885. A tax on the profits of trading companies called the **Corporation Profits Tax**, imposed in 1920, has been abolished.

Corps Body of troops. It is now used specifically to mean an army corps. It is also used in such expressions as corps de ballet, a troupe of dancers, corps of commissionaires, etc.

Corpus Christi Roman Catholic festival in honour of the Holy Sacrament. The fourth Lateran Council, 1215, defined transubstantiation, and shortly afterwards elevation and adoration of the Host were formally enjoined. A festival was introduced at Liége, and Pope Urban IV., in 1264, established it universally for the second Thursday after Pentecost. Henry VIII. expunged it from the English calendar.

There are colleges dedicated to Corpus Christi at both Oxford and Cambridge. The Oxford college was founded by Richard Fox in 1516; the Cambridge college, long called Benet College, in 1352.

Corregio Italian painter. He is called Corregio, or Correggio, from his birthplace, a village in Italy. He spent most of his life at Parma. He died, March 5, 1534. A great colourist and a master of dramatic expression, Corregio's sensitive perception of beauty is specially shown in his graceful treatment of children. He is represented in the National Gallery, London. He painted a wonderful fresco in the cathedral at Parma.

Corrib Lough or lake of Ireland. In County Galway, it touches County Mayo in the north and is 27 m. long and covers 68 sq. m., making it the second largest lake in the country. In it are many islands, and the scenery is beautiful. The waters from Lough Mask flow into it, and two little rivers, one called the Corrib, take them to the sea.

Corrosion Wearing away. In metals it is effected chemically, as by acids, notably the corrosion of iron and the formation of rust in the presence of moist air. Its prevention is attempted by coating with liquid or solid substances, such as paint, varnish, iron oxide, or metal plating, or incorporating other metals, as in rustless steel.

Corrugated Iron Sheet iron, stamped or rolled into parallel ridges and furrows, for increasing resistance to stresses. Such sheets are employed in concrete reinforcement, boiler flues, boat hulls, and, when painted, galvanised or otherwise protected against rust in roof construction, especially in more or less temporary buildings.

Corsair Name applied to the Barbary pirates. They inhabited the north coast of Africa, and made frequent raids on the European shores and Mediterranean shipping.

Corsham Town of Wiltshire. It is 4 m. from Chippenham and 98 from London, on the G.W. Rly. The chief buildings are the church and Corsham Court, the seat of Lord Methuen. Pop. 3940.

Corsica Island of the Mediterranean Sea belonging to France. It is 114 m. long and covers 3367 sq. m., being situated 106 m. from Nice. The Strait of Bonifacio separates it from Sardinia. It is largely mountainous, the highest point being Mt. Cinto (8880 ft.). There are some good harbours. Olives, chestnuts, timber and marble are produced and exported. The people are farmers and fishermen. Ajaccio is the capital; other places are Calvi, Bastia and Bonifacio. The Corsicans were formerly noted for their savage vendettas and lawlessness. The island was sold to France by Genoa in 1768, but in 1793 the French were driven out. The British governed it for two years, but in 1796 it again became French and was made a department. Pop. 305,000.

Corstopitum Roman-British military station in Northumberland. Situated near Corbridge, 3 m. S. of Hadrian's Wall, it was a town of 22 acres, on the Tyne banks. It had road connection with Carlisle, 40 m. to the west. Its remains, much destroyed by quarrying, comprise Britain's second largest Roman building, as well as granaries, potteries, the Corbridge *lanx*, an ornamented silver dish weighing 148 oz., the Corbridge lion, a stone fountain ornament nearly life size, and gold and silver coins.

Cortes Parliament of Spain. Each of the early Spanish kingdoms had its own cortes. In time the cortes became the popular assembly. Aragon and Catalonia kept their own cortes long after the union of Spain under Ferdinand and Isabella.

The Cortes consisted of two houses: senate and congress. In 1923 it was dissolved, its place being taken by a national assembly which has consultative powers only. The Cortes was recalled in 1930, and in 1931 a constituent Cortes was elected to draw up a constitution for the republic.

Cortés Hernando. Spanish adventurer. Born in 1485, he went to the West Indies in 1504 and in 1518 he was sent with a small force to Mexico. He soon had Montezuma, the Aztec ruler, in his power, and with his Indian allies succeeded against tremendous odds in taking Mexico City. He was made Governor-General of the territory, but in 1528 he returned home. In 1530 he was again in Mexico, where he remained for 10 years. After a campaign in Algiers, he died, Dec. 2, 1547. His body was later buried in Mexico City.

Corundum Native alumina (Al_2O_3). Next to the diamond in hardness, this mineral appears in crystals which, tinted by iron and other metals, furnish ruby, sapphire and other gems. Its massive form is emery.

Corunna Town and seaport of Spain. It stands on a peninsula in the extreme north-west. There is an old town with a citadel and a modern quarter. Corunna was once an important naval station. The Armada sailed from here in 1588, and in 1589 the English captured it.

The Battle of Corunna was fought between the English and the French, Jan. 16, 1809. The English forces, under Sir John Moore, were in serious danger, and Moore decided to retreat to Corunna, to which the fleet was sent. There was fighting on the way, and when the

British reached Corunna the sick and wounded were put on the ships, and about 15,000 men took up their positions facing the oncoming French. They beat back the attack of the enemy, and with slight loss were able to sail away unmolested. Sir John Moore was killed and Sir John Hope took command.

Corwen Town of Merionethshire. It stands on the Dee, 12 m. from Bala, and can be reached by both the L.M.S. and G.W. Rlys. Its beautiful surroundings make it a tourist centre and it also attracts fishermen. Pop. 2690.

Corybantes Beings half divine, half demoniac. Originally objects of worship, they later became priests famous for their exhausting and noisy dance.

Cos Island off the coast of Asia Minor. One of the Sporades, it is 25 m. long and covers 115 sq. m. A large amount of fruit is grown. The island became tributary to Turkey, and gave its name to cos lettuce. It is one of the Dodecanese, 12 islands which, with Rhodes, Italy occupied during the Great War and afterwards retained. Cos is the chief town. Pop. 16,000.

Coseley Urban district of Staffordshire. It is only 3 m. from Wolverhampton by the G.W. and L.M.S. Rlys. Its chief industries are coal mines and iron works. Pop. (1931) 25,137.

Cosgrave **William Thomas.** Irish politician. Born in Dublin in 1880, he was educated by the Christian Brothers. In 1909 he was elected to the Corporation of Dublin, and from 1916-22 he was chairman of its finance committee. Having joined the Sinn Fein party, he was elected an M.P. in 1917 and was a member of the provisional government set up in Dublin, being minister for local government. In Aug., 1922, he succeeded Griffith as president of the executive, and when the Free State came into being in Dec., 1922, he was its first political head. He retained his position till 1932, when his party was defeated at the general election.

Cosmetic Substance used to produce, maintain and increase the well-being and beauty of skin, hair and eyes. Miscellaneous mineral and vegetable products, such as oil, wax, chalk, stearin, etc., are used in their making.

Cosmogony Theory of the origin of the world or the cosmos. Some Greeks believed it came from a single element; Thales, for instance, thought it was water. According to Homer the ocean was the origin of all things. More primitive beliefs held that it originated from an animal. The orthodox Christian cosmogony is stated in the Book of Genesis.

Cossack Russian name for a lightly armed horseman. They were formed into a military organisation, and homes were found for them in the district watered by the Don and the Dnieper. Before the Russian Revolution they numbered about 4,000,000. At the Revolution many of them fought against the Soviet authorities.

Costa **Lorenzo.** Italian painter. Born at Ferrara in 1460 he passed most of his early life at Bologna, where he painted a number of frescoes and was associated with the artist Francia. Later in life he settled at Mantua where he died in 1535. His "Madonna and Child Enthroned" is in the National Gallery, London.

Costa Rica Republic of Central America. It lies between the Pacific Ocean and the Caribbean Sea and has an area of 23,000 sq. m., divided into several provinces. San José is the capital and the largest town. The chief products are coffee and bananas; gold and silver are mined. Railways go from the capital to Port Limon on the Caribbean and Punta Arenas on the Pacific. The unit of currency is the gold colon, worth about 1s. 10d. Spanish is the usual language. Pop. (1932), 527,690.

Costa Rica, once part of Spanish America, became independent in 1821. It is governed by a president assisted by seven secretaries of state and a chamber of 43 deputies elected by all adult males for four years. The standing army is limited by treaty with neighbouring states to 1000 men.

Costermonger Street vendor of fruit, vegetables and fish. The word comes from costard apple in which he traded. The costermonger sells from a barrow and must take out a hawker's licence, which costs £2 a year. The full dress of the London costermonger includes bell-bottomed trousers, lavishly trimmed with pearl buttons.

Costing System of accounting, the main object of which is to ascertain the cost per unit of output in commercial organisations. A typical product of modern business efficiency methods, it aims at producing concise comparative statements of the cost of raw material, labour and general expenses of production and the relative share of each in the total cost.

Cost of Living Phrase used to show the amount of money necessary to provide a family with the means of subsistence. Obviously it varies enormously in different countries and among different classes, but some attempts have been made to arrive at a general figure.

In England in 1904 a careful calculation was made. The average family was assumed as one of 5,6 persons. The amount of food required was reckoned in calories and was different for men, women and children. Recreations and all in the nature of luxuries were excluded. From that time until 1914 there was a slight rise in the cost of living, and then came the changes caused by the Great War. Prices rose rapidly, and in 1918 a committee made a fresh examination of the subject.

This took three typical families: one that of a skilled worker, the second that of a semi-skilled one, and the third that of an unskilled one. The following figures show the cost of living of such families in 1914 and 1918.

	1914	1916.
Skilled	40 3 ..	82 4
Semi-skilled	41 8 ..	73 0
Unskilled	36 4 ..	65 10
Average	44 4 ..	75 5

This figure provides for food, rent, light, fuel and clothing, as well as something for fares, insurances and sundries.

Meanwhile, civil servants and other classes of workers had secured additions of pay in the form of bonuses to meet the extra cost of living, and it was necessary to find a basis for calculating the extent of this. This was done by the Board of Trade and later the Ministry of Labour, by means of index figures. Here the requirements of an average working class family were taken as the basis. The cost of living in 1914 was fixed at 100 and increases

over that figure were calculated each month and expressed in percentages. The results are :

	Highest.	Lowest.
1919	190 ..	105
1920	176 ..	125
1921	165 ..	99
1922	92 ..	78
1923	78 ..	69
1924	81 ..	69
1925	80 ..	72
1926	79 ..	67
1927	68 ..	64
1928	68 ..	64
1929	67 ..	60
1930	66 ..	54
1931	53 ..	45

This means that in 1926, for instance, the cost of living at its highest was 79 per cent. greater than it was in 1914.

Costs Legal term applied to the expenses incurred in employing a solicitor or barrister, and to the expenses of conducting a legal action. The costs of solicitors are mainly fixed by law or by a scale settled by the authorities. A bill of costs can be taxed, *i.e.*, sent to an official at the law courts called a taxing master, who will disallow any amount which seems excessive. In a legal action the winner can only obtain party and party costs ; he must himself pay what are called solicitor and client costs.

Costume External dress. In its fullest sense it includes any ornament or embellishment attached to or hung upon the person. Clothing, originating in the waist-girdle and the neck-girdle, developed from age to age innumerable variants, traceable to climatic influence, utilisation of new materials, conventions emphasising social classes, or the urge for individual distinction.

National costume, the external dress characterising a people or community, often lingers after neighbouring communities have passed on to other styles, such as the normal 17th century elements preserved by the Breton and Balearic peasantry. Ecclesiastical costume was at first a mere perpetuation of the ordinary Roman dress of the first two Christian centuries, assimilated in part for liturgical purposes with that of the Jewish priesthood, itself traditional. Similar conservative tendencies produced other types of professional costume, such as legal wigs and bands, academic hoods and caps, court breeches and swords, heraldic tabards, and naval and military uniforms.

Cosway **Richard.** English miniature painter. Born at Tiverton, Devon, in 1742, he studied art in London and became famous for his miniatures. In 1770 he was elected A.R.A. and the next year R.A. He died July 4, 1821. Cosway was, perhaps, the finest miniature painter of the 18th century ; his miniatures of Madame du Barri and Mrs. Parsons show his work at its best.

Cotentin Peninsula in the north of France. It juts out into the English Channel and is a flat, marshy area famed for its cattle. Cherbourg is the largest place on it, but Coutances is the capital.

Cotillon Dance introduced into England from France. Derived from a peasant dance, branles, danced by ladies in short skirts, it was of an elaborate nature ; numerous figures were invented for it and many toys, tapers and similar accessories used.

Cotman **John Sell.** English artist, born at Norwich, May 16, 1782. Long a drawing master in Norwich, in 1834 he was chosen Professor of Drawing at King's College, London. Notable for his skill in draughtsmanship and painting, especially in water colours, he illustrated several volumes of etched plates of buildings in Norfolk and Normandy. He died in London, July 24, 1842.

Cotman's two sons were both artists. Miles Edmund Cotman (1810-58) succeeded his father at King's College. The other was Joseph John Cotman (1814-78).

Cotoneaster Genus of rosaceous shrubs or trees. Of the twenty species, widespread in temperate Europe, the Himalayas and Mexico, several are favourite border or wall shrubs. The spineless *C. vulgaris* with leathery leaves, velvety beneath, pink flowers and glistening red fruits, formerly grew wild on cliffs at Great Orme's Head, Wales.

Cotopaxi Volcano of the Andes, in the N. of Ecuador. There is always snow on the summit and this melts during eruptions, causing severe floods. The highest of the active volcanoes of the world, it attains 19,612 ft.

Cotswold Hills Range of hills. They are chiefly in Gloucestershire, but extend into Worcestershire and Warwickshire. They run for about 50 m. from the Worcestershire border, right through Gloucestershire, almost to the Avon. At one time the district was famed for its wool and in the picturesque little towns and villages are buildings that serve as reminders of the wealth brought by this trade. The Thames rises in the Cotswolds, which are drained also by the Evenlode, Churn, Coln and Windrush. Some of the hills are over 1000 ft. high and the district is one of great beauty, notable scenes being the village of Bilney, Minchinhampton Common and Chipping Campden (*q.v.*).

Cottenham Town of Cambridgeshire. It is 6 m. from Cambridge in a district where much fruit is grown. Here the Ministry of Agriculture has established a station for grading and packing apples. Pop. 2400.

The title of **Earl of Cottenham** has been held since 1850 by the family of Pepys. The first earl, Sir Charles Christopher Pepys, was Lord Chancellor in the Liberal ministries of 1836-41 and 1846-50. He died April 29, 1851. The earl's eldest son is called Viscount Crowhurst.

Cotter Occupier of a cottage and small plot of land. In English manors the cotters ranked economically below the villeins, sometimes working for them, sometimes serving as shepherds or beekeepers. Domesday Book numbers 7000 scattered over southern England. In 19th-century Ireland cotter tenures were defined as those not exceeding half an acre.

In engineering, **cotters** are wedge-shaped wood or metal pins for tightening joints, fixing wheels to axles or fastening button shanks.

Cottesloe **Baron.** English title borne by the family of Fremantle. Thomas Francis Fremantle (1798-1890) was a son of Sir T. F. Fremantle, an admiral. He was a Tory M.P., 1827-46, and from 1846 to 1873 was Chairman of the Board of Customs. In 1874 he was made a baron. His son, Thomas Francis Fremantle (1830-1918), who became the 2nd baron, was an M.P. from 1876 to 1885. He was long chairman of the London, Brighton and South Coast Rly.

Cottesmore Village of Rutland. It is 4 m. from Oakham and

gives its name to a famous English hunt. This was started in the 17th century and now hunts a district in the counties of Leicester and Rutland. It has a long connection with the earls of Lonsdale, and at least three of the earls have been masters.

Cottingham Urban district of Yorkshire (E.R.), 4 m. from Hull, on the L.N.E. Rly. Cottingham, once a market town, is now practically a suburb of Hull. Pop. (1931) 6182.

Cotton White fibrous material clothing the seeds of tropical shrubs of the mallow order (*Gossypium*). Generally bushy plants from 3 to 6 ft. high, their capsular bolls comprise compartments containing from seven to nine seeds each. The outer seed coat bears one-celled, flattened, twisted tubular hairs.

Cultivated in pre-Christian times, cotton grows anywhere between 43° N. and 33° S.

Separated from the seed by ginning, the lint, weighing about one-third, is compressed hydraulically into bales averaging 500 lb., and as such reaches the cotton mills for conversion into yarn. The seed, weighing twice its cotton clothing, contains valuable oil, expressed as an olive oil substitute, or ground into meal for cattle food or fertiliser. The unspinnable fibres, pure cellulose, become paper. Cotton pests include boll weevils, boll worms and fungoid diseases.

The spinning and weaving of cotton has long been the staple industry of Lancashire, which provided much of the cotton materials for the whole world. Of late, however, it has met with severe competition, especially from India, Japan and other parts of the East.

The world's cotton is grown chiefly in the southern states of the U.S.A. The world's output is some 27,748,000 bales, of which 14,514,000 come from the States. It is grown, too, in Egypt, and also in the Sudan, E. Africa and other parts of the British Empire, and there is a British Empire Cotton Growing Association to foster this production. For its manufacture Great Britain has 57,000,000 spindles; the rest of the world over 100,000,000. In England the industry possesses strong trade unions of employed and equally strong associations of employers.

Cotton **Charles.** English poet. A Staffordshire man, he was born April 28, 1630, and became a soldier. His interests are proved by his *Planters' Manual of Fruit Trees*, 1675, and his supplement on trout fishing to *The Compleat Angler* of his friend Walton. He is famed for his translation of Montaigne. He died Feb., 1687.

Cotton Cake Foodstuff for cattle. It is obtained by compressing cotton seeds after the expression of their oil. That made from decorticated seeds, from which the hulls have been removed, is rich in nitrogenous substances, fat and carbohydrates. American cotton cake is usually ground into cotton seed meal. Qualities containing much waste fibre serve for manure.

Cotton Grass (*Eriophorum*). Genus of perennial, sedge-like herbs. Of about 12 species, spread over the north temperate regions, the common and the sheathing cotton sedges grow in bogs throughout Great Britain. The former bears tufts of white bristles which can be spun into thread and also used for stuffing pillows.

Cotton Wool Purified product of the cotton plant. Hairs of the cotton plant, when cleansed and prepared in masses, form a fleecy wool of great absorbency and softness. Sterilised cotton wool is valuable in surgery.

Couch Grass Perennial grass with stout, creeping root-stock (*Agropyrum repens*). With stems growing to 4 ft. high, it is a troublesome weed on arable land. Introduced into N. America it sometimes serves there for forage. The root contains sugar. It somewhat resembles wheat and is also called quitch grass. A maritime ally, *A. junceum*, is a useful binder on sand dunes.

Coué **Emile.** French chemist. Born at Troyes, Feb. 26, 1857, he became a chemist there. He devoted much time to studying how to cure illnesses by suggestion, his fundamental idea being that, if the patient believes himself to be getting better from an illness, he has taken an important step towards that end. Coué's ideas met with a good deal of success, and in 1910 he moved to Nancy, where he opened a clinic for their practice. He died at Nancy, July 2, 1926.

Cougar English spelling of Buffon's name for the American lion, *Felis concolor*. It is now usually known as the puma.

Cough A persistent cough should never be neglected, but its cause should be sought and treated. It may be an indication of serious ailments, such as bronchitis, tuberculosis, pneumonia, etc. A cough from "cold on the chest" may be loosened by hot lemon drinks, ipecacuanha, etc. A throat cough will be soothed by glycerine and honey, but the throat condition itself should be seen to. (*See under* THROAT).

Patent cough mixtures should never be given to children nor to sufferers from indigestion.

COUGHING OF BLOOD.—When bright red, frothy blood is coughed up in mouthfuls, consumption, heart disease, or laceration of the lungs from fractured ribs is indicated.

Treatment.—Send for the doctor at once, and keep the patient on his side with the upper part of the body raised; maintain the utmost quiet; allow no talking; keep the windows open; give small pieces of ice to suck; loosen the collar, and place an ice-bag on the chest with a thin layer of flannel beneath. Give no stimulants, but try to reassure the patient as much as possible.

Coulomb **Charles Augustin De.** French physicist. Born at Angoulême, 1736, he became a soldier, entering the engineers. In 1785 he published the result of his researches describing the torsion balance for verifying electrical and magnetic laws. He was appointed to revise the system of weights and measures at the Revolution and in 1802 he became an inspector of education. He died August 23, 1806.

His name is preserved in the **coulomb**, the unit used in describing quantities of electricity and equal to one tenth of the absolute electromagnetic unit.

Coulsdon Village of Surrey. It is 15 m. from London, on the S. Rly. Near are Farthing Down and Cane Hill with its asylum. Coulsdon is part of the urban district of Purley.

Council (Latin *consilium*, consultation and counsel; and *concilium*, effective action). Assemblies of persons selected to advise. A sovereign is advised by privy councils and cabinet councils. Associated with local government are county, city,

borough, district and parish councils; with education, the hebdomadal council at Oxford, the council of legal education, the medical council and many others. The word was used during and after the Great War for international meetings such as the supreme war council and the council of ambassadors. Today important councils are the council of the League of Nations and the Council of India.

Ecclesiastical councils for regulating matters of doctrine and discipline were held at Nicaea (325), Trent (1545-63), the Vatican (1869-70) and elsewhere. The free churches have councils on which all the bodies are represented.

Councillor Originally an alternative form of counsellor, one who gives counsel or advice. The use of the word has become restricted to the members of a town, county or district council elected by the ratepayers.

Coundon Town of Durham. It is 2 m. from Bishop Auckland, on the L.N.E. Rly. The chief industry is coal mining. Pop. 6900.

Counsel Word used in England for a barrister when acting for a client. King's counsel are barristers who enjoy special privileges.

Counsellor Variant of the word councillor. Counsellors of state are appointed to carry on the government during the illness or absence of the sovereign. In Dec., 1929, when King George V. was seriously ill, six counsellors of state were appointed to act for him. They were the Queen, the Prince of Wales, the Duke of York, the Archbishop of Canterbury, the Prime Minister and the Lord Chancellor.

Count Title of nobility. Its Roman and early French use was for a companion or officer of a king. It was then used for large landholders and survives in the form comte in France and Italy. In Great Britain its equivalent is earl and in Germany graf. The wife of an earl is called a countess and the district over which he once ruled a county.

Counter In the sense of reckoning a round medallion used formerly in computation, now for keeping count in games. Tables for counting money or displaying and handing over goods are counters; so are apparatus recording revolutions or piston strokes in cotton factories, mining pumps or motor cars.

Counterpoint Art of adding one or more, independently interesting, to a given melodic part. Such added part is also styled a counterpoint to the given melody, which is called the *canto fermo*. Strict counterpoint requires the melodies to be combined without the use of unprepared discords.

Countersign Word, phrase or signal. Previously communicated to military guards as the password to be demanded of persons approaching legitimately, it is used to distinguish them from intruders or foes. In some armies the countersign is the sentry's response to the password.

Countess Title in the British peerage. Most of its holders are the wives of earls, but some are countesses in their own right. By customary law a Scottish earldom descends to a daughter if there are no sons; an English one only does so if such is laid down in the patent. In 1932 there were six countesses in their own right. *See* EARL.

Counting House Formerly the name of the department of a business house where the money taken and disbursed was counted in or counted out. It survives as the title of the department which keeps the ledgers.

Count-out Parliamentary term. Meetings of the House of Commons or of committees of the house need a quorum of 40. The speaker or chairman may at any time, on request, count the numbers of those present. Two minutes are allowed for additional members to assemble; if the second count reveals no quorum the sitting is adjourned.

Country Club Modern development of club life. They originated in the U.S.A. and since the Great War several have been opened in England. They usually possess a golf course and facilities for tennis and other outdoor games. *See* CLUB.

Counts Term denoting in textile yarns and sewing thread the relation of weight to length. British cotton counts show the number of 840-yd. hanks per lb., as marked on sewing thread reels. Weaving yarns from American and Egyptian cotton range normally from 32s.-46s. and 42s.-62s. respectively. Yorkshire woollen yarns count yds. per oz., elsewhere drams per 1000-yd. skein. Metric counts of fibre yarns and spun silk reckon on a metre-gramme unit; raw and thrown silk on weight in half-decigrammes of 450-metre skeins.

County Division of a country for purposes of local government. It means the country of a count, or, in France, of a comte. The old English word is shire. England was divided into counties after the Norman Conquest and soon there were 40. Wales, Scotland and Ireland were divided later and the word was taken to the United States, Canada and other parts of the Empire. Wales has 12 counties, Scotland 33, and Ireland 32. Some counties, called counties palatine, had special privileges, Durham and Cheshire, for example.

County Council Body of persons established in every administrative county of England, Wales and Scotland by the Local Government Acts of 1888 and 1889. Each consists of councillors elected by the ratepayers who hold office for three years and of aldermen elected by the councillors for six years.

They are empowered to levy rates and to make by-laws. They have charge of education and main roads, and in 1930 they took over the duties formerly discharged by the Board of Guardians. County councils were set up in Ireland by an Act of 1898.

County Court In England and Wales a court of law for the trial of civil cases. County courts have nothing to do with the counties. In 1846 England and Wales, outside London, was divided into districts and in each of these a number of county courts were set up. A judge was appointed for each. He holds sittings in various towns in his district and hears cases in which £100, or less, is at stake. Most of them are cases of debt. He can also hear chancery cases in which the amount is not more than £500, and the examination and discharge of bankrupts is under his control.

For each court there is a registrar who hears minor cases, and a high bailiff to supervise the serving of writs, etc. The circuits are num-

bered and the judges are appointed by the Lord Chancellor. There is an appeal from their decisions to the high court. There are county courts in Northern Ireland.

Coupar Angus Burgh of Perthshire. It is on the River Isla, 16 m. from Perth, on the L.N.E. Rly. It is a centre for visiting the beautiful district on the borders of Perthshire and Angus. Pop. (1931) 1883.

Coup d'Etat Sudden change of government forcibly effected by ruler, army or populace. French examples occurred when Napoleon I. suppressed the Directory, Nov. 9, 1799, and Louis Napoleon, Prince-President, broke up the National Assembly, Dec. 2, 1851. Similar changes have characterised modern revolutions in Brazil, Germany, Portugal, Russia, Serbia, Spain and Spanish America.

Couperus **Louis Marie Anne.** Dutch novelist. Born at The Hague, Jan. 10, 1863, he made his reputation with a novel, *Eline Vere*. Other works followed, the titles under which they have been translated into English being *The Footsteps of Fate*, *The Mountain of Light*, *The Comedian* and, more important, the four books published as *Old People and the Things that Pass*, 1919. He died July 16, 1923.

Couplet Two lines of verse, rhymed together and expressing a complete thought, as

Rebellion in this land shall lose his sway
Meeting the check of such another day.

Elizabethan dramatists often used the couplet to secure a pointed finish to a long period of blank verse. Dryden and Pope composed excellent couplets.

Courcelette Village of France. It is on the road from Bapaume to Albert and was the scene of fierce fighting during the latter stages of the Battle of the Somme. On Sept. 16, 1916, the Canadian troops attacked and took it. It was lost in March, 1918, when the Germans advanced, and not recovered until the following August. There is a memorial here to the Canadian dead.

Courier Messenger sent to carry and fetch letters or despatches. Postal services were organised by the Persian King Cyrus in the 6th century, B.C. Augustus and Charlemagne made similar arrangements. Royal and diplomatic messages are conveyed by special couriers, called in Great Britain king's or foreign office messengers. Professional attendants who conduct tourists are called couriers.

Courland District of Latvia. It covers 10,435 sq. m. and its capital is Mitau. It has a coastline on the Gulf of Riga and here are its ports, Windau, Libau and others. Agriculture and fishing are the chief occupations. At the Reformation it began to be ruled by dukes, subject to the kings of Poland. This lasted until 1795, when Russia seized the land. In 1906 a revolt broke out.

Coursing Pursuit of hares by greyhounds. It is a very ancient pastime and a popular one in England. In each event two dogs, each held by a man called a slipper, compete against one another. When released they pursue the hare and earn points according to their skill in catching and killing it. A modern development is the use of the electric hare.

There are many coursing clubs, notably that named after Altcar, in Lancashire, where the Waterloo Cup is decided every year. The controlling body in England is the National Coursing Club. Scotland has a club and there are similar bodies in Australia, New Zealand and elsewhere. The pedigrees of the dogs are in the greyhound stud book. *See* GREYHOUND RACING.

Court Word originally meaning a house, especially the king's house. It came to mean his followers and, as he was the nation's judge, was used for the place where law cases were tried. The court means the king and queen and their attendants, and so it is described as being wherever they are residing. Courts are ceremonies held by the king and queen several times during the London season. At these men and women are presented, and this is the accepted way of entering society. Each person must be presented by someone already presented and all must be approved by the Lord Chamberlain.

There are several kinds of law courts. The Supreme Court of the United States, the High Court of England, the Court of Session of Scotland, as well as county courts, police courts, courts of record, and others. Parliament is the High Court of Parliament. The Court of Arches is an ecclesiastical court.

Courtauld English family. Its founder was George Courtauld, an American who began business as a silk thrower at Braintree in Essex. The business grew under the direction of his son Samuel and the firm of S. Courtauld and Co. became known as manufacturers of crepe. Samuel Courtauld died March 21, 1881, and his descendants have since controlled the business. In the 20th century the firm added artificial silk to its activities, and soon became much the largest producer in the country. Known as Courtauld's Ltd., it became a limited company in 1913, and has factories in Manchester, Coventry, Braintree and elsewhere, as well as large interests in the United States and other foreign countries.

Court Circular Term used for the official record of the daily doings of the king and the other members of the royal family. It is prepared by a member of the staff of the lord chamberlain's department and is issued to the press every evening. In *The Times* and other papers it appears at the head of the social news.

Courtenay Name of a famous family. Of French origin, it took its name from the town of this name. A son of Louis VI. married the heiress of the Courtenays, and from them descended **Peter of Courtenay** and other rulers of the Latin Empire of Constantinople. Another branch of the Courtenays settled in England, and one of them married a daughter of the Earl of Devon. A later one, **Hugh Courtenay**, became Earl of Devon in 1335. The title is still held by the family, although before its revival in 1831 it was unused for nearly 300 years. More than once the Courtenays married into the royal family. **William Courtenay**, a son of the 2nd Earl of Devon, was made Bishop of Hereford in 1370, Bishop of London in 1375 and Archbishop of Canterbury in 1381. He died July 31, 1396.

Courtesy Politeness, civility, consideration for the feelings of others, and literally behaviour suitable for a court.

COURTESY TITLES are titles which are only used by courtesy, not by right, by members of the families of peers. Their holders are not peers, nor do they sit in the House of Lords. The eldest son of a duke bears by courtesy his father's second title, and the eldest son of a marquess likewise bears his father's second title, earl or viscount, as the case may be. Thus, the eldest son of the Duke of Marlborough is the Marquess of Blandford. The other sons and the daughters of a duke or marquess are known as lord or lady before the Christian name and family surname. The eldest son of an earl bears his father's second title viscount or baron, and the daughters use the word lady before the name. The younger sons of earls, viscounts and barons and the daughters of viscounts and barons use the word Hon. (honourable) before the Christian name.

Court Martial Court for trying soldiers, sailors and airmen, both officers and men, for offences incidental to their profession. A court is composed of officers and the procedure is much more direct than in the civil courts. There is no jury and no appeal from the decisions. Military courts martial are either regimental, district or general. Officers can only be tried by a general court martial, which can inflict sentence of death. The others deal with minor offences. The accused can be represented by an officer or a barrister; the prosecution is usually entrusted to another officer. In the army courts martial are controlled by the Judge Advocate-General; in the navy by the Judge Advocate of the Fleet; the former also acts for the air force.

Courtrai Town of Belgium. It is situated on the Lys, 26 m. from Ghent. It has some buildings reminiscent of the time when it was one of the country's great industrial centres. These include the Hotel de Ville, the belfry and the bridge across the river with two massive towers. S. Margaret's, S. Michael's and Notre Dame are the chief churches. The town has some textile manufactures. Pop. (1931) 38,979.

The **Battle of Courtrai** was fought July 11, 1302. The Flemings defeated the French Army and after the battle collected the spurs of the dead knights, 700 in number, and hung them in the church.

Cousin Relative who is the son or daughter of an uncle or aunt. Such are called first cousins. Second cousins are the children of first cousins. Cousins once removed are the sons or daughters of a cousin. At one time cousin was used in a general sense for any relative more distant than a brother or sister.

Coutts **Thomas.** British banker. Born Sept. 7, 1735, he became wealthy and was elected Lord Provost of Edinburgh. He went to London and worked for a goldsmith. Later he became a partner and the firm became known as Coutts and Co. Thomas Coutts married Harriot Mellon, the actress. She inherited his great wealth and from her it passed to the Baroness Burdett-Coutts. He died Feb. 24, 1822.

Covenant Mutual compact. Agreements, sometimes made binding by ritual oaths, occur in the Bible between men or nations, and between God and His chosen people, the Old and New Covenants being called in English and other versions the Old and New Testaments. The National Covenant of 1581 maintaining the Presbyterian doctrine and the Solemn League and Covenant, 1643, concern the Scottish Covenanters. In the Treaty of Versailles, 1919, the covenant created the League of Nations.

In English law convenants are agreements under seal between two or more covenanters, such as a covenant to keep a house in repair or to refrain from starting in business within a certain area. Verbal stipulations are not legal covenants; no action for breach lies.

Covenanters Name given in Scotland to those who signed the National Covenant to uphold the Presbyterian religion in 1581, and the Solemn League and Covenant of 1643. In 1660, when the Established Church was restored, many of the Covenanters refused to accept its authority and formed congregations of their own. These are the Covenanters of history. Their meetings were broken up by soldiers and there was something like civil war in Galloway, their stronghold. Directed by John Graham of Claverhouse, the harrying of the Covenanters continued until the fall of the Stuarts in 1688. Galloway is full of memories and stories of the Covenanters.

Covent Garden District of London. It lies north of the Strand and east of Trafalgar Square. In olden times it was the convent garden, the convent being the Abbey of Westminster. After the monasteries were dissolved it was given to the Earl of Bedford, and the Russells retained it until 1913, when the Duke of Bedford sold it.

The principal building on the estate is the market, the chief London market for fruit and vegetables. It was opened in 1661. Near is Covent Garden Theatre, the leading English opera house. Twice burned down, the existing building dates from 1858.

Coventry City and market town of Warwickshire. It is 94 m. from London on the L.M.S. Rly. From the 12th century to 1661 it had a bishop. The bishopric was refounded in 1918. The city is associated with Lady Godiva. To **send a person to Coventry,** or to ignore him, refers to the harsh way in which prisoners here were treated by the Parliamentarians during the Civil War. In the 14th century Coventry was one of the richest places in England, and several parliaments were held here; after a period of decline it became in the 19th century a busy manufacturing centre. Motor-cars, cycles, sewing machines, watches and artificial silk are among its products and there are engineering works and dyeworks.

The chief buildings are the three old churches, called the three spires, S. Michael's, now the cathedral, S. John's and Holy Trinity. The Guildhall is an interesting old building; the Council House is a modern one. Ford's, Bond's and Bablake's are three old hospitals, and two gates are remains of the city's fortifications. Pop. (1931) 167,046.

Coventry **Earl of.** English title borne by the family of Coventry since 1697. In 1628 **Sir Thomas Coventry,** the Lord Keeper, was made a baron. The title passed to his descendants, and in 1697 the 5th baron was made an earl. In 1797 the title passed to another branch of the family, and in 1843 it came to **George William Coventry** (1838-1930) as the 9th earl. He held the title until his death in March, 1930. The earl's seat is Croome Court, Worcester. His eldest son is called Viscount Deerhurst.

Coverdale **Miles.** English divine. Born in Yorkshire, he was ordained in 1514 and joined a religious order in Cambridge. He became a Lutheran and went abroad, where he worked at translating the Bible into English. This was printed in Zürich and was the first English translation. Coverdale then superintended the printing of another translation in Paris and London, and was largely responsible for both the English Bibles associated with the name of Cranmer. He died in Feb. 1568.

Coverley **Sir Roger de.** Fictitious character created by Richard Steele. He belonged to the club professing to write the *Spectator*, which appeared every weekday for 515 days in 1711-12. Steele contributed 231 and Joseph Addison 274 numbers. Addison developed the character into an amiable English gentleman. The name denotes also a country dance.

Cowal Mountainous district in Argyllshire, Scotland. Bounded by Loch Long and the Firth of Clyde and by Loch Fyne, it is 40 m. long and 14 m. broad, and encloses Lochs Esk and Goil. It is a favourite holiday resort, containing the town of Dunoon.

Coward **Noel.** British dramatist. Born at Teddington, Dec. 16, 1899, he was educated privately. In 1910 he first appeared on the stage. Later he began to write and in a few years was regarded as one of the foremost of English dramatists. Among his plays are *The Young Idea, Easy Virtue, Home Chat, Sirocco, Bitter Sweet, Cavalcade, Words and Music* and *Theatre Royal.*

Cowbane Perennial umbelliferous herb. With a poisonous rootstock it is native to the northern hemisphere. The European *Cicuta virosa*, common in watery places in Britain, has stout, furrowed stems, much divided leaves and compound many-rayed umbels with minute white flowers. The American *C. maculata* is the spotted cowbane. It is also called the water hemlock.

Cowberry Evergreen shrub of the natural order *Ericaceae*. It is a native of N. Europe, N. America and N. Africa. Its stems are wiry and twisted with leathery leaves and pink bell-shaped flowers. Its berries are red and acid in flavour.

Cow Bird American bird which lives on insects, particularly parasites found on cows. Its habits resemble those of the cuckoo. The females, who are far outnumbered by the males, lay their eggs in other birds' nests.

Cowbit Village of Lincolnshire. It is 3 m. from Spalding and has an old church, S. Mary's. Near is Cowbit Wash, a stretch of fenland, about 10 m. long and a mile wide. During the winter it is usually frozen over and races for the skating championships take place on it.

Cowbridge Borough and market town of Glamorganshire. An old town, it stands on the River Thaw, 12 m. from Cardiff and 169 m. from London on the G.W. Rly. Pop. (1931) 1018.

Cow Catcher Triangular frame shaped like a wedge and attached to railway locomotives to remove animals and other obstacles from the track.

Cowdenbeath Burgh of Fifeshire. It is 23 m. from Edinburgh on the L.M.S. Rly. Coal mining is the chief industry. Pop. (1931) 12,731.

Cowdray **Viscount.** English title borne by the family of Pearson. Weetman Dickinson Pearson was born July 15, 1856, and entered business at an early age. He was soon at the head of the firm of S. Pearson & Son, which undertook large contracts in England and S. America. He was Liberal M.P. for Colchester, 1895-1910, being made a baron on his retirement. He had been a baronet since 1894. In 1917, when he was chairman of the air board, he was made a Viscount. He died May 1, 1927.

Cowdray was succeeded as 2nd viscount by his son Weetman Harold Miller Pearson (1882-1933), who had been Liberal M.P. for the Eye division of Suffolk, 1906-18. The third viscount, son of the last-named, succeeded in 1933.

Cowen **Joseph.** English journalist and politician. Born July 9, 1831, at Blaydon-on-Tyne, in 1874 he succeeded his father as M.P. for Newcastle. He combined advanced democratic opinions with a belief in a strong foreign policy and was soon at variance with the radicals. In 1886 he left Parliament, editing the papers he had founded or acquired, the *Northern Tribune* and the *Newcastle Chronicle*, until his death on Feb. 18, 1900.

Cowen **Sir Frederic Hymen.** English conductor and composer. He was born at Kingston, Jamaica, Jan. 28, 1852, and came to England at the age of four. He studied music in London and Leipzig. The success of his first symphony and piano concerto in London in 1869 began his career as a prolific and popular composer. Cowen has composed music of every kind and has conducted the principal British orchestras. He was knighted in 1911. He died Oct. 6, 1935.

Cowes Seaport and urban district of the Isle of Wight. It stands on the Medina River, which divides it into two parts, East and West, and is on the S. Rly. It is 92 m. from London and has regular steamer services with Portsmouth. Cowes is the headquarters of the Royal Yacht Squadron and its regatta, held every August, is the chief event in the yachting world. Its industries include shipbuilding, and it has become a centre of the aircraft industry. Pop. (1931) 10,179.

East Cowes is a separate urban district. Pop. (1931) 4595.

Cowl Monastic garment fastened behind the neck and capable of being drawn over the head or thrown back. The term also denotes chimney coverings turning with the wind to regulate the smoke, the coverings of soil pipes and ventilating shafts and aero-engine metal casings.

Cowley District of Oxford. It is separated by Cowley Marsh from the villages of Church Cowley and Temple Cowley, which are outside the city. Here are the extensive motor works erected by Sir W. R. Morris. An interesting building is the Chapel of S. Bartholomew's Hospital, once a home for lepers.

The **COWLEY FATHERS**, or the Society of S. John the Evangelist, is a missionary order in the Church of England. Founded in 1865, its headquarters are at Cowley, its London house at 22 Great College St., Westminster, and it has branches abroad.

Cowley **Abraham.** English poet and essayist. Born in 1618 in London, he was educated at Westminster School and Trinity College, Cambridge. In 1656 he became a doctor of medicine. He died at

wrote *Poetical Blossoms*. In 1647 he published his love poems, *The Mistress*, and in 1656 his *Pindaric Odes*. His treatise, *A Proposition for the Advancement of Experimental Philosophy*, led to the formation of the Royal Society.

Cow Parsnip (*Heracleum*). Biennial or perennial herb of the umbelliferous order. It is native to the north temperate zone. The British species, *H. sphondylium*, has stout, hollow stems, with broadly sheathed stalks to the leaves. Large compound umbels bear white or pink flowers and round, flattened seeds.

Cowper Earl. English title borne from 1718 to 1905 by the family of Cowper. The founder of the family was Sir William Cowper, a Kentish baronet, whose son, another William Cowper, became an M.P. and in 1705 was made Lord Keeper. In 1706 he was created a baron, and in 1707 he became the first Lord Chancellor of Great Britain. He remained in office until 1710 and was again Lord Chancellor, 1714-18. In 1718 he was made an earl and he died Oct. 10, 1723.

The 5th earl married a daughter of Lord Melbourne. He died in 1837 and his widow married Lord Palmerston. The earl left two sons; the elder became the 6th earl and the younger was the politician, W. F. Cowper-Temple. Francis Thomas, the 7th earl, was Lord Lieutenant of Ireland, 1880-82. The earldom became extinct on his death, but his baronies passed to his nephew, Auberon T. Herbert, who became Baron Lucas and inherited his seat, Panshanger, in Hertfordshire.

Cowper William. English poet. He was born at Great Berkhampsted, Nov. 15, 1731, he became a barrister. For a time (1763-65) he was an inmate of an asylum at St. Albans, and his recovery was never complete. He lived at Huntingdon with the Unwin family and then at Olney, where he became intimate with Rev. John Newton. Later he received a pension from the State and his last years were passed at Weston and East Dereham, where he died April 25, 1800.

Cowper's literary work began with the hymns he wrote with Newton. Mrs. Unwin persuaded him to write poems to occupy his tormented mind and a volume of them appeared in 1782. Another friend, Lady Austen, told him the story of John Gilpin, the subject of one of his most popular poems, and influenced him to write his greatest work, *The Task*. Nearly all his poems are marked by deep religious feeling and in them is a genuine love of nature.

Cowper Temple Clause

Clause in the Education Act of 1870. It permitted parents to withdraw their children from school during religious instruction, if they wished to do so. It was named after W. F. Cowper-Temple, later Lord Mount-Temple.

Cowry Shell of a univalve mollusc of the family *Cypraeidae*. There are about 200 species. One (*cypaera moneta*) is abundant in the Indian and Pacific Oceans and is used for money and decoration in parts of Asia and Africa. The cowry was an object of veneration in the Aegean Islands, about 2000 B.C., and then used in trading. It was used for the same purpose in China.

Cowslip Perennial herb of the primrose order (*Primula veris*). It is native to Europe and W. Asia, and is widespread in Britain, but rare in Scotland. It bears stalked umbels of drooping flowers with buff-yellow funnel-shaped corolla, and is thus distinguished from the yellow primrose; an intermediate form is called the oxlip.

Cox David. English painter. Born in Birmingham, April 29, 1783, he began his career by painting scenes for the theatres. He died June 7, 1859. Cox painted both in oils and water colours, and some of his best works were done when on tour in N. Wales. He produced a great number of sketches and some are in the Victoria and Albert Museum, London.

Coyote N. American prairie wolf (*canis latrans*). Ranging from Canada to Guatemala, it is smaller than the gray or timber wolf, with a hairier coat and a bushier tail. Its length averages 40 in. It burrows in the plains, hunting jack rabbits and chipmunks.

Coypu S. American aquatic rodent (*myopotamus coypus*). It is one of the largest members of the order, being about 2 ft. long. Its stiff, harsh fur is now used under the name nutria for women's fur garments.

Crab Popular name for all stalk-eyed, ten-footed, short-tailed crustaceans. They are distinguished from the long-tailed sub-order, such as lobsters, by having the abdomen, or tail, tucked under the thorax. The first pair of limbs have pincer-like claws; the others have joints permitting progression sideways. The common European edible crab is *Cancer pagurus*; the American Atlantic blue crab, *Callinectes hastatus*, is called the soft-shelled crab when moulting. Hermit crabs live in discarded molluscan shells, sometimes in the tropics, far inland.

Crab Apple Small tree of the rose order. A native of Europe and W. Asia (*Pyrus malus*), its few pink-tinged white flowers bear yellow fruit, acrid in taste, but used in jellies and preserves. It is an ancestor of the cultivated varieties of apple.

Crabbe George. English poet. Born at Aldeburgh, Dec. 24, 1754, he took up surgery, but abandoned it. With the publication of *The Library*, 1781, Crabbe's worst days were over. He was ordained and became chaplain to the Duke of Rutland at Belvoir. In 1783 he married his old love, Sarah Elmy. Leaving Belvoir in 1785, he held various livings, and in 1813 became Rector of Trowbridge. There he died Feb. 3, 1832.

Besides *The Library* Crabbe's poems include *The Village*, 1783; *The Newspaper*, 1785; *Tales*, 1812; and *Tales of the Hall*, 1819. They show his sympathy with poverty and want, as well as his love of nature.

Cracow Former republic of Europe. It was created in 1815 and consisted of the city of Cracow and its suburbs. The Poles, for whom it was made, regarded it as too small and after two risings it was suppressed in 1846. It then became, as it had been before 1815, part of Austria.

Cracow City of Poland. It stands on the Vistula, 186 m. from Warsaw, and is a railway junction. It has many interesting buildings, some dating from the time when it was the country's capital. Among these are the cathedral, where the kings were crowned, and the castle, now a national museum. The cloth hall is one of several museums. The university dates from 1364.

Cracow was the capital of Poland from about 1300 to 1610. From 1846 to 1918 it was an Austrian city, as it had been from the partition of Poland to 1815. Owing to its situation it has long been a fortress, and since

1919 the Poles have made it a military centre. It was attacked by the Russians in Dec., 1914, but the attack failed. Pop. (1931) 221,260.

Cradley Heath District of Staffordshire. It is in the Black Country, 121 m. from London and 10 from Birmingham, on the G.W. Rly. The making of chains is the principal industry. Pop. 10,400.

Cradock Town of Cape Province, S. Africa. It stands on the Fish River, 180 m. by railway from Port Elizabeth. It is a business centre and has a town hall, and several churches, as well as a hospital, training college and public park. Pop. 7000.

Cradock **Sir Christopher George Francis Maurice.** British sailor. A Yorkshireman, he was born July 2, 1862, and entered the navy in 1876. He was in the Sudan in 1881 and with the naval brigade in China in 1900. He was knighted in 1912. When the Great War broke out he was sent with a small squadron to S. American waters. On Nov. 1, 1914, this was destroyed by the Germans and Cradock was among the killed, going down in his flagship, the *Good Hope*.

Craig **Edward Gordon.** English actor. A son of Ellen Terry, he was born Jan. 16, 1872, and educated at Bradfield College and in Germany. He acted under Henry Irving and then became a producer and made his reputation by improving the stage and its scenery. In 1913 he made his home in Florence where he founded a school for studying the art of the theatre, and issued a paper *The Mask*. His ideas are set out in *The Art of the Theatre*, 1905 and 1911; *Towards a New Theatre*, 1913; *The Theatre Advancing*, 1921; *Scene*, 1923; and *A Production*, 1930. His *Life of Irving* appeared in 1930, and his tribute to *Ellen Terry—the Actress and the Mother* in 1932.

Craigavon **Viscount.** Irish statesman. Born Jan. 8, 1871, James Craig had a successful business career in Belfast before becoming a Unionist M.P. in 1906. He served in the S. African War and the Great War. In 1916 he was made Treasurer of the Household; in 1919 Secretary to the Ministry of Pensions; in 1920, Financial Secretary to the Admiralty. He left British politics to lead the Ulster Unionists and in 1921 became the first prime minister of N. Ireland. Made a baronet in 1918 and a viscount in 1927, he was still Prime Minister in 1936.

Craigmyle **Baron.** Scottish lawyer and politician. Thomas Shaw was born at Dunfermline, May 23, 1850, and after a distinguished career at the University of Edinburgh became an advocate. In 1892 he entered the House of Commons as Liberal M.P. for the Hawick district, and in 1894-95 he was Solicitor-General for Scotland. In 1905 he was made Lord Advocate, but in 1909 he left politics to become a Lord of Appeal and a life peer as Lord Shaw of Dunfermline. He retired in 1929 when he was made an ordinary peer as Baron Craigmyle, the name of his Aberdeenshire home. His writings include *Letters to Isabel: Darnley A Historie:* and *Leicester: A Historie* (1931).

His son, Alexander Shaw (born 1883), was in Parliament as a Liberal from 1915 to 1923. He then became prominent in the shipping world, becoming a director of the P. and O., and in 1927 President of the Chamber of Shipping. He is also a director of the Bank of England. In 1932 he succeeded his father-in-law, the Earl of Inchcape, as head of the P. and O.

Craik **Mrs.** English novelist. Dinah Maria Mulock was born at Stoke-on-Trent, April 29, 1826. After writing various stories for children, she published her first novel, *The Ogilvies*, in 1849. This was followed by others, including *Olive*, *The Head of the Family*, and *Agatha's Husband*, but the publication of *John Halifax, Gentleman*, in 1856, established her reputation. Other writings included *Sermons out of Church*, essays, juvenile fiction, and a collection of poems. In 1864 she became the wife of Mr. G. L. Craik, a partner in the publishing firm of Macmillan and Co. She died at Shortlands, Kent, Oct. 12, 1887.

Crake Various species of short-billed stout-bodied birds of the rail family. The spotted crake, *Porzana porzana*, breeds throughout Britain, laying red-spotted greenish-brown eggs in nests among the reeds. Two other species, the **Little Crake** and **Baillon's Crake**, are rare stragglers from N. Africa, where all crakes winter. *See* CORNCRAKE.

Cramlington Urban district of Northumberland. It is 10 m. from Newcastle on the L.N.E. Rly. Coal mining is the chief industry. The Newcastle Aero Club has an aerodrome here. Pop. (1931) 8238.

Cramp Painful spasmodic muscular contraction. Usually occurring in the legs, it is caused by stomachic derangement, rheumatism, cold, fatigue and pregnancy.

Stretch the muscles affected as much as possible in a contrary direction, and rub the part vigorously with the hand or with a rough towel. If this fails, apply external heat as well. Sufferers from cramp should be very careful when sea-bathing, as a sudden attack is often dangerous to life. Since the condition is usually of rheumatic origin, exposure to damp and chill should be avoided.

For long it was believed that cramp could be cured by touching a cramp ring, a ring which had been blessed by the king. Edward the Confessor had such a ring. It was brought from Jerusalem and was given by him to the Abbot of Westminster. Each Good Friday, until Mary's reign, the English sovereigns blessed and distributed cramp rings to the people.

Cran Measure by which herrings are sold. It consists of 37½ imperial gallons and usually about 750 fish. It is the usual measure in Scotland, and must be used in those ports in England and Wales to which the Cran Measures Act of 1908 applies.

Cranberry (*Oxycoccus*). Genus of creeping evergreen shrubs of the heath order. They are native to the north temperate regions. The European *O. palustris*, common in British peat bogs, has rose-coloured flowers bearing dark-red berries; they are exported from Sweden. The larger American *O. macrocarpus*, cultivated in Massachusetts and New Jersey, is exported to Great Britain and Europe.

Cranborne Village of Dorset. In the north of the county, it is 37 m. from Dorchester. There is a fine old church. The manor house is the property of the Marquess of Salisbury, whose eldest son is called Viscount Cranborne.

Cranborne Chase, which has now disappeared, was at one time one of the largest forests in England.

Cranbrook Town of Kent. It stands on the Cran, 45 m. from London, on the S. Rly. There is a fine parish church with a detached baptistery and an old grammar school. At one time Cranbrook was a centre of the cloth manufacture, and there is in the town an old building called the cloth hall. Pop. (1931), 3829.

The title of **Earl of Cranbrook** has been borne since 1892 by the family of Gathorne-Hardy. Gathorne-Hardy (1814-1906), son of a wealthy ironmaster, entered Parliament as a Conservative in 1856. He was Home Secretary in 1867; Secretary for War, 1874-78; Secretary for India, 1878-80; and Lord President of the Council 1885 and 1886-92. In 1878 he was made a viscount, and in 1892 an earl. He died Oct. 30, 1906, and was succeeded by his son. In 1915 the title came to John David Gathorne-Hardy as 4th earl.

Crane Family of birds. They are found everywhere except in S. America. With long necks and short tails, they utter trumpeting calls in flight and at rest. The European *grus cinerea* was formerly bred in England, but is now a rarity. The white crane winters in India. Two African species are crested. The birds appear to walk on stilts, so long and slender are their legs.

Crane Machine for lifting weights. They are rotary, non-rotary, fixed or locomotive, and may be actuated by hand or worked by steam, hydraulic, pneumatic or electric power. They may comprise jibs movable on central pivots, depositing weights at any point within range. Bridge cranes, or horizontal girders bearing travelling carriages, are supported on wheeled trucks.

Crane **Walter.** English artist. Born in Liverpool, Aug. 15, 1845, he was the son of Thomas Crane, a portrait painter. He studied art and made his name by the illustrations, imaginative in a distinctive way, which he drew for books. Some of these were written by himself, one being *The Baby's Opera.* He also painted, and his "Renascence of Art" is in the Tate Gallery, London. A skilled craftsman, Crane became associated with William Morris, designed decorations for the Kelmscott Press and helped to found the Arts and Crafts Society. In 1892 he was made Art Director at the Manchester, and in 1898 principal of the Royal College of Art at South Kensington. In later life he became an active Socialist, and he died at Horsham, March 14, 1915.

Crane's Bill Popular name of eleven species of *geranium.* Natives of Britain, they are distributed throughout the north temperate regions. They are distinguishable from the *pelargonium* in having regular flowers and no spurred sepals, and from the three British species of stork's-bill, *erodium,* in having ten, instead of five, fertile stamens.

Craniometry Measurement of skulls, especially in man and anthropoid apes. In conjunction with other parts of the skeleton, craniometric statistics are important for studying ancient and modern racial types and relationships, as well as the comparative anatomy of anthropoids.

Crank In mechanics, a bent or vertical arm attached to or projecting from an axis for changing rectilinear, reciprocating motion into rotary motion.

Cranleigh Town of Surrey. It is 36 m. from London on the S. Rly. There is a public school for 360 boys, founded in 1863; also an old church. Pop. 3750.

Cranmer **Thomas.** English prelate. Born at Aslockton, Nottinghamshire, July 2, 1489, he was educated at Jesus College, Cambridge. In 1509 he attracted the notice of Henry VIII. by suggesting that the case of his marriage with Catherine should be referred to the universities of Europe. In 1533 he was made Archbishop of Canterbury. He did all that the king required in securing his successive divorces and marriages, and in rejecting the authority of the Pope; at the same time he was instrumental in the burning of heretics and in introducing into England the ideas of the reformers.

During the reign of Edward VI. Cranmer introduced the two prayer books and made other changes. With Mary's accession in 1553 his power ended. He had favoured the cause of Lady Jane Grey, but his hostile attitude towards the queen's mother was also remembered. He was accused of treason, sentenced to death and burned, March 21, 1556.

Cranmere Pool Small sheet of water in the centre of Dartmoor. Reputed to be the loneliest spot in England, it can be reached from Chagford. In dry seasons it almost disappears. The River Dart rises here.

Cranwell Village of Lincolnshire. It is 4 m. from Sleaford and has an old and interesting church. During the Great War there was an aerodrome here, and the cadet college of the Royal Air Force was founded here in 1920.

Crape (French *crêpe,* from Latin *crispus,* curling). Silk gauzy fabric of crimped appearance. The soft Oriental crape, either white or coloured, is used for trimmings and shawls. It is made of raw silk (silk in the gum) with a twisted weft. When boiled the gum is freed and the weft untwists. This gives the wave or crimp.

Crashaw **Richard.** English poet. Born about 1613, he was educated at Charterhouse and Cambridge. He went to France, became a Roman Catholic and died in 1649. Crashaw wrote poems both in Latin and English, the latter in a volume called *Steps to the Temple.*

Crassus **Marcus Licinius.** Roman general and statesman. He was surnamed Dives, from the wealth acquired by Sulla's favour and the proscriptions. He was consul with Pompey, and in 60, with him and Caesar, he formed the so-called first triumvirate. In 54 B.C. he obtained the province of Syria, and was appointed to conduct a campaign against the Parthians. In 53 he was completely defeated in Mesopotamia by the Parthian generals, and treacherously murdered.

Crater Basin-shaped orifice of a volcanic duct. It is so called because of its resemblance to a cup. Through it erupted material reaches the surface. In some instances ancient craters have been filled with water, forming crater lakes. That of the dormant Mexican Popocatepetl, 17,900 ft. high, is 2000 ft. by 1300 ft., and 1700 ft. deep.

Cratinus Athenian comic poet. His vigorous satire, directed against Pericles and others, founded a new poetical style. Of 21 comedies attributed to him he gained the prize for nine. *The Wine Flask* was regarded as superior to *The Clouds* of Aristophanes. Cratinus lived in the 5th century B.C., dying in 423, when 97.

Cravat Kind of neckerchief worn by men. In the 17th century Louis XIV. of France had a regiment of cravats in his service. These men wore scarves of a peculiar shape. These scarves, made of linen or muslin, became fashionable in France and then in England. Later the word was used for any kind of neckerchief.

Craven District of Yorkshire. In the West Riding, it is a moorland area around Skipton, where there is a Craven Museum. The Craven Hunt is in Berkshire.

The title of **Earl of Craven** has been borne since 1633, except during the years 1697 to 1801, by the family of Craven. **Sir William Craven** won some reputation by the services he rendered to Elizabeth, Queen of Bohemia, the daughter of James I. In 1633 he was made an earl, but the title became extinct on his death, April 9, 1697. The barony, however, created in 1627, passed to a relation. In 1801 William, the 7th baron, was made an earl. The earl's seat is Coombe Abbey, Warwickshire, and his eldest son is called Viscount Uffington.

Elizabeth, wife of the 6th Baron Craven, was a lady of note. Born in 1750, a daughter of the Earl of Berkeley, she married Lord Craven in 1767, and after his death a German margrave. She wrote some plays and acted in one or two of them. She died at Naples, Jan. 13, 1828, leaving some *Memoirs*.

Craven Arms Village of Shropshire. It is 182 m. from London. The lines of the L.M.S. and G.W. Rlys. meet here.

Crawford **Earl of.** Scottish title borne by the family of Lindsay. Sir David Lindsay, who married a daughter of Robert II., was made earl in 1398. Most of the first 22 earls took some part, often a prominent one, in the affairs of Scotland. In 1808 on the death of the 22nd earl, the title was unused for 40 years, but in 1848 it was given by the House of Lords to James Lindsay, Earl of Balcarres, a title dating from 1651. He and his successors have been known as Earls of Crawford and Balcarres.

In 1913 David Alexander Lindsay became 27th Earl of Crawford and 9th Earl of Balcarres. As Lord Balcarres he had been a Unionist M.P. since 1895, and between then and 1922 he was Lord Privy Seal, Chancellor of the Duchy, First Commissioner of Works and Minister of Transport. He is known also as a writer on art. The earl ranks as the premier earl of Scotland. His seat is Haigh Hall, Wigan, and his eldest son is called Lord Balniel.

Crawford **Francis Marion.** American novelist. Born in Italy, Aug. 2, 1854, the son of an American sculptor, Thomas Crawford (1814-57), he was educated at Concord, Cambridge and Heidelberg. His first novel was *Mr. Isaacs*, 1882, and other successes were: *A Roman Singer*, 1884; *Saracinesca*, 1887; *Marzio's Crucifix*, 1887; *A Cigarette Maker's Romance*, 1890; *The Ralstones*, 1895; and *The Heart of Rome*, 1903. He died at Sorrento April 9, 1909.

Crawley Town of Sussex. It is 7 m. from Horsham and 31 from London on the S. Rly. It is a noted stopping place on the road from London to Brighton and its inn, the George, is one of the most famous in England. Pop. 4400.

Another Crawley is a village of Hampshire. It is 5 m. from Winchester and is famous as the original of the Queen's Crawley of *Vanity Fair*. Crawley Court is the principal residence. There is an old church and the Dower House is a picturesque building.

Cray River of Kent. A tributary of the Darent, it is 8 m. long. It gives its name to a series of Kentish villages, now residential suburbs of London. They are Foots Cray, St. Paul Cray, and St. Mary Cray.

Crayfish Name of several long-tailed freshwater crustaceans allied to lobsters. Those of the northern and southern hemispheres represent different families. The British *astacus pallipes* is long, greenish-brown above and yellowish-brown beneath. They are night feeders, burrowing under stone during the day. The larger *A. fluviatilis*, extending from France to Russia, is the most esteemed for the table.

Crayford Town of Kent. It stands on the Cray, 16 m. from London, on the S. Rly. There is a beautiful old church. Here in 457 Hengist and Horsa defeated the Britons in a battle in which Horsa was slain. Pop. 6200.

Cream Rich surface of milk which has been allowed to stand for a time. Its chief constituents are water and butter fat. It can be raised by standing the milk in shallow vessels, or by the use of separators. It abounds in vitamins and is therefore highly nutritious.

DEVONSHIRE CREAM, or clotted cream, is prepared in a special way, so as to cause the fat to rise quickly and completely. It may contain as much as 75 per cent. of fat, but has much less sugar than ordinary cream, making it suitable for sufferers from diabetes.

In 1929 an Act was passed making it necessary to mark artificial cream when offered for sale in order that it should not be confused with natural cream. In 1931 the courts decided that the fillings of cakes, not made from dairy cream, may lawfully be described as cream, as to such foods the Act does not apply.

Cream of Tartar Acid tartrate of potassium. It is expressed by the formula $KHC_4H_4O_6$. A deposit of argol, it is used in the manufacture of ginger beer and baking powder.

Creasy **Sir Edward Shepherd.** English historian. Born at Bexleyheath, Oct. 12, 1812, he was educated at Eton and King's College, Cambridge. In 1839 he became a barrister and in 1840 Professor of Modern History in the University of London. He died Jan. 27, 1878. Creasy is known by his book, *Fifteen Decisive Battles of the World*, first published in 1851.

Crêche Institution where working mothers and others may leave little children. The first crêche was instituted in Paris in 1844 and was so successful in checking infantile mortality and disease that other towns, German, English, and French, established similar nurseries. Some are conducted by local authorities, others by churches and philanthropic agencies.

Crécy Village of France, in the department of Somme 12 m. from Abbeville. The wooded district called the Forest of Crécy is famous for the battle fought on Aug. 26, 1346, between the English and the French. Edward III., and his son, the Black Prince, were attacked by the French, whose repeated assaults failed. The losses were heavy, but the exact totals are unknown. The story of the fight is told by Froissart.

Credence (Lat. *credentia*, a sideboard). In churches a small table placed near the altar. It is used for the vessels

that hold the water and other accessories for use at the celebration of the Mass or Holy Communion.

Credit Generally, a reliance on the truth or good faith of a statement or deed. Commercially the word is applied to the time given for payment of money owed, and its use has widened to connote that system of borrowing and lending which depends upon the lender's faith in the borrower's honesty, and is the basis of modern commerce. Credit functions chiefly through the use of credit instruments, *e.g.*, cheques, bills and notes, which pass from hand to hand for value, and facilitate trade.

Credit banks are banks which exist to advance money to suitable clients, often on the security of agricultural produce.

Crediton Market town and urban district of Devonshire. It stands on the Creedy, 8 m. from Exeter and 179 from London, on the S. Rly. For a short time in the 11th century it was the seat of a bishop, and it now gives its name to a suffragan bishop in the Diocese of Exeter. Pop. (1931) 3490.

Cree Canadian-Indian tribe of Algonkin stock. Formerly ranging the forests of Athabasca, and the prairies of Saskatchewan, they are now peaceable fur traders, with much white admixture, especially in Saskatchewan. They number under 18,000.

Creed Concise expression of a religious faith. The chief creed of Christendom is the Apostles' Creed, which is accepted by the Roman, Greek and Anglican Churches. The Nicene, also accepted by some churches, is an elaboration of the Apostles' Creed. Both are in the Anglican Prayer Book and the Apostles' Creed is said at both morning and evening prayer. The Athanasian Creed, less generally accepted, but also in the Prayer Book, was the work of S. Athanasius.

Crefeld Town of Germany. It stands near the Rhine, 32 m. from Cologne. Its importance dates from the 17th century, when religious persecution drove to it Calvinists from Berg and Julich who introduced the manufacture of linen. With the introduction from Holland of the silk industry in the next century, the town rapidly became prosperous, and it is now famous for its silk and velvet manufactures. It also produces a great quantity of engineering products and chemicals. Crefeld is an important railway junction. Pop. (1930) 159,000.

Creighton **Mandell.** English prelate. Born at Carlisle, July 5, 1843, he was educated at Durham School and at Merton College, Oxford. After working as a tutor at Oxford, he became, in 1875, Vicar of Embleton, Northumberland, and there he began to write his *History of the Papacy*. In 1885 he went to Cambridge as Professor of Ecclesiastical History, and in 1886 he became editor of the *English Historical Review*. In 1891 Creighton was made Bishop of Peterborough, and in 1897 was transferred to London. He remained there until his death, Jan. 14, 1901. Creighton was one of the most prominent prelates of the day. His fame rests, however, upon his *History of the Papacy* during the Reformation and afterwards, altogether eleven volumes, his *Queen Elizabeth* and other writings. His *Life and Letters* appeared in 1904.

Cremation Burning of human corpses as an alternative to burial. It was practised by many ancient peoples in Asia and Europe, but was forbidden by the Christian Church owing to the belief in the resurrection of the body. In the 19th century it was revived in Europe, and in 1874 a cremation society was formed in England. Sir Henry Thompson did a good deal to discover a satisfactory method of disposing of dead bodies, and in 1885 the first cremation took place at Woking. Before a body can be cremated, two medical certificates must be obtained and other formalities complied with.

CREMATORIA, or places for burning the bodies, have been erected at Woking, Golder's Green, Ilford, Norwood, Manchester, Leicester, Ipswich, Glasgow, Sheffield, Leeds, Hull and other places. There are many crematoria in Germany, the United States and other countries. About 40,000 bodies have been cremated in Great Britain. Attached to a crematorium is a colombarium where the ashes, having been placed in urns, are kept.

Cremona City of Italy. It stands on the Po, 55 m. from Milan, and is famous for its cathedral which has beautiful internal decoration, and a marble front. Near are the baptistery and a bell tower, nearly 400 ft. high. Some of the city's fortifications still stand. Pop. (1931), 60,634.

Cremona was the home of the great violin makers, Amati and Stradivarius, and violins made here are sometimes called cremonas.

Cremorne Gardens Former London pleasure resort. It was at Chelsea and was named after Viscount Cremorne who owned it. In 1845 it was sold and made a public resort, which it remained until 1877.

Creole Term used in the W. Indies and the neighbouring mainland for the descendants of white immigrants, who have been born in the country, but not for immigrants themselves. Creoles are chiefly of French, British, Spanish or Portuguese descent, and are found in the W. Indies, Louisiana, Mexico and elsewhere. In some places the descendants of negroes are called Creoles.

Creosote Product derived from the distillation of wood, coal, and shale. The wood tar creosote of commerce is obtained from beechwood. Its principal constituents are guaicol and creosol. Wood tar creosote is medicinally useful in bronchial complaints and for the relief of toothache.

Creosote Oil, used to preserve timber, is that part of coal tar distillate which boils between 200° and 300° C.

Crescent The waxing or waning moon. The popularity of the crescent as a symbol, as on Bronze Age personal ornaments, arose partly from lunar association, partly from its resemblance to the cow's horns. Byzantium adopted the symbol and the Turks used it as a rival emblem to the cross.

Crescograph Apparatus devised by Sir J. C. Bose for recording electrically the response of living matter to various kinds of stimuli. It has been used by him for displaying upon a screen, by enormously magnifying small movements, the growth of plant tissues, besides showing the effect of manures in stimulating or retarding growth.

Cress Name denoting various salad vegetables of the cruciferous order. Of garden cress, *lepidium sativum*, introduced from Persia, only the seed leaves are eaten, usually with those of white mustard. Curled or

Normandy cress is *barbarea praecox*; water cress is *nasturtium officinale*; rock cress is *arabis*.

Cresset (Old French *carisse*, grease). Cage or bowl of iron containing inflammable burning material. It is either stationary or mounted on a pole for purposes of illumination. It is used by watchmen, on docks and in fogs, and in the making of beacons.

Crest (Latin *crista*, a plume or tuft). Comb of a bird; the feather, cone or top of a helmet, or the helmet itself. Hence by association crest means the top of anything. A heraldic crest is a device to show identity, worn on a knight's helmet. In armorial bearings it is placed on a wreath above the helmet and shield. It is also used as a seal.

Cresta Run Artificial snow-covered track at St. Moritz, Switzerland. Constructed in 1884, it is reconditioned annually for winter sports. About 1350 yds. long, its steeper curves are banked up. Steel bobsleighs and skeletons are used on it and it is a famous sporting track.

Creswell Crags Caves in Derbyshire, famous for their antiquarian remains. They are about 9 m. from Chesterfield. In them implements used by primitive man and some of his drawings have been found. Excavations here were begun in 1924, and in 1930-31 important remains of early man were found in the Pin Hole cave.

Creswick Town of Victoria, Australia, 10 m. from Ballarat and 96 from Melbourne. It is the centre of an agricultural and mining district. Pop. 2400.

Cretaceous Geological system of rocks forming the uppermost of the Mesozoic division, and so called from its most important member, the chalk formation. These rocks are divided into two sections, the Upper and Lower Cretaceous. The lower series, or Neocomian, consists of the Wealden, a group of sands and clays, and the Lower Greensand of yellow, grey or greenish sands with ironstone bands. The Upper Cretaceous consists of the gault, a stiff blue clay, the upper greensand and the chalk.

Crete Island of the Mediterranean, also called Candia. At the south end of the Aegean Sea it covers 3120 sq. m. It is long and narrow, being 165 m. in length, and the interior is mountainous, Ida being one of its peaks. In the valleys fruit is grown and cattle are reared. Candia, the capital, and Canea, both on the north coast, are the chief towns. Suda Bay is the best harbour.

Crete is famous as the home of one of the oldest and most elaborate of the world's civilisations. Earlier than 2000 B.C. the people were living in a state of order and comfort, and had attained a high degree of artistic achievement. Cretan civilisation is called Minoan, after Minos, one of the kings, and is usually divided into three periods—early (3000 to 2200 B.C.), middle (2200 B.C. to 1600 B.C.), and late (1600 to 1100 B.C.). The chief centre of this Cretan civilisation was Cnossus, and here, as elsewhere, much excavating work has been done since about 1900.

This civilisation declined when the cities of Greece rose to importance. Later Crete formed part of the Roman Empire and then belonged to Venice; in 1669 it was taken by the Turks, who retained it until 1913, when it was given to Greece. This was the result of a long struggle against Turkish misrule. The people speak a Greek dialect. Pop. 336,000.

Cretinism Chronic disease affecting mental and physical development in childhood. It is due to absent, imperfectly developed, or diseased thyroid gland, including the enlarged condition producing goitre. The result is stunted growth, mental capacity inferior to that of normal young children, and life seldom exceeding 30 years. Good results have attended treatment with thyroid gland extracts and iodine salts.

Creusot Town of France, also called Le Creusot. It is 55 m. from Dijon, on a rich coalfield and near the Canal du Centre. Great armament works were established here by Adolphe and Eugène Schneider in 1836 and they provided the French armies with much material in the Crimean, Franco-Prussian and especially the Great War. The original ironworks have developed into works for producing arms and armaments of all kinds, for the navy as well as for the army, as well as motor cars, locomotives and machinery for electrical and engineering plants. Pop. 30,000.

Crevasse Fissure or crack. In glaciers deep chasms may form in the ice-substance when traversing uneven beds. The open top may be concealed by ice or snow bridges; mountain climbers should always be roped to at least one companion when traversing glaciers.

Crewe Borough and market town of Cheshire. It is 158 m. from London, on the L.M.S. Rly. The chief buildings are the town hall, school of art, technical school and several churches. The modern Crewe Hall, formerly a seat of the Marquess of Crewe, is near. Here are the great railway repair shops and locomotive works of the London Midland and Scottish Railway, on which system Crewe is an important junction. Pop. (1931) 46,061.

Crewe **Marquess of.** English title borne by the politician and diplomatist, Robert Offley Ashburton Crewe-Milnes. Born in London, Jan. 12, 1856, the son of Lord Houghton, he was educated at Harrow and Trinity College, Cambridge. In 1885 he became Lord Houghton and as a Liberal was Lord Lieutenant of Ireland, 1892-95, when he was made Earl of Crewe. In 1905 he became Lord President of the Council, and in 1908 leader of the Government in the House of Lords. From 1908-10 he was Colonial Secretary and from 1910-15 Indian Secretary; in 1915-16 he was again Lord President, but he left office in Dec., 1916. In 1917 he was chairman of the London County Council and from 1922-28 ambassador in Paris. In 1911 he was made a marquess and he married, as his second wife, Lord Rosebery's younger daughter. His eldest son is the Earl of Madeley. Lord Crewe, a graceful writer and something of a poet, wrote the biography of his father-in-law.

Crewkerne Market town and urban district of Somerset, 7 m. from Yeovil, on the S. Rly. The chief buildings are the beautiful church and the old grammar school. Pop. (1931) 3509.

Cribb **Tom.** English pugilist. Born July 8, 1781, he settled in London in 1794 and soon became a noted fighter. In a series of fights he beat James Belcher and other leading pugilists and in 1809 won the championship of England. He kept the title until his death at Woolwich, May 11, 1848.

Cribbage Card game which may be played by two or more people.

Five or six cards are dealt to each player, two from each hand being set aside for the crib. The object is to make pairs, fifteens, sequences, or thirty-one. The cards are laid down one at a time face upwards and when thirty-one has been reached, or all the cards laid down, the hands are counted, and scores are marked by means of pegs in holes on a board.

Criccieth Urban district and watering place of Caernarvonshire, beautifully situated on an opening off Cardigan Bay, with the mountains behind it. It is 4 m. from Tremadoc. Pop. (1931) 1449.

Crichton **James.** Scholar, known as the Admirable Crichton. The son of Robert Crichton, Lord Advocate of Scotland, he was born Aug. 19, 1560. He had great powers as a linguist, much ability as a verse writer, and a prodigious memory. His life was mainly spent in France, where he served in the army and in Italy. His scholarship was proved by his arguments on philosophy and kindred matters. In Paris he is said to have argued in twelve languages. He was killed in a street brawl at Mantua, July 3, 1582.

Cricket Family of leaping orthopterous insects allied to grasshoppers. The male chirps by rubbing together the two outer wings, the hearing organs being in the legs. British species are the house cricket, *Gryllus domesticus*; field cricket, *G. campestris*; the tiny wood cricket, *Nemobius sylvestris*; and the mole cricket, *Gryllotalpa vulgaris*, with forelegs adapted for burrowing.

Cricket Outdoor game popular in England, Australia and elsewhere. It is usually played by teams of eleven a side. The implements are bat, ball and wickets, or stumps. The wickets, three together, are pitched opposite each other and 22 yds. apart. Each is defended by a batsman. Engaged in trying to get these batsmen out are the eleven members of the other side.

The aim of the batsman is to keep the bowler from hitting his wicket and to hit the ball so that he can run to the other wicket once or more while it is being chased, or to hit it to the boundary and score an agreed number of runs for the hit. He can be out by hitting the ball to a fieldsman who catches it before it has touched the ground, or allowing the bowler to hit his wicket with it. He can also be stumped or run out, *i.e.*, by being out of his ground, which is marked by a line of whitewash, when the wicket is hit with the ball. He can also be out for stopping the ball with his legs if the umpire thinks he has broken the rules in so doing.

A batsman stays at the wicket until out. The bowler bowls six balls and then gives way to another bowler who bowls from the other end. The six balls are called an over; if no runs are scored off them it is a maiden over. In Australia eight balls to an over is the rule. The ten players who are not bowling are fielding, standing in various positions. One is the wicket keeper. He stands behind the wicket to stop balls missed by the batsman and so prevent him from making runs, called byes.

Matches are decided by the number of runs scored. It may be the number in a single innings, or it may be the total of two innings. In club and school cricket it is usually the former; in test matches and county cricket, where the matches take three days, it is the latter.

The chief matches are the test matches and those for the county championship. The test matches, five in number, are played every two or three years between England and Australia in the two countries alternately. Matches with S. Africa are also called test matches. The ashes, as the imaginary trophy contested for by England and Australia is called, were won by England in Australia in 1928-29 and recovered by Australia in England in 1930.

County cricket is played by teams representing most of the English counties. Seventeen counties, including one in Wales, Glamorganshire, are first class and these contend for the county championship, which is awarded to the one gaining the most points. A new method of awarding points was introduced in 1930, 15 points being given for a win. There is also a championship for the second class counties. Professionals take a large part in the game and every year matches are played between teams of amateurs, or gentlemen, and professionals. Cricket is played by clubs all over the country, at the universities, by every boys' school, and since the war by an increasing number of girls' schools. The governing body of the game is the Marylebone Cricket Club, called the M.C.C. W. G. Grace is the greatest name in the history of cricket, but J. B. Hobbs has beaten some of his records. Other great names are Alfred Mynn, Ranjitsinhji, C. B. Fry, T. Hayward, W. Rhodes, G. Hirst and among bowlers Alfred Shaw, S. F. Barnes and C. Blythe, but many others, including the Australians, Trumper and Noble, are equally noteworthy.

Since 1901 the county champions have been :

1901	Yorkshire	1913	Kent	1925	Yorkshire
1902		1914	Surrey	1926	
1903	Middlesex	1915		1927	Lancashire
1904	Lancashire	1916		1928	
1905	Yorkshire	1917	No Contest	1929	Notts
1906	Kent	1918		1930	Lancashire
1907	Notts	1919	Yorkshire	1931	
1908	Yorkshire	1920		1932	Yorkshire
1909		1921	Middlesex	1933	
1910	Kent	1922		1934	Lancashire
1911	Warwick	1923	Yorkshire	1935	Yorkshire
1912	Yorkshire	1924			

Crickhowell Market town of Brecknockshire. It is 14 m. from Brecon and stands on the Usk. There is a fine bridge across the Usk, also ruins of a castle. The name means the rock of Howell. Pop. 1200.

Cricklade Market town of Wiltshire, on the Thames, 8 m. from Swindon and 95 m. from London. It has a fine old church and was at one time a borough sending members to Parliament. Pop. 1520.

Cricklewood District of London, in the urban district of Willesden, about 6 m. from the city, on the L.M.S. Rly.

Crieff Burgh of Perthshire, on the Earn, 18 m. from Perth, on the L.M.S. Rly. It is much visited by invalids, as the climate is unusually mild. Crieff is the chief town of the district of Strathearn. Pop. (1931) 5544.

Crimea District of Russia forming a Soviet republic. It is a peninsula on the north side of the Black Sea, a narrow isthmus connecting it with the mainland, and covers 23,300 sq. m. It was part of Turkey until 1792, when it became Russian. In 1921 it became an autonomous republic in union with the Soviet at Moscow. Simferopol is the capital; other towns are Kertch, Yalta and Eupatoria. Pop. 2,000,000.

THE CRIMEAN WAR, carried on chiefly in

the Crimea, was fought between Great Britain and France, as allies of Turkey, against Russia. Later the allies were joined by Sardinia. In March, 1854, the allied fleets sailed into the Black Sea and bombarded Odessa. In Sept. an army was landed at Eupatoria and the first battle was fought on the banks of the Alma, where the Russians tried in vain to stop the allied advance. The rest of the campaign consisted in attempts to take the strong fortress of Sevastopol. The siege began in Oct., when the fortress was bombarded by land and sea. In Oct. the British made their famous cavalry charges at Balaclava and on Nov. 5 their camp at Inkermann was attacked by the Russian army that was assisting to defend Sevastopol. The British infantry stood their ground and the attack was beaten back.

More terrible, however, was the cold; and with sickness rife among the troops, due partly to mismanagement, the siege was for a time abandoned. Reinforcements and medical and nursing assistance were sent out and in April the fortress was again assaulted, but without success, owing partly to lack of unity between the two commands.

Two other assaults delivered in June also failed, but partial success attended one made in August, when the French seized the formidable Malakoff works. The Russians then abandoned the fortress which was destroyed by the allies. Other events of the war included the bombardment of the Aaland Islands and the destruction of Kimburn, a fortress opposite Odessa, by the French. Peace was signed March 30, 1856, without advantage to either side. The British lost 19,600 in dead, chiefly from disease and privation.

Criminal Appeal English court of law. It was set up in 1907. Before that date a convicted criminal could not appeal against his sentence, but now he can do so. The court consists usually of three judges of the king's bench division; in addition to upsetting the verdict they can increase or reduce the amount of a sentence. In 1926 a similar court was set up for Scotland.

Criminology Study of criminals with a view to dealing with them on scientific lines. In England criminals were first considered from the humanitarian point of view in the 18th century, but their study began in Italy with Cesare Beccaria, in his book *On Crimes and Punishments*, 1764. More than a century later Cesare Lombroso published *The Male Offender*, another landmark, and since then a great deal has been done. Criminals have been classified according to their physical and other characteristics and much effort has been spent in plans to prevent young offenders from becoming habitual criminals. As a result of this study criminals are carefully graded and inducements offered to lead the less vicious to adopt a crimeless life. This has taken the form in Great Britain of special courts for children, detention in Borstal institutions instead of in prisons, and a careful system of probation. *See* BORSTAL.

Crinan Sea loch of Scotland. A branch of the Sound of Jura, it penetrates for about 15 m. into the Peninsula of Kintyre. From it the Crinan Canal has been cut to Loch Gilp, an opening of Loch Fyne. This canal, 9 m. long, was opened in 1801 to save the long journey round the Mull of Kintyre.

Crinoline Stiff horsehair fabric formerly used to distend women's skirts. A wired structure worn beneath the gown to widen the garment at the hem was also called a crinoline. The name is frequently applied alike to the Elizabethan farthingale, the later hooped petticoat, and to the 19th century bustle with a petticoat four to five yards wide at the hem. In millinery, a material made of cotton gauze dressed with glue and used for manufacturing hats, is known as crinoline.

Crispi Francesco. Italian statesman. Born in Sicily, Oct. 4, 1819. He joined the revolutionary movement of 1848 and was exiled from Italy and then from France. He was a leader in the struggle of 1859-60 and helped Garibaldi to become master of Sicily. In 1861 he entered the Chamber of Deputies, in which he sat for 40 years. Then a convinced republican, later he altered his views. He was prominent in all the movements between 1861 and 1871 and in 1876 was elected President of the Chamber. In 1877-78 he was Minister of the Interior, a post to which he returned early in 1887. Later in 1887 he became Premier, but resigned in 1890. He was again Premier from 1894 until the disaster at Adowa led to his fall in 1896. He died in Naples, Aug. 12, 1901.

Crispin One of the two patron saints of shoemakers, the other being Crispinian. Their festival, which is on Oct. 25, was formerly celebrated with processions in which the shoemakers' guilds took a leading part.

Criticism Passing judgment, specifically on a literary or artistic work. Each age has sought to establish standards of right judgment in literature and the fine arts.

Biblical criticism at the Reformation found fruitful fields in comparing textual variants in MSS. and considering their authenticity and origination as distinct works. Later criticism was directed more to the literary contents of the Bible, and the literal accuracy of many of the statements, especially in the Old Testament, was questioned. Traditional beliefs about the authorship of the various books were critically examined, and the result was to cast doubt upon many matters that had hitherto been implicitly accepted as true. This work, begun by German and continued by British scholars, was known as the higher criticism and was distinguished from textual or lower criticism.

Other forms of criticism are literary and artistic. In both fields there is a great output of writing, both in the form of articles in the press and of books. William Hazlitt was one of the greatest of English literary critics.

Croatia District of Yugo-Slavia, formerly part of Hungary. It is in the north of the country, stretching to the shores of the Adriatic Sea. Its capital is Zagrab or Agram. When part of Hungary, it formed with Slavonia a province, sometimes called a kingdom, which had its own parliament and other privileges. The Croats, however, were never happy under the rule of the Magyars, even though the yoke was a light one. They are more akin in race to the Serbs and they agitated continually for the establishment of a Croatian kingdom, or for union with Serbia. After the Great War the province was included in the kingdom of the Serbs, Croats and Slovenes, called Yugo-Slavia, and four Croats sit in its legislative council. The total number of Croats is estimated at about

4,000,000. The area of the province of Croatia Slavonia is 16,200 sq. m.

Crocket In architecture an ornament placed on the sloping edge of a gable. It often takes the form of curved foliage, but occasionally represents an animal.

Crockett **Samuel Rutherford.** Scottish novelist. Born Sept. 24, 1860, he was educated at Edinburgh and was ordained a minister of the Free Church of Scotland. From 1886 to 1895 he was minister at Penicuik, near Edinburgh. In 1893 he made a success with a book of short stories, *The Stickit Minister*. Soon, therefore, he gave up the ministry and produced a number of novels, stories of Scottish life and character, some being historical, which became very popular indeed. They include *The Lilac Sunbonnet*, *The Black Douglas* and *The Raiders*. He died April 19, 1914.

Crocodile Family of large reptiles. True crocodiles differ from caimans and alligators by their interlocked upper and lower teeth, the fourth lower tooth usually biting into an upper notch like an exposed tusk, and from gavials by their rounder snouts. Some have broad, short snouts like alligators, *e.g.* the Indian mugger, *crocodilus palustris*; others have narrow, long ones like gavials, *e.g.* the estuarine, *C. porosus*, of India and N. Australia, and the W. African *C. cataphractus*. The Nile *C. niloticus*, survives only in its upper waters. There are two true crocodiles in America.

All the crocodiles are flesh eaters. They can swim rapidly, but pass most of their time resting in the water or by its edges. The largest, the estuarine crocodile, has been known to be 33 ft. long. Crocodiles lay their eggs in the sand, where they are covered up until incubated. The skin is tanned and used for making bags, etc. Owing to the nature of their eyes, crocodiles seem to weep when they are killing an animal, hence the phrase, **crocodile tears.**

Crocus Genus of hardy perennial herbs of the iris order. They are native to Europe and W. Asia. The scaly remains of last season's leaves form a bulb-like corn from which the new leaves and flowers shoot. The subterranean ovaries are surmounted by long-tubed perianths of six petaloid leaves. *C. vernus* and *C. versicolor* yield white, purple and striped garden varieties; the yellow blooms are Dutch developments from *C. aureus*. The British *C. nudiflorus* which grows wild in the meadows of the midland counties of England, is bright purple. All make beautiful flowers for the garden. *C. sativus* yields saffron.

Croesus Last king of Lydia. Solon, having been shown his treasure, is reported to have said, "Count no man happy before his death." Deceived by an ambiguous oracle, Croesus made war upon Cyrus, King of Persia, was defeated near Sardis, and condemned to be burnt alive. Remembering Solon's words, he cried out "Solon; Solon;" and when Cyrus heard the story, he spared his life. The name of Croesus is proverbial for a man of great wealth. He lived in the 6th century B.C.

Crofter Word meaning an enclosed field and used for those who rent small farms in the highlands and islands of Scotland. By law they are defined as the tenants of holdings not more than 20 acres in size and not exceeding £30 a year in rental value.

For several reasons, one being the extension of the amount of land devoted to deer forests, the condition of the crofters became very bad, and in 1883 a commission enquired into their grievances. The result was that a permanent commission was set up in 1886 to secure for them fair rents and security of tenure. This applied to 200,000 crofters in the counties of Ross and Cromarty, Caithness, Sutherland, Inverness and Argyll, as well as in the Orkney and Shetland Islands. Legislation at a later date was passed to assist them in other ways. In 1911 the crofters' commission was replaced by a land court which has power over the whole country.

Croker **John Wilson.** Irish writer and politician. Born in Galway, Dec. 20, 1780, he was M.P. from 1807 to 1832, and from 1809 to 1820 Secretary of the Admiralty. He wrote several books and was one of the founders of *The Quarterly Review* and the Athenaeum Club, but is better known owing to Macaulay's savage attack on his edition of Boswell's *Life of Johnson*. Croker died Aug. 10, 1857. He appears as Rigby in Disraeli's *Coningsby*.

Croker Land Name given by Robert E. Peary to a region northward of Axel Heiberg Island where he thought he saw distant land during his polar expedition, 1906. As, later, Dr. Macmillan found ice-floes only at the supposed spot, it may have been a mirage.

Cromagnon Man Primeval European race which entered Europe in the upper palaeolithic age. The name was given by Paul Broca to five skeletons discovered in 1868 in the Cromagnon grotto at Les Eyzies, Dordogne. Others were found elsewhere. Tall and long-headed, they introduced the Aurignacian civilisation and became part of modern man's direct ancestry.

Cromarty Formerly a county of Scotland. It consisted partly of a stretch of land on Cromarty Firth and partly of pieces scattered throughout Rossshire. In 1889 the two counties were united as Ross and Cromarty.

Cromarty Firth is a branch of Moray Firth. On the east coast of Scotland, it cuts into the land for about 19 m. and forms a good harbour.

There is an **Earldom of Cromarty** dating from 1861. Since 1895 the title has been borne by Sibell Lilian Blunt-Mackenzie. Her son and heir is known as Viscount Tarbat.

Cromarty Burgh and seaport of Ross and Cromarty. It stands on Cromarty Firth, 20 m. from Inverness and has a little shipping. Pop. (1931) 837.

Crome **John.** British artist. Called Old Crome, he founded the Norwich School of Painting. Born Dec. 22, 1768, he started life as a coach painter, but in his spare time practised sketching. Later he taught drawing. His paintings, of which "Mousehold Heath" is in the National Gallery, reveal a sense of atmosphere and a love of nature. He died at Norwich, April 22, 1821.

Crome's son, John Bernay Crome, called Young Crome (1794-1842), painted pictures in his father's style.

Cromer Urban district and watering place of Norfolk. It stands on Cromer Bay, 24 m. from Norwich and 140 from London, on the L.N.E. Rly. It is beautifully situated on cliffs, which, however, are crumbling, and the attractions include good sands and golf links. The parish church is a magnificent building. In the neighbourhood are the Garden

of Sleep, Felbrigg Woods and other beauty spots. Pop. (1931) 4177.

Cromer Earl of. Title held since 1901 by the family of Baring. Evelyn Baring, the first earl, was born at Cromer Hall, Norfolk, Feb. 26, 1841. In 1877 he was made Commissioner of Debt in Egypt, and from 1880-83 was in India as financial member of the viceroy's council. In 1883 he became British agent in Egypt and there he did a great work until his retirement in 1907. He was made a baron in 1892, a viscount in 1899 and an earl in 1901. He wrote *Modern Egypt*, 1908, and died Jan. 29, 1917.

His son, Rowland Thomas, the 2nd earl (born 1877), was appointed Lord Chamberlain in 1922. Until he succeeded to the title he was known as Viscount Errington.

Cromford Market town of Derbyshire. It is 15 m. from Derby and 141½ from London, on the L.M.S. Rly. It is also served by a canal. Here in 1771 Sir Richard Arkwright built his first cotton mill and cotton has since been manufactured here. Pop. 1823

Cromlech Term applied to certain prehistoric structures. In Britain the word generally denotes a rudely constructed chamber of three or more upright stones capped by a large stone slab. Kit's Coty House, near Aylesford, in Kent, is an example of a British cromlech.

Crompton Samuel. English inventor. He was born near Bolton, in Lancashire, Dec. 3, 1753. His family spun wool for their own use, and, after doing this for some time, Crompton, in 1779, invented a new kind of spinning jenny. A combination of the ideas of Hargreaves and Arkwright, it was called the mule. He died at Bolton, June 26, 1827.

Cromwell Oliver. English soldier. Born at Huntingdon, April 25, 1599, of good family, he was educated at the local grammar school and at Sidney Sussex College, Cambridge. In 1628 he was chosen M.P. for Huntingdon, and in 1640 for Cambridge, which he represented also in the Long Parliament.

In 1642 he became captain of a troop of horse which he led at Edgehill. Next he raised his Ironsides, men from his own district, and became a leader on the parliamentary side. He was largely responsible for the victory of Marston Moor, and, having organised the new Model Army, led it to a great triumph at Naseby. He crushed the Royalists at Preston and elsewhere, and signed the warrant for the execution of Charles I.

Next came his ruthless suppression of rebellion in Ireland and his victory at Dunbar. The final overthrow of Charles II. at Worcester followed. In April, 1653, he dismissed the Long Parliament, and later in the year he was made Lord Protector. He ruled England, more successfully in his foreign than in his domestic policy, until his death, Sept. 3, 1658, a little while after he had refused to accept the crown. He was buried in Westminster Abbey, but in 1660 his body was disinterred and hanged at Tyburn.

Cromwell left two sons, Richard, who became protector, and Henry; and four daughters, one of whom married Ireton and then Fleetwood. His male line is extinct, but his female line has many representatives.

Cromwell Richard. Second Lord Protector of England. Born Oct. 4, 1626, son of Oliver Cromwell, he was educated at Felsted, and in 1654 became an M.P. He was a member of the council of state in 1657, and in 1658 succeeded his father as Lord Protector. In May, 1659, he gave up the office and as John Clark went to France. About 1680 he returned to England and lived at Cheshunt until his death, July 12, 1712.

Cromwell Thomas. English politician. He was born about 1485, and practised as a lawyer, and this may have led to his acquaintance with Wolsey. In 1523 he entered Parliament, and as Wolsey's secretary helped to suppress the smaller monasteries to endow Wolsey's colleges at Ipswich and Oxford.

On Wolsey's fall Cromwell was for eleven years Henry VIII.'s chief adviser. He was instrumental in carrying through the measures that finally separated England from Rome, and as Vicar-General was the chief author of the suppression of the monasteries. To this he owes his nickname of *malleus monachorum*, the hammer of the monks. Numerous honours and much wealth came to him. He was Chancellor of the Exchequer and Secretary of State; Lord Privy Seal and Lord Great Chamberlain; and was created a baron and then Earl of Essex. His fall followed the marriage he brought about between Henry and Anne of Cleves. Cromwell was charged with high treason and was beheaded, July 28, 1540.

Cronje Piet Arnoldus. Boer soldier. Born about 1840 he became a farmer in the Transvaal. In the war against the British in 1881, he was in command of a detachment of Boers and won reputation as a soldier. He was in charge of the force sent against the Jameson raiders in 1896 and was chosen to command one division of the Transvaal forces when war broke out in 1899. He led them at the Modder and at Paardeberg where he surrendered. He was in St. Helena until 1902 and then in the United States, but he died in S. Africa, Feb. 4, 1911.

Cronos In Greek mythology, one of the Titans, the son of Uranus and Ge.

Crook Urban district of Durham. It is 15 m. from Durham, on the L.N.E. Rly. Coal mining is the chief industry. Pop. (1931) 11,690.

Crookes Sir William. English scientist. Born in London, June 17, 1832, he was trained at the Royal College of Chemistry. He became an assistant there, and later in the Radcliffe Observatory, Oxford. His original work soon made him known, and in 1863 he was elected F.R.S. His researches and discoveries cover a wide field in physics and chemistry, and among his inventions are the Crookes tube, a special form of vacuum tube, and the radiometer. He discovered thallium, enlarged our knowledge of radium and gave attention to the world's wheat supply, and to problems connected with dyeing. He was also interested in psychical research. He died April 4, 1919. Knighted in 1897, he was President of the Royal Society and the British Association, and in 1910 was given the O.M. He edited *The Chemical News* and *The Quarterly Journal of Science*.

Crops Term used for the produce of cultivated plants when gathered for food. The cereal crops are wheat, rye, maize, barley and oats; in addition there are crops of rice, fruit and potatoes.

Crops are grown in rotation to allow the soil time to recover from the loss of a particular ingredient. There are several systems in use, cereals alternating with root crops and vegetables. *See* BARLEY, WHEAT, etc.

Croquet Outdoor game. It is played by two or four persons with balls and mallets, each player having a ball and mallet of a distinctive colour, red, blue, yellow or black. The ground should measure 35 yards by 28, and on it, at stated intervals, are six hoops and two posts. The aim of each player is to send his own ball and that of his partner, if he has one, through the hoops and to hit the posts in regular order, and to prevent his opponents from so doing. The rules of the game are supervised by the Croquet Association, 4 Southampton Row, London, W.C., and championship meetings are held annually.

Crore Hindu word for 10,000,000. It refers especially to 10,000,000 rupees.

Crosby Name of two urban districts in Lancashire. Great Crosby is a watering place on the Mersey. It is 6 m. from Liverpool, on the L.M.S. Rly. The chief buildings are S. Luke's Church and the Merchant Taylors' School. This was founded in 1618, and the present buildings erected in 1878. Pop. (1931) 18,283. Little Crosby (1931) 1096.

Crosby Hall Famous London building. A fine example of Tudor domestic architecture, it stood in Crosby Place, Bishopsgate, where it was built in the 15th century by Sir John Crosby. In 1638 it passed to the East India Co., after which it was a meeting house. Restored in 1836, in 1910 it was re-erected at the corner of Cheyne Walk and Danvers St., Chelsea, where it serves as a hall of residence for women students.

Cross River of W. Africa. It rises in the French Cameroons and, flowing into Nigeria, turns south and enters the Gulf of Guinea by an estuary, near Calabar. It is over 500 m. long. The estuary is always navigable.

Cross Two pieces of wood, one fixed crosswise on the other. It was used as a gibbet for malefactors and, because Jesus Christ was put to death on one, the cross became the symbol of the Christian faith.

There are several kinds of cross. In the **Greek cross** the crossed pieces are of equal length; in the **Latin cross**, the one used for malefactors, the upright piece is longer than the transverse one. **S. Andrew's Cross** represents the letter X, and S. Anthony's the letter T. The **Celtic cross** is the Latin cross with a circle round the head; the **Maltese cross** has bifurcated limbs.

Market crosses and **preaching crosses** were at one time numerous, and crosses are seen in villages and churchyards. The crusaders took the cross as their symbol, and it is used in wartime to distinguish the great **Red Cross** organisation.

It is used in heraldry and as a military distinction, *e.g.*, the Victoria Cross, Military Cross, Distinguished Flying Cross, and others.

The festival called the **Invention of the Cross** commemorates the finding of the true cross by S. Helena. It is held on May 3.

Crossbill Name given to a genus of birds of the finch type. They are characterised by a peculiar bill, the two sheaths of which are crossed obliquely. This formation enables the birds to extract from fruit and fir cones the seeds which are their usual food. About the size of a skylark, but of stronger build, the crossbill has a plumage of rich colours, the hen's being of yellowish green and the cock's displaying orange, yellow and crimson feathers.

Crossbow Weapon used in the Middle Ages. It consisted of a strong wooden stock to which a bow was fixed crosswise. The cord of the bow was stretched and fixed in a notch, being released by a trigger to propel an iron bolt.

Cross-Examination Method of questioning witnesses to produce evidence in a court of law. Each witness is examined by counsel on behalf of the party for whom he is called, this being the examination in chief. He may then be cross-examined by the counsel for the opposing side and finally re-examined by his own counsel.

Cross Fell Mountain of Cumberland. One of the highest points of the Pennine Chain, it is 10 m. from Penrith, and 2930 ft. in height.

Crossword Form of word puzzle introduced into England about 1923. It consists of a series of numbered squares, with clues correspondingly numbered, down and across. When rightly solved, the solutions provide words reading downwards and across which completely fill the vacant squares. The crossword may take any form, but the most usual contain black squares acting as stops between words, usually arranged in a conventional design. Many daily and weekly publications contain a crossword and many regularly offer prizes for solutions. Some of these contain ambiguous clues, affording various solutions, which make the solution a matter of luck rather than skill. Other crosswords require a high degree of skill and considerable knowledge for their solution.

Crouch River of Essex. It rises near Brentwood and after a course of 24 miles enters the North Sea at Foulness. The estuary is a favourite yachting centre, Burnham-on-Crouch being the headquarters. There are oyster beds in the river.

Crouch End District of London. It is 4 m. north of the city, on the L.N.E. Rly., and mainly in the borough of Hornsey. The chief building is Christ Church.

Croup This chest complaint, which is accompanied by high temperature and difficulty of breathing, develops very suddenly in young children.

Symptoms.—The child holds the breath and then breathes in with a typical crowing sound. He may then struggle for breath and become livid with dilated pupils.

Treatment.—Try anything that serves to stimulate the breathing—a hot sponge to the throat, immersion in a hot bath (105° F.), a cold sponge to the chest or head, etc., after which put the child to bed and keep him warm, with a steam kettle in the room.

Crow Name of a family of birds. They are usually black and found all over the world. They include the raven, jackdaw, chough, magpie and rook, as well as the hooded crow and the carrion crow.

Crowberry Dwarf shrub. It grows on bogs or moors and is found in Great Britain. Its wiry trailing branches bear leathery leaves rolled into closed tubes.

The berries, black, purple or red, are eaten, and from them a dye is prepared.

Crowborough Village and pleasure resort of Sussex. It is 39 m. from London and 7 from Tunbridge Wells, on the S. Rly.

Crowborough Beacon (800 ft. high) commands very fine views.

Crowland Town of Lincolnshire. It stands on the Welland, 7 m. from Peterborough. It is visited for the ruins of the abbey, at one time one of the largest in England. The ruins include the belfry tower. The north aisle is used as a church. There is an interesting bridge in the centre of the town. Pop. 2700.

Crown English coin representing five shillings. Henry VIII. introduced gold crowns in 1522; Edward VI. silver crowns and half-crowns in 1553. Down to the time of Charles II. double crowns sometimes appeared in both gold and silver, but since then they have only been coined in silver. There are only a few crowns in circulation, but the half crown is a common coin.

Crown Headgear worn by kings and queens as a sign of sovereignty, also by emperors and empresses. Usually of precious metals and adorned with precious stones, crowns are only worn to-day on ceremonial occasions. The English kings have had crowns since Anglo-Saxon days, but all the older ones have perished. The present imperial crown was made for Queen Victoria. The act of placing it on the sovereign's head is called the coronation.

Crown **Order of the.** Name of several orders of chivalry. In the British Empire there is the Imperial Order of the Crown of India, for women only, established in 1878, and in Italy, the Order of the Crown of Italy, founded in 1868. Other European orders of this name disappeared in 1919.

Crown Agents Officials appointed by the Colonial Secretary. With headquarters in London, they act as agents for crown colonies and protectorates. Concerned with the commercial and economic interests of the countries they represent, their chief duties are financial, and through them the colonies make purchases.

Crown Colony Land acquired by cession or conquest, and without power of self-government. The British Government is reponsible for the legislation of its crown colonies, which are ruled by governors appointed by the king, aided by councils which include members representative of the colony. All enactments must be approved by the Colonial Secretary.

Crown Lands In Great Britain the land which is the property of the crown, the remains of the vast estates once owned by the kings. In 1707 the sovereign was forbidden to make gifts of crown lands to individuals, which William III. and other kings had done freely. George III. surrendered his interest in the crown lands in return for an annual income from the civil list, and later sovereigns have done the same.

The crown lands are now managed by commissioners with offices at 55 Whitehall, London, S.W.1. They include valuable London property in Regent St. and elsewhere. In 1930-31 they produced a net income of £1,280,000.

Crown Office Department of the supreme court of justice in England. Its chief official is called the Master of the Crown Office, and its functions include the issue of indictments, writs of habeas corpus, informations and proceedings for attachment.

Crown Prince Title borne in monarchical countries by the heir to the throne. His position is comparable to that of the Prince of Wales.

Crow's Nest Pass through the Rocky Mountains of Canada. It is traversed at a height of 5500 feet by the southern branch of the C.P.R. The pass crosses great coalfields whose natural gas is of considerable economic worth.

Crow's Nest Small platform with an encircling protection on a ship's mast. It is used as a position for a look-out man in warships and such vessels as whalers. Modern signalling methods have now made the crow's nest unnecessary on many ships.

Croxteth Park Lancashire seat of the Earl of Sefton. It is 6 m. from Prescot and 3 from Liverpool. The house, built early in the 18th century, stands in a park covering 960 acres. Races are held in the park.

Croydon County borough, market town and airport of Surrey. It is 10 m. from London by the S. Rly. The picturesque hospital, really an almshouse, in the High St. and the grammar school are associated with the name of Archbishop Whitgift. For the grammar school new buildings at Haling Park have been erected. Industries include bell founding and engineering. Addington Hills is one of several open spaces. The borough which sends two members to Parliament, includes Norbury, Addiscombe, Selhurst, Thornton Heath and parts of Norwood. Croydon is the main English airport and at Waddon are extensive buildings and landing grounds. Pop. (1931) 233,115.

There is a mining centre of this name in Queensland.

Crozier Pastoral staff of a bishop or archbishop. It is shaped like a shepherd's crook. Croziers have been used for hundreds of years and some are beautiful works of art. An example is the staff of William of Wykeham, Bishop of Winchester, in New College, Oxford.

Crucible Vessel in which ores are smelted or metals melted or mixed at a great heat. Crucibles are still used in metal refining and in the manufacture of bronze, steel and brass.

Crucifix Cross bearing an image of Christ. The earliest known crucifix was an insulting Roman caricature. Christians did not openly show the cross as an emblem until Constantine's time. From the 6th to the 12th centuries crucifixes showed Jesus triumphant and clothed, with four nails in the feet. Later they became more realistic.

Cruden Bay Watering place of Aberdeenshire. It is 30 m. from Aberdeen, on the L.N.E. Rly. Here are fine golf links.

Cruelty Wilful infliction of pain on animals or children. Its practice has been considerably curtailed by the increase in humanitarian ideals and by the consequent legislation. Owing to the activities of the **Royal Society for the Prevention of**

Cruelty to Animals, 105 Jermyn St., London, S.W.1, various Acts of Parliament have been passed to make the perpetrators of cruelty liable to prosecution and fine.

The National Society for the Prevention of Cruelty to Children has done similar work on behalf of children. Its offices are 40 Leicester Square, London, W.C.2.

Cruft's Abbreviation for Cruft's Great International Dog Show Society. Founded in 1884 by Charles Cruft, the show is held in the second week of each February at the Royal Agricultural Hall, Islington, London. Prizes are awarded for all classes of dogs.

Cruikshank George. English artist. Born in London, Sept. 27, 1792, his father, Isaac Cruikshank (d. 1811) was known as a caricaturist. The son followed in his father's steps, but with greater power and success. He illustrated the works of Fielding and Dickens and Grimm's *Fairy Stories*, and did a great deal of work for magazines such as *Bentley's Miscellany*. To further the cause of temperance he painted a series called "The Bottle" and a cartoon "The Worship of Bacchus," which are in the National Gallery, London. Other works by him are in the British and South Kensington Museums. He died Feb. 1, 1878. His brother, Isaac Robert Cruikshank (1789-1856), was also an artist.

Cruiser Warship designed primarily for speed. To-day all cruisers are armoured, and divided into battle cruisers and light cruisers. Battle cruisers are battleships, but with rather lighter armour and greater speed than the battleship proper. Such were the *Lion*, *Tiger* and the newer *Hood*. Light cruisers are smaller vessels, designed to act as the eyes of the fleet. In the British Navy they are usually named after towns and counties, *e.g. London* and *Norfolk*. The Washington Treaty of 1922 limited the size of cruisers to 10,000 tons and the Naval Treaty of 1930 provided for a limitation of their number and strength. In 1931, excluding battle cruisers, Great Britain had 53 cruisers, Japan 37, the United States 19 and France 16.

Crummock Lake of Cumberland. It is 7 m. from Keswick and is 2¼ m. long.

Crusade Military expedition sent out under the banner of the cross, especially those sent out from Europe to recover Palestine for the Christians. Palestine was overrun by the Saracens in the 7th century, but Christians were permitted to make pilgrimages to the Holy Places at Jerusalem. In the 11th century, however, the Turks occupied the country and pilgrims were maltreated.

This gave rise to the first crusade which was preached by Peter the Hermit and ordered by Pope Urban II. at Clermont in 1095. Some European princes raised an army in 1097 and this, with members of the great military orders, the Templars and the Hospitallers, in its ranks, took Antioch, Edessa and other places, and in 1099 captured Jerusalem, where a kingdom was set up under Godfrey of Bouillon.

In 1147 Edessa was retaken by the Turks and under Louis VII. of France, the second crusade went to the Holy Land. This was an utter failure. In 1187 Jerusalem was retaken by Saladin and the third crusade was organised. In this Richard I., Frederick Barbarossa and Philip Augustus of France took part, and it was the most spectacular of all. It ended in 1192 in a treaty allowing the pilgrims to visit the Holy Places.

There were several other crusades in the 13th century, but they all failed to achieve their object.

Crustacea Large division of invertebrate animals. They have the body segmented and provided with jointed limbs; the head, however, is fused with some of the thoracic segments. The rest of the body segments are usually divided into two sections, the thorax and abdomen, and the whole animal is covered with a chitinous cuticle which may be hardened by lime salts. The head bears a pair of stalked eyes and appendages, which are either masticatory or sensory.

Crutched Friars Religious order. The crutched, or crossed, friars first appeared in the 12th century in Italy and received their rule from Pope Alexander III. in 1169. They were a mendicant order and the name was given them because they had the sign of the cross on their staves and habits. The habit, at first black, was later blue. They had several houses in England, one at Colchester and another near the Tower of London, at the place still called Crutched Friars.

Crypt Vaulted chamber wholly or partly underground, especially beneath churches. Growing out of the confessio or martyr's tomb, it often enshrined other memorials. England's largest Norman crypt is Canterbury; the one at S. Paul's, London, is coterminous with the surface area. In secular buildings, 15th century crypts survive in the guildhalls at London and Coventry.

Cryptogamia Old term used to denote the lower division of the plant kingdom, as their reproductive processes were thought to be concealed. The term is used still, but in a general sense, for the thallophyta, which include the bacteria, algæ and fungi, the bryophyta or mosses and liverworts, and the pteridophyta or ferns, horsetails and clubmosses.

Cryptography Art of secret writing by means of ciphers, code words or other devices. Cryptography was practised among the Greeks and Romans and in more recent times in business and diplomacy. With the wide use of telegraphy, ciphers and codes have become of use in reducing the length of messages transmitted.

Crystal Solid body of regular shape bounded by symmetrically disposed plane surfaces, and possessing definite internal structure and properties. Crystals arise from solidification of chemical elements or compounds, either by gradual cooling of fused substances, evaporation of their fluid solvents, or condensation of sublimated vapour, as snow crystals condense from atmospheric water vapour.

Crystal Gazing Practice of staring into a crystal or other clear substance in the hope of inducing hallucinatory visions.

Crystallisation Process by which certain liquids, when passing to the solid state form crystals or solid regular geometric shapes. The molecules of the liquid, when near solidifying point, tend to arrange themselves in some definite pattern or lattice, these lattices being formed of unit cells or minute groups of particles. Crystallisation is usually brought about by evaporation and cooling of a solution, or by cooling a fused substance.

Crystallography Study of the geometric forms of matter known as crystals. The science involves the consideration of the relation between crystal faces and their axes, the measurement of the interfacial angles, the identification of similar faces, and the classification into different grades of symmetry. The fundamental laws of crystallography are, first, the constancy of corresponding interfacial angles of crystals of the same substance; second, a simple ratio between the co-ordinates of all planes on crystals of the same substance; and third, the definite symmetry of crystals. There are seven systems and 32 sub-divisions of crystals, each characterised by its special symmetry.

Crystal Palace Pleasure resort at Sydenham, London. It was designed by Sir Joseph Paxton and erected in 1854. Constructed of an iron framework filled in with glass, the materials were chiefly furnished from a huge hall set up in Hyde Park for the Great Exhibition in 1851. It has two towers flanking a large hall, and is visible from many parts of the metropolis. The grounds, covering 200 acres, are used for dirt track and speed boat racing, festivals of various kinds, firework displays, etc. The Handel festival is held in the great hall. There is a fine organ, also a collection of statuary. Before the Great War the final matches for the Association Football Cup were played here. The palace became public property in 1920.

Ctesiphon Ancient city of Mesopotamia (Iraq). Situated on the Tigris, 25 m. S.E. of Bagdad, opposite Seleucia, it became the winter quarters of the Parthian kings, who captured Seleucia, A.D. 43. After Roman expeditions against it, Ctesiphon with Seleucia became the capital of the Sassanian kingdom in A.D. 226. Chosroes I. about 550, built a brick palace of which a huge hall still stands. The city was captured by the Arabs in 637 and became a ruin It is now only a village.

The **Battle of Ctesiphon** was fought between the British and the Turks, Nov. 22, 1915. The British force, under Sir C. Townshend was inadequate in numbers, and ammunition falling short, had to retreat to Kut, with a loss of 4500 men, but it inflicted heavy losses on the enemy. Ctesiphon was occupied by the British in March, 1917.

Cuba Island and republic of the West Indies. It covers 41,634 sq. m. Attached to it are other islands, the chief being the Isle of Pines, which cover a further 2530 sq. m. Havana is the capital and much the largest town, others are Santiago, Camaguey, Cienfuegos, Cardenas, Santa Clara, Sancti Spiritus and Manzanillo.

The island is long and narrow with the Atlantic on one side and the Caribbean on the other. The interior is mountainous, and the coast contains some fine harbours. The main product is sugar, but tobacco is extensively grown. Fruit is cultivated and much timber is cut. Iron ore is mined and exported.

Cuba was a Spanish possession until 1898, when it became nominally independent. The United States looked after its affairs until 1901, when a republican constitution was adopted and the island became independent. Owing to unrest in 1906 the United States again interfered and formed a provisional government. In 1909 the country again retained its liberty. Congress consists of a Senate of 36 members and a House of Representatives of 126 with a president and a small cabinet. Before 1933 members were elected for six years, but since then for nine years. In 1928 there were constitutional changes and the vote was given to women. There were risings in the island in 1931 and 1933, the latter leading to the resignation of the cabinet. There is a small army and navy. Cuba is a member of the League of Nations. Pop. (1930) 3,638,174.

Cube In geometry, a term for a solid with six sides each being a square. In arithmetic, a cube is a number multiplied by itself twice; thus the cube of 6 is 216.

Cubism Form of art originating in the modern French School. It is characterised by depicting objects by a rectangular or geometrical treatment of forms. According to the Spanish artist, Picasso, "Cubism is neither the seed nor the germination of a new art; it represents a stage in the development of original pictorial forms." This tendency to geometrical forms is foreshadowed in the famous picture "The Rout of San Romano," by Paolo Uccello (1397-1475).

Cubit Ancient measure of length. It is equal to the length of the forearm from the elbow to the end of the middle finger, and varies from 18 to 22 in. in various countries. The old English cubit was 18 in., the Talmudic Hebrew cubit 21.9 in., while the Egyptian measure varied from 18.24 to 20.64 in.

Cuckmere River of Sussex. It rises near Heathfield and enters the English Channel about 4 m. west of Beachy Head. At its mouth is Cuckmere Haven.

Cuckoo (*Cuculidae*). Family of birds of widespread distribution. The common cuckoo, (*cuculus canorus*) is one of the earliest spring visitants to the British Isles. It has sombre plumage and feeds chiefly on hairy caterpillars. Its eggs are laid singly and deposited in the nests of smaller birds, such as the hedge sparrow and others. The young cuckoo will often, by superior strength, eject its weaker companions from the nest, thus securing exclusive attention for itself. The name cuckoo is taken from the cry of the male bird.

The great spotted crested cuckoo of N. Africa and the American yellow-billed and black-billed nest building tree cuckoos are rare visitors to Britain.

The **cuckoo flower** is a name sometimes given to the lady's smock.

Cuckoo Pint (*Arum maculatum*). Familiar British wild-flower. Found in spring in woods and hedge-banks, it has tuberous roots and arrow-shaped leaves, often marked with black or dull purple spots. The flower stalk bears a large green rolled-up leaf which gradually unfolds, disclosing a purple column with minute flowers round the lower section. The leaf withers, leaving in autumn a spike of scarlet berries. The leaves and berries are poisonous, though a species of starch known as Portland arrowroot was at one time manufactured from the roots.

Cuckoo Spit Froth-like spume observable in summertime on grass and low herbs. It is produced by green plant lice which are the larval forms of several genera of homopterous bugs called froghoppers. The larvæ suck out the plant sap, render it viscous with secretions, and for protective purposes, aerate it by abdominal movements.

Cucumber Cultivated trailing herb of the gourd order. (*Cucumis sativus*). Reaching Britain from Holland about 1538, it is raised in glass frames at temperatures over 70°F., or in open-air ridges. Male and female flowers are distinct; the ovaries become cucumbers without fertilisation. In Britain it is usually eaten uncooked as a salad, but small ones and also gherkins from the West Indies are pickled.

Cud Bolus of hastily-swallowed fodder. It is received temporarily into the first of the four cavities of the stomach of ruminant mammals, such as sheep and oxen. It is returned at will into the mouth for leisurely mastication, the semi-fluid mass then reaching the true stomach, where it is digested. This is called chewing the cud.

Cudbear Name given to a purplish dye stuff, or colouring matter, obtained from a parmeliaceous lichen (*Lecanora tartarea*). The lichen is a greyish encrustation found on rocks. Formerly used in Scotland for the dyeing of homespun fabrics, it is also prepared in Norway and Sweden for export. The name is a corruption of Cuthbert, after Dr. Cuthbert Brown, who first brought it into prominence.

Cuddesdon Village of Oxfordshire. It is 6 m. to the S.E. of Oxford. Here is the palace of the Bishops of Oxford, who have lived here since the 17th century. Other buildings are the church and the college for the training of candidates for ordination.

Cudweed Popular name of several species of composite herbs (*Gnaphalium*). Of this widespread genus the commonest British form is *G. sylvaticum*. This is densely cottony, with narrow leaves and small flower heads enclosed by chaffy-coloured scales which usually persist, giving them sometimes the name everlastings. *G. supinum* grows in the Highlands of Scotland, *G. uliginosum* in damp situations.

Cudworth Urban district of Yorkshire (W.R.), 4 m. from Barnsley, on the L.M.S. Rly. It is a centre of mining, quarrying and woollen industries. Pop. (1931) 9380.

Cudworth **Ralph**. English philosopher and divine. Born at Aller, Somerset, in 1617, he was educated at Emmanuel College, Cambridge, and became a tutor there. In 1645 he was made Master of Clare Hall and in 1654 of Christ's College. He was also Professor of Hebrew. Having been ordained, he was made rector of North Cadbury, Somerset, in 1650, and of Ashwell, Hertfordshire, in 1662. He died July 26, 1688.

Cudworth's philosophy, contained in his *True Intellectual System of the Universe*, 1678, sets out to prove the reality of the divine intelligence and of moral ideas which are accompanied by moral freedom and responsibility.

Cue Tapering rod for striking the ball in billiards and bagatelle. Usually of seasoned ash, the butt being spliced with heavier wood, it is about 57 in. long and is tipped with leather.

Cuffley Village of Hertfordshire, 13 m. from London, on the L.N.E. Rly. On Sept. 3, 1916, a zeppelin, destroyed by Lieut. W. L. Robinson, fell here. It was the first to be brought down in England. Pop. 650.

Cuinchy Village of France. It is situated between Béthune and La Bassée. Here the Germans, violently attacking Haig's 1st corps, drove them back for about 800 yards with heavy loss on Jan. 25, 1915. There was further fighting for the redoubts and on Feb. 1 the Guards recovered the lost ground.

Cuirass Body armour protecting the breast and back. It consists either of a single piece of metal, back and front, or smaller pieces joined. It succeeded the coat of mail in the 14th century and still persists in the uniform of the British Household Cavalry and some foreign regiments.

Culdees Monastic order. In the 8th century they started in Ireland and the earliest Culdees were hermits. Later they took vows and became an order under a modified Benedictine rule. They spread to England and Scotland, where they existed until the 14th century.

Culebra Town of Panama. It is 15 m. N. of the Canal's Pacific end, and became the constructional headquarters and health resort. Pop. 1020.

Cullen Burgh and market town of Banffshire, Scotland. A watering place and small fishing port, it is situated at the mouth of the River Cullen, 21 m. from Elgin, on the L.N.E. Rly. It stands above the sea with a beautifully wooded background surmounted by the Binn Hill, commanding a view of ten counties. Cullen House, built about 1600, has extensive grounds, which are opened to visitors. Cullen is the Portlossie of George MacDonald's novel, *Malcolm*. Pop. (1931) 1688.

Cullercoats Watering place of Northumberland. It stands near the mouth of the Tyne, not far from Tynemouth, on the L.N.E. Rly., being connected with Newcastle by an electric service. Here Armstrong College, Newcastle, has a marine biological laboratory.

Cullinan Diamond Largest known diamond. It weighed 3025¾ carats, (1¼ lbs.) and was discovered in 1905 at the Premier Mine in the Transvaal on ground belonging to T. Cullinan. In 1907 it was presented to King Edward VII. It was cut into two stones, one, the Star of Africa, being set in the king's sceptre and the other in his crown.

Culloden Tract of moorland about 7 m. from Inverness. Here, on April 16, 1746, British troops under the Duke of Cumberland defeated the Jacobites under Charles Edward and put an end to his hope of recovering the throne. Each side was about 8000 strong, the Jacobites having a few French and Irish with them. They were utterly routed, about 1000 being killed and many massacred after the battle. A cairn marks the site. In 1928 the estate, long the property of the Forbes family, was sold. In Culloden House *The Culloden Papers* were found.

Culm Jointed stem of plants of the grass order. Usually cylindrical and hollow between the joints, it is herbaceous, *e.g.*, wheat, occasionally woody, *e.g.*, bamboo. Culm also describes rocks of Carboniferous age, comprising slates, sandstones and inferior coal beds found notably in S.W. England.

Culross Burgh and seaport of Fifeshire. It is on the north side of the Firth of Forth, 7 m. from Dunfermline, on the

L.N.E. Rly. There are ruins of the abbey. At one time girdle plates were made here. Pop. (1931) 495.

Culter Town of Aberdeenshire, 8 m. from Aberdeen, on the L.N.E. Rly. The chief industry is the manufacture of paper. Pop. 5600.

Cultivator Implement for loosening earth, uprooting weeds or breaking up land. All-metal grubbers, introduced about 1820, later acquired vibratory spring actions.

Culture Term denoting the promotion of growth of organic beings or their attributes. It may mean tillage of plants for food by regular or intensive culture, production of improved varieties, or artificial growth in a nutrient medium of specific micro-organisms for research or preparation of vaccines.

In anthropology, it denotes a stage of civilisation; in sociology, the improvement of knowledge and outlook effected by education in the individual mind.

Culverin Primitive light cannon made of bronze or leather, much used in ancient wars. Culverins varied in weight from 15 to 40 cwts. and propelled shots weighing from 2 to 18 lb. each.

Culvert Tunnel or subterranean pipe for the conducting of water underneath roads, railways or canals.

Cumae Ancient town of Campania, Italy. The first Greek colony in Italy, it was founded by the Chalcidians of Euboea. First taken by the Campanians and then by the Romans it became a municipal town in 339 B.C. Cumae founded two colonies: Neapolis (Naples) and Puteoli (Pozzuoli).

Cumberland County of England. It has a long coast line on the Solway Firth and the Irish Sea. Landwards it touches Scotland. In the north are peaks of the Pennine range; in the south are the mountains of the Lake District, Scafell Helvellyn and Skiddaw, the three highest in England. In this region, too, are many lakes including Derwentwater, Thirlmere, Bassenthwaite, Crummock and Wastwater. The rivers are the Eden, Derwent and Esk. There is fertile soil in the dales and many sheep are reared on the hills. Around Whitehaven is a coalfield and the fisheries are valuable. Carlisle is the county town. Other places are Whitehaven, Workington, Keswick, Maryport, Millom, Egremont, Cockermouth and Penrith. The railways are the L.M.S. and the L.N.E. Cumberland sends four members to Parliament. Its area is 1530 sq. m. Pop. (1931) 262,897.

Cumberland Peninsula of Canada. It is part of Baffin Land and is surrounded on three sides by Baffin Bay, Davis Strait and Cumberland Sound.

A river of the United States is called the Cumberland. It is a tributary of the Ohio and flows through Kentucky and Tennessee. Its length is 650 m. In the same region is the **Cumberland Plateau**, one of the main divisions of the Appalachian Mts. A city of Maryland on the Potomac is also called Cumberland. Pop. (1930) 37,747.

Cumberland **Duke of.** English title held by several members of the royal family. The family of Clifford were earls of Cumberland from 1525 to 1643. Prince Rupert was Duke of Cumberland from 1644 to 1682 and Prince George of Denmark, the husband of Queen Anne, from 1689 to 1708.

In 1721 William Augustus (1721-65), a son of George II., was made Duke of Cumberland. He was the duke who routed the Jacobites at Culloden, and cruelly suppressed the rising. He died, Oct. 31, 1765. In 1766 Henry Frederick, a brother of George III., was made duke. He died childless in 1790.

In 1799 the dukedom was revived for Ernest Augustus, a son of George III. In 1837 he became King of Hanover and was succeeded by his son, George. In 1866 George lost his kingdom and, consequently, his son, Ernest Augustus (1843-1923) was known as the Duke of Cumberland. He married a sister of Queen Alexandra. In 1917, as an enemy prince, he was deprived of his dukedom and he died, Nov. 14, 1923.

Cumberland **Richard.** English author. Born, Feb. 19, 1732, he went to Westminster School and Trinity College, Cambridge. The most successful of his plays are *The West Indian*, *The Brothers* and *The Fashionable Lover*. He died, May 7, 1811. He is Sheridan's Sir Fretful Plagiary.

Cumbernauld Town of Dumbartonshire, a mining district, 16 m. from Glasgow, on the L.M.S. Rly. Pop. 5100.

Cumbrae Two islands off the west coast of Scotland. Great Cumbrae is in the Firth of Clyde, between Bute and the mainland and covers about 5 sq. m. Little Cumbrae lies to the south. Both are part of the county of Bute.

Cumbrian Mountains A mountain group in Cumberland and Westmorland. They are the mountains of the Lake District. The highest point is Scafell (3210 ft.). Helvellyn is only a little lower. The group, which just enters Lancashire, covers about 1000 sq. m.

Cummin Herbaceous annual (*cuminum cyminum*) of the *umbelliferae*. It is cultivated in the east and around the Mediterranean for its fruit which contains an essential oil. It is used in veterinary medicine.

Cumnock Name of two towns in Ayrshire, Old and New. Old Cumnock stands on the Lugar, 34 m. from Glasgow and 16 m. from Ayr. It has some manufactures. New Cumnock is 5 m. away, being 21 m. from Kilmarnock and is a coal mining centre. Both are on the L.M.S. Rly. The burgh is Cumnock and Holmhead. Pop. (1931) 3653.

Cumnor Village of Berkshire. It is 4 m. from Oxford, on the G.W. Rly. Amy Robsart, the wife of Robert Dudley, Earl of Leicester, lived here. Cumnor Place has been pulled down, but the old church remains. Pop. 1100.

Cunard **Sir Samuel.** English shipowner. Born at Halifax, Nova Scotia, Nov. 21, 1787, the son of an American, he set up in business at Halifax as the owner of some fishing boats. In 1831 he settled in England and in 1839 established a line of ships between Liverpool and Boston. In 1878 these lines and another were united as the **Cunard Steamship Co.**, which became one of the largest in the world, with headquarters in Liverpool. Cunard, who was made a baronet in 1859, died April 28, 1865.

Cuneiform Name given to written characters which resemble a series of wedges or arrow heads, usually seen in Ninevite sculptures. Sir Henry Rawlinson

deciphered three forms, Babylonian, Median and Persian. It contains only two elements—the wedge and the rectangle. The cuneiform characters are supposed to have been invented by people who used a Ural-Altaic (Turanian) language, differing from the Semitic languages of the Assyrians and Babylonians.

Cunningham Allan. Scottish poet. A Dumfriesshire man, he was born Dec. 7, 1784. He wrote for *The London Magazine* and was the author of several books, including *Lives of British Painters, Sculptors and Architects* and a *Life* of Wilkie. He is best known by his song. *A Wet Sheet and a Flowing Sea.* He died Oct. 30, 1842. One of his sons, Peter (1816-69), compiled a notable Handbook of London.

Cunninghame-Graham Robert Bontine. Scottish writer and traveller. Born in 1852, he was educated at Harrow and spent some years as a rancher in Mexico and S. America. He developed strong Socialistic sympathies and from 1886-92 was M.P. for North Lanarkshire. His books include volumes of short stories, lives of several Spanish adventurers and descriptions of his travels.

Cup Drinking vessel. Usually like a half-sphere, it was sometimes provided with a handle. Cups range from communion chalices to the tea cups of the home. Ornamental and commemorative cups have served for a century as sports trophies, *e.g.*, America, Ascot, Association, Calcutta and other cups.

Another kind of cup is a cool drink. It is made of wine or other beverage and flavoured with fruit or other ingredient, to which ice may be added. Sometimes a liqueur is added. Claret cup is a popular drink in hot weather.

Cupping means drawing blood, as a remedy for various complaints, a special kind of cup being employed for the purpose.

Cupar Burgh and county town of Fife-shire. It stands on the Eden, 44 m. from Edinburgh, on the L.N.E. Rly. The town has a trade in corn and linen and other manufactures. Pop. (1931) 4596.

Cupel Shallow cup-shaped vessel made of bone ash. It is used in metallurgical assaying for the separation of base metals from gold or silver or other unoxidisable metals.

Cupid God of love in classical mythology. He is identical with the Eros and Amor of Greek and Latin writers. Cupid was the son of Venus (Aphrodite).

Cupola Term used in architecture for a dome or arched roof like an inverted cup at the summit of a building or tower. The cupola, or dome, is one of the distinctive features of Byzantine architecture. It is also characteristic of the mosque.

Curaçao Island of the Dutch West Indies. Situated in the Caribbean Sea, 40 m. from the Venezuelan coast, it covers 212 sq. m. It raises sugar and tobacco and exports also salt and guano phosphates. Willemstad is the capital and St. Anne's Bay is a good harbour. Pop. (1931), 45,191.

The liqueur curaçao owes its flavour to orange peel, to which rum or brandy is added. It was first made in Curaçao.

Curara Arrow poison used by the South American Indians. It is prepared from various plants, principally species of *Strychnos*, and used to some extent in medicine in cases of tetanus and hydrophobia. From it is obtained the active principle, curarine, in the form of a yellowish-brown powder, which, though said to have no physiological action when swallowed, paralyses the muscles if injected beneath the skin.

Curassow Game bird found in South America. These birds are nearly as big as turkeys and have black, purple or dark green plumage. The crested curassow is the best known. They can be tamed.

Curator In Roman times the guardian of a person under full age, *i.e.*, 25 years, who took charge of his property. The word is still used in that sense in Scots law. It is now chiefly used for the official at the head of a museum, art gallery or similar institution, and also for an official or member of a governing board at a university.

Curfew Bell rung throughout Europe to warn people immediately to extinguish fires and lights. It was precautionary against fire, as ancient wooden buildings were inflammable, and aided in preventing sedition. The curfew is still rung at several places in England.

Curia Name denoting one of the 30 divisions of the Roman people. They were formed traditionally by Romulus, each having a vote in the comitia. Later it was applied to the senate house.

The word was introduced into England where the *curia regis*, or king's court, became the parent of the modern judicial courts, and especially of the privy council. It also designates the *curia Romana*, the juridical and administrative institutions whereby the Vatican governs the Roman Catholic Church. They comprise the congregations of the sacred college, tribunals, chancery, secretariat and so on.

Curie Pierre. French scientist. Born in Paris, May 15, 1859, he was educated at the Sorbonne. He became Professor of Physics at the Sorbonne, and married a Polish lady, Marie Sklodowski, who assisted him in his researches. They subjected large quantities of pitchblende to fractionation, and so discovered polonium and radium in 1898. For this they were awarded a Nobel prize in 1903. Curie was interested, also, in electricity, and with his brother, who was Professor of Mineralogy at Montpelier, did valuable work in this field. He was accidentally killed in Paris, April 19, 1906.

Madame Curie succeeded her husband as professor at the Sorbonne. In 1911 she received a Nobel prize for chemistry, and in 1919 she became Professor of Radiology at Warsaw, where a radium hospital was built in her honour. She died on 4th July, 1934.

Curius Manius. Roman Consul. Of plebeian birth, he was called Dentatus, from having been born with teeth already grown. During his first consulship he ended the Samnite War, and gave restricted citizenship to some Sabine towns. Again consul, after defeating Pyrrhus at Beneventum, he inaugurated the exhibition of captive elephants in public triumphs, 275 B.C. He died in 270 B.C.

Curlew Genus of shore birds of the plover family (*Numenius*). Their long crescent-shaped beaks have knobbed upper mandibles. The common (*N. arquatus*), breeds in Britain; the jack curlew, or whimbrel (*N. phaeopus*), only in the North of Scotland: and the Eskimo curlew (*N. borealis*), is a rare straggler. The stone curlew, or Norfolk plover, is of another family.

Curling Game popular in Scotland. It is played on the ice with large stones and an implement called a granite for pushing them, usually by four persons a side. The aim is to place the stones within three concentric circles as near the centre of the inner one as possible. The field of play is from 32 to 42 yds. long, and the stones weigh something under 40 lb.

Curragh Tract of land in Kildare, Irish Free State. It is about 32 m. from Dublin, and covers nearly 10 sq. m. Race meetings have been held here for 100 years, the beautiful turf being a great attraction.

Curran **John Philpot.** Irish lawyer. Born at Newmarket, Co. Cork, July 24, 1750, he went to Trinity College, Dublin. In 1783 he was elected to the Irish House of Commons, where he was one of Grattan's ablest followers. His reputation rests upon his oratorical efforts on behalf of those taken prisoner in 1798, and upon his speeches against the Union of 1800. From 1806 to 1814 he was Master of the Rolls in Ireland, and he died in London, Oct. 14, 1817. One of his daughters was the heroine of Moore's ballad *She is Far from the Land.*

Currant Fruit of various shrubs of the saxifrage order. *Ribes rubrum* yields cultivated red currants and, in another variety, white currants; *R. nigrum* yields black currants. The American red-flowered *R. sanguineum* is a shrubbery plant.

Another kind of currant is the dried seedless fruit of a grape grown especially in the Ionian Islands. This came originally from Corinth; hence the name.

Currency Term used for the money that passes current in a country. It may consist of coins of gold, silver, bronze or nickel, or may be paper money, of which, since the Great War, a great proportion of the world's currency has been composed. The name **currency notes** is used sometimes for the notes for £1 and 10s. issued in Great Britain since the Great War. At first issued by the Treasury, since 1928 they have been issued by the Bank of England.

Current In electricity, a movement of electrical energy from points of high to points of low potential. It is galvanic when battery-generated, induced when dynamo-generated. When flowing uniformly in one direction currents are continuous or direct (CC or DC); when reversing direction at intervals, alternating (AC). When the to-and-fro cycle is repeated during a specified time it is periodic, the number of cycles per second being the frequency.

Current Movement of a fluid in a determined direction. Air currents, occasioned primarily by the earth's rotation, are affected by differences of density and temperature. Every prevalent wind causes oceanic drift currents, which generate surface stream currents. Thus the Atlantic equatorial currents, drifted westward by the trade winds, unite in the Gulf of Mexico, creating the Gulf Stream, which flows northward. To assist mariners the British Admiralty publish monthly *Wind and Current Charts.*

Currie **Sir Arthur William.** Canadian soldier. Born in Ontario, Dec. 5, 1875, he became an estate agent at Victoria, British Columbia. As an officer in the Canadian militia, he commanded a brigade in Europe in 1915, fighting at Ypres in April of that year. Later he was appointed to a division. In 1917 he became Commander of the Canadian Corps, which he led to the end of the war. Knighted in 1917, in 1919 he was made Inspector-General of the Canadian Forces, and in 1920 Principal of M'Gill University, Montreal. He died in 1933.

Currie **Sir Donald.** Scottish shipowner. Born in Greenock, Sept. 17, 1825, he became a clerk in a shipping firm there. In 1868 he started in business himself, and soon had boats sailing to and from S. Africa. He called his firm the Castle Line, and later the **Union Castle Line,** all the ships being named after castles. In 1877, Currie was knighted, and in 1880 he became a Liberal M.P. He remained in Parliament until 1900, but separated himself from Gladstone, a personal friend, on the home rule question. He died April 13, 1909.

Currier Dresser of leather. He prepares tanned hides by soaking, skiving, shaving, scouring and colouring.

The **Curriers' Company** is a London city livery company which existed as a guild in 1367, and built a hall in 1516. The present hall is at 6 London Wall, London, E.C.

Curry Dish seasoned and made with boiled rice. The ingredients include coriander, cumin, pepper, garlic, ginger, coconut, spices, turmeric and tamarind. Freshly ground daily, it is poured as a mixed sauce on eggs, fish and meat. Curry is eaten in India and other parts of the East. English made curries are ordinary stews flavoured with curry powder.

Curtesy In English and Scots law, the life interest of a husband in his wife's lands after her decease. It becomes consummated only after the wife's decease, and if, except with gavelkind lands, there has been issue competent to inherit. In cases of intestacy the right was unaffected by the Married Women's Property Act, 1882. Similar rules of law exist in France and Germany; some of the United States recognise in their own laws tenancy by the courtesy of England.

Curtius **Marcus.** Roman legendary hero. According to one legend a large gulf opened in the middle of the Forum, and, an oracle having declared that it would not be filled up until Rome had thrown her most precious possession into it, Curtius mounted his horse and jumped into the abyss, which immediately closed, being afterwards called the Lacus Curtius.

Curwen **John.** English musician. Born at Heckmondwike, Yorkshire, Nov. 14, 1816, he was trained for the Congregational ministry. In 1844 he took charge of a church at Plaistow, was attracted by the tonic sol-fa system, then in its infancy, and in 1853 helped to found the Tonic Sol-fa Association. In 1864 he left the ministry, and in 1869 became first principal of the Tonic Sol-fa College in London. He wrote books on music and to publish them set up the business of J. Curwen & Son. He died, May 26, 1880, and was succeeded as principal of the college and head of the business by his son.

Curzon **of Kedleston, Marquess.** English statesman. Born Jan. 11, 1859, George Nathaniel Curzon was the eldest son of Lord Scarsdale, an Irish peer, whose ancestors had lived at Kedleston, Derbyshire, for 800

years. At Eton as at Balliol College, Oxford, he showed unusal powers, and became a fellow of All Souls. He spent some time travelling in the East, and his books soon made him an authority on that region. In 1886 he entered Parliament as Unionist M.P. for Southport. In 1891-92 he was Under Secretary for India, and in 1895-98 for Foreign Affairs. From 1898, when he was made an Irish peer, to 1905 he was Viceroy of India. He presided over the Durbar of 1903 and resigned owing to disagreements with Lord Kitchener. In 1911 he was made an earl.

Closely associated with Lloyd George during the Great War, he was Lord Privy Seal, 1915-16, President of the Air Board, 1916, and Lord President of the Council, 1916-19, and from 1919-24 was Secretary for Foreign Affairs. Made a marquess in 1921, he died March 20, 1925. He was Chancellor of the University of Oxford from 1907, and held many other high positions.

Curzon was twice married, firstly to Miss Mary Leiter of Chicago, and secondly to Mrs Grace Duggan. He had three daughters. The eldest became Baroness Ravensdale; another, Cynthia, married Sir Oswald Mosley.

Custard Apple Fruit of a small W. Indian tree (*Anona reticulata*). Widely cultivated in the tropics, its compact heart-shaped, dark-brown berries with quilt-like reticulation contain a soft, sweetish reddish-yellow pulp.

Custom House Institution set up to collect the duties imposed on imports. Its functions also include the declaring of free goods, and the entering and clearing of vessels. The London Custom House is at the north end of London Bridge, and there are custom houses at the various seaports; also at Croydon and other airports.

Customs Taxes levied on imported goods since the reign of Richard I. In 1801 there were 1500 specific rates of customs duty, but hundreds of these were cancelled in 1845-46, and in 1860 Gladstone still further reduced their number. Customs duties are levied on many articles imported into Great Britain, some, like those on tobacco and wine, being old duties, while others were introduced when the principle of a general tariff was adopted in 1931-32. Dutiable articles include sugar, tobacco, wines and spirits; the M'Kenna Duties and the safeguarding duties are also customs duties. Their collection is controlled by the Board of Customs and Excise.

Cutch Native state of India. It is on the north-west coast of Bombay. The Gulf of Cutch on the south is an arm of the Arabian Sea. Cutch covers 7600 sq. m. Its capital is Bhuj. Its ruler, the Maharas, is entitled to a salute of 19 guns. Pop. 484,500.

The Runn of Cutch is a district to the north of the state. In the wet season it is a water area; in the dry season it is a salt-covered desert. It covers 9000 sq. m.

Cuthbert British saint. He was born about 635, and became a shepherd. After spending some time at Melrose Abbey and in missionary travel, he became a hermit in Farne, or Holy Isle, and in 685 was made Bishop of Lindisfarne. In 687 he went back to Farne, where he died on March 20 the same year. His body was placed in Durham Cathedral, which is dedicated to him, and his shrine was very popular with pilgrims.

Cutler One who deals in cutlery or instruments for cutting and eating. In England the trade is centred in Sheffield where there is a cutler's company with a master cutler at its head. Another **Cutlers' Company** is one of the London livery companies. Its offices are at 4 Warwick Lane, E.C.4.

Cutter Single-masted sailing vessel. It has the mainsail, fore-staysails, and jib set to the bowsprit end. Cutter yachts are sloop-rigged vessels of considerable draught and slight beam. Armed revenue cutters for enforcing customs regulations, especially in the U.S.A., were originally cutter rigged, then schooner-rigged. Nowadays steamships are used. Ships' cutters are double-banked boats with dipping lug-sails used for shoregoing.

Cuttlefish Genus of marine molluscs with internal shell of calcareous bone (*sepia*). Unlike the eight-armed octopus, they and the squids have two long, additional tentacles with sucker-shod ends and ink-sacs for darkening water as a protection. Three species inhabit British waters. Southern Asia and the Mediterranean region use cuttlefish and squids for food. *See* CEPHALOPODA.

Cutty Sark Sailing ship of the type known as clipper, the most famous of the kind. She was built in 1869, and engaged in the Australian wool trade, sailed from Sydney to London in 75 days, a remarkable feat in those days. She is now in Falmouth Harbour.

Cuvier Georges. Name taken by the French naturalist and anatomist, Georges Léopold Chrétien Frédéric Dagobert, Baron de Cuvier. Of Huguenot family, he was born Aug. 24, 1769, and educated at Stuttgart. In 1795 he was made assistant Professor of Comparative Anatomy at the Jardin des Plantes, Paris. Later he was Professor of Natural History at the Collège de France, and in 1803 was made Secretary of the Academy of Sciences. In 1819 he was appointed Minister of the Interior. He died May 13, 1832. Cuvier was the greatest anatomist of his time. His work, *The Animal Kingdom Distributed according to its Organisation* was long a standard book.

Cuxhaven Seaport of Germany, at the mouth of the Elbe, 70 m. from Hamburg, to which it belongs. After 1875 it was converted from a village into a seaport, and it has accommodation for the largest vessels. It was used by the German navy up to 1918. On Dec. 25, 1914, British forces bombarded it. Pop. 15,000.

Cuzco City of Peru. It stands in a small valley 11,400 ft. above the sea. It has some industries and is connected by railway with La Paz and the coast. Once a great Inca centre, it was taken by the Spaniards in 1533. There are many remains of Inca architecture. Pop. 40,000.

Cyanamide White crystalline solid (NH_2CN), melting at 40°C. It forms metallic derivatives, in which the two hydrogen atoms are replaced by an atom of a metal. The chief metallic derivative is calcium cyanamide, which is black, and contains 29 per cent. nitrogen, which is liberated as ammonia on contact with water. This is why it is largely used as a fertiliser, as the bacterial soil flora convert the ammonia into the nitrates necessary for plant growth.

Cyanic Acid Chemical substance (HCNO). It is obtained by heating cyanuric acid and condensing the acid evolved by a freezing mixture. Its salts are formed when cyanogen gas is led into alkalis. Applied to the skin the acid causes a blister.

CYANOGEN is a poisonous gas which has a smell like that of peach kernels. It is obtained by heating dry cyanide of mercury in a tube and collecting the gas cooled over mercury. It is easily liquefied and burns with a blue flame.

Cyanide Compound of cyanogen with an element or radical; also a salt of hydrocyanic acid, especially potassium cyanide.

In metallurgy, the cyanide process is a method of extracting gold and silver from their ores. Devised and patented in 1890, it was developed especially in S. Africa. The ore, finely ground, is transferred to leaching vats in which an alkaline cyanide in solution forms a cyanogen compound with the precious and the alkali metal, and is afterwards precipitated by zinc turnings, zinc dust, or electrolysis. The process, employing potassium cyanide, was first confined to the treatment of tailings left after extraction by amalgamation. Nowadays sodium cyanide, even impure calcium cyanide, are largely used, and the process is applied to virgin ore.

Cybele Greek nature goddess of fertility. Her worship, which originated in Crete, spread over Greece. She was also called Rhea, or the great mother.

Cyclades Group of Aegean islands. Numbering 24 larger and about 200 smaller islands, they form a horseshoe S.E. of Attica and Euboea. The highest land is Mt. Ozia, 3290 ft. They supply limestones, marbles, sulphur, obsidian, millstones and clays; Naxos emery is a government monopoly. Hermoupolis on Syra is the capital. They cover 1040 sq. m. and belong to Greece.

Cycling Riding a bicycle or tricycle whether for pleasure or as a sport. Towards the end of the 19th century, when the ordinary bicycle was being developed, it was very popular, but now has a formidable rival in the motor cycle. The interests of cyclists are looked after by the **Cyclists' Touring Club** at 3 Craven Hill, London, W.3. For the sport the controlling authority is the National Cyclists' Union, which holds championship meetings. Several of the world's cycling records are held by L. Vanderstuyft, who has done 76 miles, 504 yds. in an hour. The record for one mile is 61.¼ secs. with a flying start.

Cyclone Atmospheric system in which equal barometric pressures form concentric circles or ovals with the lowest pressure at the centre. The axis is usually inclined. The steepness of gradient governs the strength of wind. Because of terrestrial rotation, cyclone winds move anti-clockwise in the northern hemisphere, but clockwise in the southern. The movement of translation is generally eastward.

Cyclopes In Greek fable, one-eyed giants. Homer made them shepherds living in Sicily. Hesiod made them the Titan sons of Heaven and Earth who forged Jove's thunderbolts, Pluto's shield and Neptune's trident; later they worked for Vulcan in Etna.

Cyclops Genus of minute freshwater crustaceans of the copepod order. They have enlarged feelers which they use as oars. A dark beady spot in front makes them look one-eyed; hence the name, which means circle-eyed. The female carries two oval eggsacs externally; the larvæ pass through the nauplius stage. Scores of species inhabit lakes and ditches.

Cylinder Solid traced by revolving a rectangle about one of its sides, which form the axis, the adjacent sides forming the circular bases. Specifically, in a right cylinder, the volume equals the height multiplied by the diameter-squared multiplied by .7854. When hollow, cylinders may serve as gun barrels, the chambers in which pistons operate, as in engines and pumps, or the glass barrels of electrical machines. Thus we hear of three, four and six cylinder engines. They may be rollers, metallic or otherwise, in printing and other machines, including ancient clay and stone cylinder seals.

Cymbal Musical instrument made of metal. Cymbals are plate-shaped and of indefinite pitch. They are played in pairs, one being slid against the other. More rarely they are clashed together. Modern orchestration frequently requires one to be suspended, then struck with a drumstick. This gives an impressive, unique sound. Ancient cymbals were much smaller and cup-shaped, emitting distinct bell-like notes.

Cymbeline British king, supposed to have been the son of Cassivelaunus. He was frequently confused with Cunobelinus, a mythical king of the Silurians. He was the chief ruler of Britain; in fact, he is called by Suetonius king of the British. Augustus, thinking him dangerous, contemplated an invasion of Britain, which was stopped by the submission of Cunobelinus. The plot of Shakespeare's *Cymbeline*, taken partly from Holinshed's *Chronicles*, is devoid of historical truth.

Cymmrodorion Society for preserving Welsh literature and nationality. Established for instructing the ignorant and relieving the distressed in 1751, it ceased in 1781. It was revived for promoting literary study in 1820 and published two volumes of transactions down to 1843. Reconstituted, largely through Sir Hugh Owen, as the Honourable Society of Cymmrodorion, of London in 1877, it publishes annual transactions and ancient MS. records. The offices are at 64 Chancery Lane, London, W.C. A similar society, established in 1792, which published various MSS., led to the revival of the national Eisteddfod.

Cymry Celtic word used by the Welsh as a name for themselves. It is also used to denote the group of languages comprising Welsh, Breton and Cornish.

Cynics Sect of Greek philosophers founded by Antisthenes. According to them virtue was the only good, consisting in avoiding evil and wanting nothing. From the cynics sprang the Stoics (*q.v.*).

Cypress Genus of evergreen shrubs and trees of the coniferous order. They are natives of S. Europe, Asia and N. America (*Cupressus*). The common cypress, *C. sempervirens*, grown in the Mediterranean region in antiquity, and used for domestic carpentry, musical instruments and mummy cases, was regarded as a symbol of the dead.

One variety of it, *C. fastigiata*, grows like the Lombardy poplar to a height of 90 ft; but in Britain it is seldom over 40 ft. Another, *C. horizontalis*, has spreading branches resembling the cedar.

Cyprian Saint and martyr. He was probably born at Carthage in A.D. 200. At first a teacher of rhetoric, he was converted to Christianity in 246 and became Bishop of Carthage in 249, when persecution was causing apostasy among timid Christians. Cyprian rallied and encouraged his flock, and, by his sympathetic understanding of their fears, encouraged the return of many lapsed Christians. Renewed persecution by Valerian caused first Cyprian's banishment and finally his execution on September 14, 258.

Cyprus Island of the Mediterranean Sea. It is 44 miles from the coast of Asia Minor and covers 3584 sq. miles. Nicosia is the capital. Other towns are Larnaca, Limasol and Famagusta. There are two mountain ranges with a plain between them. Fruit and vegetables are grown and exported. Other crops are cotton and tobacco. Asbestos and copper are mined; sheep and goats are kept. There are about 64,000 Turks in the population of 347,959. The others are Cypriotes, who form a Christian church of their own.

At an early date Greek and Phœnician colonies were planted in Cyprus. It was a Persian possession and then part of the Roman and Byzantine Empires before it passed to Venice. From 1571-1878 it was Turkish. In 1878 its government was taken over by the British, who annexed the island in 1914. Cyprus is governed by an executive and a legislative council under a governor. Of the 24 members of the legislation, 15 are elected. In 1930 the inhabitants petitioned Great Britain for independence, and in 1931 there was serious trouble in the island, largely due to religious discord.

Cyrano de Bergerac **Savinien.** French romance writer and dramatist. He was born in Paris, March 16th, 1620, and studied with a country priest, and in Paris. He served in the army in 1639-40, when he began the exploits for which he is famous, such as his single-handed adventure against 100 enemies. He began to write in 1642, mostly classical tragedies, but his most famous works are romances: *L'Histoire comique des Etats du soleil* (1662) and *L'Histoire comique des Etats de la lune* (1656 ?). He died in Sept., 1655.

Cyrus Names of two rulers of Persia. Cyrus, the elder, called the Great, was the founder of the Persian Empire. He attacked Croesus, King of Lydia, captured Sardis and took the king prisoner. Later he captured Babylon, united the Medes and Persians and made Susa his capital. In 529 B.C., according to Herodotus, he was killed by the Scythians; according to Xenophon he died peacefully in bed. Xenophon's *Cyropaedia*, purporting to describe the life of Cyrus as an ideal ruler, is really a didactic romance.

Cyrus the Younger was a son of Darius Nothus, King of Persia. He revolted against his brother, Artaxerxes, and led an army of Greeks from Asia Minor into Persia, where, at the Battle of Cunaxa, he was killed in 401 B.C. This expedition is the subject of Xenophon's *Anabasis*.

Cyst Cavity in the body containing fluid. It is usually enclosed by a tough fibrous layer. Retention cysts, formed by the blockage of ducts through inflammation or disease, may occur in breasts, kidneys, tongue, sinews or skin. Dermoid cysts, containing sebaceous matter, sometimes develop teeth. Dog tapeworms, living as larvae in man, form hydatid cysts.

Cytology Study of the structure and functions of cells, the living units of cytoplasm, of which all animals and plants consist. It seeks to elucidate the history of cell formation and development, whether concerned with reproduction or growth, and the methods by which cells discharge their generalised or specialised duties. It is of special moment in tracing out the relationships of micro-organisms to normal life processes, as well as to the causation and avoidance of disease. *See* CELL.

Czech People of Slavic stock mostly inhabiting the western region of Czechoslovakia. They form, with Poles, Wends and Slovaks, the western branch of the Slavs. Apparently migrating westward from the Upper Vistula in the 5th century, their speech became differentiated and was kept alive by John Hus and afterwards by the Moravian Brethren. The Czech University, founded at Prague in 1882, has fostered new and virile developments in their literature and culture. They number about 8,000,000.

Czechoslovakia Republic of Europe. It consists of five districts in central Europe, all before 1919 part of Austria-Hungary. These are Bohemia, Moravia, Slovakia, part of Silesia and Ruthenia. Its area is 54,000 sq. m. and its population (1930) 14,720,158, most of whom are Czechs and Slovaks. Prague is the capital, Brno, Ostrava, Bratislava and Pizen are the next largest places. The country is very productive. Coal and iron are mined. The chief crops are sugar beet, potatoes, rye, barley and wheat. There are extensive forests. Hops are grown and beer is made and exported. Other exports are glassware and cotton and woollen goods. The chief ports are Bratislava (Pressburg) on the Danube, and Aussig and Teschen on the Elbe, and the country has certain rights in Stettin and Hamburg. The railways are mainly owned by the state.

Czechoslovakia became a state in Oct., 1918. A national assembly met and Professor T. G. Masaryk was chosen president. The republic was recognised by a treaty of Sept., 1919, and in 1920 a constitution was framed. Masaryk remained president until Dec., 1935, when, at the age of 85, he resigned. Dr. Benes was appointed to succeed him. There is a parliament of two houses, both elected by proportional representation, and to them the ministry is responsible. There is an army of about 150,000 men raised by universal service. The unit of currency is the krone, equal to about 1½*d*.

Czernowitz or **Cernautzi.** City of Rumania, the capital of Bukovina. It is 164 miles from Lemberg, and is an important railway centre. During the Great War the city was several times taken and retaken by Russians and Austrians, while from Aug., 1917, to the end of the war it was in German hands. Pop. 111,122.

DAB Fish of the flat fish family (*Pleuronectes limanda*). Inhabiting British coast waters and brackish estuaries, it is about 12 in. long, with rough skin, light-brown above and white beneath.

Dabchick Popular name of the little grebe (*podicepes minor*). It has a greenish-black back and red breast, and dives with its young beneath its wings, or on its back. The Caroline, or pied-billed dabchick (*podilymbus podicepes*) is occasionally seen in Britain.

D'Abernon Viscount. English diplomatist. Edgar Vincent was born at Slinfold, Sussex, Aug. 19, 1857, and educated at Eton. He began his diplomatic career in Turkey. From 1883-89 he was Financial Advisor to the Egyptian Government and from 1889-97 Chairman of the Imperial Ottoman Bank. From 1899 to 1906 he was Unionist M.P. for Exeter, and in 1914 he was made a baron. He was Chairman of the Royal Commission on the resources of the Dominions, and from 1915-20 of the Central Liquor Control Board. From 1920 to 1926, when he was made a viscount, D'Abernon was British ambassador in Berlin. His *Diary* appeared in three volumes in 1929-30.

Dacca City of Bengal. It stands on the Buhri Ganga in the east of the presidency and is an important centre. From 1905 to 1912 it was the capital of East Bengal and Assam, a province now abolished. It has a number of industries, and here is the university, opened in 1921, for Bengal. Pop. (1931) 138,518.

Dace Freshwater fish of the carp family (*Leuciscus vulgaris*). Black-brown, with silvery sides, it is 8 to 9 in. in length, and up to 1 lb. in weight. It swims in shoals in running streams in France, Germany and southern England, but not in Scotland or Ireland.

Dachshund Breed of dog. It is a distorted hound with short crooked legs, and is employed in Germany in badger hunting. In Britain it is a favourite domestic dog. It has a cylindrical body, about 8 in. high at the shoulder, and weighs from 15 to 21 lb. The ears are long and pendulous and the tail tapering. The dog is rough or smooth haired.

Dacia Classical name for the region between the Danube and Carpathians, now part of Rumania and Hungary. Long occupied by independent Thracian tribes, it was subdued in A.D. 107 by Trajan, who created the Roman province of Dacia, separated from Moesia by the Danube. Under pressure from the Goths, Aurelian withdrew southwards into Moesia about A.D. 275, and formed a new province, Dacia Aureliani.

Dacoits Gangs of armed robbers in India. Dacoity was especially rife in the 18th century, and also for many years after the annexation of Upper Burma in 1886, but was at length suppressed.

Dado In classical architecture, the plane faced portion, usually rectangular, of the pedestal between base and cornice. Nowadays it is also the lower portion of wall interiors, with or without a separate capping, when contrasted in material or design with the wall area above. It developed out of the panelled wainscotting which preceded it.

Daedalus Mythical Athenian sculptor. His name personified the most ancient achievements of sculpture and architecture. He is said to have entered the service of Minos, ruler of Crete, and made the labyrinth which housed the Minotaur. Displeasing Minos, he was imprisoned, but escaped by making wings for himself and Icarus, his son. Icarus flew too near the sun and when the wax fastenings melted, he fell into the sea. Daedalus reached Sicily.

Daffodil Hardy bulbous plant of various species of narcissus of the amaryllis order. They are native to parts of Europe. The British lent lily (*narcissus pseudo-narcissus*), whose solitary nodding flowers have crimped trumpet-shaped coronas, comprises many varieties, including the Tenby daffodil and the robust Spanish daffodil. Gardeners have hybridised hundreds of varieties, but the daffodil still grows wild in some parts of England.

Dagenham Urban district of Essex. It is 3 m. from Barking and 11 from London, on the north side of the Thames and includes Becontree. Here are the English works of the Ford Motor Co. begun in 1928, and docks. Pop. (1931) 89,365.

Daghestan Soviet republic. Lying west of the Caspian Sea, it was set up in 1921 and covers about 13,500 sq. m. Its capital is Makchah-Kala. Pop. 787,000.

Dago Name applied, more or less contemptuously, to Spaniards, Portuguese and Italians in general in the United States. Corrupted from the Spanish name Diego, James, it was used primarily of seamen in mixed crews, but has since been extended ashore to the poorer Italian immigrants.

Dagon National deity of the Philistines. He is referred to in the Old Testament (Judges xvi., 21, 23; I. Samuel v. 1), and was worshipped at Ashdod and Gaza. Possibly he is identifiable with Dagan or Babylonian god of agriculture.

Daguerre Louis Jacques Mandé. French inventor, jointly with J. N. Niepce, of the daguerreotype, and thus a pioneer of the art of photography. Born at Cormeilles, Nov. 18, 1789, he took to operatic scene painting and opened a diorama in Paris in 1822. Collaborating with Niepce, 1829-33, he continued after the latter's death to elaborate the process which bears his name and which was communicated to the Academy of Sciences through Arago in 1839, actually 11 days after the publication of the Talbot-type process.

Dahlia Genus of herbaceous plants of the composite order. In 1781 specimens were brought to Europe from Mexico and cultivated by Dahl, a Swedish botanist, whence its name. One species, *D. variabilis*, with yellow discs and dull scarlet rays, has yielded most garden varieties. Cultivated single dahlias derive from *D. coccinea*, and cactus varieties from another species. The new dwarf hybrids are invaluable for borders, as they bloom freely, are sturdy in growth, and do not require supports.

Dahomey French colony in W. Africa. Adjoining Nigeria's western boundary, it runs from the coast northward to other French colonies. Westward lies French Togoland. Its coastline is only 70 m. long; the total area is 41,302 sq. m. Porto Novo is the capital. The chief products are coconuts, kola nuts, oil palms and cotton. Roads and railways have been made. The kingdom was annexed by France in 1894. Pop. (1931) 1,134,247.

Dail Eireann House of the legislature of the Irish Free State. The name was given by Sinn Fein members of parliament to the assembly they set up in Dublin in 1919. When the Irish Free State was created by treaty in 1922 the name was given to the Chamber of Deputies which, with the Seanad Eireann, or Senate, constitutes the state legislature. It has a speaker, deputy speaker and clerk of the House. It consists of 153 members, elected by the constituencies of the Free State.

Daimler **Gottlieb.** German engineer. Born March 19, 1834, he was responsible for some of the inventions that have made the modern motor car and its engine possible, and a well-known make of car is named after him. He also helped to invent the Otto gas engine. Daimler died March 6, 1900.

Dairen Seaport of Manchuria. It stands on the Liaotung peninsula 20 m. E.-N.-E. of Port Arthur. It has a good harbour and is the terminus of the S. Manchurian Rly., which has its headquarters here. It was handed over to Japan in 1905, and has since been the capital of the territory of Kwantung. The port does a considerable trade. Pop. 282,665

Dairy Place for collecting milk and preparing butter and cheese. In England dairying is supervised by a dairy commissioner under the Minister of Agriculture. The British Dairy Farmers' Association, founded in 1876, holds annual shows, and promoted a world dairy congress in 1928. Its Aylesbury school became the British Dairy Institute which, with the National Dairy Research Institute, is associated with Reading University. Dairy science studies the physiology of milk secretion, bacterial organisms, the food value of forage plants and the improvement of cattle.

DAIRYING AS A CAREER.—*See* AGRICULTURE.

Dais Platform, particularly the one on which a table stands. In the dining halls of the colleges at Oxford, Cambridge and the Inns of Court, one table, called the high table, stands on a dais.

Daisy (*Bellis perennis.*) Genus of hardy herbaceous perennial plants of the composite order. They are native to Britain and most parts of Europe. Cultivated garden varieties produce pink, red, and white giant double blooms. **Marguerites,** or ox-eye daisies, are *chrysanthemum leucanthemum,* while the so-called **Michaelmas daisies** belong to the aster family.

Dakota Name of two states of the United States, north and south. Both are in the north central part of the country, and are agricultural areas with a good deal of mountainous land. Each was admitted as a state in 1889, and each sends two senators and three representatives to Congress. North Dakota covers 70,837 sq. m., and South Dakota 77,615 sq. m. Bismarck is the capital of N. Dakota, which has a population (1930) of 680,845. Pierre is the capital of S. Dakota, which has (1930) 692,849 inhabitants. The Dakotas are a branch of the Sioux Indians.

Dalai Lama Chief pope of Lamaism, the form of Buddhism prevalent in Tibet and Mongolia. Its hierarchy has two heads. One is called Dalai Lama, and lives at Potala, a hill near Lhasa. The other, called **Tashi Lama,** resides in the convent at To-shi-lun-po. Their powers, religious and civil, are identical, but the Dalai Lama possesses the greater territory.

Dalbeattie Burgh and market town of Kirkcudbrightshire. It is situated on Dalbeattie Burn, 5 m. from Castle Douglas and 14½ from Dumfries, and its quarries have supplied the granite from which the docks at Liverpool and the Thames Embankment have been constructed. Other industries include concrete works, granite polishing, and dyeing. Pop. (1931) 3011.

Dalgety Town of New South Wales. Situated on the Snowy River, it is in an agricultural district. It was proposed as a site for the Federal capital, which was, however, built at Canberra. Pop. 4077.

Dalhousie **Earl of.** Scottish title borne by the family of Ramsay. In 1633 Lord Ramsay was made Earl of Dalhousie, and the title descended to **James Andrew,** the 9th earl. He succeeded in 1838, and in 1847 was made Governor-General of India, a post he filled until 1856 with great distinction. In 1849 he was made a marquess and he died Dec. 19, 1860. The marquesate became extinct, but the earldom passed to a kinsman.

John William, the 13th earl, was secretary for Scotland in 1880. His elder son became the 14th earl in 1887, and his younger son, **Alexander Robert Maule Ramsay,** married Patricia, daughter of the Duke of Connaught, in 1918. **Dalhousie Castle,** the earl's seat, is in Midlothian. His eldest son is called Lord Ramsay. **George,** the 8th earl (1770-1838), was governor of Nova Scotia; the university at Halifax, founded in 1818, is called **Dalhousie University.**

Dalkeith Burgh and market town of Midlothian. It is 8 m. to the south-east of Edinburgh, on the L.N.E. Rly. It has a corn market and is a coal mining centre. Pop. (1931) 7502.

Here is **Dalkeith Palace,** a seat of the Duke of Buccleuch. Built about 1700 it stands in a large park. An earlier castle was one of the seats of the Douglas family. The eldest son of the Duke of Buccleuch is called the Earl of Dalkeith.

Dalmatia Province of Yugoslavia. It forms a narrow coastal region, 200 m. long, on the Adriatic between Bosnia-Herzegovina and the sea, and is faced by innumerable islands with extensive fisheries. Occupying 4900 sq. m., it is mostly mountainous. There are some good harbours. The chief towns are, Sibenico, Brazza, Cattaro, Spalato and Ragusa. Until 1918 Dalmatia was Austrian territory. In 1920 it was given by treaty to Yugoslavia, except the capital, Zara, which was handed over to Italy. Pop. 623,000.

Dalmatian Breed of dog. It is a lightly built pointer, perhaps with original bull terrier crossing, with unwrinkled head and smooth, glossy white coat with

evenly sprinkled black spots. It averages 50-55 lb. in weight.

Dalmatic Liturgical vestment. A wide sleeved tunic became fashionable in Rome and Pope Silvester I. (314-335) bade his clergy wear this instead of the sleeveless garment. In its present embroidered form it is worn by deacons in the Roman Catholic Church and by bishops under the chasuble at mass.

Dalmellington Village of Ayrshire. It is situated on the River Doon, 15 m. from Ayr on the L.M.S. Rly. A Roman road once passed through the parish towards Ayr. Iron working and coal mining are the chief industries in the neighbourhood. Pop. 6183.

Dalmeny Village of Linlithgowshire. It is on the Forth, 10 m. from Edinburgh, on the L.N.E. Rly. There is an old church here and also **Dalmeny House**, the seat of the Earl of Rosebery, whose eldest son is called Lord Dalmeny.

Dalmuir District on the Clyde, part of the burgh of Clydebank. It stands where Dalmuir Burn falls into the Clyde, and has a station on the L.M.S. line. The important shipbuilding yard here was closed in 1930.

Dalry Town of Ayrshire. It is 23 m. from Glasgow, on the L.M.S. line. In the neighbourhood are iron works and coal mines, and there are textile manufactures in the town. Pop. 7400.

Dalston Suburb of London. To the east of the city, it is in the borough of Hackney. Another Dalston is a village in Cumberland, 4 m. from Carlisle.

Dalton **John.** English scientist, and one of the greatest of chemists. Born Sept. 6, 1766, he became a schoolmaster at Kendal. In 1793 he became a lecturer at the New College, Manchester, and in 1822 an F.R.S. He died in Manchester, July 27, 1844.

In 1794 Dalton, himself colour blind, published the first scientific account of that defect, often called **Daltonism**. He is better known, however, for his statement of the Atomic Theory of Matter which postulates that the elements unite in definite proportions by weight, the proportions being determined by the "atomic number." Thus the atomic weight of oxygen being 16, oxygen always combines in units of 16 or multiples of 16.

Dalton laid down also two important laws: (1) The pressure exerted by, and the quantity of, a vapour which saturates a given space are the same for the same temperatures whether the space is a vacuum or is filled with gas. (2) **(Dalton's Law)** The pressure of a mixture of gases is the sum of the pressures which would be exerted separately by the several constituents if each alone were present.

Dalton-in-Furness Market town and urban district of Lancashire. It is 3 m. from Barrow. Furness Abbey remains are near. In the market place is an old building called Dalton tower. Pop. (1931) 10,338.

Dalton System Educational experiment. It was started in America in 1920 by Miss Helen Parkhurst at the Dalton High School, Massachusetts, and the Children's University School, New York. The system, which aims at a less artificial relationship between the child and its work, is based on the three principles of Freedom, Interaction of Groups, and Individual Work. The work to be done is assigned to the child, who then attacks it independently of his schoolfellows, being supervised, and assisted if need be, by the teacher. The system has been adopted in some of the British Secondary Schools, and experimented with in certain Elementary Schools.

Dalziel **George.** British engraver. Born Dec. 1, 1815, he settled in London in 1835, and with his brothers started in business as an engraver. They provided the woodcut illustrations for an edition of *The Waverley Novels*, and did a great deal of work for *Punch*, *The Illustrated London News*, *The Cornhill Magazine* and other periodicals. Later Dalziel became a publisher. He died Aug. 4, 1902.

Dam Term applied to an embankment or barrier of wood or masonry built across a river or lake. It serves to prevent or regulate the flow of water for purposes of irrigation, or for providing water power for generating electricity. Notable dams are those on the Nile at Aswan and Asyut, the Great Senaar dam in the Sudan, and the Lloyd dam in India.

Damages Sum of money awarded to a successful plaintiff in a civil suit. If a person has been libelled, or injured, or suffered loss on a contract, he brings an action stating the amount of the loss he has suffered. Damages are sometimes claimed in cases of divorce and seduction.

Damascening Term applied to several processes for ornamenting metallic surfaces. The pattern may be deeply engraved with undercut grooves filled with gold or silver thread, and smoothed. Such work, highly developed in the East, was introduced by the Crusaders to Western Europe.

Damascus Capital of Syria. Situated 57 m. S.-E. of its port, Beirut, it stands in the Anti-Lebanon foothills. It is a great commercial centre and through the Gate of God pilgrims go on their way to Mecca. Features of the city are the enormous mosque, the huge bazaar and "the street that is called straight" in the Christian quarter.

Damascus belonged in turn to Assyria, Persia and Rome, and from 661-750 was the capital of the Caliphate. In 1516 the Turks captured it and in Oct., 1918, the British entered it. Later, it became part of the new republic of Syria. Pop. 193,912.

Dame Title of honour, also the legal designation of the wife or widow of baronet or knight, prefixed to her Christian name and surname. The Order of the British Empire has dames grand cross (G.B.E.), and dames commanders (D.B.E.).

Damien **Father.** Belgian missionary. Born Jan. 3, 1840, he joined a French religious order having missions in the Pacific, was ordained priest at Honolulu in 1864, and in 1873 volunteered to take spiritual charge of the leper settlement. Though himself stricken with leprosy in 1885, he continued his work until his death, March 28, 1888. Statements made by Dr. Hyde, a Presbyterian minister in Honolulu, after his death, evoked R. L. Stevenson's celebrated letter to Dr. Hyde in defence of Father Damien.

Damietta Town and port of Lower Egypt. Situated on a spit of land between Lake Menzala and the eastern branch of the Nile, about 10 m. from its mouth,

it surpassed Rosetta until the silting of its harbour diverted trade to Port Said and Alexandria. It is served by railway. Damietta was taken by the Crusaders several times. Pop. 34,907.

Dammar Hindu name applied to various resins, specifically from coniferous trees. *Dammara orientalis* yields East Indian dammar; *D. australis*, the New Zealand kauri pine, yields Australian dammar. Both, dissolved in turpentine oil, make transparent varnishes. Black and white dammars are Indian resins from non-coniferous trees.

Damocles Favoured courtier of Dionysius the elder, tyrant of Syracuse. Having declared his patron to be the happiest of mortals, he was invited to a banquet and seated in the place of Dionysius where he observed above his own head a sword hanging by a single hair. The parable was effectively utilised by Cicero and Horace.

Damon Greek hero. Damon and Pythias were two friends. Dionysius of Syracuse condemned the latter to death. Damon took his place and remained imprisoned while Pythias settled his affairs. Pythias honourably returned in time for execution and Dionysius, impressed by their friendship, liberated both.

Damp Humidity. In mining phraseology "firedamp" is marsh gas; mixed with air and exploded, it produces "choke damp" (carbon dioxide). "Black damp"—an accumulation of irrespirable gases, causes lights to burn dimly, while "white damp" is used of carbon monoxide.

In Building—To avoid the upward passage from the soil of atmospheric vapour through porous building materials such as timber and bricks, a damp course is formed not less than 6 in. above the ground level by horizontal, waterproof bands. These may be of slate, glazed stoneware slabs, sheet lead, asphalt, bituminised felt or similar impervious materials.

Damper Device for moderating the vibration of strings in keyboard instruments. Felt pad damper heads which press upon the strings by springs are connected to damper lifters. All dampers are released simultaneously when the loud, or right, pedal is depressed. This prolongs the vibration of the strings after the release of the keys, and excites others, harmonically related.

A damper is also a door or valve, arranged to diminish the aperture of an air-flue or chimney, thus checking the combustion.

Dampier William. English navigator, buccaneer and hydrographer. Born in Somerset, 1652, he served ashore in the Caribbean, 1674-76. He buccaneered in S. American waters, 1679-86, reached Guam in 1686, sighted Australia in 1688, and was, after a dispute with his comrades, marooned on the Nicobar Islands, reaching England in 1691. He explored the Australian coast from Shark's Bay to Dampier Archipelago and discovered New Britain off Dampier Strait. After two privateering expeditions in 1703-07, he piloted Woodes Roger's circumnavigation voyage in 1708-11. He died in March, 1715, leaving two books, *Voyages and Descriptions*, 1690, and *A New Voyage Round the World*, 1697.

Dampier Archipelago, off the N.W. coast of Australia, was a German possession until 1914. It is now governed by Australia under mandate from the League of Nations. Dampier Land is a peninsula of Western Australia.

Damson Fruit of a variety of the cultivated plumtree (*prunus domestica*). Mostly propagated by suckers, they are grown largely in Shropshire, Cheshire, Worcestershire and Kent. Smaller than the plum, and oval-shaped like it, the damson is usually dark blue in colour, but yellow and other colours are grown.

Dan (Signifies judge). Israelitish tribe named after Jacob's son Dan. Allotted the coastal region W. of Jerusalem, they could not resist the Ammonites without help from Ephraim and Judah. Part of the tribe accordingly migrated N. to Jordan's headwaters, where the ancient city Laish was renamed Dan. This became Palestine's northern limit. Hence the phrase "from Dan to Beersheba," in the South.

Danaë In Greek legend, the daughter of Acrisius, King of Argos. She was the mother of Perseus by Zeus, who visited her in a golden shower when, for safety, concealed by Acrisius in a brazen tower. Mother and babe were sent adrift in a sea chest. In classical tragedies and on vase paintings, Danaë personifies the thirsty earth fertilised by rain.

Danaïdes In Greek legend, 50 daughters of Danaus, King of Argos. Promised in marriage to the 50 sons of Aegyptus, they were bidden by their father to slay their husbands on the wedding night; all obeyed except Hypermnestra, who spared her husband, Lynceus. The guilty ones were condemned in Hades to the endless task of pouring water into bottomless pitchers.

Danbury Village of Essex. It is 4 m. from Chelmsford. Danbury Place was the residence of the Bishop of Rochester. On Danbury Hill, one of the highest points in the county, are remains of a Danish encampment. The name means Danes town. Pop. 1200.

Another Danbury is a city of S.W. Connecticut, 65 m. N.N.E. of New York, famous for the Danbury Hatter's Case (1902) arising out of a trade union boycott.

Dancing Rhythmical steps and movements of the body. Primevally it is a spontaneous expression of strong emotion, religious or social, and is illustrated in the art of the Stone Age. Primitive peoples manifest it variously, as Australian corroborees, Iroquois corn dances, Hawaiian hulas and Asiatic posturings. The sound for measuring the rhythm enhances the emotional appeal, even if it is only mere hand clapping or drum-tapping.

Music advanced with dancing to stimulate the sense of rhythm. The morris dance round a maypole, brought by John of Gaunt from Spain, typifies the homely measures of Tudor England, and survives in the games of modern children. From Spain came the pavane, fandango, bolero and saraband. France, besides elaborating the gavotte, minuet and quadrille, remodelled the central European polka, schottische and waltz.

Dances comprise step dances, by individual performers, as jigs and hornpipes; rounds by pairs, with or without bodily contact; squares by even pairs, as reels and mazurkas; country dances, *contre-danses*, by indefinite pairs; and cotillons or germans. American barn dances of negro origin, governed by jazz band syncopation, came to Europe and developed into the two-step, the one-step, and the fox trot. Stage dancing elaborated the latter, both French and Russian.

Dandelion Perennial herb of the composite order (*taraxacum officinale*). It is native to all temperate and cold regions. The lobed leaves resemble lions' teeth, *dents-de-lion*. Its long black tap root bears numerous hollow flower stalks with solitary heads of yellow strap-shaped florets. The seeds radiate white pappus hairs. The cultivated dandelion is blanched for salads. Pharmacists prepare taraxacum extract from the dandelion, and its bitter juice forms a rustic remedy for warts.

Dandie Dinmont Breed of dog. Introduced in Teviotdale, largely through a farmer who was a character in *Guy Mannering*, it is a long-backed, short-legged border terrier. With deep muzzle and hazel eyes, the dog is muscular and plucky, averaging 18 lb. The silky coat is slate-blue, pepper or mustard in colour.

Dandolo **Enrico.** A famous doge of Venice. Born in 1108, he belonged to one of the leading families of the republic. He visited Constantinople as an envoy to the emperor in 1173, but the story that he was blinded is not now believed. In 1192 he was chosen doge. He is chiefly remembered for his heroism in joining the Fourth Crusade in 1201. He added Crete and other districts to Venice and helped to found the Latin kingdom of Constantinople. He died there, June 23, 1205.

Dandruff Excessive dandruff — dead, flaky skin—indicates an infectious disease of the scalp (*Seborrhœa*) very difficult to cure and liable to result in baldness.

Treatment consists in frequent washing of the scalp with bland, pure soap, the removal of all dead, scaly matter, mild antiseptic and oily dressings and massage. Olive oil rubbed into the scalp before washing is helpful in removing the dandruff. Ultra-violet ray treatment is effective, and attention to the general health is of the greatest importance.

Another type of seborrhœa is accompanied by excessive greasiness, but the same general treatment is indicated.

Danegeld Tax imposed in England to provide money to buy off the Danes. For about 60 years, from 991, it was paid from time to time by all landholders to keep the invaders away. William I. revived it in 1084, but it was used for other purposes.

Danelagh Portion of N. and N.-E. England, handed over to the Danes. In 878 by the Treaty of Wedmore, or perhaps in 886, the Danes obtained the E. portion of Mercia, in which many of them had settled, called the Danelagh, and divided from the English section by a line running from London along the Lea to Bedford, then along the Ouse to Watling Street. It included East Anglia, Northumbria, and a part of Mercia. Early in the 10th century it was recovered by the English king.

Danes Name given to the rovers from the Scandinavian countries who raided England before 1066. They are also called Northmen. From 790 to 851 raids were fairly frequent and great damage was done by the invaders, who sailed up the rivers and landed in search of plunder.

In 851 the Danes began to settle in England and Alfred the Great handed over the Danelagh to them.

About 982 the Danish ravages began again. Ethelred the Unready raised money, the Danegeld, to buy them off, and in 1002 he instigated a massacre. In 1013 Sweyn, King of Denmark, arrived and conquered the N. of England, and in 1016 his son, Canute, became King of England. He reigned until 1035, and his sons, Harold and Hardicanute, until 1042, when the Danish rule ended. Danish settlements may be recognised by the ending *by*, *e.g.*, Grimsby and Formby.

Danewort Popular name for the dwarf elder (*Sambucus ebulus*). It is supposed to have reached Britain with the Danes. A native of Europe, W. Asia, and N. Africa, it is a many-stemmed herb, with pink-tipped white, bell-shaped flowers in flat-topped clusters. They bear small, black globular berries. The whole plant is distinctly purgative.

Daniel Biblical character. He was a Jew, one of the prisoners taken by Nebuchadnezzar to Babylon where he interpreted the king's dreams. This made the Chaldean magicians very angry and Daniel, by hostile strategy, was put into a den of lions from which he came out unhurt. Daniel is mentioned by the prophet Ezekiel as a man of great wisdom.

The Book of Daniel. In the Hebrew Scriptures between Ezra and Esther. External to the Law and the Prophets, it comprises six narrative and six apocalyptic chapters. The original Hebrew, partly lost in antiquity, depends, from ii. 4 to vii., upon contemporary Aramaic versions. From its minute familiarity with the events of the second century, modern scholarship dates its production to Antiochus Epiphanes' reign (76-164 B.C.) The anonymous author presumably utilised oral traditions of a Jewish Babylonian captive to hearten his Maccabean countrymen.

Dante Italian poet. Dante Alighieri, the son of a lawyer, was born in Florence in May, 1265. In 1289 he served with the Florentine army in the field and in 1300 he was one of the city magistrates. In 1301 he was sent on an errand to the Pope and, during his absence his party lost power, and he was banished. He died at Ravenna, Sept. 14, 1321, where he is buried.

Through life Dante dreamed of a great empire that would bring unity and peace to Italy and Europe. When a child, and once or twice later, Dante met a certain Beatrice, also a child. He never married her but she became for him the personification of love and inspired his muse. In 1292 he married Gemma Donati by whom he had four children.

Dante's immortal work, *La Commedia*, called, in an edition printed 250 years afterwards, *La Divina Commedia*, occupied eighteen years of his life. It describes an imaginary pilgrimage of the human soul, guided by Virgil (natural philosophy) and Beatrice (revealed religion). They descend through hell's three divisions, climb a seven-terraced purgatory into the earthly paradise, where Virgil leaves Beatrice to guide the pilgrims through the heavenly spheres to the Empyrean, the intuitive vision of the Godhead. The *Vita Nuova*, completed in 1300, describes his love for the earthly Beatrice. *De Vulgari Eloquentia* and *De Monarchia* are Latin treatises on Italian poetry and political relations respectively. The London Dante Society was founded in 1899.

Danton **Georges Jacques.** French revolutionary leader. Born at Arcis-sur-Aube, Oct. 26, 1759, he became a lawyer in Paris. In 1789 he was President of the Cordeliers Club and he commanded the National Guard in 1790. He became adminis-

trator of Paris in 1791 and Minister of Justice in 1792. He advocated resistance to the Prussians, using his famous phrase "De l'audace, encore de l'audace, et toujours de audace," and became one of the leaders of the revolutionary movement. He sat in the convention as a leader of the Mountain, voted for the king's death, was a member of the Committee of Public Safety and of the revolutionary tribunal, but was not willing to follow Robespierre further. Consequently he was arrested and sent to the guillotine, April 6, 1794, after he had made a speech of remarkable power and eloquence to his judges.

Danube The most important river of S. Europe It rises at Donaueschingen in Baden and flows for 1740 m. through Württemberg, Bavaria, Austria, Hungary, Czechoslovakia and Yugoslavia, marking the Bulgo-Rumanian frontier, and crossing Rumania to the Black Sea. It has over 300 tributaries, and on it are three great capitals, Vienna, Budapest and Belgrade, where it is over 1 m. wide, also Ulm, Regensburg, Passau and other historic towns, Bratislava, the port of Czecho-lovakia and Orsova with the Iron Gates. It is navigable by large vessels to Braila and by river barges to Ulm, and is connected with the Rhine by the Main and a system of canals.

The Danube is an international river, passing through six countries, and is governed by an international commission set up in 1919, which meets in Vienna, and looks after the river between Ulm and Braila. For the rest of the river, from Braila to its mouth, a smaller commission was set up in 1856, with members from Great Britain, France, Italy and Rumania.

Danzig City and free state under the League of Nations. It stands on the Vistula, about 4 m. from its mouth, at its junction with the Mottlau, 280 m. N.E. of Berlin. The territory included covers about 754 sq. m. The older parts of the city retain their mediaeval aspect, and the town hall is a magnificent Gothic edifice of the 14th century. There is a good harbour for trade in timber, corn, etc. Poland has the right to use the port.

The free state is governed by a president, a senate and a diet of 72 members elected for 4 years, and there is a commissioner representing the League of Nations. In 1924 the Bank of Danzig was founded and a currency introduced with 25 gulden to the pound sterling. Until 1919 it was the capital of West Prussia. Earlier it was an important member of the Hanseatic League. It has a broadcasting station (453.2 M; 0.5 kw.) Pop. (1929) 407,517.

Daphne In Greek mythology, the daughter of a river god. Her lover, Leucippus, who pursued her in woman's clothing, was slain by her attendant nymphs at Apollo's behest, and she was changed by her mother into a laurel tree. The sanctuary and grove of Daphne, near Antioch, in Syria, were sacred to Apollo.

Dardanelles Strait between Europe and Asia. It united the Sea of Marmora with the Aegean. The classical Hellespont, it is 47 m. long and 3 or 4 m. broad. At the Marmora end Gallipoli confronts Lapsaki; at the Aegean, Cape Helles confronts Kum Kale. Above its broad outlet the channel narrows, and is protected by castles on both sides. Between Sestos and Abydos, the channel, 1300 yd. wide, was crossed on boat bridges by the armies of Xerxes, 480 B.C., and Alexander, 334 B.C. There, too, it was swum in legend by Leander, and, in fact, by Byron. The passage was forced by a British fleet in 1807, by Admiral Duckworth. In 1856 the peace of Paris confirmed the right of Turkey to the sole use of the straits by warships.

Dardanelles Campaign. During the Great War, in 1914 and again early in 1915, the forts were bombarded by British and French warships and an attempt to force the straits failed with considerable loss. These operations preceded the landing on the peninsula of Gallipoli. The Treaty of Lausanne of 1923 placed the straits under an international commission. *See* GALLIPOLI.

Dardanus Mythical ancestor of the Trojans. A son of Zeus and Electra, he was born in Arcadia. He crossed over into Asia Minor where he married a daughter of Teucer and founded Troy. From him the Trojans are called Dardanides. He is connected with Rome through the legend of Aeneas. Another story transferred the ancestors of Dardanus to Italy.

Darent River of Kent. It rises near Westerham and flows to the Thames which it enters near Erith. It is 20 m. long and is navigable to Dartford.

Darenth is a village on the river, 2 m. from Dartford. Here a Roman villa and an Anglo-Saxon cemetery have been unearthed. The village has paper mills.

Dar-es-Salaam Seaport of Tanganyika Territory. It has a sheltered harbour which accommodates ocean-going vessels. There are railways to Kiguma on Lake Tanganyika, 772 m. away, and a branch from Tabora to Mwanza on Lake Victoria, 235 m. away. With Bagamoyo it is the terminus of cavarans from the interior, and handles a growing export trade of sisal hemp, coffee, cotton and minerals. It has a wireless transmitting station. Dar-es-Salaam was the capital of German East Africa before it surrendered to the British in Sept. 1916. Pop. (1930), 33,147.

Darfur Province of the Anglo-Egyptian Sudan, and semi-independent kingdom. The greater part of the country is a plateau for two to three thousand feet above sea level. Bordered westward by French Equatorial Africa (Chad colony), the frontier of which was delimited in 1924, southward by the Sudanese province of Bahr-el-Ghazal, and eastward by Kordofan, it occupies 175,000 sq. m. Mostly upland, it is traversed by the Jebel Marra ridge, the watershed between the Chad and Nile basins. The negro and Arab population raises cattle and cereals. Copper and iron are mined. El Fasher is the capital. Pop. 1,500,000.

Dargai Station on the Indian frontier. On the Afghan border of the N.W. province, its railway station, the most northerly in India, terminates a branch from Naushahra. It is on a hill range dominating the Malakand Pass into the Swat valley, and in the Tirah campaign of 1897-98, British troops were forced to abandon it from lack of water, but it was retaken after an unsuccessful first attack, by the Gordon Highlanders, supported by the 2nd Gurkhas and the 3rd Sikhs, Oct. 20, 1897.

Darien Name formerly applied to the neck of land joining Central and S. America, now called the Isthmus of Panama. It was "silent upon a peak in Darien" that Balboa—not Cortez—looked down upon the Pacific in the Gulf of San Miguel in 1513. The

Darien River is now the Tuira. The Serrania del Darien is an Andean range on the Colombian frontier.

The Darien Scheme was a plan to start a company in Scotland to trade with the W. Indies. It was founded by William Paterson and authorised in 1695 by the parliament in Scotland. In 1698 settlers were sent out to Darien, but they found it impossible to remain there. The climate was bad and the Spaniards hostile. The scheme was disliked in England, and its failure was attributed to this attitude, and there was much bitterness between the two countries for some years.

Darius Name of three Persian kings. Darius I., Hystaspis (521-485 B.C.) a son of Hystaspes, established himself as successor to Cambyses after suppressing various rebellions. He made Thrace and Macedonia Persian, and undertook two expeditions into Greece, the second being overcome at Marathon, 490 B.C. He organised the taxes, coinage, postal service, and maritime trade, dug a ship canal from the Nile to Suez, and permitted Zerubbabel to build Jerusalem's second temple (Ezra vi.).

Darius II., Ochus (424-404 B.C.), had a disturbed reign. Under Darius III., Codomannus (336-331 B.C.), Philip of Macedon and Alexander, victorious at the Granicus, Issus and Arbela, terminated Achemenian rule in Persia.

Darjeeling Town and district of Bengal. The town, 7000 ft. above sea-level, is a military and civilian health station, the summer quarters of the provincial government and an educational centre. It is 360 m. from Calcutta, connected by railway. Tea and rice are grown in the province in which are some of the foothills of the Himalayas. Pop. 22,258,

Darlaston Urban district of S. Staffordshire, in the Black Country, about 2 m. from Wednesbury, on the L.M.S. Rly. The chief industries are coal mining and iron working. Pop (1931) 19,736.

Darling River of Australia. It rises in the Great Dividing Range in Queensland and flows right across New South Wales until it joins the Murray at Wentworth. The Warrego is its most notable tributary. On it are Bourke, Louth, Menindie and other places. Its volume of water varies very much; in a wet season steamers can ascend it beyond Bourke. Its length is 1160 m.

Darling Downs is a great grazing area in Queensland. It is famous for its sheep, and contains coal mines. Warwick and Toowoomba are the chief towns.

Darling **Grace.** English heroine. Born at Bamborough, Nov. 24, 1815, she was the daughter of William Darling, keeper of the lighthouse on the Longstone, one of the Farne islands. On Sept. 7, 1838, the steamer *Forfarshire* was driven on the rocks about a mile from the Longstone. The Bamborough boatmen refused to put out through the wild seas, but Grace Darling persuaded her father to help her in taking a boat to their rescue. They reached the wreck and returned to the lighthouse safely with nine survivors, whom they tended for two days before they could be taken to the coast when the gale subsided. She received a purse of £700 raised by public subscription and many gifts and testimonials. She died of consumption at Bamborough, Oct. 20, 1842.

Darling Lord. English lawyer. Charles John Darling was born Dec. 6, 1849, and became a barrister. In 1888 he was elected Conservative M.P. for Deptford, a seat he retained until made a judge in 1897. He retired in 1923, and in 1924 was made a baron. His reputation as a wit was maintained by the volumes of verse he published, including *On the Oxford Circuit*.

Darlington Borough and market town of S. Durham, on the Skerne, a tributary of the Tees, 230 m. from London and 18½ from Durham, on the L.N.E. Rly. It has been an important railway centre since the opening of the Stockton and Darlington Rly. in 1825. The industries include railway locomotive shops, engineering works, iron works, and woollen mills. It is associated with the famous Quaker families of Pease and Fry. Pop. (1931) 72,093.

Darmstadt City of Germany. The capital of the republic of Hesse, 21 m. from Mainz, it is an important railway junction. Manufactures include chemicals and beer. In the 16th century Darmstadt became the residence of the family ruling over the part of Hesse called Hesse-Darmstadt. Pop. 90,000.

Darnel (*Lolium temulentum*). Annual grass related to rye grass. It is a native of Europe, temperate Asia and N. Africa. It differs from rye grass by its longer empty glumes and more turgid flowering glumes.

Darnley Lord. Scottish noble. Henry Stuart was born at Temple Newsam, Dec. 7, 1545, being the eldest son of the Earl of Lennox. Through his mother, a Douglas, he was descended from Henry VII. On July 29, 1565, he was married to Mary, Queen of Scots, and their only child was the boy who later became James I. Darnley's short married life, marked by his share in the murder of Rizzio, was ended when he was blown up and killed whilst lying ill in a house called Kirk o' Field, Edinburgh, Feb. 10, 1567. The share of Mary in this crime is still a riddle of history.

The Irish title of Earl of Darnley has been borne by the family of Bligh since 1725. The family seat is Cobham Hall, Kent, and the earl's eldest son is Lord Clifton. The 8th Earl, when Hon. Ivo Bligh, was a noted cricketer.

Dart River of Devon. It is formed by the E. Dart and the W. Dart. Both rise on Dartmoor and unite at Dartmeet, whence the river flows past Dartmouth to the English Channel. On account of the beauty of the scenery through which it flows it has been called the English Rhine. It is navigable to Totnes, and is 46 m. long.

Dartford Market town and urban district of Kent. It stands on the Darent, a tributary of the Thames, and 15 m. from London, on the S. Rly. There are ruins of a priory, once a famous pilgrim resort. Cement and paper are made, and there are engineering works and flour mills. It is proposed to build a tunnel from here to Purfleet. Wat Tyler started his rebellion here (1381). Pop. (1931) 28,928.

Dartmoor Moorland district in Devonshire. It covers about 300 sq. m. and is about 25 m. at its widest extent, N. to S., and 20 m. E. to W. It stretches from Okehampton almost to Plymouth and from Tavistock to Newton Abbot. It is practically useless for agriculture, though there is a little grazing. High Willhays and Yes Tor are the highest peaks, both just over 2000 ft. Princetown, with its convict prison, is on the moor

and on its edge are Lydford, Chagford and other places. The Dart, Tavy, Teign and Okement rise on the moor. In the N. it is used as an artillery range. The prison was built in 1806 to hold French prisoners of war. For some time after 1815 it was unused, but in 1830 it was made the chief convict prison for the country. In 1931 there was serious trouble among the prisoners.

The Dartmoor Terrier is a variety of fox terrier, bred to dig out foxes on the moor.

Dartmouth Borough, seaport and market town of Devon. It stands on the W. bank of the Dart, 30 m. from Exeter. Its station (G.W.R.) is at Kingswear on the other side of the river. A good harbour is formed by the river and it is a yachting centre. Pop. (1931) 6707.

Dartmouth Royal Naval College was opened in 1905 to train officers for the navy. They enter the college after passing a competitive examination and remain there as naval cadets for nearly 4 years. The building is on Mt. Boone and holds about 500 boys.

The title of Earl of Dartmouth was given to William Legge, a Secretary of State, in 1711. The earl's seat is Patshull House, Wolverhampton. His eldest son is called Viscount Lewisham, in which district he owns a good deal of land.

Dartmouth City of Nova Scotia. On the E. side of Halifax Harbour, it has engineering works and sawmills and a ferry crosses the harbour. It is the terminus of a railway line, now part of the national system. Pop. (1931) 9,100.

Darton Urban district of Yorkshire (W.R.), on the Dearne, 4 m. from Barnsley, on the L.M.S. Rly. Coal mines and engineering works are the chief employments. Pop. (1931) 12,595.

Darwen Borough and market town of Lancashire, 20 m. from Manchester, on the L.M.S. Rly. The industries are the making of cotton and paper, coal mining and stone quarrying, and public baths were erected in memory of Sir Robt. Peel. Pop. (1931) 36,010.

Darwin Port and town of N. Australia. It stands on a gulf in the extreme N., and is connected with the interior by railway. There is a good harbour. Its earlier name was Palmerston.

Another Darwin is a settlement in the Falkland Islands.

Darwin **Charles Robert.** English naturalist. The son of Dr. Robert W. Darwin, F.R.S., he was born at Shrewsbury, Feb. 12, 1809, and educated there and at Edinburgh and Cambridge. From 1831 to 1836 he served as naturalist on board the *Beagle* in its survey of the Atlantic and Pacific Oceans, and the knowledge gained on this voyage laid the foundations of his later researches. In 1839 he married Emma Wedgwood and the next 20 years were spent in scientific researches, chiefly at Down in Kent. The results were published in *The Origin of Species* in 1859, a landmark in the history of science, and in 1871 appeared *The Descent of Man*. He died April 19, 1882.

The theories of Darwin were fiercely assailed and aroused bitter controversy. He believed that man is related to the lower animals and that in animal life there is a continuous struggle for existence which leads to the natural selection of those qualities that are most useful to preserve and continue the life of the species. This is the doctrine of the survival of the fittest, or natural selection. Darwin gives many examples of the selective process, which he studied very intently. His theory that men is descended from the lower animals is now a truism of science. His theory of natural selection is accepted, with certain modifications due to the influence of environment, which he ignored or rejected. His house at Down, Kent, is now the property of the British Association.

Darwin's sons inherited his gifts. Sir George Howard Darwin (1845-1912) was professor of astronomy at Cambridge. 1883-1912. Charles Galton Darwin became professor of natural philosophy at Edinburgh in 1923, Sir Francis Darwin (1848-1925) was reader in botany at Cambridge and was responsible for his father's *Life and Letters*. Bernard Darwin won fame as a golfer and a writer on golf. Leonard Darwin (born 1850), the scientist's fourth son, became a soldier in the Royal Engineers. He went on several scientific expeditions and later became president of the Eugenics Society, and a writer on that subject. Sir Horace Darwin (1851-1928) became the head of a firm, at Cambridge, making scientific instruments.

Darwin Erasmus. English scientist. He was born at Elston, Nottinghamshire, Dec. 12, 1731, studied at Cambridge and Edinburgh, and became a doctor. His poem, *The Botanic Garden* (1792), shows a great love of nature, although the style is stilted and artificial. His most noted scientific work was his *Zoonomia*, 1794, in which he treats of pathology and generation. In this latter work he anticipated much of the Lamarckian idea of evolution. He was the grandfather of Charles Darwin and of Francis Galton. He died April 18, 1802.

Datchet Village of Buckinghamshire, on the S. Rly. It stands on the Thames, 2 m. from Windsor. Datchet Mead is the scene of Falstaff's tribulation in *The Merry Wives of Windsor*. There are remains of a monastery near the bridge. Pop. 2056.

Date Fruit of a tree of the palm order. A native of N. Africa and S.W. Asia (*Phœnix dactylifera*), it is widely cultivated in India. Mediterranean Europe grows it for Palm Sunday foliage. It is straight-stemmed and crowned with feather-like leaves, the male and female flowers being found on separate trees. It grows to a height of 100 ft. and bears dates in bunches of 200 or so. The natives of N. Africa use the date-palms for building huts, for fibre cloth, ropes and brooms.

The fruit of the date palm is very rich in sugar, and is largely exported to Great Britain.

The date plum is a tree that bears fruit about the size of a small orange. The plums are dried and eaten as a dessert fruit.

Daudet **Alphonse.** French novelist. Born at Nîmes, May 13, 1840, the son of a silk manufacturer, he was educated at Lyons and became a secretary in Paris. His studies of his early life in Provence, *e.g.*, *Lettres de mon Moulin*, 1866, *Le Petit Chose*, 1868, appeared first in the newspapers, but a wider fame came with the wonderful adventures of the imaginary Tartarin de Tarascon, *Fromont Jeune et Risler Aîné*, *Trente ans de Paris*, 1888, and *Souvenirs d'un Homme de Lettres*, 1888, are autobiographical. *L'Immortel* is a satire on the Academy. Daudet died in Paris, Dec. 17, 1897.

His son, Léon Daudet, born Nov. 16, 1867, became a journalist and editor of *L'Action Française*. He is better known, perhaps, as a

royalist, and his advocacy of that cause led to his imprisonment.

Dauphin Title borne by the eldest son of the kings of France. It means dolphin and was the title of certain princes in the 13th century or earlier. One of these, the Dauphin of Vienne, sold his lands to the prince who, in 1364, became King Charles V. He gave these lands to his son, and from that time the eldest son was called the Dauphin, just as in England he was called the Prince of Wales. His inheritance, the district round Grenoble, became known as Dauphiné.

Davenant **Sir William.** English poet. The son of an innkeeper at Oxford, he was born in Feb. 1606, and was a godson of Shakespeare. In 1629 he was made poet laureate and became manager of a London theatre. In the Civil War he fought for Charles I. and was knighted, but later he was imprisoned as a royalist. He died April 7, 1668. Davenant wrote *The Cruel Brother* and other plays, but is best known as the author of "The lark now leaves its watery nest."

Daventry Borough and market town of Northamptonshire. It is 74 m. from London and 12 m. from Northampton, on the L.M.S. Rly. The chief industry is the making of boots and shoes. Here the B.B.C. has erected two high power stations (5 XX and 5 GB) for the transmission of the Daventry National programme (1554.4 M.; 30 kW.), and the Midland Regional (398.9 M.; 25 kW). Pop (1931) 3608.

Davey **Lord.** English lawyer. Horace Davey was born Aug. 30, 1833, and educated at Rugby and University College, Oxford. In 1861 he became a barrister, and in 1880 Liberal M.P. for Christchurch. In 1886 and in 1892-93 he was Solicitor-General. From 1888 to 1892 he was M.P. for Stockton. In 1893 he was made a Lord Justice, and in 1894 a Lord of Appeal and a life peer as Lord Davey of Fernhurst. He died Feb. 20, 1907.

David Biblical character. The youngest son of Jesse, a man of Jerusalem, he became a shepherd and famed for his skill on the harp. Samuel, the prophet, anointed him as Saul's successor in the kingship, and he became armour-bearer to the king. Having killed the giant Goliath, he became the bosom friend of Saul's son, Jonathan, but Saul's enmity soon drove him into the wilderness where he became the leader of a body of discontented men who lived in the cave of Adullam. The death of Saul, and Jonathan, in battle against the Philistines followed, and David became King of Judah, but his reign was passed in warfare, mainly against his rebellious son, Absalom, and others.

David is regarded as the founder of the royal line to which Jesus Christ belonged. His story is told in the books of Samuel, Kings, and Chronicles. He stands out as a national hero, remarkable for strength and skill, a great leader of men, but capable of dastardly deeds in pursuance of his ends. His statue by Michelangelo at Florence is one of the world's masterpieces.

David Name of two kings of Scotland. David I., a son of Malcolm Canmore, passed his youth in England. In 1124 his brother, Alexander I., died, and he became king. His chief work was to establish bishoprics and monasteries. He died May 24, 1153.

David II. was a son of Robert Bruce. He became king in 1329, but passed many years as a prisoner, first in France, and then, after his defeat at Neville's Cross, in England. He died in Edinburgh, Feb. 22, 1371.

David Patron saint of Wales. According to legend he was a grandson of King Ceredig, uncle of King Arthur and a great miracle worker, and his mother was Non, a Cymric saint. Historically, he was born early in the 6th century and became Bishop of Menevia, now S. David's. As the head of the church in Wales he moved the seat of ecclesiastical government from Caerleon to Menevia. He founded many churches. He died about A.D. 601, and was canonised by Calixtus II. in 1120. **S. David's Day** is March 1.

David **Jacques Louis.** French historical painter. Born in Paris, Aug. 31, 1748. His father was an architect. Under Napoleon he was given official recognition, but was afterwards exiled and died in Brussels, Dec. 29, 1825.

Among David's best pictures are "Madame Récamier" and "The Coronation." "The Rape of the Sabines" (1799) is usually accounted his masterpiece. He was also a politician, and as a member of the convention voted for the death of Louis XVI., later following Robespierre.

Gerard David was a Flemish painter who lived between 1450 and 1523. Some of his work is in the National Gallery, London.

Davidson **Baron.** English archbishop. Randall Thomas Davidson was born April 7, 1848, near Edinburgh, and was educated at Harrow and Trinity College, Oxford. In 1874 he was ordained and for 3 years was a curate at Dartford. In 1877 he was made domestic chaplain to the Archbishop of Canterbury, whom he served for 6 years. In 1883 he was appointed Dean of Windsor, in 1891 Bishop of Rochester, and in 1895 Bishop of Winchester. In 1903 he was chosen Archbishop of Canterbury, and for 25 years held that post, a longer period than most of his predecessors. He resigned in 1928 and was made a baron. He died May 25, 1930.

Davidson **John.** Scottish poet. Born April 11, 1857, at Barrhead, his father was a minister. He was educated at Edinburgh, and was for twelve years a schoolmaster. In 1890 he settled in London where the rest of his days were devoted to poetry, and his volumes, *Fleet Street Eclogues* and *Ballads and Songs*, won for him a high place amongst the poets of his day. He drowned himself at Penzance, March 23, 1909.

Davidson **John Colin Campbell.** British politician. Born in Aberdeen, Feb. 23, 1889, he was the son of Sir J. M. Davidson, a noted physician there. Educated at Westminster School and Pembroke College, Cambridge, he entered political life and between 1910-20 was private secretary to a succession of ministers. In 1920 he was elected Unionist M.P. for the Hemel Hempstead division, and in 1923 was Chancellor of the Duchy of Lancaster. From 1924-26 he was Parliamentary Secretary to the Admiralty, and was chairman of the Unionist party organisation from 1926 to June, 1930. In 1928 he was made a Privy Councillor.

Davies **Benjamin Grey.** Welsh vocalist known as Ben Davies. Born in Glamorganshire, Jan. 6, 1858, he studied music in London. For many years he was with the Carl Rosa Opera Co., and his tenor voice was also heard to great advantage in *Ivanhoe* and other operas at Covent Garden Theatre, London.

Davies **Sir Henry Walford.** British organist and composer. Born at Oswestry, Sept. 6, 1869, he was a chorister at Windsor and took up music as a career. After studying in London, he was appointed organist of Christ Church, Hampstead, in 1891, and in 1898 organist of the Temple Church, London. He was (1903-07) conductor of the Bach Choir. In 1923 he became professor of music at University College, Aberystwyth. In 1924 he was chosen Gresham Professor of Music, and from 1927 to 1932 was organist of S. George's Chapel, Windsor. In 1922 he was knighted. Davies is known for his cantatas and other music, and for his popular broadcasting talks, which were, however, discontinued for a year from June, 1934, to give him time for his literary and other activities. He succeeded Elgar as Master of the King's Musick, April, 1934.

Davies **William Henry.** English poet. Born at Newport, April 20, 1871, he lived a wandering life in America and Britain, chiefly as tramp and pedlar. All the time he was writing poetry, and in 1906 his volume, *The Soul's Destroyer*, attracted a good deal of attention. Other volumes followed, all showing a love of nature expressed in beautiful language. These include *The Song of Love*, 1926. His prose writings include *The Autobiography of a Super-Tramp*, *A Poet's Pilgrimage* and *The Adventures of Johnny Walker, Tramp.*

Davis **Jefferson.** American statesman. Born in Kentucky, June 3, 1808, he was in the army from 1828 to 1835. In 1845 he was elected to Congress by Mississippi, and served in the Mexican War (1846-47). In 1847 he became a member of the Senate. From 1851 to 1855 he was Secretary for War, and in 1855 he returned to the Senate. In 1861, when the southern states seceded from the union, Davis was elected their president and remained president during the war. When it was over he was accused of treason, and passed some time in prison, but in 1869 he was released. He died Dec. 6, 1889, and was buried at Richmond, Virginia.

Davis **John.** English sailor, sometimes called John Davys. (Not to be confounded with John Davis of Limehouse, also a navigator, who lived several decades later.) Born in Devonshire about 1555, he went to sea, and in 1585 tried to find the North-West Passage. After voyages to the Arctic Ocean, he went S. and discovered the Falkland Islands in 1592, and then E. to the Indies. In 1604, Dec. 29 or 30, he was killed during a fight with pirates in the eastern seas.

Davis Strait, the channel connecting Baffin Bay with the Atlantic is named after him. It is 200 m. wide at the entrance and separates Baffin Island from Greenland. **Davis Sea**, part of the Antarctic Ocean, is named after a later explorer, James Davis, who explored it in 1914.

Davis Cup Trophy contended for by international lawn tennis teams. It owes its name to Dwight Davis, an American politician. Each team consists of four men. From 1920 to 1926 it was won by the United States, from 1927 to 1932 by France and in 1933 by Great Britain.

Davit Projection on a ship's side or stern for holding a boat. Usually pairs of straight or curved wood or metal arms, they can be shipped or unshipped at will. They commonly turn on their axes, enabling the boat to swing inboard for stowage, or outboard for lowering by pulleys. Cat davits are similar forecastle cranes for catting anchors.

Davitt **Michael.** Irish politician. Born in Mayo, March 25, 1846, he was the son of a peasant who was evicted from his holding and went to Lancashire in 1851. There Michael began to work in a cotton mill at Haslingden, and a few years later lost his right arm through a machinery accident. He soon became an active Fenian, and was one of the band that attacked the castle at Chester. In 1870, for trafficking in arms, he was sentenced to a long term of imprisonment, but was released in 1877. In 1879 he founded the Land League, but his activities led to his return to prison; while there he was elected M.P. for Meath, but as a convict was unable to take his seat. He sat in the Commons as M.P. for South Mayo, 1895-99, but until Parnell's death he was one of his opponents. In 1898 he helped to found the United Irish League. He died May 31, 1906. Davitt's writings include *Lessons from a Prison Diary.*

Davos Platz Winter and health resort of Switzerland. It is in the Davos valley, which stands 5000 ft. high. It is famous as a resort for consumptives, and for its organised winter sports, including skating, ski-ing, ice hockey and bobsleighing.

Davout **Louis Nicolas.** French soldier, brilliant, but a despot. Born in Burgundy, May 10, 1770, he became a marshal in 1804, and held commands at Austerlitz and elsewhere. He was with Napoleon in Russia in 1812 and was then in Germany where, in 1814, he surrendered. He joined Napoleon during the Hundred Days, and after Waterloo remained with the army to the last. He was pardoned in 1817, when he regained his title of Duke of Auerstädt, and took part in public life until his death, June 1, 1823.

Davy **Sir Humphry.** English chemist. He was born at Penzance, Dec. 17, 1778, educated at the grammar school there, and apprenticed to a doctor. In his early studies in chemistry he investigated the properties of gases, and discovered laughing gas. After his appointment as professor of chemistry at the Royal Institution, London, in 1802, his work was concerned with agricultural and electro-chemistry. In 1810 Davy demonstrated the true nature of chlorine, and his discovery by electrolytic methods of the metals sodium and potassium was followed by the isolation of boron, proof of the combatibility of the diamond and the invention of the Davy safety lamp. He was knighted in 1812 and received a baronetcy in 1818. In 1820 he was made President of the Royal Society. He died at Geneva, May 29, 1829.

Davy Lamp Miner's safety lamp. It was invented by Sir Humphry Davy in 1815. An oil lamp is enclosed in a cylinder of metal wire gauze through which the flame cannot be communicated even in an atmosphere which contains sufficient coal-gas to be explosive.

Dawes **Charles Gates.** American diplomatist. Born in Ohio, Aug. 27, 1865, he became a lawyer and practised at Lincoln, Nebraska. Later he turned to business life, and in 1917 was appointed chairman of the purchasing board of the American army. In 1923 he represented his country when the question of German Reparations was considered. The scheme drawn up at that time was called the Dawes Plan, and provided for the pavment by Germany of certain sums yearly the total amount to be fixed later. It was operative until superseded by the Young Plan in 1929. In

1924 he was elected Vice-President of the United States on the republican ticket. When he vacated that office in 1929 he was sent as ambassador to London. He retired in 1932 to take charge of the Reconstruction Corporation, but soon returned to business life in Chicago.

Dawlish Urban district and seaside resort in Devonshire. It is 12 m. from Exeter, and 3 m. from Teignmouth, on the G.W. Rly. The sea front is attractive with extensive sands. Pop. (1931) 4578.

Dawson City Capital of the Yukon territory, Canada. A river port, it stands at the junction of the Rivers Klondike and Yukon, about 1500 m. from the sea. Founded at the end of the 19th century, it became prosperous owing to the discovery of gold in the Klondike district. As the mines became less productive the city declined in importance. Pop. 1000.

Dawson River of Queensland. It rises in the Carnarvon range and joins the Fitzroy River below Boolburra. The two rivers have a combined length of 350 m. Coal of good quality is found in the river valley, but not much mining has been done.

Dawson of Penn, Lord. Bertrand Edward Dawson, the first baron, studied at University College and the London Hospital. He has done much research on gastric trouble, and has published treatises on paratyphoid and infective jaundice, on which he worked during the war. He became a peer in 1920, is Physician-in-Ordinary to the king, and was with King George V. in his last illness.

Dawson Sir John William. Canadian geologist and naturalist. Born in Nova Scotia, Oct. 30, 1820, he went to Edinburgh to complete his education. In 1842 he started to survey Nova Scotia, and in 1850 he was superintendent of education for the province. From 1855 to 1893, he was principal of McGill University, Montreal, and professor of geology there. In 1884 he was knighted, and in 1886 was President of the British Association. He died Nov. 20, 1899.

His son, George Mercer Dawson (1849-1901), was director of the geological survey of Canada. Dawson City is named after him.

Day John. English dramatist. Born at Cawston, Norfolk, about 1574, he went to Cambridge. He is known as the author of a dramatic allegory, *The Parliament of Bees* and *Humour out of Breath*. He wrote plays in association with Henry Chettle and Thomas Dekker before his death in 1640.

Daybrook Village of Nottinghamshire. It is 3 m. from Nottingham, on the L.N.E. Rly. Lace and hosiery are manufactured and there are laundries and a large brewery. Bestwood Lodge is near.

Daylesford Town of Victoria, about 75 m. N.-W. of Melbourne. In an agricultural district, it is a mining centre and there is a school of mining. Pop. 3846.

The original Daylesford is a village in Worcestershire. Warren Hastings, the Indian administrator, bought back the estate, which had for centuries been in his family, and rebuilt the house. He is buried in the churchyard.

Daylight Saving Scheme for giving extra hours of daylight in the summer. It was first brought forward by William Willett in an article published in *The Daily Telegraph* in 1907. The idea was to advance the clock one hour during the summer so as to increase the daylight in the evening, thereby benefiting the general health and welfare of the community and reducing the consumption of artificial light.

For many years Willett faced great opposition but in 1916, a year after his death, Summer Time became law by Act of Parliament, and by a further Act in 1925 the change was made permanent. This provides that on the morning of the day following the third Saturday in April, or the second Saturday if the third is Easter eve, the clock shall be advanced by one hour. It is put back one hour on the day following the first Saturday in October. This applies to Great Britain and Northern Ireland, while France, Belgium and other countries have adopted a similar scheme.

Dayton City of Ohio. It is 50 m. from Cincinnati, at the junction of the Great Miami River with three of its tributaries, it is an important railway junction with a network of electric lines. A busy manufacturing place, here are the works of the National Cash Register Co. and other large concerns. The city is a station of the U.S.A. air service. Pop. (1930) 200,982.

Daytona Seaside resort of Florida. It is on E. coast, about 50 m. south of St. Augustine. It is famous for its beach on which motor races are run.

Deacon In the Anglican and Roman Churches, a member of a clerical order. The word in Greek means servant, and the first deacons, of whom Stephen, the first Christian martyr was one, were appointed soon after the death of Jesus Christ (Acts vi.).

In the Church of England a man cannot be ordained deacon until he is 23 years of age. After serving as a deacon for a year, he is usually ordained priest. A deacon can conduct the services, but is not permitted to consecrate the elements at the Communion service, or to pronounce the absolution. In certain Nonconformist churches, deacons are laymen elected to manage the affairs of the church.

The office of deaconess existed in the early church, but after some centuries, owing to the growth of religious houses for women, they disappeared. They were revived in the 19th century and are now found in the Church of England and various Nonconformist churches, as well as in Germany and the United States. In the Church of England since 1897 they have carried on social work after being licensed by a bishop, and have been ordained for work as missionaries abroad

Dead Letter Office In Great Britain a department of the General Post Office. Letters which cannot be delivered because of being insufficiently addressed, the departure of the addressee, or any other reason, are opened here and returned to the sender.

Deadly Nightshade Plant found in Great Britain and elsewhere. It grows in shady spots and bears reddish flowers and small black berries. The root, leaves and berries are very poisonous. Atropine and belladonna are prepared from the leaves and root. The plant is sometimes called the belladonna.

Dead Men's Fingers Popular name for a coral zoophyte, *Alcyonium digitatum*. It is frequently cast up on British coasts. The pink,

spongy-looking masses are studded with tentacled polyps, which do not harden into solid skeletons. The word also refers to the spotted orchis, *O. maculata*, or marsh orchis, *O. latifolia*, with pale hand-like tubers. Shakespeare mentions them in *Hamlet*, iv. 7.

Dead Nettle Genus of annual perennial hairy herbs of the labiate order. It is native to temperate Europe, Asia and N. Africa. The botanical name is lamium. The commonest British species are the red flowered *L. purpureum*, white flowered *L. album*, yellow flowered *L. galeobdolon*, the imperfect flowered henbit, *L. amplexicaule*, and the spotted *L. maculata*, with white striped leaves and spotted flowers.

Dead Sea Lake of Palestine. It is 47 m. long and covers 340 sq. m. It receives the waters of the Jordan and lies 1300 ft. below the level of the Mediterranean. The Arabs call it Birkit-Lut, or the Lake of Lot and it is supposed to occupy the site of the cities of the plains, Sodom and Gomorrah. Its waters, reduced by evaporation, contain 25 per cent. of alkaline salts, and asphalt is found near. Fish cannot live in the sea, but the human body floats easily on it. Steps have been taken of recent years to extract the salt.

Dead's Part In Scot's law the part of a person's estate which he can leave to whom he will. It is one-third for a married man with children; in other cases it may be half or even all. Like Roman law, Scots law does not allow a person to leave all his money away from his family.

Deaf Mute Person, who, unable to hear from birth or infancy, has never learned to speak. For teaching such persons to understand the thoughts of others, gestures were at first employed, but in time these gave way to a regular alphabet, in which there is a finger position for each letter. In Great Britain both hands are used; in the United States only one. Lip reading is also employed, but this is less satisfactory.

In Scotland the education of deaf mutes was made compulsory in 1890, and in England and Wales three years later. There are several societies for them in Great Britain. The Royal Deaf and Dumb Association, unifying about 60 local welfare societies, maintains churches for them. The National College of Teachers of the Deaf promoted an international conference on the subject in London in 1925. The National Institute for the Deaf at 2 Bloomsbury Street, London, W.C. 1., is concerned with their industrial training. In the United Kingdom there are about 40,000 deaf mutes.

Deafness Lack of hearing. Deafness from atrophied auditory nerves is permanent. It may result, in any degree, partial or transient, from imperfect conduction to the nerves of sound vibrations from the outside. It is due to inflamed external meatus, the presence of foreign body or hardened wax, usually remediable, or a diseased or injured diaphragm of the middle ear or inner ear. **Occupational deafness** affects boilermakers, artillerymen and others who hear constant noises. **Nerve deafness**, sometimes partial, frequently attends old age. **Middle-ear deafness** may be due to scarlatina, adenoids or nasal catarrh. **Word deafness** prevents sufferers from attributing meanings to words that they hear.

Deakin **Alfred.** Australian politician. Born at Melbourne, Aug. 3, 1857, he was educated there and became a lawyer. In 1878 he was elected to the legislature of Victoria and from 1883 to 1886 he was minister of public works and Solicitor-General. From 1886-90 he was State Secretary. He worked for the federation of Australia and in 1900 became Attorney-General and a leading member of the first federal cabinet. In 1903 he followed Barton as prime minister, a post to which he returned in 1905. He resigned in 1908, but was again premier for a short time in 1909. He died Oct. 7, 1919.

Deal Borough and watering place of E. Kent, and one of the Cinque ports. It is 9 m. from Dover and 91 from London, on the S. Rly. Once Deal was a prosperous port, but the sea has encroached. It is now known as a pleasure resort. Pop. (1931) 13,680.

Deal Trade name for sawn fir timber. It covers yellow Scottish *pinus sylvestris*, white American *p. strobus*, and silver fir, *abies excelsa*, besides allied building timbers. English deals are 7-9 ins. by 3 ins. by 6 ft. and over; those under 7 ins. are battens, over 10 ins. are planks, thinner are boards, shorter are deal ends. American deals are 11 ins. by 2½ ins. by 12 ft. A standard hundred of deals contains 120 pieces.

Dean (Lat., *decanus*.) Ecclesiastical and collegiate official. It referred at one time to the judge of ten districts, and came to be used for the senior member of a society. Most of the English cathedrals and also Westminster Abbey and S. George's Chapel, Windsor, each have a dean who is the head of the body called the chapter which is responsible for looking after its affairs. In the Oxford and Cambridge Colleges, the dean is responsible for all matters of discipline. Other deans are the Dean of the Arches, or judge of the Court of Arches, and the Dean of Guild, an official in some Scottish burghs. A rural dean is a clergyman who looks after a part of a diocese.

Dean **Forest of.** District of S.W. Gloucestershire. It lies between the Severn and the Wye, and covers about 60 sq. m. It is largely crown property. Much of it is still forest land, where oaks and beeches grow, but elsewhere are coal mines. Cinderford and Coleford are the chief towns; the court of speech, now part of the Speech House Hotel, is the old capital. A railway line crosses the forest from Lydney to Lydbrook. Ruardean Hill (930 ft.) is the highest point. St. Briavel's is famous for its castle and church.

Death End of life. It may be natural or violent. In England and Wales, if a medical man is unable to give a certificate saying that the death was from natural causes, an inquest must be held by a coroner, in Scotland an inquiry by a procurator-fiscal. Every death must be registered with the registrar of births, marriages and deaths, otherwise the burial cannot take place.

Death Duties are the duties charged on the property left by a dead person. In Great Britain, they consist of estate duty and legacy duty. *See* ESTATE; EXECUTOR; LEGACY.

Death Rate Number of deaths occurring annually per thousand members of a country's population. Statistics are collected by the Government to show the increase or decrease between one period of years and another, to compare the mortality of the sexes at different ages, and the incidence of death in one district or occupa-

tion with that in another. Death rates are higher in tropical countries.

Owing to improved methods of sanitation, greater medical skill, scientific discoveries, humanitarian ideas, etc., the death rate in all civilised countries has decreased greatly in recent years. In 1876 the rate for England and Wales was 20.9 per 1000. Later figures for Great Britain and Northern Ireland are :—

1930	.. ..	11 7	1933	.. ..	12 5
1931	.. ..	12 5	1934	.. ..	11 9
1932	.. ..	12 3			

Death Watch Beetle Popular name applied to a small beetle (*xestobium ruforillosum*) which lives in wood, and makes a ticking noise, wrongly believed to foretell death. The noise is really a mating call. The ravages of this insect in furniture and old buildings are extensive, necessitating regular architectural surveys and often wholesale reconstruction.

Deauville Watering place of France. It is on the English Channel, 10 m. from Havre, and is separated from Trouville by the little River Touque. The place, which has good hotels, golf links and other attractions, is much visited by Britons. A race meeting is held in August. Pop. 3000.

Debenture Bond issued by a company or other legal corporation as evidence of a loan of money raised. The document states the amount of the loan, the rate of interest, the security (if any) and the terms of issue, including the lender's rights in default of payment of interest or principal. Debentures, like shares, are often issued in series by companies who raise huge loans by this means, and can be transferred like stocks and shares on payment of a stamp duty.

Sometimes second debentures are issued, in which case the others are known as first or prior lien debentures. Debenture holders are not members of a company, but are creditors of it. Debentures must be registered at Somerset House, London, W.C.

Deborah Prophetess of Old Testament history. She encouraged the Hebrews to victory over Sisera in Canaan. The Song of Deborah (Judges v.), one of the oldest specimens of Hebrew literature, describes the battle and the killing of Sisera by Jael.

Debrecen Town of Hungary, 130 m. E. of Budapest. It is an important railway junction, and a market for horses, cattle and agricultural produce. The university was founded in 1912, and the area under the municipal authorities covers 650 sq. m. It was once a fortress and noted as a stronghold of the Calvinists. Pop. 117,275.

Debrett John. English publisher. Born about 1752, in 1781 he took over the business carried on in Piccadilly, London, by John Almon. Almon had already issued in 1754 a *New Peerage*, and this was turned by Debrett into *Debrett's Peerage and Baronetage*. He died Nov. 15, 1822.

Debt Sum of money owing by one person to another. If a person cannot get his debt paid he usually turns it over to a solicitor or a debt collecting agency. In English law the process is to issue a writ or a summons for the amount. If this is £100 or less the case comes on in a county court; if more than that amount in the high court. Unless the debtor is able to prove that he does not owe the money, the judge will order it to be paid and, if this is not done, a distress can be levied on his goods. If there are no goods on which to levy a distress, the creditor should apply for a judgment summons. In this case the judge usually orders payment by instalments, and if the debtor then fails to pay he can be imprisoned for contempt of court. In Scotland the process is somewhat different.

An ordinary debt cannot be claimed if it is more than 6 years old, under the Statutes of Limitation, unless it has been acknowledged in writing since that date. In the case of a debt expressed in a deed, called a specialty debt, the period is 20 years. The limitation of debts does not operate in the case of money due to the crown.

Debussy **Claude Achille.** French musician. He was born at St. Germain-en-Laye, Aug. 22, 1862 and after studying at the Paris Conservatoire, won the Grand Prix de Rome with a cantata *L'enfant prodigue* in 1884. Debussy then became a pioneer of impressionism, seeking to distil into musical terms the sights, sounds and atmospherics of nature. His orchestral work, *L'après midi d'un Faune* (1894), his opera *Pelléas et Mélisande* (1902), and his lovely pianoforte music are proofs of his success. He died March 25, 1918.

Decalogue (Gr. *deka*, ten; *logos*, speech). The ten commandments. According to the account related in Exodus, they were given by God to Moses on Mount Sinai, and were originally written on two tables of stone. They were first introduced into the liturgy of the Church of England in the prayer book of Edward VI. in 1552. They are not to be regarded merely as definitions of different crimes, but as ethical and spiritual precepts.

Decameron Collection of tales written by Boccaccio. The idea is much the same as that of Chaucer's *Canterbury Tales*, some of which are borrowed from Boccaccio, who in turn, borrowed from other writers. During the plague in Florence in 1348 certain persons left the city and stayed for 10 days in an inn. Here they told the stories. Boccaccio wrote the book about 1350. The first English translation was made in 1620.

Decapolis (Gr. *deka*, ten; *polis*, city.) District of the Roman Empire occupied by a league of 10 cities. They enjoyed various privileges, struck their own coins, and were liable to military service. The decapolis of Palestine, probably formed during Pompey's campaigns in the East, is well known. Gadara was one of its cities.

Deccan District of India. A Sanscrit word which means "southern," the Deccan is a great plain lying to the S. of the Vindhya Hills, with the Ghats, E. and W., on either side. In it are Bombay and Madras, as well as the Central Provinces. Some believe that it was part of a continent now mainly under the sea. Much has been done since the Great War to irrigate the district, now named Gondwanaland.

Decimal In arithmetic, a term applied to a fraction having ten or some power of ten as a denominator. It is represented by a point, thus .4 means four-tenths,

and 62.5 means 62½. To divide or multiply by ten and multiples of ten the point is moved in one way or the other, and if necessary noughts are added, thus, 33.412 divided by 1000 is .033412.

The decimal system of coinage has been adopted in most civilised countries except Great Britain and India. A standard unit is taken for reference, such as the franc in France and the dollar in the United States. In the metric or decimal system of weights and measures the metre is the standard unit of length, the gramme of weight and the litre of capacity. The other measures are this unit multiplied or divided by ten or a multiple of ten, *e.g.*, a kilogram is a thousand grammes.

Decimation Selection by lot of every tenth man. It was a Roman military punishment, adopted to avoid undue weakening when large numbers of troops merited death for mutiny. It occasionally applied also to captured prisoners. The term nowadays incorrectly designates wholesale destruction, such as decimation by fever or enemy fire.

Decius **Caius Messius Trajanus.** Roman emperor. Of obscure birth he rose to be governor of Moesia, whither he was sent to pacify the revolting army. His soldiers forced him to assume the purple and he was also recognised in Rome. He was finally defeated and slain by the Goths in a battle on the Danube. His brief reign, from 249 to 251, is especially notorious for a cruel persecution of the Christians.

Declaration Formal statement of any kind. Outstanding examples are the Declaration of Indulgence of 1687; the Declaration of Rights of 1689; the American Declaration of Independence in 1776; the Declaration of Paris, concerning maritime warfare in 1856; and the Declaration of London on similar subjects in 1908-9. In English law, solemn declarations before authorised persons sometimes replace affidavits. A deathbed declaration respecting cause of death may be valid evidence. Declarations of trust must be in writing and signed. In Scots law prisoners may make signed declarations before magistrates within 48 hours of arrest; parties appearing before a court after ascertainment of facts, such as marriage, are entitled to a declaration. Declarations of war nowadays usually follow initial acts of hostility.

De Clifford **Baron.** English title, one of the oldest in the peerage. It was given in 1299 to Robert de Clifford. His family became extinct in 1605, and the barony was in abeyance until 1691. In 1721, having been held by the Tuftons, it again fell into abeyance, as it did in 1775 and 1832. In 1832 it came to Sophia, wife of John Russell, a descendant of the Southwells who held it from 1776 to 1832 and in that family it has since remained.

Declinator Instrument used in astronomy for determining the declination of a star or place in the heavens. This is the angular distance from the celestial equator as seen from the earth, thus corresponding with terrestrial latitude, just as right ascension corresponds with longitude.

Decomposition As generally applied, the decay or separation of the constituents of a substance. As regards organic matter this process is expedited by the action of bacteria, fungi and various insects as well as by rain, frost, etc., and the acids set free from decaying matter act as agents in the decomposition of rocks. In the case of granite the solvent action of carbonated waters resolves the rock into its constituents to form beds of sand and Kaolin.

Decorated Period Style of Gothic architecture intervening between Early English and Perpendicular. It covers approximately the reigns of the first three Edwards, 1272-1377. Dog tooth passed into ball flower moulding, foliage became more naturalistic, and ogee curves developed. A geometric style, *e.g.*, as in the angel choir at Lincoln and the nave at Lichfield, became, by eliminating circle tracery, flowing and curvilinear. The choir stalls at Westminster and Ely and Aymer de Valence's tomb in Westminster Abbey illustrate other forms. Other fine examples of decorated work are the spires of the cathedral at Salisbury, of S. Mary the Virgin, Oxford, and of the cathedral towers at Hereford and Wells.

Decoy Contrivance for luring wildfowl into snares or within reach of guns. The term, denoting in Tudor England a sharper and a card game, was perhaps transferred to Dutch duck cages in Stuart times. Charles II. made one in St. James's Park in 1685. Channels are made from an estuary into a pool. Arched with nets gradually narrowed, and the wild fowl lured therein by trained decoy ducks. In America artificial birds float in suitable spots. Some sportsmen hang caged partridges in trees as decoys.

Decree Authoritative decision having the force of law. The term designates such decisions by Roman emperors, and subsequently by ecclesiastical councils, *e.g.*, Trent. Formerly denoting equity decisions, decrees are now usually called judgments, except notably in the divorce court, which makes decrees for restitution of conjugal rights, judicial separation or divorce. Those for separation or divorce, at first conditional, or decrees *nisi* (unless) become absolute after six months.

Decretal Letters and official acts of the popes, which had the force of law and were unreservedly accepted. The first collection of these were sent by Innocent III. in 1210 to the University of Bologna, additions being made by later popes. Apocryphal decretals soon became common; the most celebrated collection appeared in the 9th century in the Frankish Empire, under the name of S. Isidore. It was received as authentic by the councils and popes.

Dedham Town of Essex. It is 7 m. from Colchester and about 2 m. from its station Ardleigh on the L.N.E. Rly. It was once a centre of the cloth trade and had a market. The Stour flows by the town and on it is a picturesque mill. Dedham has association with Constable, the artist.

Deduction In mathematics the act of subtraction. Accountants deduct losses from gross receipts; agents deduct commissions before making payments.

In logic deduction is the act of deducting from general principles particular results. Deductive reasoning is followed in making weather forecasts. Thus, if for many years it has been wet on the 40 days following S. Swithin's day, it can be deducted that it will be wet during that period in the future. The

opposite, though similar process, from the particular to the general, is induction.

Dee Name of several British rivers. The Welsh Dee rises in Bala Lake and flows to Chester, where its estuary begins. It is 70 m. long, but its commercial importance has been destroyed by the accumulation of sand in the estuary.

Another Dee is in Aberdeenshire, 90 m. long, and passes Balmoral on its way through Deeside to the sea at Aberdeen. It is famous for its salmon. A shorter Dee, in the county of Kirkcudbright, is 45 m. long and rises in a loch of the same name.

Dee John. English alchemist. Born in London, July 13, 1527, he was educated at Cambridge. He claimed to foretell the future by means of the stars and crystals. He was put in prison in the time of Mary, but Edward VI. gave him two livings in the church, and Elizabeth believed in him and visited him for advice. He died at Mortlake in Dec. 1608. Dee claimed to be able to transmute gold, and suggested a reform of the calendar. He wrote books on mathematical subjects. His son, Arthur Dee (1579-1651), was physician to the Tsar of Russia and to Charles I.

Deed In law a document given under seal, more binding than an ordinary agreement. It must be stamped, the value of the stamp varying according to the amount of property dealt with by deed. It should be signed by each party to it and the signatures witnessed. Deeds are executed where houses and land are sold, or mortgages are granted. Settlements of money on marriages and other occasions are usually done by deed.

Another deed is a deed of arrangement by which an insolvent person hands over his property to his creditors and so avoids bankruptcy. A deed made by one person is called a deed poll. Examples are where a man changes his name or gives a power of attorney to some one.

Deemster Judge in the Isle of Man. There are two deemsters who hold courts, one in the N. and the other in the S. division of the island, for the trial of offenders. The name, formerly used also in Scotland, means one who pronounces a doom or judgment. The late Sir Hall Caine published a novel called *The Deemster* in 1887.

Deeping George Warwick. English novelist. Born at Southend-on-Sea, in 1877, he was educated at the Merchant Taylors School, London, and at Trinity College, Cambridge. He took a medical degree in 1902 and practised for a short time. In 1903 he published a novel and henceforward, except during the Great War when he saw active service with the R.A.M.C., he devoted his time to writing, his reputation rising steadily with each work. They include, *Bertrand of Brittany*, 1908; *Martin Valiant*, *The Prophetic Marriage*, 1920; *Sorrell and Son*, 1925; *Old Pybus*, 1928; *Roper's Row*, 1929; *The Exiles*, 1930; *The Road*, 1931; *New Wine and Old*, 1932; *Two Black Sheep*, 1933; and *Sackcloth into Silk*, 1935.

Deer Family of solid-horned ruminants. They are found all over the world except in S. Africa and Australia. Their horns or antlers, which are shed and renewed every year, are borne by all the stags or male deer except the musk deer. They are also borne by the females of the reindeer.

Three varieties are found in Great Britain, the red, the roe, and the fallow deer. The red deer is found wild in the Scottish Highlands and on Exmoor. There are also tame herds in various deer parks, where the fallow deer is also seen. The flesh of the deer called venison can be eaten. At one time it was an important article of diet, especially among the rich, hence every large house had its deer park.

To-day deerstalking is a popular sport in the Scottish Highlands, where over 3,000,000 acres are given up to deer forests. The season is from Aug. 12 to Sept. 12 for stags, and from Nov. 10 to March 31 for hinds, as the females are called.

Deerhound Breed of dog. A rough-haired, stoutly-built variety of Scottish greyhound, it is used especially in deerstalking. Brindled, fawn or blue, it has long tapering head and stern, and well-arched loins. Quick-running, and keen-scented, it averages 90 lbs. in weight. The almost extinct Irish deerhound has reappeared by careful breeding.

Default In law a failure to do something. It is used when a person fails to defend an action brought against him. In such cases judgment is usually given for the other party.

Defence Protection against attack. In the United Kingdom the defence of the country from foreign enemies is in the hands of the navy, army and air force, each with its own organisation. It has been proposed that these should be combined into a single ministry of defence. To consider the defence problems of the British Empire there is a Committee of Imperial Defence with a secretariat at 2 Whitehall Gardens, London, S.W., 2. There is an Imperial Defence College at 9 Buckingham Gate, S.W.1.

Several warships have borne the name *Defence*. One was the armoured cruiser that was sunk in the Battle of Jutland.

Defence of the Realm Form of martial law established in Great Britain by the Defence of the Realm Act, Aug. 8, 1914. Colloquially called D.O.R.A., it was consolidated, Nov. 27, 1915, and amended, Mar. 16. 1916. Under this legislation the King in council proclaimed during the Great War a multitude of regulations affecting every aspect of the national life. They concerned factories, railways, lights, bells, information, censorship, shop hours, enemy trading and food control. When the act lapsed an Emergency Powers Act, 1920, enabled the Government departments to keep many of its provisions in force, especially those concerned with the sale of food and drink.

Defender of the Faith Title, in Latin *fidei defensor*, conferred on Henry VIII. in 1521. It was a recognition by Pope Leo X. of the King's treatise defending the seven sacraments. Withdrawn after the breach with Rome, Parliament reaffirmed it in 1544, and it remains part of the official designation of the British crown. Inscriptions on coins usually show *F.D.* or *fid. def.*

Deflation Removal of the contents of a gas bag, thus reducing its volume. By analogy it denotes a reduction in the amount of paper money in circulation. From 1914 to 1920 the volume of paper money increased enormously, especially in France and Germany, causing a great rise in prices.

To check this the amount of paper money was gradually reduced, bringing prices down, and this was known as deflation. *See* REFLATION.

Defoe **Daniel.** English writer. Born in London about 1659, he was the son of a butcher, James Foe. He studied at Stoke Newington to become a Nonconformist minister, but instead entered business life in London. In 1613 he married, and in 1685 took part in Monmouth's rebellion. He was in the army of William III. and soon after the revolution of 1688 began to write, first as a supporter of the King. In 1702 he wrote the ironical *The Shortest Way with the Dissenters*, to whom he still belonged, and for this he was put in the pillory and imprisoned. While in prison he started *The Review*, a landmark in the history of English journalism. At first a weekly, after a time it was issued three times a week until it ceased in 1713.

In 1703 Defoe was released and for the next 25 years he was busy writing, though he found time to travel in Europe and to serve the government as a secret agent in Scotland and elsewhere. His many political writings have no permanent importance, but through them he exercised a potent influence on English journalism, of which he was one of the founders. But great as is his title to fame, it is overshadowed by that of the author of *Robinson Crusoe*, the first part of which appeared in 1719. Some of Defoe's other books include, *The Journal of the Plague Year*; *The Political History of the Devil*; *The History of Colonel Jack*, and *A Tour through Great Britain*. His novels include *Moll Flanders*. Defoe lived at Tooting, where he was associated with a dissenting congregation, and then at Stoke Newington. He died at Moorfields, April 26, 1731, and was buried in Bunhill Fields. In 1931 the bi-centenary of his death was celebrated.

Degas **Hilaire Germaine Edgar.** French artist. Born in Paris, July 19, 1834, he studied there. He soon won a reputation by his paintings of dancing girls and was especially remarkable for his draughtsmanship. He died in Paris, Sept. 27, 1917.

Degeneration In biology a term used for modifications in certain organisms representing changes from a higher to a lower type of structure. It often accompanies parasitism. This is seen well in the crustacean family of the fish lice, where in some the appendages are reduced, the eyes absent and the antennae represented by hooks, in others the body is vermiform and other parts are correspondingly reduced. In one type which is parasitic on crabs, the adult stage has the form of a large sac without mouth or appendages.

Dehra Town of British India. In the United Provinces, it is 70 m. from Ambala, and is a railway junction. It takes its name from the River Dehra and the district of which it is the capital is called Dehra Dun. Pop. 36,000.

Deira One of the early English kingdoms. It consisted of the land between the Tees and the Humber, and came into existence about 500, or later. A century or so later it was united with Bernicia and the two were called Northumbria. The boys seen by Pope Gregory in the slave market at Rome came from Deira.

Deism Belief in a personal God, detached from the world and recognised by the light of reason. This current of rationalistic thought, denying Christianity and the supernatural authority of the Scriptures, was incipient at the Reformation. It emerged in England through the teachings of Lord Herbert of Cherbury, who in the 17th century laid down its 5 ruling principles, and of Blount, Tindal, Toland, Woolston, Middleton, the 3rd Earl of Shaftesbury, Collins and Bolingbroke. Their influence reached Voltaire, Rousseau and Diderot in France, Eberhard, Reimarus and Lessing in Germany. English deism encountered the strength of the evangelical revival, provoked Butler's *Analogy of Religion*, passed into the scepticism of Hume and preluded later developments of free thought. Deism is distinguished from theism, which regards God as in touch with His creation.

Dekker **Thomas.** English dramatist. He was born in London about 1570 and passed his life there, but little else is known about him. He was more than once in prison for debt, and died about 1632. Dekker wrote a number of plays, some of them with Ben Jonson, Webster, Massinger, Middleton and other dramatists. His own include *The Shoemaker's Holiday* and *The Pleasant Comedy of Old Fortunatus*. With Middleton he wrote *The Roaring Girl* and with Ford and Rowley *The Witch of Edmonton*. He also wrote *The Gulls' Handbook*.

Delagoa Bay Opening of the Indian Ocean. It consists of an inner and an outer bay and the two form a wonderful harbour. It is on the E. coast of Africa in Portuguese territory, and on it is Lorenzo Marques. A railway runs from there to Pretoria, 350 m. away, and Delagoa Bay is the obvious outlet for the produce of the Transvaal. The ownership of the bay was a matter of dispute until 1875, when arbitration gave it to Portugal.

De la Mare **Walter John.** English poet and novelist. He was born at Charlton, Kent, April 25, 1873, and educated at the choir school of S. Paul's Cathedral. From 1889 to 1908 he was employed by a business firm in London, but during this time he became known as a writer. His novels include *Henry Brocken*, *Memoirs of a Midget* and *The Return*, which won a literary prize. He is best known, however, for his poems, *Songs of Childhood*, *The Listeners and other Poems*, and further volumes. A collected edition appeared in 1920. He also wrote *Crossings*, a fairy play, and some volumes of stories. In 1933 appeared *The Lord Fish*, a collection of tales.

Delamere Village and forest of Cheshire. The station is on the Cheshire Lines Rly. between Chester and Northwich. Of the forest much has been put to agricultural uses, but some of it remains. The title of Baron Delamere has been borne since 1821 by the family of Cholmondeley.

Delane **John Thaddeus.** English journalist. The son of a barrister, W. F. A. Delane, he was born in London, Oct. 11, 1817. He went to King's College, London, thence to Magdalen Hall, Oxford. In 1840 he joined the staff of *The Times*, and in 1841 was made editor. He had then become a barrister. He retired in Nov. 1877, and died, Nov. 22, 1879.

Delane did much to make *The Times* the foremost paper in the land. For nearly 40

years he dictated its policy and in so doing set an example of fearlessness and independence.

Delaroche Hippolyte, often known as Paul. French painter. He was born in Paris, July 17, 1797. He studied under Baron Gros and exhibited in the Salon from 1822 onwards. The most popular of his paintings are, "The Death of Queen Elizabeth" and "The Children of Edward IV.," but one of the greatest is the "Hemicycle," which decorates the amphitheatre of the Ecole des Beaux Arts, Paris. He is represented in the Wallace Collection, London. He died Dec. 11, 1856.

Delaware One of the Atlantic states of the U.S.A. This stretch of land along Delaware Bay covers only 2370 sq. m. Dover is the capital, but Wilmington is the largest town. Two senators and one representative are sent to Congress, and there is a general assembly of two houses to manage state affairs. Delaware became British in the 17th century, and was one of the 13 original states of the union. Pop. (1930) 238,380.

Delaware River of the United States. It rises in New York State in the Catskill Mts., and separates that state from Pennsylvania and later, Pennsylvania from New Jersey. It is 400 m. long and the chief town on its banks is Philadelphia. It is navigable to Trenton and is much used commercially. It falls into **Delaware Bay,** an opening of the Atlantic.

De la Warr Baron. English title. It dates from 1299, when Roger de la Warr, a landholder in Sussex, became a baron. In 1426 it was inherited by Reginald West, a descendant in the female line. His descendant, Thomas, the 12th baron (1577-1618), was the first governor of Virginia. The state and River of Delaware were named after him. John, the 16th baron, was made an earl in 1761. The 5th earl married a daughter of the Duke of Dorset, and since then the family name has been Sackville-West. Herbert Edward Sackville who became the 9th earl in 1915, was a member of the Labour ministry in 1924 and again in 1929-31, and joined the National Government as Under-Secretary for Agriculture.

Delcassé Theophile. French statesman. Born at Pamiers, Mar. 1, 1852, he became a journalist. In 1889 he entered the Chamber of Deputies, and in 1892 was made under secretary for the colonies. In 1894 he was made colonial minister and, after three years out of office, he was chosen foreign minister in 1898. He retained that post for 7 critical years until the dislike felt by Germany for his policy compelled him to resign in 1905. He then became minister of marine which position he left in 1913 to become ambassador to Russia. In 1914 he again became foreign minister, but he resigned in Oct. 1915. Delcassé, who died Feb. 21, 1924, had a good deal to do with bringing about the informal understanding between Great Britain, Russia and his own country, which materialised at the outbreak of war in 1914. In foreign affairs he was the outstanding figure of the Third Republic.

Delft Town of South Holland. It is 5 m. from the Hague, on the little river Schie and is connected with the capital by river, rail and tram. The so-called "new" church is dedicated to S. Ursula, and contains the burial place of the Orange family and a memorial to William the Silent. The house in which William was killed is now a museum. Agneta Park is an industrial quarter. The town has some manufactures and a trade in agricultural produce. Pop. (1932), 51,286.

In the 17th century Delft was famous for its porcelain. This became a flourishing industry and early pieces are very valuable. They are usually in blue with scenes from Dutch life crowded on to them.

Delhi City of India, the capital of the Empire since 1911. It stands on the Jumna, 954 m. N.W. of Calcutta. Until 1911 it was in the Punjab, but when it became the capital it was, with the surrounding district of 593 sq. m. placed directly under the Government and ruled by a Chief Commissioner.

There have been several cities on or near the site. The present one was built by Shah Jehan in the 17th century and his work is seen in the palace, or fort, and the grand mosque, both unique buildings, the fort being entered by the famous Lahore Gate. The tomb of Humayun is also notable. Its native industries include metal work, ivory carving, weaving, etc. The modern ones include flour milling and cotton spinning.

About 5 m. to the S.W. is the new city of Delhi. This has wide roads and large open spaces, all laid out on a definite plan to give unity and beauty to the place. A vast circular block of buildings with halls for the various parts of the legislature, a large library, and the viceroy's house was formally opened in 1930. A university was opened in 1922. Pop. (1931) 365,883.

Delilah Philistine woman beloved of Samson. He revealed to her that his strength lay in his hair, so she treacherously cut this off, and betrayed him to his enemies. The story is told in Judges xvi., 4-31.

Delirium Condition of mental disorder, generally accompanying a specific bodily disease. More or less temporary, it is a symptom of disease and treatment should be directed to its predisposing cause. It may display incoherence, vivid hallucinations, violent maniacal acts and coma. **Delirium tremens,** an acute disorder supervening on chronic alcoholism, is marked by trembling, especially in the early stages. Raving delirium may accompany acute fevers and alcoholism and induce attempts at suicide.

Delius Frederick. British composer. He was born of German parents, Jan. 29, 1863, in Bradford, Yorkshire, and in 1883 he went to Florida as manager of an orange plantation. He gave up business for music, to which he had hitherto devoted his leisure, and in 1886 went to Leipzig where he studied composition. In 1890 he settled in Paris. His important works include concertos for violin, violoncello, piano and violin and 'cello combined; *Appalachia, Sea-Drift, Requiem,* and other choral works; *Paris Brigg Fair, On Hearing the First Cuckoo in Spring* and other orchestral works. In 1932 he produced an opera, *Koanga. A Village Romeo and Juliet* is his best known musical drama. He was made a Companion of Honour in 1929, and six festival concerts were held in his honour in London. He died in June, 1934.

Della Robbia Family of Florentine artists which gave its

name to a famous ware. Luca della Robbia (1399-1482) brought to perfection the art of enamelling terra cotta. His nephew, Andrea (1435-1525) produced fine examples of enamelled reliefs adapted to friezes and medallions. He died in 1525, leaving five sons, three of whom were notable artists. There are examples of Della Robbia ware in the museum at South Kensington.

Deloraine District of Selkirkshire, Scotland, long associated with the Scott family. The title of Earl of Deloraine was given in 1706 to Henry Scott, a son of the Duke of Monmouth. It became extinct in 1807 when the 4th earl died. Deloraine is the name of a town of Tasmania. It is 32 m. from Launceston and is an agricultural centre.

Delos Smallest of the Cyclades Islands in the Aegean Sea. A floating island, Zeus made it stable, to provide a refuge for Latona, who there gave birth to Apollo and Artemis. On it there was a magnificent temple of Apollo, now being excavated by the French. Made a free port by the Romans, it prospered greatly. A league formed by Athens and other cities in 477 was called the **Delian League**, and its treasury was for a time at Delos.

Delphi In ancient geography, a town in Phocis, on the slope of Parnassus. It was the seat of the oracle of the Pythian Apollo, and was supposed to be the centre of the earth. Greek cities and foreign princes sent rich presents to Delphi, and placed their treasures under the protection of the god. The modern name is Kastri.

Delphinium Genus of hardy ranunculous plants, both biennial and perennial. Delphiniums bear tall spikes of blue, mauve, or purple blooms, in many beautiful varieties. They are grown from seed planted in April, and the seedlings transplanted for blooming the following year.

Delta Fourth letter of the Greek alphabet. The word is used for the mouths of rivers which bring down a great deal of alluvial deposit forming a mass round which the stream flows in two or more branches. The delta of the Nile is the most famous. The delta of the Ganges—Brahmaputra covers 50,000 sq. m., and that of the Mississippi 12,000. Other rivers with deltas are the Danube and the Rhône.

Delta Metal Class of brass alloys which contain iron in addition to copper and zinc, but extended now to brasses containing manganese, tin and aluminium as well as iron. Iron increases the strength of the alloy, and the other additional metals impart particular properties. Delta metal is very fluid when melted, producing fine-grained sound castings, and it can be worked either hot or cold.

Deluge Great flood, pre-eminently that described in Genesis as overwhelming all living beings except Noah, his family and the animals which accompanied them in the ark. The Biblical story is paralleled in early Babylonian literature and in folklore all over the world. Excavations at Ur and Kish (*q.v.*) have revealed deluge floors and antediluvian remains supporting the view that the story concerned local floods in the Euphrates valley.

Delville Wood Small wood in France. It covers about 160 acres and is between Longueval and Ginchy. On July 15, 1916, it was taken from the Germans, after terrible fighting, by the S. Africans. The Germans retook it in March, 1918, but lost it again in August. In 1920 the wood was bought by the S. African Government, and a memorial to the S. Africans erected there.

Dementia Mental feebleness. It may follow mania and other acute mental diseases. There is a specific form of dementia called dementia paralytica—or general paralysis of the insane—in which there is marked physical deterioration as well as mental. It is a fatal disease, though recently it has been treated with induced malaria, with good results. Senile dementia, the general enfeeblement attending advanced life, accompanies arterial degeneration. Dementia praecox is a form occurring at puberty. Dementia affects a mind that is previously formed; amentia is mental deficiency from birth.

Demerara River of British Guiana. It rises in the highlands of the colony and enters the sea at Georgetown. Its length is 180 m. and it is navigable for 90.

Demerara is also the name of a district between this river and the Berbice River. It gives its name to the brown sugar which was first produced here.

Demeter In Greek mythology, one of the Olympians. She was the goddess of the products of the fields and the protectress of marriage. She is best known for the rape of her daughter Persephonē (Proserpina) by Pluto, god of the underworld, and her wanderings to find the lost child.

Democracy Term used for the rule of the people. A democracy is a state in which the people, either directly or indirectly through representatives, decide their own affairs.

The earliest democracies were the Greek states, but these were small and every citizen could take a personal part in the deliberations. Something of this kind was the custom among the Anglo-Saxons and other Teutonic tribes and through these the idea of self-government was kept alive.

Partly through the influence of the Church, the representative system was evolved upon which the great modern democracies work. In all of them, whether kingdom as Britain, or republic, as France, the will of the people, as expressed in voting for their representatives, is the ultimate authority. The people, long considered as being only the adult males, have come in the 20th century to include also the adult females.

At the same time a certain impatience with democracy, once regarded as an ideal system, has manifested itself. In some countries a dictator has superseded assemblies elected by the people. In Italy this movement against democracy has taken the form of Fascism.

Democratic Party Political party in the U.S. It arose soon after the formation of the Republic, and the presidents from 1801 to 1861 were nearly all Democrats. Since then only Grover Cleveland in 1884 and 1892, and Woodrow Wilson in 1912 and 1916 have secured election. Its candidate at the election of 1928 was Alfred Smith, Governor of New York, who was defeated by Mr. Hoover. In 1932 Franklin Roosevelt was selected as candidate.

Democritus Greek philosopher, called the "father of physics."

Born at Abdera, in Thrace, about 460 B.C., he died about 370 B.C. Following Leucippus, he propounded an atomic theory of the universe, wherein all is movement in space. The soul is material, there is no Deity, and the *summum bonum* is pleasure without pain.

Demonology Study of supernatural beings below divine rank, conceived as influencing mankind. The generalised animistic spirit world became specialised into corn demons, disease demons and others. Such spirits, all nameless, were recruited from discarnate spirits, departed human and animal souls, and its offspring of *incubi* and other obsessions. The attribution of personal names converted polydaemonism into polytheism, the unnamed spirits becoming agents of divine powers. The idea of moral dualism separating benignant angels from malignant demons, is a belief which characterises much popular superstition.

Demosthenes Greek orator. Born in Athens in 384 B.C., he began his career as a speaker by pleading against the guardians who had robbed him of his property. When addressing the people he failed through faulty pronunciation, so he went into retirement in order to overcome this defect. He then reappeared in Athens and made successful speeches in the courts.

Turning to political life, Demosthenes employed all his energies in opposing the designs of Philip of Macedon on Greece. He fought in the Athenian army at Chaeronea in 338, but fled from the field in the disastrous defeat. After the death of Philip in 336 he took the lead in opposing his son Alexander. In 324 he was imprisoned for laxity in safeguarding the public funds entrusted to him, but he escaped and lived for a time in exile. In 322 he was recalled to Athens and he led an expedition against Antipater of Macedon. This was beaten at Crannon and Demosthenes committed suicide on the islet of Calauria. Many of his speeches have survived. The greatest are *De Corona* (on the crown), delivered after some Athenians had proposed to give him a golden crown, and the *Philippics*, against Philip of Macedon.

Dempsey Jack. Irish-American pugilist. Born in 1895, his real name is Wm. Harrison. He was a lumberjack before taking up pugilism and came into prominence when he defeated the world's heavyweight champion, Jess Willard, at Toledo in 1919. He remained champion until 1926, when he was beaten by Gene Tunney. After his defeat by Tunney, Dempsey became a film actor.

Demurrage Shipping term. When goods are shipped the charterer of the vessel signs a document, known as a charter party, setting out the conditions of the transaction, including the number of days allowed for loading and unloading. If the stipulated time is exceeded a charge, known as demurrage, is made for each day in excess.

Denarius Principal silver coin of republican and Imperial Rome. It was originally of the value of ten asses (about 9½d.). The *denarius* of the reign of Tiberius is the penny of the New Testament. About A.D. 215 it was so debased that it contained only 40 per cent. of pure silver.

Denbigh Borough and market town of Denbighshire, also the county town, 30 m. from Chester, on the L.M.S. Rly. There are ruins of a castle and a priory, some manufactures and a trade in agricultural produce. Pop. (1931) 7249.

The title of Earl of Denbigh has been held by the family of Feilding since 1622. The Earl's eldest son is called Viscount Feilding. His seat is Newnham Paddox, Warwickshire.

Denbighshire County of N. Wales. It has a short coastline on the Irish Sea, beautiful scenery, and, in the E., lead and coal mines. Denbigh is the county town; other towns are Wrexham, Ruthin and Conway. In the county are Colwyn Bay, Llangollen and other pleasure resorts. The rivers include the Dee, Conway and Clwyd. The area is 665 sq. m. Pop. (1931) 157,645.

Dendrite Crystalline structure in certain minerals. In it the crystals diverge from one another and from a common axis so as to resemble a leaf or tree-like growth. This is seen in native copper and pyrolusite occurring in sandstone.

Dene-hole Ancient excavation, chiefly found in Essex and Kent, S.E. England. At Grays, Essex, scores of them lie closely together. They are bell-shaped chambers, sometimes with apses in threes and are reached by vertical shafts, 3 ft. across, sunk through the sand for a distance up to 60 ft. The chambers were from 10 to 20 ft. high. Sometimes utilised subsequently for refuges, the Britons perhaps sank them as silos for storing wheat.

Denham Village of Buckinghamshire. It is 2 m. from Uxbridge and 14 from London, on a joint railway. Denham Court and Denham Place are noteworthy houses. Denham has become an outer suburb of London.

Denis French saint. He was born in Italy and sent into Gaul as a missionary in the time of the Emperor Decius. He became Bishop of Paris, but about 275 he was beheaded by the Roman governor at Catulliacus (now St. Denis), and his tomb became the site of a priory. In 625 Dagobert founded a monastery there and many French kings were buried therein. Later, a Denis or Denys was made the patron saint of France. His day is Oct. 9.

Denman Lord. English lawyer. Born in London, July 23, 1779, Thomas Denman was educated at Eton and S. John's College, Cambridge. In 1806 he became a barrister and made a reputation by defending Queen Caroline in 1820. In 1830 Denman was made Attorney-General and in 1832 Lord Chief Justice. He died Sept. 22, 1854.

Denman's title, created in 1834, came in 1894 to a great-grandson, another Thomas Denman. He, the 4th baron, married a daughter of Viscount Cowdray and was Governor-General of Australia, 1911-14.

Denmark Country of Europe. It consists of a piece of land on the mainland and several islands, among them Zealand, Fünen, Falster and Bornholm. It includes part of Slesvig, which was restored to Denmark in 1919. The total area is 16,576 sq. m. and the pop. (1932) 3,590,000. In addition Denmark owns Greenland and the Faroe Islands. Iceland is independent, but is under the same king. Copenhagen is the capital and the largest town. Other centres are Aarhus, Odense, Aalborg, Horsens and Randers.

The borders of the country are the sea, except where in the south Denmark touches Germany. Much of it is very fertile and by

intensive methods of cultivation its production of butter, eggs and bacon is very large, something like £50,000,000 being sent into the United Kingdom in a year. The fisheries are valuable. The unit of currency is the krone, worth about 1s. 1d., and the metric system of weights and measures is in use.

Denmark's early history is very closely connected with that of the other Scandinavian countries, and at one time all were under the same ruler. The union was dissolved in 1448 when Denmark chose a king of the house of Oldenburg, but Norway and Denmark were united until 1815. In 1863 there was a crisis on the extinction of the ruling family. Christian IX. of Slesvig-Holstein was chosen king, but Slesvig and Holstein were taken by Prussia after a short war. In 1912 Christian X succeeded his father, Frederick VIII., as king.

The parliament, or Rigsdag, consists of two houses and the actual control of affairs is in the hands of a council or cabinet. There is an army raised by universal service and a small navy. Lutheranism is the state religion. The socialists are very strong in the country and formed the largest party in Parliament after the election of 1932.

Denmark Hill Suburb of London. It is in the borough of Camberwell, on the south side of the river. Here is King's College Hospital.

Denotation In logic, all that is included in a term. Its opposite is connotation, which means the properties of a thing. Thus, man denotes all human beings, whether white, yellow, black or red. Man connotes certain possessions, such as a brain, two arms and two legs.

Density Property of matter. It is defined as the amount or mass or matter in a unit of volume of a substance. The unit of density for solids and liquids is taken as that of distilled water, and the ratio of density of a substance to that of water is termed specific gravity.

Denstone Village of Staffordshire. It is 5 m. from Uttoxeter, on the L.M.S. Rly. It is chiefly known for its Church of England school for 300 boys, founded in 1873.

Dent Word of twofold origin. As a variant of O.E. dint, it denotes a hollow produced by blow or pressure. Maize, because each kernel is depressed, is called dent corn. When denoting a notch it is confused with the Latin word for tooth (*dens*). The French form often designates tooth-like Alpine peaks, *e.g.*, the Dent du Midi.

Dentist Specialist practitioner concerned with diseases of the teeth and their treatment. In Great Britain dental practice was systematised by the Dentists Act, 1878, which instituted a register in the charge of the General Medical Council. Unregistered persons were forbidden to use the term dentist or dental practitioner.

Since 1921 no person can be registered unless he or she has passed through a course of training in the medical and dental schools in London and elsewhere. The usual degree is L.D.S. or licentiate in dental surgery, given by the Dental Board at 44 Hallam Street, London, W.1. The interests of the profession are looked after by the British Dental Association at 23 Russell Square, London, W.C.1.

Dentistry Department of curative practice for diseases of the teeth, their conservation, extraction and artificial replacement. It studies the therapeutics of the mouth, applying operative surgery for conserving, and prosthetic surgery for substituting. Dental practice arose in antiquity. Filling appeared in the 9th century, gold-foil treatment in the 16th century, gold-capping shortly after.

Fauchard, who wrote *Le Chirurgien dentiste*, 1728, the father of modern dentistry, introduced specialised training, the bow and drill—precursor of modern dental engines—porcelain instead of ivory for artificial teeth, and the retention of upper dentures, as false teeth began to be called, by suction. Great advances were the invention of metallic and vulcanite bases for dentures, and the introduction of anaesthetics by gas administration or local injection. Nowadays systematic attention is given to mouth hygiene in early years, the correction of badly grown teeth, and the inculcation of cleanly habits. There are organised services in elementary schools and other institutions, dental hospitals, and an army dental corps. The Royal Dental Hospital of London is in Leicester Square, and in 1930 the Eastman Dental Clinic, said to be then the finest in the world, was opened at the Royal Free Hospital, London, W.C.

DENTISTRY AS A CAREER.—There is a growing demand for properly qualified dentists, and good monetary rewards can be obtained both from private practice and from public appointments. The extension of school and clinic dentistry provides more and more promising openings for women in the profession.

Before he is legally entitled to practise, a student must have his name entered on the Dentists' Register, and to qualify for this he must have obtained one of certain recognised Diplomas or Degrees. The majority of the universities and some outside bodies grant a Diploma, and at a number of the universities degrees in Dental subjects may also be taken.

Information is obtainable in the first instance from The Registrar, Dental Board of the United Kingdom, 44 Hallam Street, London, W.1.

At many hospitals and schools special arrangements are made for women students. Communications should be addressed to the Deans of the schools or the Registrars of the universities.

The fees payable for the Diploma Course vary considerably, but the following may be taken as an example

	£	s.	d.
Pre-registration subjects	24	10	0
Total tuition fees (payable in instalments)	269	0	0
Books, instruments, etc.	75	0	0
Club subscriptions admission fees, etc	26	5	0
Examination fees	21	0	0
Total,	£426	15	0

Scholarships are frequently available.

Dentition Arrangement of the teeth in vertebrate animals. Absent from birds, they are supplemented in reptiles and fishes by accessory teeth on the palate. Their conformation and number vary in different orders. In mammals, those in the foremost jawbones, usually one-rooted, are incisors; those in the jaw proper generally include on each side a long, pointed, one-rooted canine and several grinding teeth, usually with two or more roots, those being premolars and the hindmost molars. In most mammals the permanent teeth are preceded by a set called the "milk teeth."

Denton Market town and urban district of Lancashire. It is 7 m. from Manchester, on the L.M.S. Rly. Hat making is the main industry. Pop. (1931) 17,383.

Denton Park, near Otley in Yorkshire, was long the seat of the Fairfax family.

Denudation Action of the weather, rivers and sea upon rocks. It causes the disintegration of rock masses and the transport of the looser material to lower levels. Subaerial denudation is due to frost, glaciers, changes of temperature, wind, rain and the chemical action of solvent waters of rivers. By denudation, a granite may be decomposed into micaceous sands and china-clay, while sedimentary rocks are built up from the debris of older ones.

Denver City and capital of Colorado, U.S.A. It stands on the South Platte River, near the Rocky Mts. with university, zoological and botanical gardens and an observatory. Denver is an important railway junction and the market centre for the produce of Colorado. There are some manufactures. Pop. (1930) 287,861.

Deodar Coniferous evergreen tree, similar to the cedar. It forms extensive forests in the Himalayas at an altitude above 7000 ft., and also grows in Baluchistan and Afghanistan. It sometimes reaches a height of 200 ft. The timber, which is light red in colour and very durable, is valuable in cabinet making.

Deportation System of punishing criminals by transporting them to penal settlements outside the country they inhabit. The system is no longer practised in England, although undesirable aliens can be expelled. Criminals were at one time transported to Virginia, and later to Australia, but the practice was abolished in 1856. In France and certain other countries the system of deportation is still maintained for the worst type of criminals.

Deposit Name applied to anything separated or laid down, *e.g.*, in chemistry the sediment of a liquid, and in geology a bed of material accumulated by natural means.

The word is also widely used for an initial payment as an earnest of good faith against which goods are delivered in a business transaction, and for a sum of money paid into a deposit account in a bank, withdrawal being subject to notice and interest being allowed.

Deposition Evidence given on oath in a court of law. It is particularly used for an affidavit, *i.e.*, a statement, taken down in writing, to the truth of which the deponent afterwards swears.

Deposition Process by which strata are formed by the action of water. These strata represent the sediment deposited by streams, lakes or the sea. At a river mouth transported material will be sorted into gravel and sand near the shore with clay and mud farther seaward. Marine deposits are represented by organic oozes and in the greatest depths by a fine red clay.

Depôt French word meaning laid down, and used in England specifically for a place where goods are stored, *e.g.*, a furniture depôt. In America the word is used for a railway station for goods or passengers, but in England it is used in this connection only for a goods station. In military matters, a depôt is a centre where recruits are received and trained. Each regiment has its depôt.

A **depôt ship** is a ship that carries stores for a fleet at sea.

Depreciation Term used to denote a fall in value. In particular it is applied to the percentage written off the book value of assets to reduce them to their market value. The Companies Act permits a company to pay dividends only out of profits, and to arrive at an accurate computation depreciation must be allowed for. Income-tax legislation allows certain deductions on account of depreciation from profit for tax purposes.

Deptford Borough of the County of London. It is on the south side of the Thames between Bermondsey, Camberwell, Lewisham and Greenwich, with a short frontage on the river. The parish church is an interesting building. It includes much of the New Cross district. Deptford is chiefly famous for its associations with the navy. It had a dockyard and a victualling yard in the 16th century or earlier. John Evelyn's home, Sayes Court, was in Deptford. Peter the Great of Russia (*q.v.*) worked in the dockyards as a craftsman. Pop. (1931) 106,886.

Depth Charge Form of submarine mine first used in the Great War. It consists of a charge of explosive so arranged as to explode at a given depth. The mine consists of a steel case provided with rings at either end for handling and enclosing a charge of explosive. At the centre is a primer or detonator above which is placed the timing apparatus or "pistol."

Deputy Name applied in France and elsewhere to the members elected to the chamber of deputies. A clerk of the peace, a recorder, or a county court judge may appoint a deputy, but judges of the supreme court cannot do so. In the city of London each of the aldermen has a deputy for his ward.

De Quincey **Thomas.** English writer. Born in Manchester, Aug. 15, 1785, he was educated at Worcester College, Oxford, and afterwards lived in the Lake District, where Wordsworth and Coleridge were among his friends. He married Margaret Simpson, and earned a living writing for the magazines. In 1828 he moved to Edinburgh and he died there, Dec. 8, 1859.

A man of powerful intellect, a wide reader and a real student, with an extensive knowledge of Greek, German and other languages, De Quincey's career was marred by his addiction to opium. Nevertheless he ranks as one of the great writers of imaginative prose. His *Confessions of an English Opium Eater* first appeared in *The London Magazine*. Notable, too, are his essays *On Murder Considered as One of the Fine Arts*. His essays show that he possessed considerable critical ability. They deal with philosophy, literature and history. A delightful piece is *The English Mail Coach*. He also wrote on political economy and produced one novel.

Derating Term used in Great Britain for the system of relieving property from rates. By the important Local Government Act of 1929, agricultural land was entirely relieved of rates and premises devoted to productive industry, including railways, from three-quarters of their rates. The loss to the local authorities is made good from the national exchequer.

Derby City of England, the county town of Derbyshire. It stands on the

Derwent, 129 m. from London, on the L.M.S and L.N.E. Rlys.

Derby's chief industry is the manufacture of rolling stock for the L.M.S. Rly. Until 1921 it was the headquarters of the Midland Rly. There are motor-car and other engineering works. Other products are lace, hosiery, silk, chemicals and chinaware. The diocese of Derby covers the county and was created in 1927. The city has a famous Association football club, Derby County. Pop. (1931) 142,406.

Derby give its name to a famous kind of porcelain known as Crown Derby. This was first made in 1750 and is still produced, although not by the original firm. There is a fine collection in the museum.

Derby The. Most famous horse race in the world. It was founded in 1780 by the 12th Earl of Derby and is run at Epsom on a Wednesday in May or June. The course is 1½ m. long, and the race is confined to three-year-old horses. Since 1900, except during 1915-18, when the race was not run, the winners and owners have been :

1900	Diamond Jubilee	Prince of Wales.
1901	Volodyovski ..	W. C. Whitney.
1902	Ard Patrick ..	J. Gubbins.
1903	Rock Sand ..	Sir J. Miller.
1904	St. Amant ..	L. de Rothschild.
1905	Cicero	Earl of Rosebery.
1906	Spearmint ..	Major E Loder
1907	Orby . ..	R. Croker
1908	Signorinetta ..	Chev. Ginistrelli
1909	Minoru ..	King Edward VII
1910	Lemberg ..	"Mr Fanie"
1911	Sunstar ..	J B. Joel
1912	Tagalie ..	W. Raphael
1913	Aboyeur ..	A P. Cunliffe
1914	Durbar II. ..	H. B. Duryea
1919	Grand Parade	Lord Glanely.
1920	Spion Kop ..	Capt. G. Loder
1921	Humorist ..	J. B Joel
1922	Captain Cuttle	Lord Woolavington.
1923	Papyrus .	B. Irish.
1924	Sansovino ..	Earl of Derby.
1925	Manna ..	H. E. Morriss.
1926	Coronach ..	Lord Woolavington.
1927	Call Boy .	F Curzon
1928	Felstead .	Sir H. Cunliffe-Owen
1929	Trigo . .	W. Barnett
1930	Blenheim .	The Aga Khan
1931	Cameronian .	J A. Dewar
1932	April the Fifth	Tom Walls
1933	Hyperion .	Lord Derby.
1934	Windsor Lad	Maharajah of Rajpipla.
1935	Bahram	The Aga Khan.

Derby Earl of. English title borne by the family of Stanley since 1485. Earlier it had been held by the family of Ferrers. Thomas, Lord Stanley (died 1504), was made an earl by Henry VII., whose mother he had married as his second wife. James, the 7th earl, was Lord of the Isle of Man, and his wife, Charlotte, was famous for her defence of Lathom House during the Civil War. The direct line died out in 1736, when Sir Edward Stanley, a descendant of the 1st earl, became the 11th earl. Lathom House is the old seat of the family, but the earl's chief seat is now Knowsley, near Liverpool.

Derby Earl of. English statesman. Born at Knowsley, March 29, 1799, he was educated at Eton and Christchurch, Oxford. He entered the House of Commons in 1820, and sat for a succession of constituencies until he was made a peer in 1844, seven years before he succeeded to the earldom. At first a Whig, he was Under Secretary for the Colonies in 1827, and in 1830 Chief Secretary for Ireland. In 1833, having supported the Reform Bill, he was made Secretary for War and the Colonies, but, having freed the slaves in the West Indies, he resigned in 1834. In 1841 he became Colonial Secretary under Peel, and after 1846 came out as the leader of the Conservative party. In 1852 Derby became Prime Minister, and he held that office again in 1858-59 and 1866-68. He died at Knowsley, Oct. 23, 1869. Derby, who declined to become King of Greece in 1863, was known as the "Rupert of Debate."

Two of Lord Derby's sons succeeded in turn to the earldom and both were prominent in public life. **Edward Henry Smith Stanley** (1826-93), who became the 15th earl, sat in the House of Commons from 1848 to 1869. In 1858-59, as President of the Board of Control, he became the first Secretary for India. In 1866-68 he was Foreign Secretary as he was from 1874-78, but he resigned in 1878 because he disliked Disraeli's foreign policy. He then became a Liberal and was Secretary for the Colonies, 1882-85. He died April 21, 1893.

Frederick Arthur Stanley (1841-1908), who became the 16th earl, was a soldier. Having sat in Parliament from 1865 to 1886, he was made Baron Stanley of Preston in 1886. He was Secretary for War, 1878-80, and Colonial Secretary, 1885-86. He was President of the Board of Trade, 1886-88, and Governor-General of Canada, 1888-93. He died June 14, 1908.

Derby Earl of. English nobleman. Edward George Villiers Stanley was born April 4, 1865. After service in the Grenadier Guards, he entered the House of Commons in 1892 and sat therein until 1906. In 1895 he was made a Lord of the Treasury; in 1900 Financial Secretary to the War Office, and he was Postmaster General, 1903-05. He was Press Censor during the S. African War, and in 1908 became Earl of Derby. In 1915 he was made Director General of Recruiting and was responsible for the Derby Scheme, the last effort to obtain men for the army by voluntary means. It added about 850,000 to the forces. In 1916 Derby was made Under Secretary for War, and a little later he became Secretary. From 1918-20 he was ambassador in Paris, and from 1922-24 was again Secretary for War. He was known as an owner of racehorses until his stables were closed in 1930. Lord Derby's two sons, Lord Stanley and Hon. Oliver Stanley, were both elected to Parliament in 1924 and 1929, and the latter made a name as a speaker. In 1931 he was made Under-Secretary to the Home Office.

Derbyshire Inland county of England. It is divided geographically into two distinct portions. In the north is a mountainous and picturesque region called the Peak; in the south is a level region where coal is mined. The chief rivers are the Derwent and the Dove. Derby is the county town. Industrial centres include Alfreton, Belper, Chesterfield, Glossop and Ilkeston. Buxton, Bakewell and Matlock are pleasure resorts, and the county contains Chatsworth, Haddon, Hardwick and many beauty spots in the Peak district, including Castleton with its caves. Its area is 1016 sq. m. Pop. (1931) 757,332.

Dereham Urban district and market town of Norfolk; in full East Dereham. It is 102 m. from London, and 16 from Norwich, on the L.N.E. Rly. The place has an agricultural trade. Pop. (1931) 5641.

Derelict Property abandoned by the owner in a manner which indicates that he disclaims all right to it. More particularly it is used for ships abandoned at sea by their crews. Derelict ships, picked up and brought to British ports, are kept by the

receiver until the owner can be found, but not for a longer period than a year and a day.

Derg Name of two loughs or lakes of Ireland. One is in the south of Donegal and covers 25 sq. m. On it are several islands, on one of which is a cave called St. Patrick's Purgatory, once a popular place for pilgrims. The river Derg flows from here to the Moyle, 17 m. away.

The other Lough Derg is a widening of the Shannon between Killaloe and Portumna. It is 24 m. long.

Dermatitis Inflammation of the skin. The term usefully comprehends all such affections, whatever their cause. Some types arise from local irritation, sunburn, frostbite, X-ray exposure, vegetable toxins such as poison ivy, animal parasites and ringworm fungi. **Blastomycetic dermatitis** is due to a yeast. **Occupational dermatitis**, arising from external irritants, such as tars and dyes, usually develops eczema-like forms.

De Ros **Baron.** English title. It dates from 1264 and is one of the oldest in the peerage. Its first holder was Robert de Ros, and it was held by his descendants until 1508. It passed to the Manners and then to the Villiers family, and from 1687 to 1806 was in abeyance. In 1806 it was given to the Fitzgerald family, and in 1907 it came to a daughter of the 24th baron, who became also Countess of Dartrey. It passed in 1920 to her son, Anthony Lucius Dawson.

De Rougemont Name taken by Henri Louis Grin. Born in Switzerland, Nov. 9, 1847, he travelled in Australia, and later, in London, described the wonderful adventures he had met with among the Australian aboriginies. His narrative was published in *The Wide World Magazine*, and he lectured before the British Association at Bristol. Later it was discovered that Grin's stories were almost wholly imaginary. He died in the infirmary at Kensington, June 9, 1921.

Derrick Stationary crane used in constructing buildings. In it the inclination of the projecting arm or jib can be altered by letting out, or hauling in, the stay or supporting chain. A derrick can be rotated through part of a circle and may be mounted on a tower to increase the height of the lift.

Derry Old name for the city and county in Northern Ireland now known as Londonderry (*q.v.*). Its bishop is still called the Bishop of Derry.

Dervish Moslem devotee. Throughout Islam the word denotes a monk, in Turkey and Persia a wandering mendicant, called in Arabic-speaking countries a fakir. There is a loose relationship with Hindu fakirs. Thirty fraternities, with innumerable suborders, include the Kalandarite order, the familiar calendars of the *Arabian Nights*, Rifalite, or howling dervishes, Mevlevite, or dancing dervishes, and the modern Senussi. Each fraternity has its directing sheikh, garb, rule and ritual.

Derwent Name of several English rivers. One is in Derbyshire, a tributary of the Trent. It rises in the Peak and flows past Matlock and Derby, being 60 m. long. Its water is used to supply Sheffield, Nottingham, Leicester and Derby.

Another Derwent is in Yorkshire. This is a tributary of the Ouse and is navigable to Malton; it is 70 m. long and is united by canal with Pocklington.

Another Derwent, 35 m. long, is in Cumberland. It passes through Derwentwater and Bassenthwaite on its way to the Solway.

A river between Northumberland and Durham is a fourth Derwent. A tributary of the Tyne, it is 30 m. long.

There is a Derwent in Tasmania. This flows for 130 m., from Lake St. Clare to Hobart.

Derwentwater Lake of Cumberland. It is beautifully situated near Keswick and is formed by the river Derwent. It is 3 m. long and about a mile wide. In it are several islands. Friar's Crag, now the property of the National Trust, is one of several beauty spots. At the head of the lake are the Lodore Falls.

The title of Earl of Derwentwater was borne by the family of Radclyffe from 1688 to 1716. James Radclyffe, the 3rd earl, joined the Jacobites in 1715 and was captured and executed in London, Feb. 24, 1716. He figures in the ballads of the times. The male line of this family died out in 1814. The Aurora Borealis is called in Cumberland "Lord Derwentwater's Lights."

Desborough **Lord.** English nobleman. William Henry Grenfell was born Oct. 30, 1855, and educated at Harrow and Balliol College, Oxford. At the university he was famous as an oarsman and a runner. From 1880-85 he was a Liberal M.P. for Salisbury, and he sat in the Commons as a Liberal-Unionist, 1885-86, 1892-93 and 1900-1905. In 1905 he was made a baron. Two of Lord Desborough's sons, Julian and Gerald, were killed in the Great War; the remaining one was killed in a motor accident. His residence is Taplow Court, near Henley, Bucks.

Descartes **René.** French philosopher and mathematician. Born in Touraine, March 31, 1596, he was educated by the Jesuits, but never accepted their teaching. He saw a certain amount of military service in France and Germany, and in 1628 settled in Holland. In 1649 he went to Stockholm, where he died, Feb. 1, 1650.

The founder of the Cartesian system of philosophy, Descartes is one of the world's great thinkers. His fundamental principle is the dominance of thought, expressed as "I think, therefore I am." His ideas are set out in his *Discours de la Méthode*, and more fully in *Meditationes de Primâ Philosophiâ* and *Principia Philosophiae*. Equally eminent as a mathematician, Descartes is regarded as the founder of analytical geometry.

Deschanel **Paul Eugene Louis.** French politician. He was born in Belgium, Feb. 13, 1856. He received his education in Paris and entered the public service in 1876. In 1885 he entered the Chamber of Deputies, and in 1898 was elected its president; he held the post until 1904 and was again president from 1912 to 1920. In 1920 he was chosen President of the Republic in succession to Poincaré. A little later he became an invalid, resigned office in Sept. 1920, and died April 28, 1922.

Deschanel won fame as an orator and a writer. His books include one on Gambetta. In 1899 he was elected to the Academy. His duel with Clemenceau in 1893 was a notable event.

Desert Region where, on account of intense cold or insufficient rain, forms of life and little, or no, vegetation can exist. Where the mean annual rainfall is less than 10 inches, desert conditions usually

prevail. Deserts are characterised by intense heat, as in the Sahara, or by great cold, as in the Arctic and Antarctic wastes. Notable deserts are the Sahara and Kalahari in Africa, the Gobi in Asia, the Atacama in S. America, and some in Australia.

Desertion Word meaning to leave surreptitiously and without permission, particularly to the neglect of a duty. Desertion from the army is a military offence punishable by death if the deserter is on active service. Desertion of a wife by a husband is a ground for a judicial separation in English law, and, if accompanied by adultery, for divorce.

Desiccation Process of drying substances by various methods such as by heat, dry air or chemicals having an affinity for water. Desiccation enters into many economic and commercial processes, such as the drying of timbers, fruit, rubber, textiles, etc. Among the chemicals used are quicklime, fused chloride of calcium, and sulphuric acid.

Desmid Group of minute green unicellular conjugate algae occurring in fresh water. They show a great diversity of form, some being canoe-shaped, others rounded, oval or trigonal. Their cells consist of two symmetrical halves usually joined by an isthmus, and the cell wall is marked with delicate patterns like the diatoms.

Desmond Earl of. Irish title borne by the family of Fitzgerald and then by the family of Feilding. It was given in 1329 to Maurice Fitzgerald and was held by the family until the 15th earl died. In 1619 the title was given to Richard Preston, Lord Dingwall, and in 1628 passed to George Feilding. In 1674 George became Earl of Denbigh, and since then the two earldoms have been held together by the Feildings.

Desmoulins Camille. French revolutionist. Born at Guise, March 2, 1760, he became a lawyer and a writer. He is famous as the man, who, on July 12, 1789, just after Necker had been dismissed, urged the crowd, "Aux armes!" and so started the Revolution. He then conducted a weekly paper to further the cause, and had a share in destroying the Girondists. He himself shared Danton's ideas and was guillotined, April 5, 1794.

Despotism Arbitrary government. In ancient Greece a despot, the master of the household, was the ruler of slaves. The title, applied to the absolute monarchs encountered in Western Asia, was given to the emperors at Constantinople. Nowadays despotism describes an arbitrary government, whether benevolent or malevolent, which is uncontrolled by constitutional restrictions.

Destroyer Short name for torpedo boat destroyer, a warship evolved as an answer to the torpedo boat. In the British navy the first was launched in 1893. Their uses were extended, and during the Great War they acted as scouts and screens for the fleets of battleships and battle cruisers. In 1914 the largest British destroyer displaced 965 tons and steamed 32 knots. Larger ones were built and by the end of the war they displaced 1320 tons and steamed 34 knots. In 1932 the British navy had 132 destroyers and a further 23 were building. The largest of these were the A class, the largest of which displaced 1530 tons, steamed 37 knots and carried four 4.7 in. guns. Destroyers are organised in flotillas of eight, each under a captain or commodore.

Destructor Form of high temperature furnace, designed for the destruction of town or household refuse. It is used especially in thickly populated districts where other means of disposal of waste is not available. In some towns the refuse is used as a fuel for steam production, and in a modern installation there may be, as accessories, electro-magnetic separators for iron, clinker crushers and screens, slab-making mills and presses, and also asphalt-making machinery.

Detaille Jean Baptiste Edouard. French artist. Born in Paris, Oct. 5, 1848, he studied under Meissonier and first exhibited at the Salon in 1867. Three years later he joined the army, finding in his military experiences subjects for his most famous pictures. His paintings include the "Salut aux blessés," 1877, "The Dream," 1888, and portraits of several royal personages. He died Dec. 23, 1912.

Detective Member of a police force not in uniform. His task is to discover information concerning wrongdoers, investigate specific cases, watch individuals or classes of offenders, guard royalties and other prominent personages, and the like.

The Criminal Investigation Department (C.I.D.) at New Scotland Yard, London, is the chief detective force in the country. The Metropolitan police also aids, on request, provincial police forces, which have their own detective organisations. Private detectives are persons engaged unofficially in obtaining information for, or guarding, their employers.

Stories about the detection of crime form a very popular class of fiction, and at least one imaginary detective, Sherlock Holmes, has become immortal. The real founder of this class of fiction was Edgar Allan Poe. For a full study of the detective novel see *Masters of Mystery* by H. Douglas Thomson.

Detonator Percussion cap or detonating powder used to fire a charge of explosive, either in firearms or in mining charges. The explosive compound, or fulminate, best known and used in percussion caps and detonators is fulminate of mercury, a greyish crystalline substance which explodes violently when dry. This fulminate is made by the action of a mixture of nitric and sulphuric acids upon metallic mercury. A fulminate of silver explodes more readily and is used for some purposes.

Detroit City of Michigan, U.S.A. It stands on the western side of the Detroit River, and owes its prosperity partly to its position near Lake Erie. There is a good harbour on the river and the city is well served by railways. Detroit is one of the largest cities in the country. Here are the Ford works, and factories for making machinery of almost every description. There is an enormous trade along the river and with Canada, where many of the workers live. At first a French trading station, Detroit was at one time a British possession. Pop. (1930) 1,568,662.

The Detroit River flows from Lake St. Clair into Lake Erie. It is 27 m. long and carries an enormous quantity of shipping. A tunnel beneath it connects the United States and Canada.

Dettingen Village of Bavaria. Situated on the Main. It was the

scene of the Battle of Dettingen (June 27, 1743), between the English, the Austrians and the Hanoverians on the one side and the French on the other. In the end the main body of the allied infantry put the French to flight. In honour of the victory, Handel composed his Dettingen *Te Deum*.

Deucalion In Greek legend, a son of Prometheus. King of Phthia. When Zeus resolved to destroy mankind by a flood, Deucalion entered an ark with his wife, Pyrrha, drifted for nine days and landed on Mount Parnassus. Receiving an oracle which bade them cast behind them the bones of the great mother, they interpreted this to mean stones. Those cast by Deucalion became men, those by Pyrrha women. Their son, Hellen, was the supposed founder of the Hellenic race.

Deuteronomy Fifth book of the Old Testament. The title, "second law," is a Septuagint mistranslation of a Hebrew word meaning copy of the law. It comprises an historical introduction, i.-iv., an exposition of the law, v.-xxvi., the renewal of the Covenant, xxvii.-xxx., the delivery of the law to the Levites, xxxi., the song of Moses, a psalm embodying his blessing and the account of his death, xxxii.-xxxiv. Apparently reaching its present form in Manasseh's reign, it inspired the reforms of his grandson, Josiah.

Deutschland German name for their own country, as in the song "Deutschland über Alles."

The *Deutschland* is the name of a German submarine which made a voyage to the United States in 1916 in order to carry cargo. In 1918 she was surrendered to Great Britain.

De Valera **Eamon.** Irish republican. Born in New York, Oct. 14, 1882, his father a Spaniard and his mother Irish, he was educated in Ireland and soon became active in the Sinn Fein movement. He was chosen President of the Gaelic League, and in 1918 was elected M.P. for E. Clare, but did not take his seat.

When the Irish republic was proclaimed he was chosen President. He refused to accept the treaty of 1921, and as the leader of the republicans made war upon the Free State. For a year he was in prison and on his release he entered the Dail, where he led the republican party. In the General Election of 1932, Mr. de Valera's party were victorious, and he became President. He broke the good relations with Great Britain by wishing to abolish the oath of allegiance and refusing to pay the interest on money borrowed for land purchase. On Dec. 12, 1935, De Valera urged the Dail to carry a bill to abolish the Senate. This took effect in 1936.

Developer Chemical substance used to develop the latent image formed by the action of light upon silver salts in a film of sensitive emulsion. The process consists of the reduction to a metallic state of the silver salts acted upon by the light.

Development Commission

Department of the British Government. It was set up in 1909 to assist the economic development of the country. It consists of paid and unpaid commissioners, and its offices are at 6A Dean's Yard, Westminster, S.W. With money granted by Parliament, the Commission assists schemes for benefiting agriculture and fisheries, improving harbours, afforesting, reclaiming and draining land; in fact, any proposal which cannot be carried out by business men in the ordinary way.

Deventer Town of the Netherlands. It is at the union of the Yssel and the Schipbeek, 66 m. from Amsterdam. Some of the buildings are of great historic interest. Thomas à Kempis and Erasmus were educated at Deventer. At one time it had a famous school, the Athenaeum. There are some manufactures and a trade in agricultural produce. Pop. (1932) 36,930.

Devi Hindu goddess. The wife of Siva, she is shown as a woman with a countenance streaming with blood. Round her are snakes and skulls. Sometimes she is shown riding on a tiger. Human sacrifices were offered to placate the goddess.

Devil Evil spirit, pre-eminently the Hebraic chief of the powers of darkness. Apart from the personalisation of forces hostile to God observable in the Eden story, the doctrine of a personal devil does not emerge clearly in Hebrew thought until after the Exile, when a personality called Satan, sometimes—under Philistine influence—Beelzebub, was conceived; he was in some measure subservient to the Almighty. This conception, passing into Christian philosophy, became very powerful in the Middle Ages. The doctrine of a malignant personality whose temptations must be withstood is officially recognised by Roman Catholicism. Some Protestants accept the same doctrine, although in very varying forms, but others reject it.

Devil's Bridge Beauty spot of Wales. It is in Cardiganshire, 11 m. from Aberystwyth, on the Vale of Rheidol Rly. Here two bridges cross the Mynach, one above the other. The lower one was built in the 11th century by the monks of Strata Florida.

Another **Devil's Bridge** is in Switzerland. This was built across the River Reuss in 1830. It is near Andermatt on the way to Italy, and is nearly 5000 ft. high.

The word devil is much used in place names. There are **Devil's Dykes** in Sussex, Norfolk and Cambridgeshire. The one in Sussex, 5 m. from Brighton, is the property of that borough. The **Devil's Jumps** are three hills near Hindhead in Surrey, and there also is the depression called the **Devil's Punchbowl.** Another Devil's Punchbowl is near the top of Mangerton, Kerry. A Roman road in Northumberland, about 60 m. long, is called the **Devil's Causeway.**

The term "**devil's advocate**" is used in the Roman Catholic Church for one who is deputed to bring forward objections to a person whom it is proposed to canonise.

The **devil's coach horse** is a name given to a black beetle found in Great Britain. It is also known as the cocktail beetle.

The Devil's Own is a name given to the Inns of Court Officers' Training Corps.

Devizes Borough and market town of Wiltshire. It is 86 m. from London by the G.W. Rly., and is also on the Kennet and Avon Canal. It is an agricultural centre, with important markets. Bacon curing and brewing are its industries. Pop. (1931) 6058.

Devlin **Joseph.** Irish politician. Born in Belfast in 1872, he was educated by the Christian Brothers. In 1902 he was elected M.P. as a nationalist for N. Kilkenny, and from 1906 to 1922 he represented W. Belfast. He was again returned in 1925, and in 1929 was elected for Fermanagh and Tyrone

From 1921-25 he sat in the Parliament of Northern Ireland. Died Jan., 1934.

Devolution (Lat. *devolvere*, to roll down.) Act of handing over something. It is used for a kind of home rule suggested in 1904 as a settlement of the Irish difficulty, namely, the establishment of a parliament or council to manage local affairs under the supreme authority of the Parliament at Westminster. The war of 1667-68 between France and the Netherlands is called the **War of Devolution.**

Devon **Earl of.** English title held by the family of Courtenay. There was an Earl of Devon soon after 1066, a member of the De Redvers family. About 1335 the title was given to Hugh de Courtenay. More than once his successors forfeited it, but it was again bestowed upon a Courtenay in 1485 and in 1553. In 1556 it fell into abeyance and was not revived until 1831. The earl's seat is Powderham Castle, Exeter.

Devonian System of rocks forming part of the Upper Palaeozoic division and including the Old Red Sandstone. These rocks are found in Devon and Cornwall forming deposits of marine origin, and in South Wales, Herefordshire and Scotland, forming a series of lacustrine or estuarine origin (Old Red Sandstone). The Devonian rocks are divided into Upper, Middle and Lower, and consist of grits, sandstones, slates and limestones with numerous fossils. The Old Red Sandstone in Scotland is rich in fish remains.

Devonport District of Plymouth, at one time a separate borough. It stands on the estuary of the Tamar, called the Hamoaze, and is 224 m. from London. Devonport is one of the chief stations of the British Navy. At Keyham is the training college for engineer officers. A dockyard was opened here in 1691, and until 1824 the place was called Plymouth Dock. In 1914 it was united with Plymouth (*q.v.*).

Also town and port of Tasmania. It stands at the mouth of the River Mersey, 80 m. from Launceston, on the north side of the island. It is connected by railway with Hobart and other towns, and from here steamers go to Melbourne. Pop. 4950.

Devonport **Viscount.** English merchant and politician. Hudson Ewbanke Kearley was born Sept. 1, 1856, and soon entered business life. He built up the business of Kearley and Tonge and became also the head of the International Stores, both firms dealing in provisions. In 1892 he was elected Liberal M.P. for Devonport, and from 1905-09 was Secretary to the Board of Trade. He left office to become Chairman of the Port of London Authority, and in 1916-17 was Food Controller. In 1908 he was made a baronet, in 1910 a baron, and in 1917 a viscount. He died in Sept., 1934.

Devonshire Western and maritime county of England, the third largest in the country. Lying between the Bristol and the English Channels, it has a long and irregular coastline on both sides and is famous for its beauty. It covers 2610 sq. m. and is separated from Cornwall by the Tamar. Exeter is the county town, but Plymouth is the largest city. Other places are historic seaports, such as Bideford, Brixham, Barnstaple and Dartmouth, and there are picturesque inland towns such as Tiverton, Honiton, and Tavistock, and watering places such as Torquay, Ilfracombe, Paignton, Dawlish, Sidmouth and Teignmouth.

The county has such famous beauty spots as Clovelly and Lynton. In it is Dartmoor and part of Exmoor. The rivers are the Dart and the Teign, the Exe and Tavy, the Tamar and the Plyn. Lundy Island is part of the county. It is an agricultural county, famous for its cream while fishing is an important industry. Devon sends seven members to Parliament and is in the Diocese of Exeter. It is the background of novels by Charles Kingsley, Eden Phillpotts and R. D. Blackmore and is the subject of extensive literature. Pop. (1931) 732,869.

Devonshire gives its name to a famous regiment, formerly the 11th foot. This was raised in 1685 and has a fine record of service including South Africa, 1900, and the Great War. Its depot is at Exeter and its motto is *semper fidelis*.

The **Devonshire** was the nameship of six cruisers built between 1903-05. The other five were *Antrim*, *Argyll*, *Caernarvon*, *Hampshire* and *Roxburgh*. In 1929, the earlier ship having been scrapped, a new *Devonshire* was completed. This is a cruiser of the London class and displaces 14,000 tons.

A breed of cattle is known as the **Devon.** These are famous both for their beef and for their milk. They are deep red in colour and have been bred in Devonshire for at least two centuries.

Devonshire **Duke of.** English title borne since 1694 by the family of Cavendish. Sir William Cavendish and his wife, Bess of Hardwick, had a son, William, who inherited large estates in Devonshire. In 1618 he was made an earl and in 1694 his descendant, William, the 4th earl (1640-1707), one of the supporters of William III., was made Duke of Devonshire. William, the 4th duke, was Prime Minister, in name at least, in 1756-57. The wife of the 5th duke, Georgiana, a daughter of Earl Spencer, was the famous and witty lady who was painted by Gainsborough and Reynolds. In 1858 the 6th duke died unmarried, and the title passed to a cousin, until then known as the Earl of Burlington. Another William Cavendish, he became the 7th duke, and was known for his interest in science and education generally.

The duke has large estates in Derbyshire; he also owns valuable land in Eastbourne and around Barrow-in-Furness. His chief seat is Chatsworth; others are Hardwick Hall, Bolton Abbey and Lismore Castle, Waterford. His eldest son is called the Marquess of Hartington.

Devonshire House, Piccadilly, long the London residence of the duke, was sold in 1919 and later pulled down. The site is now occupied by shops and flats. The **Devonshire Club**, at 50 St. James's Street, London, is a social club founded in 1875.

Spencer Compton Cavendish, born July 23, 1833, the eldest son of the 7th duke, was educated at Trinity College, Cambridge. In 1857 he became Liberal M.P. for N. Lancashire, and as the Marquess of Hartington, he remained in the House of Commons until he became the 8th Duke in 1891. In 1863 he was made a Lord of the Admiralty and then Under-Secretary for War. In 1866 he became Secretary for War, in the Gladstone ministry of 1868-74 he was Postmaster-General, and from 1871-74 Chief Secretary for Ireland. From 1875-80, Gladstone being in retirement, he led the Liberal party in the Commons. In 1880 he became Secretary for India, and in 1883 Secretary for War.

In 1886 Lord Hartington separated himself from Gladstone on the question of Home Rule, and became one of the Liberal Unionist leaders. He was out of office until 1895, when he joined the Unionist ministry as Lord President of the Council. He held this post until 1903, when he resigned rather than abandon his Free Trade principles. He died without sons March, 24, 1908.

Victor Christian William Cavendish was born May 31, 1868, a son of Lord Edward Cavendish and a grandson of the 7th Duke of Devonshire. He went to Eton and Trinity College, Cambridge, and in 1891 was elected Unionist M.P. for West Derbyshire. In 1900 he joined the Unionist Government, in which he held office as Treasurer of the Household and then Financial Secretary to the Treasury (1903-05). In 1908 he succeeded his uncle in the dukedom and estates. From 1916-21 the Duke was Governor-General of Canada, and in 1922-24 Secretary for the Colonies. He is a K.C., and his public positions include Chancellor of Leeds University and High Steward of Cambridge University.

Dew Term used to denote the deposition of drops of water upon the ground or objects near the ground. It is due to the fall of the night temperature to that point at which saturation of water vapour occurs (dew point) and moisture is extracted from the air. Dew is deposited on a clear night upon objects cooled by radiation and causes a liberation of heat thus checking a further fall in temperature. *See* DEW POND.

Dewar Baron. Scottish merchant. Thomas Robert Dewar was born, Jan. 6, 1864, and joined his father who was in business as a distiller. The firm, John Dewar and Sons, grew enormously, Thomas becoming the managing director. From 1900-06 he was Unionist M.P. for St. Georges, Tower Hamlets. In 1917 he was made a baronet and in 1919 a peer. Lord Dewar won a reputation as one of the wittiest speakers of the day and was a racehorse owner. He died, April 11, 1930, and his title became extinct. His nephew and heir, Capt. J. A. Dewar, is known as an owner of racehorses.

Dewar's brother, **Arthur Dewar** (died 1917), was Solicitor General 1909-10, being then made a law lord, when he took the title of Lord Dewar.

Dewar Sir James. Scottish scientist. Born at Kincardine, Sept. 20, 1842, and educated at Edinburgh, he soon began the experimental works which brought him fame, the chief of these being to find methods of liquefying and freezing hydrogen and other gases. His inventions made the vacuum or thermos flask possible and he helped Sir F. Abel to discover cordite. In 1875 Dewar was made Jacksonian professor of experimental philosophy at Cambridge, and in 1877 Fullerian professor at the Royal Institution, London. He was president of the British Association in 1902, was knighted in 1904, and died, March 27, 1923.

Dewberry (*Rubus caesius.*) Species of bramble of low growth with fruit resembling that of a blackberry. The drupes of the berry, which are larger and considerably less in number than those of the blackberry, are covered with a bluish bloom, while the flavour is somewhat acid. In America the species *rubus villosus*, is cultivated extensively, as are others.

De Wet Christian Rudolf. Boer soldier. Born in the Orange Free State, Oct. 7, 1854, he became a farmer there. In 1880-1 he served with the Boer army, and from 1885 to 1897 he was a member of the legislature of the Free State. In 1899, when war broke out, he was one of the Boer leaders and in 1900 he was made Commander-in-Chief of the Free State army. His extraordinary skill in the guerilla warfare of 1900-02 made his name widely known. In 1907 De Wet entered the legislature of the Orange River Colony, and was made minister of agriculture. In 1914 he joined the rebels and met with some success, until taken on Dec. 1, 1914. He suffered a short imprisonment and was fined. He died, Feb. 3, 1922. He wrote an account of the war of 1899-1902.

Dew Pond Name given to small ponds found on the high ground of the chalk downs of southern England. They are supplied with water by condensation of the thick mists and heavy dews frequent upon the downs in the summer. In making a dew pond the excavation is lined with straw, over which puddled clay is placed, and above this a layer of stones. When the pond is properly made the supply of water is perennial and is a great boon to farmers.

Dewsbury County borough of Yorkshire (W.R.). It is 182 m. from London and 8 m. from Leeds, on the L.M.S. and L.N.E. Rlys. It is also served by the Aire and Calder navigation system. Dewsbury is famous as the centre of the manufacture of blankets and shoddy. It sends one member to Parliament. Pop. (1931) 54,303.

Dextrin Colourless tasteless powder obtained by carefully heating starch alone, or with acids, or by the action of diastase upon starch. It is known also as British gum. The commercial product often contains soluble starch and probably unaltered starch and glucose, and varies in its properties according to the mode of preparation. Dextrin is used for many purposes; as a substitute for gum arabic, for the stiffening and finishing of fabrics, for thickening inks and as an adhesive for postage stamps.

Dextrose Alternative name for glucose or grape sugar. It is so called from the action of the sugar upon polarised light which it turns to the right (dexter). It is found naturally in grapes and other fruits, and is prepared from the starch of maize, potatoes, etc., by boiling with dilute sulphuric acid and is obtained in the form of a syrup or as hard masses. It is used as a sweetening agent in brewing and in confectionery.

Dhak E. Indian tree of the leguminous order (*Butea frondosa*). Abundant throughout India, it has bright orange-red flowers which yield a fugitive yellow dye, and seeds which furnish moodooga oil. It exudes a latex hardening into a brittle, ruby-tinted gum called Bengal kino. The fibre serves for cordage; the wood, leaves and flowers are used in religious ceremonies.

Dhole Wild Indian dog. It chiefly inhabits the jungles of the Deccan, is somewhat larger than the jackal and differs from true dogs in lacking the last lower molars. In colour it is bay with darker mottlings. It hunts in packs of 50 or 60, almost silently, and is capable of running down elephants and occasionally tigers.

Dhow Vessel of about 150 or 200 tons burden, generally with one mast and a lateen sail. It is much used in the Arabian

Sea and along the coast of E. Africa (sometimes as a slaver).

Diabase Name somewhat loosely applied to some types of greenstone, and in particular to an altered basic rock. Originally containing plagioclase felspar and augite, this has become chloritised. The diabases form intrusive masses among other rocks in N. and S. Wales, the Lake District, N. Scotland and Ireland.

Diabetes Disease characterised by habitual excessive discharge of urine. Two forms occur: *diabetes mellitus* or persistent glycosuria, in which the urine contains more or less grape sugar, and *diabetes insipidus* or polyuria, involving no abnormal ingredient. The cause of *diabetes mellitus* is a failure of the insulin-secreting endocrine gland of the pancreas, and treatment is by replacing the deficient insulin by injections of this substance and by careful regulation of the dietary. Starchy foods should be avoided as far as possible.

Diaghileff **Serge Paulovich.** Russian artist. Born March 19, 1872, he studied art and organised exhibitions of art in St. Petersburg. About 1907 he went to Paris where he produced operas and plays which attracted much attention by the beauty and novelty of their staging, while his ballets were a landmark in the history of stage dancing. Soon he carried his ideas to London, Berlin and New York, and in these and other cities sustained his reputation as a producer of rare and original genius. He died Aug. 19, 1929.

Diagnosis Term denoting the act of distinguishing a disease by its symptoms. The branch of medicine concerned with the observation and interpretation of the signs of disease, called diagnostics, may involve studying the patient's past medical history, noting the temperature and pulse and making laboratory tests.

Diala River of Persia and Iraq. Rising in the Persian highlands it runs south and west, forms part of the boundary between the two countries and, entering Iraq, joins the Tigris just below Bagdad. There was some fighting along the river during the British advance to Bagdad in March, 1917.

Dialect Local variant of a language. The word denotes the collective variations in pronunciation, vocabulary and syntax that are due to geographical conditions. When these variations become unintelligible to those in related communities the dialect becomes a language. Thus the primitive Aryan speech passed through dialectic variations into the separate languages of Greek, Sanskrit, Latin and others; Greece has its Ionic, Doric, Aeolic, Attic and other dialects; the peasant dialect of Tuscany became the literary language of Italy.

In England there are many dialects. Dictionaries of these have been published and societies exist to keep the dialects alive.

Dialysis Method (invented by Thomas Graham) of separation of colloid and crystalloid substances from a solution. First elaborated in 1861, it is found that colloidal substances, such as gum and gelatin, will not pass through a parchment membrane, which crystalloids readily diffuse through. The apparatus used consists of a glass vessel (dialyser) with a parchment bottom, containing a solution of both types of substances. The dialyser is suspended in a vessel of water, and the crystalloids slowly diffuse into the water leaving the colloids in the upper vessel.

Diameter In geometry a straight line passing through the centre of a circle and terminated both ways by the circumference. Mathematically its length is the length of the circumference divided by $3\frac{1}{7}$, this being the nearest fraction to the exact decimal.

Diamond Crystalline form of carbon. It is found in nature as water-worn pebbles, or grains, in river gravels and other alluvial deposits, also in conglomerates and sandstones in S. Africa, India, Brazil, Borneo and elsewhere. The crystals belong to the cubic system and occur in octahedra and dodecahedra often with curved faces. They are usually white, but yellow, red and other colours also occur. The diamond is one of the most popular of gem stones, owing chiefly to its lustre. It is the hardest substance known and therefore is used as an abrasive.

More than half the world's supply is produced in S. Africa, but the Borneo and Australian diamonds are preferred for abrasive purposes. The S. African output in 1931 was valued at over £4,182,523. Two of the finest diamonds ever found are the Koh-i-Nor and the Cullinan, both among the British crown jewels.

Diamond Sculls One of the chief races at Henley. It was first rowed in 1844 and is confined to amateurs. The course is 1 m. 550 yds. long. It is for single scullers.

Diana Roman divinity identified with the Greek Artemis. She appears as the goddess of light, as mistress of the groves and as Hecate. She is represented as a huntress bearing a torch, and was regarded as possessing the virtue of chastity. Probably on this account she was worshipped as the goddess of women and childbirth. Many temples were erected in her honour, the most famous being the one at Ephesus.

Dianthus Genus of herbs of the carnation-pink order. They are native to the N. temperate regions and to S. Africa. Of 70 species, several grow wild in Britain, notably the Maiden, Deptford and Cheddar pinks. The Mediterranean clove pink originated all the garden varieties of carnation; from the pheasant's eye come many garden pinks, the bearded pink and the sweet williams.

Diapason Musical term used in acoustics. Diapason normal signifies the pitch standard of 435 vibrations per second for the production of middle A. Fixed in 1859 by the French Academy, this is known as the French or international pitch.

Diapason signifies also a series of organ stops of eight and sixteen feet. It is poetically synonymous with the range of compass of a voice or instrument.

Diaper Textile fabric, usually of linen or cotton, with simple geometrical or conventional woven pattern uniformly repeated.

Diaper patterns, geometrical and floral, mostly derived from Byzantine textiles, are also seen on mural surfaces, sculptured in low relief, painted, or gilded; and in backgrounds and fillings of illuminated manuscripts, on stained glass, tiles, incised brasses and heraldic compositions.

Diaphragm In men and some animals, a dome-shaped muscular membrane separating the chest from the abdominal cavity. Attached continuously to the chest's lower margin, it comprises muscular fibres surrounding a trefoil-shaped tendon. It is pierced by the gullet, aorta, inferior vena

cava, certain nerves and small vessels. It is lined beneath by the peritoneum enclosing the abdominal organs, and above by membranes enclosing heart and lungs. It contracts and relaxes with breathing, and plays the chief part in respiratory motion.

Diary Daily record of events or transactions. The words diary and journal have the same ultimate origin. When the diarist notes all matters within his personal experience and observation, or those communicated by others, his record sometimes makes valuable contributions to historical or scientific knowledge. Some of the greatest, as Pepys's and Wesley's, were kept in cipher, with no thought of ultimate publication. Some, as Evelyn's, bear traces of subsequent elaboration. Greville's and Creevey's are diaries of great historic interest.

Diaz **Armando.** Italian marshal. Born in Naples, Dec. 5, 1861, he entered the army in 1881 and rose to be a general. Commander of an army corps in 1916, in Nov., 1917, after Caporetto, he was made Commander-in-Chief, and in 1921 received a dukedom. He died Feb. 29, 1928.

Diaz **José de la Cruz Porfirio.** Mexican President. Born at Oaxaca, Sept. 15, 1830, he became a lawyer. In 1854 he was a leader in an insurrection, and his military talents brought him to the front. He led the Mexican Army in the struggle against the Emperor Maximilian and in 1877 was elected President. He was re-elected every succeeding four years until 1910. Under his rule order was restored and Mexico enjoyed considerable prosperity, although he had many enemies. In 1911 a rising forced him to resign and he left the country to die in Paris, July 2, 1915.

Dibdin **Charles.** English song writer. Born in Southampton, March 4, 1745 he settled in London, and in 1762 his operetta *The Shepherd's Artifice* was produced at Covent Garden. Of his many songs "Tom Bowling" and "Poor Jack" are the best known. He also wrote novels and an *Autobiography*. Dibdin died July 25, 1814.

Dibon City of Palestine. It lay to the east of the Dead Sea and was one of the cities of the Amorites. Here in 1868 the Moabite Stone, now in the British Museum, was discovered. The village called Dhiban stands on the site.

Dicey **Albert Venn.** English jurist. A son of T. E. Dicey, he was born in 1835 and educated at Balliol College, Oxford. He became a barrister, and in 1882 Vinerian Professor of English Law at Oxford. He resigned in 1909, and died April 7, 1922.

Dicey's most famous work is his *Law of the Constitution*, 1885, whilst his *Case Against Home Rule* helped to defeat Gladstone's bill. His *Essay on the Privy Council* is a valuable text book.

Dicey's brother **Edward** (1832-1911), a Cambridge man, was also a forceful and able writer. From 1870-89 he was editor of the *Observer*. He died July 7, 1911.

Dick **William Reid.** Scottish sculptor. Born in Glasgow in 1879, he was educated there and in London, and soon made a name for his figures in stone and bronze. His work may be seen in the Kitchener Memorial Chapel in S. Paul's Cathedral, London, on the Menin Gate at Ypres and elsewhere. "Femina Victrix" is in the public galleries of Sydney. Dick was elected A.R.A. in 1921 and R.A. in 1929.

Dickens **Charles.** English novelist. Born at Landport, Portsea, Feb. 7, 1812, he was the son of a clerk in the navy, and his full name was Charles John Huffam Dickens. In 1814 the family moved to London. The father fell on evil days and was imprisoned for debt, so Charles worked as a child in a factory, before obtaining a little schooling at Camden Town. Later he entered a solicitor's office, learned shorthand and became a fairly successful reporter. In 1836 he married Catherine Hogarth, from whom he separated in 1858. They had a family of seven sons and three daughters. One son, **Henry Fielding Dickens**, became a successful barrister and a K.C.

In 1833 Dickens began to write fiction and, calling himself "Boz," published some sketches of London life in the *Evening Chronicle*. In 1836 the first part of *The Pickwick Papers* appeared in serial form. This was a great success and its author's fame was assured. He left his reporting work and became editor of *Bentley's Miscellany* in 1837. In this *Oliver Twist* appeared, and then came *Nicholas Nickleby*, *The Old Curiosity Shop* and *Barnaby Rudge*. After a visit to America he wrote *Martin Chuzzlewit* and then followed *A Christmas Carol*, and others of *The Christmas Tales*. In 1846 he was for three weeks the first editor of the *Daily News*.

For the next 17 years Dickens was busy writing and giving public readings from his works in both Britain and America, these being very popular in both countries. *Dombey and Son* appeared in 1848, and *David Copperfield* in 1850. *A Tales of Two Cities* was published first in *All the Year Round*, as was *Great Expectations*. *Our Mutual Friend* appeared in 1864. In 1865 Dickens broke down in health, but he continued his readings and began to write *The Mystery of Edwin Drood*. Before it was finished he died at Gad's Hill, near Rochester, a house he had bought in 1856, on Jan. 9, 1870.

In one respect Dickens is much the greatest of English novelists. No one has approached him in the creation of characters whose names are household words. Pickwick, Sam Weller, Micawber, Stiggins, Little Nell, Bill Sykes and Mark Tapley are a few out of many. He possessed, too, remarkable gifts of humour and pathos and unrivalled powers of description.

The memory of Dickens is kept alive by the **Dickens Fellowship**, which has branches all over the country. Its headquarters are at 48 Doughty St., London, W.C.1, where a Dickens Museum has been opened. There are several lives of Dickens including a critical one, *This Side Idolatory*, by C. E. Bechofer Roberts, 1928.

Dicksee **Sir Francis Bernard.** English artist. He was born in London, Nov. 27, 1853, and first exhibited at the Royal Academy in 1876. He was elected R.A. in 1891 and chosen president in 1924. He was one of the leaders of the older academic school, expressing art in sentimental or poetic form combined with realistic though somewhat mechanical technique. His numerous paintings include "Harmony" and "The Two Crowns" in the Tate Gallery, London, and "Reverie," in the Liverpool Art Gallery. In 1924 he was knighted, and died Oct. 17, 1928.

Dictaphone Modification of the phonograph, used to save time in the dictation of letters, etc. The letter or message is spoken into the mouthpiece of an instrument having a revolving wax cylinder upon which a record is made. The cylinder is then taken by the typist and placed in a transcribing machine and, by means of a pair

of receivers placed over the ears, the message can be heard and typed.

Dictator Originally the name of an office under the Roman Republic. Its holder was a magistrate appointed in times of great difficulty and invested with wide powers. The office was abolished by Antony in the year 44 B.C. The name is now generally applied to any official exercising supreme power in any country or office.

The S. American States have had dictators at various times and after the Great War they arose in several European countries. Mussolini in Italy and Hitler in Germany are the most prominent examples of the modern dictator.

Dictionary Primarily a book giving in alphabetical order the meanings of words and their correct spellings. More elaborate dictionaries give full and detailed etymologies with quotations showing the use of the word in question. Of English dictionaries one of the first was compiled by Samuel Johnson; the most elaborate is the *New English Dictionary*, edited by J. A. H. Murray. There were, however, dictionaries compiled by Jewish and Arabic scholars in the 9th century or earlier.

The word is used sometimes for a book which gives the English meanings of the words in a foreign language, *e.g.*, Greek or French, but these are more correctly called **lexicons**. Books containing biographies, quotations, etc., arranged in alphabetical order are also called dictionaries.

Didcot Town of Berkshire. It is 7 m. from Abingdon and is an important junction on the G.W. Rly. which has works here. Pop. 2160.

Diderot **Denis.** French writer. Born at Langres, Oct. 5, 1713, he was educated by the Jesuits, but refused to accept their teaching. The great work of his life was the preparation of the *Encyclopédie*, which appeared in 17 volumes between 1751 and 1765. Diderot also wrote novels and plays, some volumes of criticism, artistic and literary, and a book on acting. He died July 30, 1784.

Dido Princess of Tyre. Her brother Pygmalion having killed her husband Sichaeus, she fled to Africa and founded Carthage. To escape wedding Iarbus the Gaetulian, she erected a pyre and stabbed herself upon it. Virgil makes Dido contemporary with Aeneas, at whose departure she kills herself for love of him. Her real name was Elissa, but she became confused with Dido, a name of Astarte, the moon goddess.

Didymium One of the very rare metallic elements. Its atomic weight is 141 and its symbol D. It occurs in certain minerals, such as monazite and parisite, along with other rare metals, cerium, thorium and lanthanum. The presence of didymium in a mineral is recognised by a simple inspection by transmitted light with the spectroscope, as the element shows two broad black bands enclosing a bright space, one in the yellow part of the spectrum and the other in the green section.

Die Term having the primary significance of a small cube used for gaming, dice being the plural form. It is applied also in architecture to the square base of a column and in engineering to various stamping contrivances and for tools used in impressing coins. Dies for power presses in sheet metal work are of two kinds: cutting dies which cut out or punch flat blanks, and shaping dies which shape the form of the blank. Dies are used also for drawing fine wire.

Dieppe Seaport and pleasure resort of Northern France. It stands on the English Channel at the mouth of the little River Arques. 105 m. from Paris and 38 from Rouen. There is an old town with a castle. The port has a good harbour and a considerable export of produce. There is a large fish market. Pop. 25,117.

Diesel Engine Type of internal combustion engine. In it air is drawn into the cylinder and compressed to about 500 to 600 lb. per square inch with the result that the air becomes greatly heated. The heat of the air charge then ignites the liquid fuel which has been sprayed by means of a powerful pump through a jet into the cylinder. The result of the ignition is a detonation which causes a downward movement of the piston. It was invented by Rudolf Diesel (1858-1913).

Diet Food and drink. Nutrient substances absorbed into the body are utilised in forming tissue, repairing waste and producing energy. Essential constituents are flesh-forming proteins, heat-producing fats and carbohydrates, mineral matters, minute quantities of vitamins, and water.

For studying dietetic problems food's potential energy is measured by the heat evolved in complete oxidation, that needed to raise the temperature of a kilogram of water 1°C. being called a calorie. Proteins 3½ oz., carbohydrates 18 oz., fat 2 oz., yield 5300 calories.

Diet (Lat. *dies*, a day). Name used for the representative body of the Holy Roman Empire, and of similar bodies elsewhere. It was so called because a particular day was fixed for the meeting; the Germans retain this use of the word day (*tag*) in Reichstag, Landtag, etc.

The diet, or **Reichstag**, of the Holy Roman Empire consisted of three colleges or houses (1) the electors; (2) the princes; and (3) the free cities. Never very powerful, its power grew less and less, and after 1648 little was heard of it. The word was also used for the parliaments of the Germanic Federation, and other states and provinces of Central Europe, *e.g.*, Poland.

Diffraction Phenomenon observed during the study of Light. Monochromatic rays from a distant point falling upon a narrow slit produce a pattern of light and shadow bands, due to the interference of waves travelling slightly different paths.

A **Diffraction Grating**, or glass plate ruled with very fine lines, produces similarly a series of spectra of white or coloured light of uniform distribution, and is much used, therefore, in spectroscopy.

Diffusion Term used in physics for the phenomenon of the gradual mixing of two different substances which are in contact. Diffusion in liquid takes place more rapidly at high temperatures and under agitation.

Digestion Process of preparing food after entering the mouth for absorption into the blood vessels. It comprises three stages, salivary, gastric and intestinal. Food mixes during chewing with a ferment contained in the alkaline saliva which converts the starch into forms of sugar. This activity continues in the stomach, gradually superseded by that of the gastric juice which, in the presence of free hydrochloric acid, operates through several active principles. When gastric digestion is completed the semi-fluid chyme

passes into the bowels, where intestinal activities elaborate a creamy fluid chyle, whence the lymphatics extract the emulsified fats. Sugar, salts and soluble proteins reach the small blood vessels direct.

Digitalis Genus of plants belonging to the natural order *scrophulariaceae*. They are natives of Britain, Europe, N. Africa and Asia. The foxglove, *D. purpurea*, is a well-known species. Its leaves yield the poisonous alkaloid digitalin, as well as several other poisonous glucosides. The leaves are gathered from wild plants of the second year's growth and carefully dried. Both the leaves themselves and various preparations are used in certain forms of heart disease, and dropsy.

Dijon City of France. It is picturesquely placed amid the mountains in the south-east of the country, 210 m. from Paris, and is at the junction of the rivers Ouche and Suron. There is a university founded in 1722 and several colleges. Dijon was at one time the capital of the Duchy of Burgundy. To-day it has some manufactures and a trade in wine and agricultural produce. Pop. (1931) 90,869.

Dilapidation Word meaning a falling into decay. Legally, in the plural form, dilapidations, it means the disrepair of property for which tenants, who bind themselves to keep buildings in good repair and to hand them back in that condition to the owner, are liable. The holders of benefices in the Church of England are often called upon to find money for dilapidations when they leave a rectory or vicarage.

Dilemma (Gr. *di*, twofold; *lemma*, proposition). Argument in which an opponent is caught between two difficulties; when he has two alternatives to choose from each of which would be fatal to his cause. A modern example of a dilemma is the argument used by opponents against a tariff. If it succeeds in keeping out foreign goods it will produce no revenue; if it fails to do so it will not protect the home market.

Diligence Form of stage coach. It was popular in France until superseded by steam trains, and lingered throughout the 19th century in Switzerland and other mountain regions.

Dilke **Sir Charles Wentworth.** English politician. Born in London Sept. 4, 1843, he was the son of Sir C. W. Dilke, Bart., and the grandson of Charles Wentworth Dilke (1789-1864) who owned and edited the *Athenaeum*. He was educated at Trinity Hall, Cambridge, and in 1869 succeeded to the baronetcy created in 1862 and the ownership of the *Athenaeum*. Elected M.P. for Chelsea in 1868, he was made Under-Secretary for Foreign Affairs in 1880, and in 1882 President of the Local Government Board. Dilke married Emilia Frances, widow of Mark Pattison, and died childless Jan. 26, 1911. His books include *Problems of Greater Britain*.

Dill (*anethum graveolens*). Annual umbelliferous plant found in Asia and S. Europe. It has small yellow flowers and flat brown fruits or seeds. From these is prepared dill water, a carminative used medicinally for infants, and the leaves are also used for flavouring. It is identical with the anise mentioned in the Scriptures.

Dillon **John.** Irish politician. A son of John Dillon, M.P., he was born in 1851 and educated for the medical profession in Dublin. In 1880 he entered Parliament, became one of the most active of the nationalists, and was more than once in prison. In 1896, after the split in the nationalist party, he was elected leader of the section opposed to Parnell, and in 1918, on the death of J. E. Redmond, he was chosen as his successor in the leadership of the united party. The rise of Sinn Fein, however, left his party almost powerless. Dillon died Aug. 4, 1927.

Dillon's brother, **Emile Joseph Dillon**, won a reputation as a foreign correspondent, especially for the *Daily Telegraph*.

Dilution Term used for the process of lowering the strength of a liquid by mixing it with water or other fluids. In medicine distilled water is used for reducing concentrated extracts to the required strength for dosage and in some extracts, such as nux vomica and strophanthus, milk sugar is the diluting agent. Dilution plays an important part in the preparation of homeopathic medicines which are given in infinitesimal doses.

Dime Silver coin current in the United States. The tenth part of a dollar, it is worth about 5d. in English money.

Dimorphism Term applied to the phenomenon where two different forms occur in a species of animal. An example is the case of certain insects where winged and wingless individuals occur in the same species. In other types the male and female may differ strongly in colour, size, etc. (sexual dimorphism).

Dinan Town of Britanny. It stands on both sides of the River Rance, 15 m. from St. Malo. The chief buildings are the Church of S. Sauveur, once a cathedral, and the castle. There is a small harbour and a little shipping trade. Pop. 10,100.

Dinant Town of Belgium. It stands on both sides of the Meuse, 17 m. from Namur. At one time Dinant was a great commercial city with 60,000 people protected by walls and a castle. The Germans captured the town and burned some of the houses in Aug., 1914. Pop. 6900.

Dinar Standard monetary unit of Yugoslavia. It has a nominal value of about 9¼d. in English money. Coins of 1 and 2 dinars, and notes of 5, 10, 100 and 1000 dinars are current.

Dinard Watering place of Brittany. It stands at the mouth of the Rance, opposite St. Malo. There is a casino and other attractions for visitors. Pop. 8000.

Dindings District of the Straits Settlements. It consists of a piece of land on the coast together with Pangkor and other islands. It covers about 200 sq. m. Lumat is the capital. Pop. 18,334.

Dingle Seaport and market town of Kerry, Irish Free State. It is on the railway, 30 m. from Tralee, and is a fishing centre. There is a harbour. Pop. 2000.

Dingle Bay is an arm of the Atlantic. It is 24 m. long and at its entrance are Bray and Dunmore Heads.

Another Dingle is a part of Liverpool. In it is Dingle Point, a prominent mark on the Mersey.

Dingo Native Australian dog or warrigal. It is stoutly built and sandy-coloured, short-legged, with bushy tail. Notwithstanding fossil remains of pleistocene age, it is commonly regarded as having been introduced by man, and related to the S. Asian

pariah dogs. It is nowadays entirely wild and very destructive to flocks, being systematically destroyed under government encouragement.

Dingwall Burgh of Scotland; the county town of Ross and Cromarty. It stands on the Cromarty Firth, 18 m. from Inverness, on the L.M.S. Rly. Pop. (1931) 2554.

Dinkelsbühl Town of Bavaria, famed for its picturesque appearance. It was founded in 928, was long a free city, and in 1802 became part of Bavaria. In 1928 the town celebrated its thousandth anniversary. Pop. 5500.

Dinnington Village of Yorkshire (W.R.). It is on the S. Yorkshire coal field 14 m. from Doncaster, on the L.N.E. Rly. Pop. 4900.

There are towns of the same name in Northumberland and Somerset.

Dinosaur Order of extinct four-footed reptiles of the *mesozoic* era. Mostly small-brained, they dominated by bulk; some laid eggs, while some produced living young. They form four sub-orders: (1) Lizard-footed herbivores, as the atlantosaur, 100 ft., diplodocus, 80 ft., cetiosaur and brontosaur, 60 ft.; (2) Armour-plated herbivores, as the stegosaur, 25 ft., and three-horned triceratops, with 6 ft. head; (3) Bird-footed herbivores, as the *iguanodon*, 30 ft.; (4) Beast-footed carnivores, as the megalosaur and dryptosaur, 20 ft., and the tyrannosaur, 40 ft.

Dinotherium Genus of extinct proboscidean *mammals* of great size, preceding the mastodons and the elephants. Perhaps originating in miocene N. Africa, fossil remains of several species are found in miocene and pliocene rocks in France, Germany, Greece and N. India. Lacking upper incisor and canine teeth, their lower jaw, sharply bent downward, bore two massive tusk-like incisors. Apparently they were more or less aquatic, and the skull indicates a length of 18 ft.

Diocese District under the authority of a bishop. The whole of Great Britain is divided into dioceses and there are dioceses also in the British Dominions and in other lands where the Anglican Church works. The Roman Catholic Church is also divided into dioceses. A group of dioceses forms a province which is usually under an archbishop.

There are now 43 dioceses in England, 30 in the province of Canterbury and 13 in the province of York. Wales has six dioceses. Each diocese has a cathedral and usually takes its name from the cathedral city. In one or two cases a diocese has a double name, *e.g.*, St. Edmundsbury and Ipswich.

Diocletian Roman emperor. Born at Diocles in Dalmatia in A.D. 245, his full name was Gaius Aurelius Valerius Diocletianus. Said to have been the son of a slave, he became a soldier, held various commands, and in 284 was proclaimed emperor. He divided the empire with his colleague, Maximilian, and later, in 292, with Galerius and Constantius Chlorus as well. Nicomedia was his capital.

Diocletian's reign was marked by a strong tendency towards absolute rule. He subjected the Christians to much persecution by an edict of 303. In 305 he abdicated and died at Spalatro in 313.

Diogenes Greek cynic philosopher. Born at Sinope, according to tradition, he early emigrated to Athens, became a pupil of Antisthenes, the founder of the Cynics, and lived in a tub. Taken prisoner by pirates and sold as a slave, he was bought by a wealthy Corinthian, Xeniades, who gave him his freedom. Little is really known of his life and doctrines. The countless anecdotes that are told of him by ancient authors cannot lay claim to authenticity. Under his name we have some spurious letters. He lived from 412 to 323 B.C.

Diomedes Greek legendary hero. King of Argos, the bravest of the heroes next to Achilles, and the favourite of Pallas Athene, he was present at the siege of Troy. Fighting against the gods who sided with the Trojans he wounded Arês and Aphroditê. His cult, starting from Argos, spread through all the Greek lands.

Dionysia Greek festivals in honour of Dionysus. These consisted of the lesser or rural Dionysia, celebrated in the country, and the greater or city Dionysia, celebrated at Athens. On the first day of the latter there was a grand procession to the altar of the god, a feast, and a choral dance; on the second day dithyrambs were sung; and on the last three, contests of tragedy and comedy were held in the great theatre of Dionysus.

Dionysius Name of two rulers of Syracuse, known as tyrants.

Dionysius the Elder was born at Syracuse in 430 B.C. He won renown in the campaign against Carthage and was made commander of the army in 405. Soon he was proclaimed king, ruling over a good part of Sicily, as well as the city of Syracuse. His rule was oppressive and conspiracies were formed against him, but he kept his state and position until his death in 367. Dionysius erected beautiful buildings in Syracuse, won a prize with a play and was visited by Plato.

His successor, **Dionysius the Younger**, passed most of his reign in warfare with a rival, Dion. He was driven away in 356, but returned ten years later. In 343 he again left Sicily and passed his remaining days as a teacher in Corinth.

Two other persons of this name are known. **Dionysius the Areopagite** was one of S. Paul's converts. He was evidently an Athenian (Acts. xvii.). **Dionysius of Halicarnassus** was a Greek who passed much of his life in Rome. He wrote, in Latin, a book on the history of the Roman people.

Dionysus Greek name for the god known usually as Bacchus (*q.v.*).

Diopside Somewhat rare mineral allied to augite and belonging to the monoclinic pyroxene group. It consists of a silicate of calcium and magnesium, and occurs as green or colourless crystals in veins in serpentine, granular limestones and garnet rock in Sweden, Italy, the United States and other localities.

Dioptase Rare mineral. It consists of silicate of copper and occurs as green transparent crystals which resemble those of the emerald. It was first found lining cavities in the limestone at Altyn-Tübeh in the Khirgiz Steppes and later in Chile and the French Congo. In its chemical composition it is allied to the commoner copper ore, chrysocolla. It sometimes serves as a gemstone.

Diphthong (Gr. *di*, double; *phthongos*, sound). Union of two vowel sounds which follow each other so closely that when pronounced they form only one syllable.

Thus, in the word *out*, *ou* is really a compound of the sound of *a* heard in *father* and the sound of *u* heard in *put*.

Diplodocus Genus of extinct land reptiles. They lived in Wyoming and Colorado in Jurassic times. They had smooth skins, slender necks and long tails, with diminutive heads and tiny brains. Walking on all fours, with nostrils overhead for breathing, they browsed on succulent aquatic weeds, submerged in wide estuarine shallows at the foot of the Rocky Mts. Their length ranged from 50 to 85 ft.

Diphtheria Infectious disease. A germ or bacillus sets up an inflammation in the throat or adjacent areas where a fibrinous membrane is formed. The temperature rises and is accompanied by pains, headaches and general lassitude. Sometimes the glands are swollen. Diphtheria chiefly attacks young children, but others are by no means immune. It is highly infectious. Many cases are due to drinking impure water, and it is often conveyed in milk. It can also be conveyed by carriers, persons who are themselves free from it, but who can infect others. In its severe form diphtheria is very dangerous; breathing is impeded and the closing of the air passages brings on death.

Formerly almost one in two cases was fatal, but the use of anti-toxin has greatly reduced the mortality. In Great Britain cases of diphtheria must be notified to the medical officer of health. The word is a Greek one meaning leather, because the membrane formed in the throat resembles leather.

Diploma Mark of proficiency, usually in a branch of learning. Examining bodies who cannot give degrees give diplomas to those who have fulfilled certain tests. They are also given to dispensers, opticians and traders of other kinds to show that a certain degree of skill has been attained. Strictly speaking the diploma is the document on which the qualifications are set out.

The Diploma Gallery is at Burlington House, London. It contains the works sent to the Academy by those who have been elected R.A. The rule is that each R.A. presents a work to this gallery.

Diplomacy Art of negotiation, especially between countries. To-day each country possesses a diplomatic service whose members called diplomatists carry on negotiations with foreign countries. Some of these, ambassadors, ministers, envoys, etc., go abroad and live in a foreign capital to keep in close touch with its rulers. Their business is to watch over the interests of their country and to send regular reports upon all that concerns it. The position is a highly confidential one.

The service originated when emperors and kings sent men on business to foreign countries. About the end of the Middle Ages the practice began of sending a representative to reside in a foreign land. The Tudor sovereigns had a number of such diplomatists and much of our knowledge of foreign affairs comes from studying their reports.

In the United Kingdom the diplomatic service is part of the foreign office staff. Most of the ambassadors and ministers are drawn from members of the service, but occasionally an outsider of eminence is appointed, as when Lord Derby and then Lord Crewe were sent as ambassadors to Paris. Diplomatists in a foreign capital enjoy special privileges. They cannot be arrested and their residences are free from rates and taxes. All the diplomatists in a capital form the **diplomatic corps** which takes precedence on State occasions. Its etiquette is very strict.

Diplomatics Critical study of historical and other documents. It comes from the word diploma and is only concerned to find whether or not the documents are genuine. The study arose at a time when many forgeries of charters, etc., were in existence. There is a reader in diplomatics at Oxford.

Dipper Semi-aquatic songster allied to the thrush (*cinclus aquaticus*), also called the water ouzel. Brownish, white-breasted, with short rounded wings, it haunts mountain streams, into which it plunges noiselessly. It clings to the bed of the river and uses its wings to help its progress under the water. The bird lays five eggs at a time.

Dipsomania Morbid craving for alcoholic stimulants. It is the result of mental instability, assisted in many cases by an hereditary tendency to drink. Dipsomaniacs are treated in homes for inebriates and the law allows them to be put under restraint.

Diptera Order of insects. Characterised by two membranous wings, usually transparent, not folded at rest, the posterior pair present in other insect orders is reduced to drum-stick balancers or halteres. With short antennae and two large compound eyes, the mouth parts form a proboscis for piercing and sucking. Upwards of 40,000 species have been named, but far larger numbers remain unnamed. Nearly 3000 are recognised as British; they include crane flies, mosquitos, house flies, tsetses and bot flies. Many species walk upside down by means of foot suckers.

Diptych Form of writing tablet used by the Romans. It consists of two wooden or ivory leaves which fold over like a book. In time it became customary to present consuls with a diptych carved on the outside in bas-relief. The early Christian diptych is distinguished by the principal illustration being on the inside.

Dirce In Greek legend the wife of the King of Thebes, Lycus. She is known for her harsh treatment of Antiope, a former wife of the king. To avenge their mother, Antiope's sons, Amphion and Zethus, killed Lycus and tied Dirce to a wild bull which dragged her about till she died.

Directoire Form of architecture and furniture developed during the French Directory, which was in power 1795-99. It marked a gradual abandonment of the restrained classical grace in vogue under Louis XVI., passing into an enthusiasm for the heavier Roman motives. Its influence upon contemporary taste in England was slight.

Director One holding a directing or responsible position. Under the company law of England every limited liability company must have a board of directors who are responsible for its affairs. They are elected by the shareholders. One of them is chosen to act as chairman, and one or more are called managing directors and give their whole time to the business. The directors are responsible for the statements made in a prospectus and can be prosecuted for neglect in the supervision of the company's affairs. A board of directors must keep minutes of its

roceedings and issue reports to the share-olders.

The word is also used for certain high fficials in the civil service, especially the War ffice and the Admiralty, and for those sponsible for the control of education in unties and county boroughs. Another irector is the director of public prosecutions.

)irectory Committee of five men who governed France from Oct., 795, to 1799. The convention framed a con-itution and entrusted the executive power to ie Directoire. Its first members were Barras, arnot, Lépeaux, Letourneau and Rewbel. nder the Directory Napoleon conducted cam-aigns in Italy, Egypt and Germany, French nfluence increased in Italy and Switzerland, nd a treaty with Austria was concluded. apoleon ended the Directory Nov. 9, 1799, nd made himself first consul.

)irge Funeral song or hymn. The word is a corruption of the opening word the Roman Catholic office for the dead, *irige, Domine*, etc.

)irigible Term applied to navigable balloons and non-rigid air-ips. The earliest type was a slightly elongated alloon propelled by oars or propellers and orked by hand power. The modern non-rigid pe, the result of many experiments, is spindle-aped, giving less resistance than the globular rm, and is directed by horizontal and vertical anes.

)irk Highland dagger or poignard. It has a short, sharp-pointed blade from 15 20 in. in length, and a handle of wood or orn, or of brass with ornamental mountings. the British Navy it was worn as a side arm midshipmen and cadets.

)irt Track Course of dirt or cinders on which motor cycles race. irt track racing originated in Australia and as brought to England in 1928. Matches take lace regularly between teams of six, much on ie principle of the leagues in association foot-all. There are tracks at Lea Bridge, Crystal alace, Stamford Bridge, Wimbledon and else-here in the London area ; also in Manchester, irmingham, Liverpool and other large cities.

)ischarge In law, the bringing to an end of a contract, *e.g.*, by erformance, breach or mutual agreement. In ankruptcy, discharge means the release of a ankrupt from his liabilities, which may be anted, unconditionally or subject to a con-tion, *e.g.*, after the lapse of a period of time, the payment of a specified sum as dividend to ie creditors.

The term is also used when a soldier or sailor aves the army or navy. He is discharged at ie end of the time for which he enlisted, but he an buy his discharge at an earlier date.

)isco Ball game introduced into London in 1928. It resembles badminton, it the play is faster. Underhand service is mpulsory and modern racquets are used. he court is 40 ft. long and 16 ft. wide, divided a net, 4 ft. high. The service lines are marked etween two posts 14 ft. back from the net. n each post is a disc, 20 in. across. If the ball ils to clear the net or goes out of the court ie point is lost, but if it hits a disc five points e gained. Games are for 15 points, and a set the best out of five games.

)isco Island off the west coast of Green-land, of which it forms part. It vers 3000 sq. m. and on it are coal mines and stone quarries. Godhavn is the chief settlement.

Discobolus Copy in the Vatican of a famous statue by Myron. There is also a marble copy in the British Museum.

Discount Percentage allowance from the price of an article or the amount of a debt. Cash discount is allowed by traders for prompt payment, while trade discount is an allowance made by wholesalers from the retail prices of articles bought in large quantities.

Banker's Discount is a commission charged for discounting, *i.e.*, cashing a bill of exchange. The firms engaged in this business in London form what is called the discount market.

Discovery Name of several English ships. One was commanded by William Baffin when he went to the Arctic Ocean early in the 17th century. Captain Cook and George Vancouver sailed in ships of this name and there were others. In 1901 Capt. R. F. Scott went to the Antarctic in a new *Discovery*, and this vessel, having been refitted, was used by Sir D. Mawson in 1929.

Discus Round or oval piece of stone or wood or metal used in athletic contests. Throwing the discus was one of the competitions in the games of ancient Greece. It has been revived in modern times and is an event at many athletic meetings. The discus weighs 4½ lbs. The world's record of 157 ft. 1½ in. was made at San Francisco in 1925. In 1930 a British record (126 ft. 8 in.) was made at Brighton by A. R. Edwards.

Disease Definite ailment or complaint. It may be physical or mental, acute or chronic, curable or incurable, affect any part of the organism, and directly or indirectly conduce to death. Its study is called pathology. Physicians and surgeons are either general practitioners or specialists in limited fields of practice, such as diseases of the eye or the lungs. Diseases may be constitutional, localised, congenital, infectious, endemic, or epidemic. Some infectious diseases must be notified to the local medical officer of health.

For the study of tropical diseases there are institutes in London, Liverpool, Hamburg and elsewhere.

Disendowment Sequestration by the State of property belonging to the Church. It usually accompanies disestablishment. By Acts of Parliament passed in 1869 and 1914, the Irish and Welsh Churches were disendowed, the clergy receiving life interests in their benefices. Proposals have been put forward for disendowing the Church of England, but its advocates maintain that property definitely left to the Church within recent years should not be appropriated by the State.

Disestablishment Act of separating Church and State. The Roman Catholic Church has been disestablished in France, Spain and other countries, and the Anglican Church in Ireland (1871) and in Wales (1920). The separation thus effected means that the church becomes self-governing ; no longer are its bishops and other clergy appointed by the king and his ministers, but by the Church itself.

In the 19th century there was a strong agitation for the disestablishment of the Church of England, and in 1844 the Liberation Society was formed, countered by the Church Defence Institution. In the 20th century,

especially after the rejection by Parliament of the Revised Prayer Book in 1927 and 1928, there was a new movement for disestablishment, but this time it came from within the Church.

Disfranchisement Act of depriving people of the right to vote or to be represented on an elected body. Parliamentary constituencies have been disfranchised by Act of Parliament from time to time, chiefly because of their small size. This was done in 1832, 1867, 1884 and 1918. The electors, however, retain their right to vote, doing so in a larger constituency which includes the disfranchised one.

The disfranchisement of individuals is now a rare event, but conscientious objectors were so treated for a limited period after the Great War. At one time excise officials in Great Britain were not allowed to vote.

Disinfection Term applied to the process of destruction of the causes of infection by disease, and often loosely used to include deodorants and antiseptics. They act by destroying germ or bacterial life. A deodorant merely covers or destroys offensive odours.

Disinfection may be carried out in various ways, by burning, or the use of hot air, steam or boiling water; by the use of oxidising agents, such as sulphurous acid, chlorine, permanganate of potash, etc.; by the use of substances which coagulate albumen, such as corrosive sublimate and copper sulphate, or by the use of poisonous agents such as phenol.

Disley Village of Cheshire. It is 6 m. from Stockport and 175 from London, on the L.M.S. Rly. Pop 3960.

Dislocation Displacement of the ends of opposed bones in a joint. It may be congenital, when due to a malformation at birth, spontaneous, when caused by disease of the joint tissues, or accidental, when resulting from violence. Besides displaced bones there may be bruised tissues and torn ligaments. Compound dislocations, attended by wounds communicating externally with the air, are sometimes accompanied by fractures. Unqualified surgeons who treat dislocations and fractures are colloquially called bone setters.

Dispatch Official communication sent away promptly or regularly. The term especially denotes the communications of ambassadors and military or naval commanders. Detailed accounts of naval and military operations, sometimes prepared leisurely, and preceded by condensed urgent *communiqués*, rank as dispatches, and units or men named in them as meriting special commendation are said to be mentioned in dispatches.

The use of dispatch riders for conveying messages between headquarters and units has marked military operations in all ages. The American Civil War utilised horsed riders, the S. African War cyclists, and the Great War motor cyclists.

Dispenser In Great Britain a person qualified under the Pharmacy Acts to compound medicines from physicians' prescriptions. A dispenser is qualified also to trade as a chemist and druggist. The examinations prescribed for dispensers are conducted by the Pharmaceutical Society of Great Britain, 17 Bloomsbury Square, London, W.C. There is also a Pharmaceutical Society in Dublin and a College of Pharmacy in Leeds. The diploma of M.P.S. is given to successful candidates.

Pharmaceutical chemists, hospitals and general practitioners employ dispensers for compounding their medicines. Many women have now entered the profession.

Dispensing requires, in addition to a good general education, a knowledge of chemistry and *materia medica*, and of the British Pharmacopœia and other recognised formularies; a practical acquaintance with the weighing and measuring of drugs and the system of dosage; and the ability to decipher the written prescription with its symbols and abbreviations.

Dispensing Power In England a power claimed by certain sovereigns of allowing individuals to break the law without being punished. It was claimed and exercised by James I. and other Stuart kings, especially by James II. In the Bill of Rights passed in 1689, it was declared illegal.

Dispersion Term used in optics for the separation of white light into its constituent colours by refraction through a prism. The rays having the longest wave length are refracted least, whilst those with the shortest wave length undergo most deviation. Sunlight is dispersed by refractions through rain-drops, to form the rainbow. Dispersion also occurs when light is refracted through a lens, giving rise to colours on the edges of the image focussed on a screen.

Displacement Term used of ships. It is the weight of water which a vessel displaces, and is usually expressed in tons. *See* TONNAGE.

D'Israeli Isaac. English writer. Born at Enfield, May 11, 1766, he was the son of Benjamin Disraeli, a Jewish trader in London. He was educated in Amsterdam and began to write, his best known work being *The Curiosities of Literature*, published in six volumes. He also wrote *Calamities of Authors* and other books. D'Israeli became a Christian in 1817. He died at Bradenham, Bucks., Jan. 19, 1848, leaving one son, later the Earl of Beaconsfield (*q.v.*).

Disruption Term used for the secession of 420 members from the Church of Scotland in 1843. They differed from the others on the question of patronage and, led by Dr. Thomas Chalmers, they formed the Free Church of Scotland.

Diss Market town and urban district of Norfolk. It is on the Waveney, 19 m. from Norwich, on the L.N.E. Rly. John Skelton, poet and satirist, was rector here. There is a trade in agricultural produce. Pop. (1931) 3422.

Dissenter In Great Britain one who separates from the Established Church for reasons of doctrine, discipline or ritual. The word was applied to those who declined to accept the Act of Uniformity of 1662, but it denotes more particularly the Protestant dissenters referred to in the Toleration Act of 1689. In the Relief Act, 1791, English Roman Catholics were originally styled Protesting Catholic Dissenters. Members of the Episcopal Church of Scotland are technically dissenters from the Established Church of Scotland. Modern usage tends to prefer the epithet Nonconformist or Free Church.

The **Dissenting Deputies** is a body of laymen representing the three denominations, Congregationalist, Presbyterian and Baptist.

Founded in 1732 it has the right of offering an address to the sovereign at his accession and at other times.

Dissecting Operation of cutting open or separating into parts, specifically the complete or partial cutting of animals or plants into component organs or tissues for examination and study. The provision of human bodies for anatomical study is governed by the laws of 1832 and 1871 before which they were obtained by illegal means, such as those adopted by Burke and Hare. Dissecting is part of the training of all medical students.

Dissertation Formal discourse or treatise. The word especially denotes a written essay or thesis required of candidates for university degrees independent of set examinations. Such theses are offered for the degrees of Doctor of Literature, D.Litt., at London University, docteur-ès-lettres at the Paris Sorbonne, and Doctor of Philosophy, Ph.D., at some German universities.

Dissolution Act of reducing to constituent parts an organised association. The term may denote the termination of a partnership, by effluxion of time or mutual agreement, duly notifiable in the *London Gazette*.

A Dissolution of Parliament precedes a General Election. It takes place on the advice of the Prime Minister, unless the parliament comes to an end because its period, in Great Britain five years, has expired.

Distaff Cleft stick for holding fibre in hand spinning. Usually of wood, the cotton, wool or flax was wound loosely upon it in readiness for the spinning. It was held under the left arm. The lower end rested upon the girdle or the ground, and the right hand drew out the fibre and twisted it on its way to the weighted spindle. It disappeared when large spinning wheels were introduced. Distaffs were in use in very early times. Their length was about 36 in.

Distemper Method of painting with pigments mixed with glutinous material, preferably egg yolk, soluble in water. Surfaces, usually wood or canvas, are coated with gum—mixed plaster. Such tempera, which was continued until oil-painting developed, still serves for scene painting and similar work.

In house decoration pigments mixed with size and body white are spread upon plastered walls. Called distempers, these often take the place of paper. They are easy to keep clean and can be obtained in a variety of colours.

Distemper Specific infectious and contagious fever attacking young dogs. Primarily catarrhal, it affects the mucous membrane of the eyes and nostrils. The running discharge impairs vision; the cornea may become ulcerated. Rigor, sneezing, loss of appetite, increased temperature and pulse, cough and diarrhœa may lead to other complications. Chorea frequently supervenes. Careful nursing, nourishing food and frequent bathing of the affected parts are essential. High-bred and pet dogs are peculiarly liable to distemper.

Distilling Converting a substance or its volatile constituents into vapour condensable into liquid drops. It extracts essential or volatile oils from plants, mineral oils from coal tar, fresh water and salt, and alcoholic spirit from fermented saccharine liquids.

The apparatus comprises stills containing the substance whose heating drives into their upper part vapour which passes through spiral tubes, or worms, surrounded by condensing water: the liquid drops fall into receivers. Stills are fire-heated pot stills, steam-heated patent, or Coffey stills, and rectifying stills.

Several substances are used for distilling. Brandy is distilled from wine. Rum is distilled from sugar cane and its molasses; also from beet. Whisky is distilled from starchy materials, chiefly grain, such as barley, rye, oats, wheat and maize. In these the starch is first fermented into sugar and the sugar then fermented for alcohol. Industrial alcohol is distilled from beet and molasses, also from potatoes and sawdust.

Distilling is a considerable industry in Scotland, where much of the world's whisky is made. A distiller must take out a licence, which varies according to the number of gallons distilled. For 50,000 gallons or under it is £10.

The Distillers Company is a London livery company; it dates from 1638 and its offices are in the Guildhall.

Distinguished Conduct Medal British military decoration. Instituted in 1862, it is conferred on non-commissioned officers and men for "individual acts of distinguished conduct in the field." It is now awarded for services in action only. The ribbon has three stripes of equal width, the centre stripe being blue and the others red. It is called the D.C.M.

Distinguished Flying Cross British decoration. It was instituted in 1918 solely for officers and warrant officers of the Royal Air Force, to whom it is awarded for conspicuous gallantry in action. It is a small cross with a purple and white ribbon, striped horizontally, and is called the D.F.C.

The Distinguished Flying Medal, also awarded for gallantry in action, is given to non-commissioned officers and men of the Royal Air Force. The ribbon is purple and white striped horizontally. It is called the D.F.M.

Distinguished Service Cross Naval decoration. It is given to officers of the navy below the rank of lieutenant-commander, including warrant officers and is called the D.S.C. It was founded in 1901 as the Conspicuous Service Cross. The ribbon is three equal stripes, two blue with a white stripe in the centre.

The corresponding decoration for the lower ranks of the navy and marines is the **Distinguished Service Medal**. This dates from 1914. The ribbon is purple and white, and it is called the D.S.M.

Another Distinguished Service Medal is given to the men of the Indian army. It dates from 1907; the ribbon is violet with blue borders.

Distinguished Service Order Naval and military decoration. It dates from 1886 and is called the D.S.O. It is given to officers of the army and air force for distinguished service in the field. Members are called Companions and have precedence before the 4th class Royal Victoria Order. A bar is awarded for an additional act of gallantry. The ribbon is red with blue edges and the badge is a Maltese cross. Over 8500 awards were made during the Great War.

Distraint Method of enforcing payment of a debt. The usual method

is for the creditor to sue the debtor, and, having proved his debt, to obtain an order calling upon the debtor to pay; if he fails to do this the creditor can send the bailiffs to his house, or business, and sell his goods. At one time the goods of a lodger could be seized for the debts of his landlord, but this was forbidden by law in 1908.

Arrears of rent are often obtained by a distraint. Before the passing of the Rent Restriction Act during the war period, a landlord could distrain without applying to the court. Under the Rent Restriction Acts an order of the court is necessary before this can be done. If a tenant removes his goods the landlord can distrain upon them wherever they are within 30 days.

Distributor Flat or columnar switchboard for distributing electrical energy derived from a main supply through the various circuits comprised in a building or other system. In multiplex telegraphy, by cable or wireless, a rotating arm making in sequence contacts with levers controlled by selecting pins enables several messages to be transmitted and received simultaneously in connection with a single wire or aerial. Similar devices enable multicylindered internal combustion engines to operate from a single source of energy.

District Defined portion of territory. Such is the district of Columbia, which includes Washington, in the United States. In England there are two kinds of district, urban and rural, each with an elected council, and controlled to some extent by the county councils. Urban councils, especially those with over 20,000 inhabitants, have much more extensive powers than the rural ones. The councils were set up in 1894.

Ireland had councils on the same plan. In Scotland the counties are divided into districts and district councils were set up by a law passed in 1929.

A district registry is an office where wills can be proved. There are about 40 of them in the large towns of England and Wales.

Ditchling Beacon Hill in Sussex. It is about 7 m. from Brighton and one of the highest points of the South Downs. It is now the property of the borough of Brighton.

Diuretic Medicinal agent tending to increase the flow of urine. Such agents, by increasing the flow, assist in eliminating morbid products or dropsical fluids. They may pass direct to the kidneys, diminish kidney congestion and relieve the heart.

Divan Persian word meaning a tribunal; also its registers, its place of meeting and the low raised seats round its walls. In the first meaning it denotes a state council, specifically Ottoman; the second passed into French as *douane*, a custom house: the third came to mean a smoking café or tobacco divan. A combination of seat and bed, suitable for flats, is called a divan.

Diver Genus of diving birds (*Colymbus*). Of the four species, three, the great northern (*C. glacialis*), with glossy black head and neck, the red-throated (*C. septentrionalis*), with reddish-grey throat patch, and, very rarely, the white billed (*C. adamsi*), are winter visitants to Britain, but breed inland in more northern regions. The black throated (*C. arcticus*), breeds in the Hebrides.

Divide Term used in the United States for an elevated water parting between valleys. The Continental Divide is in Wyoming. Between Idaho and Montana rises Divide Peak. Queensland has a Great Dividing Range, and Victoria a Dividing Range.

Dividend (Lat. *dividendum*, something to be divided). Word used in mathematics for a sum to be divided by a divisor to obtain the quotient.

In law a dividend is a sum of money set aside out of a company's profits for distribution among the shareholders, usually by a percentage on their share holdings. The declaration of a dividend creates a specialty debt (*i.e.*, a debt not barred for 20 years), due from the company.

By English law a dividend cannot be paid out of capital. Dividends on preference shares are cumulative or non-cumulative. If the former, any dividend that is not paid must be carried forward and paid before the ordinary shareholders receive anything.

Divination Quest or discovery of the unknown by non-rational methods. The processes observed are subjective, as in dreams, crystal gazing, trance speaking, dowsing and necromancy; or objective, depending upon inference from observed facts. Their interpretation developed schools of empirical deduction, traceable among Chaldean soothsayers and prevalent in ancient Rome. They observed live things such as birds and hands, dead things such as entrails, inanimate objects as in astrology and geomancy, mechanisms such as suspended keys and rings, and cast lots.

Divine Right Idea that kingship and other forms of authority are of divine sanction and cannot lawfully be set aside. It was strong in England in the 16th and 17th centuries, and especially held in connection with the Stuart kings. The idea, which is historically unsound, gradually lost favour, but societies still exist which regard it as an article of faith. Its supporters call themselves legitimists and believe that a member of the late ruling family of Bavaria, as being descended from Charles I., is the rightful king of Great Britain. *See* JACOBITES.

Diving Act of plunging into water. Diving has been adopted as the means of obtaining pearls and sponges from the sea bed in shallow waters. A diver can remain for only two to three minutes under water, and in many of the pearl and sponge fisheries diving apparatus is coming into general use.

For recovery of treasure and other purposes in deeper waters the diving dress consists essentially of a flexible waterproof or metal garment and copper helmet, provided with air tubes, signal line, telephone and outlet air valves.

Diving is also a pastime and competitions are held. The record for the longest time under water is 6 min. 29⅘ sec., held by a Frenchman.

Divining Rod Fork twig used in searching for something hidden. This method of divination, of great antiquity, is still employed by professional dowsers in searching for metalliferous deposits or water springs. Timber twigs, usually hazel, or metal wires and springs are held between the extended hands and give notice of the proximity of the object sought by more or less violent contortions. The frequent success of this method is sometimes attributed to the dowser's capacity for perceiving obscure

indications which are communicated to the rod automatically.

Divinity Term for the godhead. In polytheistic religions the term denotes all gods and demi-gods.

It is also used synonymously with theology for the science of divine things. In Scotland **divinity halls** are theological colleges or university departments. **Doctors of Divinity** (D.D.) hold degrees, usually honorary, conferred by universities under varying conditions. There are regius professors of divinity at both Oxford and Cambridge and professors of divinity at the universities of London and Durham, the Scottish universities and Trinity College, Dublin.

Division In the United Kingdom a district that sends a member to Parliament. Each of the larger counties and boroughs is divided into several divisions.

In both houses of parliament the taking of votes is called a division. Members pass into one of two lobbies, the " ayes " in one and the " noes " in another. There they are counted and the result announced to the House by two members called tellers.

In military matters a division is the unit between an army corps and a brigade. It consists of three brigades of infantry, about 10,000 men, with appropriate artillery, engineers and other auxiliaries. It is usually commanded by a major-general.

Divorce Legal ending of the marriage tie. This branch of the law was long under the control of the church, which regarded divorce with great disfavour. As, however, the influence of the church weakened divorces became easier to obtain.

Divorce was allowed on very slender grounds by the Romans, but became much more difficult to obtain when Christianity was established in Europe. At the time of the Reformation some countries, Scotland for instance, began to allow it in cases of adultery.

In England the history of the law falls into three periods. Until 1857 a divorce could only be obtained by a special Act of Parliament, which meant that it was confined to the rich. In 1857 a law was passed which allowed a husband to apply for a divorce if his wife had committed adultery. A wife could only obtain a divorce if adultery was coupled with desertion or cruelty. Divorce could also be obtained for bigamy. A divorce court was set up and is now part of the probate, divorce and admiralty division of the high court.

In 1923 a law was passed which made the sexes equal in this matter. Adultery is now a ground for divorce by both husband and wife. If the case is proved the court grants a decree *nisi* (unless). If, at the end of six months, the parties concerned have not broken the law, the decree is made absolute, and they are free to marry again. Poor persons desiring a divorce on good grounds can obtain assistance from the Law Society, Chancery Lane, London, W.C.2.

There is a movement to make divorce still easier to obtain, in cases of insanity or serious mental trouble, for instance, and a Divorce Law Reform Union exists at 55-56 Chancery Lane, London, W.C., to urge such reforms.

In other countries the law varies greatly. In the United States each state has its own divorce laws, and divorce is very easy to obtain. In France it is allowed. In general it is most difficult to obtain in countries where the Roman Catholic church is strongest.

Dixmude Town of Belgium. It stands on the Yser, 12 m. from Ypres. The town was much damaged during the Great War. Taken by the Germans, it was recovered by the Belgians in Sept., 1918.

Dnepropetrovsk Town and river port of Ukraine. It stands on the Dnieper, 250 m. from Odessa and is the fourth largest town in the republic. It is an important trading centre, as the Dnieper is navigable by large vessels, and has a number of manufactures. It occupies the site of a Polish fortress, where later a residence was built in 1787 for the Empress Catherine II. This was called in her honour Ekaterinoslav and round it the town grew. In April, 1918, it was taken by the Germans; later the Soviet authorities changed its name. Pop. 233,801.

Dnieper River of the Ukraine. It rises in the Valdai Hills and enters the Black Sea, just below Kherson. It is navigable and is used for bringing down corn for shipment at Odessa, artificial channels having been cut to avoid the rapids. It is over 1300 m. long and is linked by canals with other rivers.

Dniester River of Europe. It rises in Poland and passes through the Ukraine and Rumania to the Black Sea, which it enters near Odessa. It is used for bringing down grain for export from the Black Sea ports. Its length is 750 m. and canals unite it with other waterways.

Dobell **Sydney Thompson.** English poet and critic. Son of a wine merchant, he was born at Cranbrook, Kent, April 5th, 1824. Though he assisted his father in business at an early age he wrote verse and studied continuously. In 1850 the publication of *The Roman* brought him instant success. *Balder*, published in 1854, was followed by *England in Time of War*, 1856, and many other poems. Dobell died at Nailsworth, Gloucestershire, Aug. 22nd, 1874.

Dobrudja District of Rumania. It covers about 8000 sq. m. and lies between the Black Sea, Bulgaria and the Danube. Constantza is the chief town. A good deal of it is marshland, but other parts are fertile soil. Dobrudja was taken from Turkey and given to Rumania in 1878. In 1916 it was conquered by the Austro-German armies and in 1918 was handed over to Bulgaria. It became Rumanian again by the treaty of 1919.

Dobson **Frank.** English sculptor. Born in London, Nov. 18, 1887, he studied art in London and in Cornwall. At first he worked both as a painter and a sculptor, and his pieces attracted a good deal of attention when exhibited in 1909. Afterwards he gave his time almost entirely to sculpture and produced some notable work, including busts of Lord Oxford and Asquith and Lydia Lopokova.

Dobson **Henry Austin.** English writer and poet. Born at Plymouth, Jan. 18, 1840, he became a civil servant, entering the Board of Trade in 1856. In 1873 he published *Vignettes in Rhyme* and from that time onwards was known as a graceful writer in both prose and verse and a discerning critic, with a wide knowledge of modern literature. He wrote lives of Steele, Goldsmith, Horace Walpole, Fanny Burney and others, volumes of verse and many articles and reviews, as well as essays and introductions. Dobson died Sept. 2, 1921.

Dock Enclosure, usually in a port, for the reception of vessels. It is made by

enclosing some part of a harbour or river with strong walls. Where the tide rises and falls considerably, gates are necessary. Gateless docks are called tidal basins.

The usual division of docks is into wet and dry. The former are docks in which vessels can lie while being loaded or unloaded. The latter are docks from which the water can be excluded so that ships can be cleaned or repaired. Dry docks are divided into graving docks, slip docks and floating docks. All serve the same purpose. The slip dock is a graving or repairing dock with a slipway leading out of it. The **floating dock** is a movable repairing dock.

The steady increase in the size of ships has led to a corresponding increase in the size of docks, and in all the great ports the tendency is to build larger ones. Each dock is fitted with machinery and apparatus for dealing with cargo, and warehouses for storing it.

In the large ports, such as London, certain docks are set aside for certain classes of merchandise. In one dock coal is handled, in another oil, and so on. The King George V. dock, opened in 1921, one of the largest in the world, covers 186 acres. The total area of the Port of London docks is 4203 acres, including 675 at Tilbury. The governing body is the Port of London Authority; in other places docks are controlled by a dock and harbour board, as at Liverpool, or a railway company as at Southampton, or by the local council.

A dock warrant, which must be stamped, is a document showing to whom the goods in a dock belong. It can be used as security for a bank loan.

Dock Genus of biennial and perennial herbs of the polygonum family (*Rumex*). They are native to all temperate climates. They have tapering rootstocks, alternate leaves, and whorled clusters of small greenish flowers bearing leathery three-sided fruits. A dozen British species, sometimes troublesome weeds, include the bitter, or broad leaved, fiddle, golden, water, and sour dock, or sorrel.

Dockyard Any place where docks are, but in practice confined to a place maintained by a government as a base for warships. It contains facilities for docking and repairing the ships, for victualling them and preparing them for sea, sometimes for building them. The chief English dockyards are Portsmouth, Devonport and Chatham. Since the Great War Pembroke has been closed and Rosyth partly closed. The Admiralty also maintains dockyards at Gibraltar, Bermuda, Hong-Kong and elsewhere.

Doctor Term for a man of learning. There are doctors in all branches of learning, men who have received from a university the degree of doctor, whether in law, divinity, philosophy, science, music or medicine. These degrees are usually given after the writing of a thesis or sometimes without any test.

The word is most generally used, however, for a qualified medical practitioner, whether or not he or she has obtained a doctor's degree.

Doctors' Commons District of London. It is near St. Paul's Cathedral and is named after a college of lawyers which had its headquarters here from 1768 to 1857. Its members were chiefly concerned with ecclesiastical cases, which then included divorce and probate matters.

Doctrinaire In politics, economics, science or art, a theorist who follows one narrow principle or group of principles regardless of practical considerations. After Louis XVIII.'s second restoration in 1815, the name was applied derisively to the statesman philospher, Royer-Collard, and his royalist following, who advocated a constitution on historical principles, opposed to absolutist and revolutionary ideas.

Dodd **Francis.** British artist. Born at Holyhead, Nov. 29, 1874, son of a Weslevan minister, he studied art in Glasgow and Paris, and made his reputation with his sketches of generals and admirals during the Great War, when he was an official artist. In 1927 he was elected A.R.A.

Doddridge **Philip.** English divine. Born in London, June 26, 1702, he spent most of his adult life in Northampton where he was minister of a Nonconformist church and founder of a college for training ministers. He is best known for his hymns, which include "O God of Bethel," and "Hark, the glad sound," and as an early believer in shorthand. He died in Lisbon, Oct. 26, 1751.

Dodecanese Name of twelve islands in the Aegean Sea. They lie between Crete and Asia Minor and include the Island of Patmos. For long they belonged to Turkey. In 1912 they were seized by Italy, but they were not formally ceded to that power until 1924. Since the Italian occupation the name has been applied to the Thirteen Southern Sporades.

Dodman **The.** Point on the coast of Cornwall. It is 8 m. from St. Austell on the south coast and stands 270 ft. high. Sir A. Quiller-Couch refers to it as Dead Man's Rock. It is the property of the National Trust.

Dodo Large flightless bird of the pigeon order (*Didus ineptus*). Found inhabiting Mauritius when discovered by the Portuguese in 1507, it is known to have survived to 1681, but is now extinct. Several almost complete skeletons have been constructed from abundant finds of bones. It was clumsy and defenceless, with stout bill, short legs, stumpy tail and downy feathers.

Dodworth Urban district of Yorkshire (W.R.), 3 m. from Barnsley, on the L.N.E. Rly., it is in a coal mining district. Pop. (1931) 4248.

Doe **John.** One of two fictitious names, once used in legal procedure for the sake of convenience. The other was Richard Roe. When a litigant could more conveniently bring an action in a fictitious name than in his own, or against a fictitious person, one of these names was used. The practice was abolished in 1852.

Dog Domesticated quadruped. It is derived from one or more species of the canine genus of flesh eating mammals. The systematic name, *canis familiaris*, is a conventional, not a zoological, classification. Its nearest congener is the wolf, their crossing producing fertile offspring, but some breeds suggest other ancestral relationships, as the jackal and the hyena.

Dogs may have domesticated themselves in mesolithic times; ten thousand years of human associations have developed mutual trust and affection.

Dogs are classed as sporting and non-sporting. There are many kinds, widely

different in size and other qualities, and new breeds are evolved from time to time. The Sealyham terrier and the Corgi are recent breeds. They range from large dogs such as the Alsatian wolfhound and the bloodhound, to tiny pet dogs. The terriers form one large group and the spaniels another. The foxhound, the greyhound and the harrier are the chief sporting dogs.

Dogs are chiefly kept for companionship, but they are still useful for guarding houses and property, especially in country districts. In the Arctic regions they are used to some extent for drawing sledges.

The breeding of dogs is a considerable industry. The first dog show was held in 1859, and in 1873 the Kennel Club was founded. There are now over 520 shows, Cruft's being the chief. Another organisation is the Tail-waggers' Club at Temple Avenue, London, E.C. In Great Britain a licence of 7s. 6d. a year must be taken out for a dog unless it is kept by a shepherd or a blind person. The owner of a dog is liable for any damage or injury done by it.

Dog Days Period beginning between July 3rd and August 15th, and lasting for 30 to 54 days. The heat and unhealthiness of these days in ancient Egypt were held to be due to the rising of the dog star. Now the period is generally considered to last from July 3rd to August 11th.

Doge Title of the chief magistrate in the Venetian and Genoese republics. In Venice in the 8th century city tribunes were replaced by a single *dux*, or leader. He was chosen for life and the office lasted until the overthrow of the republic in 1797. In Genoa the doge first appeared in the 16th century. He was elected for life, later for two years.

Dog-fish Several species of small sharks. They are found in packs in temperate and tropical waters. British species include the large-spotted nurse hound (*Scyllium catulus*) and the small spotted rough hound (*S. canicula*). They are marketed as rock salmon and their rough shagreen skin is used for polishing wood. The more abundant dog-fish (*Acanthias vulgaris*) produces the young alive; the other species produce them from eggs. The fish is from 3 to 5 ft. in length.

Dogger Bank Sandbank in the North Sea. It is between Britain and Denmark, covers about 1200 sq. m. and is famous for its cod. Here on Oct. 21, 1904, during the Russo-Japanese War, a Russian fleet inadvertently fired on some British trawlers and did some damage for which compensation was paid.

On Aug. 5, 1781, there was a sea fight here between the English and the Dutch, but neither side gained any advantage.

BATTLE OF DOGGER BANK. On Jan. 24, 1915, the German cruisers crossing to attack the British coast were met on the Dogger Bank by some British cruisers under Sir D. Beatty. The Germans retreated, followed by the British, and a fight took place. Beatty's ship, *Lion*, was hit and, while he was out of action, the fight was broken off about 90 m. from Heligoland. The British losses were slight. Of the German ships *Blücher* was sunk and *Seydlitz* and *Derfflinger* damaged.

Doggett **Thomas.** Irish actor. Born in Dublin, he appeared on the London stage in 1691 and soon became one of the leading actors of the day. He acted in some of Congreve's comedies and died in 1721.

In 1715 Doggett gave some money for a race for watermen on the Thames. The course is from London Bridge to Chelsea, and the prize is known as **Doggett's Coat and Badge.** The race is rowed annually on Aug. 1.

Dogma Opinion, stated positively, and supposed to have been previously shown to be true, as opposed to one deduced from experience or demonstration. **In theology** it was intended to mean a doctrine defined by the church, and put forward, not to be discussed, but simply believed. But as this method of stating truth often comes to mean the assertion of unfounded opinions, *dogma* has come to be used in English for an assertion without any proof; hence **dogmatism,** meaning uncritical acceptance of beliefs or principles.

Dog Rose Prickly bush of the rose order. It is a native of Europe, Siberia and N. Africa (*Rosa canina*). Britain's largest wild rose, it grows in thickets and hedgerows. It has hooked prickles scattered uniformly on long arching branches, and white or red flowers bearing crimson hips. About 30 varieties are found.

Dogs **Isle of.** District of London. Formerly a peninsula jutting out into the Thames, opposite Greenwich, it was made into an island when the docks were built. From it there is a tunnel under the river to Greenwich. The name is said to be due to the fact that the king's kennels connected with the palace at Greenwich were here.

Dog Star Alternative name for Sirius, the brightest star in the heavens. It is found in the constellation Canis Major. It was regarded by the ancients as herald of the hot season, hence the term "Dog days."

Dog Watch Period of time on board ship. It lasts from 4 p.m. to 8 p.m. and is divided into the first and second dog.

Dogwood Genus of shrubs and small trees of the cornaceous order. They are native of temperate and subtropical regions. The common *Cornus sanguinea* has egg-shaped leaves, reddening autumnally, and clustered cream-white flowers bearing black-purple berries. The tough wood serves for ladder spokes and skewers. The berry-bearing alder (*rhamnus frangula*) is sometimes called black dogwood.

Dolcoath Village of Cornwall. It is near Camborne and is famous for its copper mine, one of the richest in England.

Doldrums Name given by sailors to a belt of low pressure in the equatorial regions where the N.E. and S.E. trade winds meet. In the days of sailing ships vessels were often becalmed in this region, which is characterised by heavy rains and violent thunderstorms.

Dole *See* UNEMPLOYMENT.

Dolgelley Market town and urban district of Merionethshire, also the county town. It is on the G.W. Rly. 230 m. from London and stands amid beautiful scenery, Cader Idris being near. Pop. (1931) 2261.

Doll Puppet representing the human figure. Its use as a plaything is traceable in very early times, and examples exist from 18th dynasty Egypt, western Asia, Greece and Rome. Cortes found Montezuma and his court

playing with elaborate dolls; some encountered in negro Africa apparently have a magical significance. American Indians and Eskimos also use them.

Dolls are very popular toys and making of dolls, dolls' houses and dolls' perambulators is an important branch of the toy industry.

Dollar Burgh of Clackmannanshire. It is 6 m. from Alloa, on the L.N.E. Rly. It is famous for its school, Dollar Academy, built in 1819. Near are the ruins of Castle Campbell. Pop. (1931) 1485.

Dollar Silver coin. The word is a variant of thaler, and the first dollars were the Spanish pieces of eight. To-day the dollar is the monetary unit of the United States, Canada and Newfoundland. It is worth 4s. 1½d. and is divided into 100 cents. It circulates chiefly in the form of paper money, but silver dollars are coined. Adopted in 1792, the **American dollar** is based on a gold standard and its par value is normally 4.86 to the £ sterling.

The Mexican dollar and the dollar that circulates in the Malay States is a coin of 2s. 0½d., or just about half the American dollar. The Mexican dollar is also called the peso.

Dollfuss **Dr. Englebert.** Austrian Chancellor and Dictator. Born in 1892, he joined the Christian Social party, and was successively Secretary of the Lower Agricultural Chamber; Director of the Chamber; President of the Railways; and, in 1931, Minister for Agriculture and Forestry. As Chancellor in 1933 he stood out against Nazi intrusion in Austria, banned Nazi flags, uniforms and meetings, closed the Nazi headquarters and was largely instrumental in saving Austria from Nazi domination. Later in the year he became dictator, but in July was assassinated by Nazis in the Chancellery at Vienna.

Dolmen Megalithic chamber. It consists of an unhewn capstone poised on two or more unhewn uprights. They originated under neolithic conditions as sepulchres for eminent persons and were covered with earth or stone. They are sometimes mistakenly called cromlechs or druid altars.

Dolomite Magnesian limestone. It is composed of carbonate of lime and carbonate of magnesia in almost equal proportions. Brittle and lustrous it is used in the production of steel and for building purposes. It is found in England and Scotland and in the Alps, also in Canada and the Transvaal. Dolomite is named after a French geologist, D. G. de Dolomieu (1750-1801).

A division of the Alps is called **the Dolomites.** This is in the Trentino and stretches north from Trent. A district of the Transvaal is known as the Dolomite region.

Dolphin Cetacean mammal (*Delphinus delphis*). It inhabits the Mediterranean and temperate Atlantic waters. Black with yellowish stains, it follows ships in large herds, being often entangled in mackerel nets in the English Channel. With sharp snouts they are about 7 ft. long. The dolphin family includes the bottle-nosed, white-beaked and white-sided varieties. Several freshwater dolphins of another family occur in the Ganges, Amazon and La Plata rivers. British fishermen improperly call the coloured fish *Coryphaena*, the Portuguese dorado, a dolphin.

Dome Hemispherical structure forming the roof of large buildings and supported on arches, triangular vaulting, low walls or corbels. The dome is characteristic of Coptic, Byzantine and Mohammedan architecture. The Copts used it for churches of the basilica type, the Byzantine architects roofed large spaces with groups of domes and semi-domes, while in Mohammedan architecture the dome, first used for burial places, became the distinctive feature of mosques. The great central dome of the Pantheon at Rome is a fine example.

In England, famous domes are those of S. Paul's Cathedral, strengthened in 1929 by a massive chain, and the British Museum. The dome of S. Peter's, Rome, is 139 ft. in diameter; that of S. Sophia, at Constantinople, is 115 ft. or a little larger than that of S. Paul's, London.

Domesday Book Survey of England. It was drawn up by order of William the Conqueror in 1086 and gives an account of England as it then was. It states for each county, except those in the north, who are the holders of the land and what each holding is worth; also what it was worth in the time of Edward the Confessor. Other details given are the names of the landholders, the numbers of villeins, cottars and others on each holding, the numbers of oxen, pigs, etc., and a good deal of miscellaneous information. A careful study of the book has thrown a vast amount of light upon the social and economic conditions of the time. The original is in the Public Record Office, London; facsimiles have been printed.

Domestication Process of accustoming animals and plants to live and propagate under human control. It comprises controlled mating, food provision, shelter and training for specialised services. Dogs were perhaps self-domesticated before they were bred for herding and hunting in Asia and Egypt in neolithic times. Tamed horses, asses and camels were milked before man broke them in for riding and transport. Domesticated cattle, goats and other animals may have been tamed by milking them for sacrificial purposes.

Domestic Science Practice of conducting the work of the home. It includes cooking and the various cleaning processes. Of late years much attention has been paid to training in housecraft; many schools for girls have classes for the various subjects, and there are training colleges in the large towns, as well as schools for cookery. Some of them, as in Manchester, are under municipal control.

For **Teachers of Domestic Subjects,** courses are provided at King's College, London; National Training School of Cookery, Buckingham Palace Road, S.W.1; Training College of Domestic Subjects, Berridge House, Fortune Green Road, N.W.6; Battersea Polytechnic Domestic Science Training College, S.W.11; and in the provinces there are several Training Colleges of Domestic Science—Gloucester, Bath, Leeds, Leicester, Liverpool, Manchester, and Newcastle-on-Tyne.

Domestic Servant Person employed in a house for work therein. In 1921 there were over 1,200,000 domestic servants in Great Britain, so it is now one of the largest of occupations, at least for women. The domestic servant of the 19th century usually lived in the house, but to-day a large proportion go daily to their work and live at home. Domestic servants must be insured by their employers under the national health scheme. The total

weekly premium is 1s. 1d. and includes a payment towards the Old Age pension. They are not insured against unemployment, but the employer is liable if accidents happen to them in the course of their work.

Domicile In English law the place of a man's permanent abode. It begins with a domicile of origin, that of his parents at his nativity. On reaching his majority he may acquire a domicile of choice in another state, if he intends to remain there. A married woman's domicile is that of her husband.

Dominic Spanish saint. He was born of good family in 1170 at Calaroga, in Spain, was ordained in 1195, and, as an Augustinian canon, was sent by Innocent III. to fight the Albigensian heresy. Succeeding as a persuasive missioner, he was permitted to found the order of preaching friars in 1218 and lived to see it flourishing in Toulouse and elsewhere. He died on Aug. 6, 1221, and was canonised in 1234.

Dominica Island of the West Indies, one of the Leeward Islands. A British possession, it is 29 m. long and covers about 300 sq. m. It lies between Guadeloupe and Martinique. Roseau is the capital and the chief seaport. The island is mountainous, but much of the soil is fertile and tropical fruits are grown, including limes, used for making lime juice. It is governed by an elective council. Pop. (1931) 43,098.

Dominican Order of preaching friars. It was founded by S. Dominic at Toulouse in 1215. Based upon S. Augustine's monastic rule, it received papal sanction in 1218. The Dominicans came to England in 1221 and were called the Black Friars because they wore a black mantle and scapular over a white habit. They established 57 British friaries and one nunnery before the dissolution of the monasteries. Their English province was reorganised in 1850.

Dominican Republic Name sometimes used for the West Indian republic of Santo Domingo (*q.v*).

Dominion Word denoting lordship or authority. It was chosen from Ps. lxxii to designate Canada when its provinces were federated by the British N. America Act, 1867. The union, proclaimed July 1, is celebrated annually as a national holiday called Dominion Day. The name, taken by New Zealand, 1907, also embraces other parts of the British Empire which have attained Dominion status. There are six of these Dominions: Canada, Australia, New Zealand, Newfoundland, the Union of South Africa and the Irish Free State. **The Dominions Office,** created in 1925, transacts business with the Dominions, previously transacted by the Colonial Office.

Domino Originally a priestly hood worn by clerics. It came to be used for a hooded cloak with wide sleeves worn with a half mask to conceal the features at a masked ball. The half mask itself is called a domino, as is the person who wears it.

Domitian Roman emperor. A son of the Emperor Vespasian, his full name was Titus Flavius Domitianus Augustus. Having been proclaimed emperor by the soldiers in A.D., 81 in succession to his brother Titus, he ruled badly, had to buy peace on disgraceful terms from Decebalus, King of Dacia, and through jealousy recalled Agricola from Britain. At last his cruelty made him so hated that a conspiracy was formed and he was murdered by a freedman in A.D. 96.

Domodossola Town of Italy. It is on the French frontier, on the railway line through the Mont Cenis pass to Turin. Here the customs officials examine the luggage of travellers.

Don Spanish title. Equivalent to the English Sir, it was once used solely by the nobility, but is now used in all classes. The term is also used for members of the teaching staffs at the universities of Oxford and Cambridge, and to some extent in other universities.

Two famous dons of fiction are **Don Quixote,** the hero of Cervantes' great novel, and **Don Juan,** the hero of Byron's poem. In real life there were several dons in Spanish history. **Don John,** the victor of Lepanto, was a natural son of Charles V. Another **Don John,** immortalised in Schiller's poem, was the unfortunate son of Philip II. of Spain.

Don River of Aberdeenshire. It rises on the borders of Banffshire and flows E. and enters the North Sea at Aberdeen. It is 82 m. long and the district through which it flows is called Donside. There are paper mills on its banks.

Don River of Yorkshire (W.R.). It rises in the Pennines and flows S.E. past Sheffield and Doncaster and enters the Ouse at Goole. It is 70 m. in length.

Don River of Russia. It rises in Lake Ivan and flows in a southerly direction until it falls into the Sea of Azov. It is 1325 m. long and is much used, except in winter, for the transport of grain and cattle. The chief of its many tributaries is the Donetz, which is 670 m. long and flows through a rich coalfield.

The Cossacks of the Don territory were famous and a territory of Russia was named after them. For a short time after 1919 this was the Don Republic, but it is now part of Ukraine.

Don Kaye. British racing motorist. Born in 1894, he entered the Air Force. In 1924 he made a record at Brooklands, but failed to beat Sir H. Segrave's record. In 1931 he made a world record in a motor boat of 89.9 nautical miles per hour in Miss England II. on the Parana river. Later, on Lake Garda, he established a record of 110 m.p.h. and on July 18, 1932, on Loch Lomond, Don broke the world's record in Lord Wakefield's Miss England III. with a speed of 119·81 m.p.h.—a speed later exceeded by the American, Gar Wood.

Donaghadee Port and market town of Co. Down, Northern Ireland. It is 25 m. from Belfast, and is situated on the south side of Belfast Lough. Dairy produce and cattle are exported and some coal is imported. A mail service was formerly operated from here to Portpatrick in Scotland. Pop. 2220.

Donatello Italian sculptor and painter. Born in Florence about 1386, his name was Donato di Niccolo di Betto Bardi. He executed many fine statues in marble and bronze, his work being distinguished by a close adherence to nature and keen sense of proportion. His masterpiece, "David," is at the Bargello, Florence, and at Padua there is an admirable equestrian statue. For Cosimo de Medici he executed, partly in relief and partly in painting, "The History of the Evangelists," for the church of San Lorenzo, Florence. His "Judith" is also in Florence. He died in Florence, Dec. 13, 1466.

Doncaster Borough and market town of Yorkshire (W.R.). It stands on the River Don, 156 m. from London, with stations on the L.N.E. and L.M.S. Rlys. Its population has grown a good deal in the 20th century owing to the opening of coal mines in the neighbourhood. There are engineering works, railway shops and manufactures of glass, artificial silk, etc. The town is a famous racing centre, and on Town Moor the St. Leger is run. Pop. (1931) 63,308.

Donegal County of the Irish Free State. In the province of Ulster, it occupies the N.W. corner of the country and covers 1860 sq. m. It has a long coastline of 165 m. on the Atlantic Ocean where there are many inlets, Lough Swilly being the chief. The scenery both on the coast and inland is remarkably fine, being wild and mountainous. Erigal is the highest peak and Derg the largest lake. The Foyle is the longest river. The people are chiefly engaged in keeping cattle and pigs, and in fishing. The county is served by a system of light railways. Lifford is the county town. Other places are Letterkenny, Ballyshannon, Bundoran, Raphoe and Donegal. Moville and Rosopenna are popular watering places. Aran Island belongs to the county. Pop. (1926) 152,508.

The title of **Marquess of Donegal** has been borne since 1791 by the family of Chichester. In 1612 Sir Edward Chichester, Lord Deputy of Ireland, was made a baron. In 1647 a later baron was made Earl of Donegal. The family estates were in counties Donegal and Antrim.

Donegal Market town of Co. Donegal, Irish Free State. It stands on Donegal Bay, an opening of the Atlantic between the counties of Donegal and Sligo. The bay is 35 m. long and at the entrance 30 m. wide. The town is connected by railway with Londonderry. Pop. 1100.

Doneraile Market town of Co. Cork, Irish Free State. It has a station on the G.S. Rlys. 7 m. from Mellow. Here Spenser wrote *The Faerie Queen*.

The title of **Viscount Doneraile** has been borne by the family of St. Leger since 1785.

Dongola Town of the Sudan. It is on the left bank of the Nile, about 600 m. N. of Khartum, and is a prosperous trading centre. It was the British base in the campaign against the Mahdi in 1884-85. Pop. 20,000.

Dongola is called New Dongola to distinguish it from **Old Dongola**, a town on the right bank of the Nile, some 75 m. to the S. This was once the capital of a kingdom which was named after it, but is now an unimportant place.

Don Juan Legendary character, appearing in the folk tales of many countries. He is first found in written literature in a Spanish play of about 1630, and became the type of the blasphemous sensualist. His popularity is largely due to the musical settings of his adventures, notably those of Purcell, Gluck and Mozart.

Donkey Engine Small type of steam engine. It is used for working a crane or hoist or for pumping water into a boiler or tank, and is attached to a larger engine or to a special boiler. In this type the piston, driven by steam from the boiler, acts directly on a plunger in a pump cylinder, the action being controlled by a fly wheel.

Donne **John.** English divine and writer. Born in London in 1573, the son of a merchant, he was educated at Oxford and Cambridge. He served as a soldier and travelled, later becoming a secretary to Lord Egerton, the Lord Keeper. He was already a barrister and he became friendly with many eminent men. He was married secretly in 1601 to a daughter of Sir George More, the lady being also related to the Lord Keeper. This cost him his position and brought a spell of imprisonment. In 1614 Donne was ordained. The king made him one of his chaplains; he became vicar of Keyston, Hunts, and of Sevenoaks, and in 1621 was appointed Dean of S. Paul's, London. He died March 31, 1631.

Donne's works include many poems and sermons, including the great *Death's Duel*, the work of a scholar and a thinker, who also possessed a graceful style of writing. His poems were not published until after his death.

Donnybrook Suburb of Dublin. It is famed for the fair which was held here each year from 1204 until 1855. It was then a village outside the capital, and its fair won a reputation as the most rowdy of all the Irish fairs.

Donoghue **Stephen.** English jockey. Born in 1884, he rode his first important winner in 1910, when he won the Cambridgeshire. Other successes followed, and after the Great War he was the leading English jockey, a position he retained for some years, riding 143 winners in 1920. On six occasions he rode the winner of the Derby. Donoghue also became known as a painter, having a picture hung in the Academy in 1925.

Donoughmore Village of Cork, Irish Free State. It is 13 m. from Cork and from it the family of Hely-Hutchinson takes the title of earl. This was given to Richard Hely-Hutchinson in 1801 and has since been held by members of the family. The earl's eldest son is called Viscount Suirdale.

Doom Term for the Last Judgment. This theme frequently inspired mural paintings in mediaeval churches, and dooms were usually represented on the chancel arch. The crude realism of weighing the souls in the scales and immersing the doomed in burning cauldrons offered a perpetual warning to worshippers. Once almost universal, many were destroyed at the Reformation, but more than 100 English dooms survive. Examples are at Chaldon, Surrey, and Shorthampton, Oxon, and there is a fine one in the cathedral at Gloucester.

Doon Lake and river of Ayrshire. The loch, 5½ m. long, is in the south of the county on the borders of Kirkcudbright, and contains five small islands. The river runs from the loch to the Firth of Clyde near Ayr. It is 36 m. long and is the stream immortalised in Burns' poem "Ye banks and braes o' bonnie Doon."

Doone Name of a famous Exmoor family. The Doones are chiefly known because of R. D. Blackmore's romance, *Lorna Doone*, but they had a real existence. They appear to have been a band of robbers who, in the 17th century, lived in the valley of the Bagworthy. About 1700, soldiers were sent to root them out, after which little more was heard of them.

Dope Term used for certain poisonous drugs. Such are cocaine, heroin and opium and their continued use causes a

drug habit in its victims. The sale of these drugs is strictly regulated by law in Great Britain, and international efforts are being made to stop the traffic in dope in various countries.

Doppler Effect Apparent change in frequency of vibration due to relative motion of the observer. The sound of a locomotive whistle alters in pitch on approaching or receding from an observer. In 1842 Doppler suggested a similar effect in light waves which has since been demonstrated and usefully applied in astronomical spectroscopy to the investigation of double stars.

"Dora" Popular name for the Defence of the Realm Act, passed in Aug., 1914, at the beginning of the Great War. Some of the regulations made under it were still in force in 1932. *See* DEFENCE.

Dorcas Society of women who make clothes for the poor. It is called after Dorcas (Tabitha) the charitable woman mentioned in Acts ix. 36-42.

Dorchester Borough and county town of Dorset. It is 135 m. from London, on the G.W. and S. Rlys. S. Peter's church, in the perpendicular style, has a fine tower. There is an interesting county museum. The town has an agricultural trade and there are breweries. Dorchester is interesting because of the extensive early British and Roman remains in and near the town, and for its connection with Thomas Hardy, the writer (*q. v.*). Near by is a wireless transmitting station. Pop. (1931) 10,030.

The title of **Baron Dorchester** was borne by the family of Carleton from 1786 to 1897. The first baron was Guy Carleton, Governor of Quebec, 1775-78, and Governor-General, 1786-94. He died Nov. 10, 1808. The title was recreated in 1899 for Henrietta Anne, daughter of the 3rd baron.

Dorchester Village of Oxfordshire. It is on the River Thames, 9 m. from Oxford. It is famous for its church, once the church of an abbey, and for its other ecclesiastical associations, as it was the headquarters of a bishopric from 635 to about 1080.

Dorchester House Residence in Park Lane, London, now demolished. Built in 1851-53 for Sir George Holford, it was one of the finest residences in London, with a wonderful collection of pictures, books and works of art. In 1926 it passed to the Earl of Morley, who afterwards sold it. An earlier mansion was the residence of the earls of Dorchester. The site is now occupied by a hotel called the Dorchester.

Dordogne River of France. It rises in the Puy de Dôme mountains and flows for some 300 m. mainly in a westerly direction until it joins the Garonne. The two form the estuary of the Gironde. Its chief tributaries are the Cère, Isle and Vézère.

An inland department of France is named after the river. Its extent is 3550 sq. m. In the rocks of the valley of the lower Vézère are prehistoric caves, important for the study of Palaeolithic man. Périgueux is the capital.

Dordrecht (or Dort). Town of the Netherlands. It stands on an island in the Meuse, 12 m. from Rotterdam, a prosperous river port with a number of manufacturing industries. Much of its trade goes by canal or along the Meuse and the Merwede, which flow through the town. The chief buildings are the 14th century church, with a lofty tower, and the restored town hall. Pop. (1932), 57,959.

Here in 1618-19 the **Synod of Dort** met. Its aim was to settle the points at issue between the Calvinists and the Arminians. In the end the teaching of Arminius was condemned.

Doré **Paul Gustave.** French artist. He was born at Strasbourg, Jan. 6, 1832. Coming to Paris in 1848, he painted many religious and historical works and achieved some success as a sculptor. His fame, however, rests upon his remarkable skill as a draughtsman and illustrator. Doré illustrated a great number of standard books including the Bible, *Paradise Lost*, Dante's *Inferno*, the works of Rabelais and Balzac, and *Don Quixote*. His work was very popular in England, and a Doré Gallery was opened in London. He died in Paris, Jan. 23, 1883.

Dorian One of the four great divisions of the Hellenic race, the others being the Aeolian, Ionian and Achaean (*q.v.*). After considerable wandering, they finally migrated to the Peloponnese, where they became the governing class and reduced the old inhabitants to slavery. Their mythical ancestor was supposed to be Dorus, a son of Hellen.

Doric Order One of the principal orders of Greek architecture. It represents the earliest and simplest type of composition. The column, which has 20 flutes meeting in sharp edges, has a plain capital, but no base, and varies in height from four to six times the diameter.

Dorking Market town and urban district of Surrey. It is on the River Mole, 26 m. from London, and is served by two branches of the S. Rly. Dorking stands in the midst of some of the most beautiful of the Surrey scenery, Box Hill, Ranmore Common and other beauty spots being near. The Glory Woods are public property. The place has many literary associations, Malthus, Meredith, Fanny Burney and others having lived here. Pop. (1931) 10,109.

The Dorking is the name given to a breed of domestic poultry once extensively raised in the Surrey town. It is a valuable table bird, especially when crossed with the English or Asiatic game fowl. The cocks may weigh 14 lb. The hens lay freely.

Dormer Architectural term for a vertical window in a projection from a steeply sloping roof of a building, designed to give light to the interior. In some buildings rows of simple dormers were placed in the roof, but in many of the Gothic and Renaissance style richly decorated dormers of masonry are seen.

Dormouse Family of small arboreal rodents (*Myoxidae*). They are widely distributed from Britain to Japan. Unlike the squirrels, they hibernate half the year in nests in which nuts are stored. The graceful English dormouse (*Muscardinus avellanarius*) has a hairy tail, prominent eyes and untufted ears. It consumes insects as well as hazel nuts and corn. The continent of Europe possesses larger edible and garden forms; there is also a N. African genus.

Dornoch Royal burgh and watering place of Sutherlandshire; also the county town. In the south of the county, it is on Dornoch Firth, 58 m. from Inverness, on the L.M.S. Rly. Once the seat of a bishop,

it had a cathedral, restored in 1837. There is a fine castle. Pop. 725.

Dornoch Firth is an inlet of the North Sea between the counties of Sutherland and Ross and Cromarty. It is 22 m. long and is a noted fishing area.

Doronicum Genus of asteraceous plants of the order compositae. The garden doronicum (*Arnica nudicaulis*), or leopard's bane, is a hardy perennial two or three feet in height, with large golden daisy-like blooms. It is easy of cultivation in any soil, preferably in a shady position. Plants should be cut down after flowering and increased by division in the autumn.

Dorset County of England. In the south of the country, it covers 987 sq. m. and has a coastline of 75 m. on the English Channel. Portland Bill is a feature of the coast. It is almost wholly an agricultural and rural area, although it is famous for its stone, especially Portland and Purbeck; fishing is an industry. Dorchester (*q.v.*) is the county town. Poole and Weymouth are seaports; Swanage and Lyme Regis are watering places. Spots of historic and other interest are Bridport, Sherborne, Shaftsbury, Gillingham and Blandford. The county contains Corfe Castle and many other antiquarian remains, and in modern times is celebrated as the scene of Thomas Hardy's novels. The dialect, in which William Barnes wrote his poems, is preserved. The county is served by the G.W. and S. Rlys. It is in the diocese of Salisbury. Pop. (1931) 239,347.

The Dorset Regiment, formerly the 39th and 54th foot, is recruited in the county. It was raised in 1702. Its motto is *Primus in Indis*; the depôt is at Dorchester.

Dorset **Earl of.** English title borne by the family of Sackville from 1604 to 1843. There was a Marquess of Dorset before this time, the title being held by the family of Beaufort and then by the Greys.

Thomas Sackville (1536-1608) the 1st earl, was a poet, but is better known as a politician and ambassador in the time of Elizabeth. His descendant, **Charles Sackville** (1638-1706), the 6th earl, was also a poet who took part in public life. His son, **Lionel,** the 7th earl, was made Duke of Dorset in 1720, and there were dukes of Dorset until the main line of the family died out in 1843.

Dortmund Town of Germany. It stands on the River Emscher in Westphalia, 50 m. from Düsseldorf. It is served by a good railway system and is the terminus of a canal to the Ems. Most of the town is modern, but some streets and houses in the older part date from the time when it was a free city and a flourishing member of the Hanseatic League. Dortmund's industries are due to its position on the coalfield. Among them are the manufactures of iron and steel goods, including machinery and railway stock. Its transport trade is also considerable. Pop. 525,837.

Dory (*Zeus faber*). Edible, marine spiny-finned fish also called John Dory. Found in British, Mediterranean and Australian waters, it is olive-brown in colour, with dark-spotted yellowish sides and few or no scales, and is valued for the table.

Dostoievsky **Feodor Mikhailovitch.** Russian novelist. Born in Moscow, Oct. 30, 1821, he was educated as an engineer, but soon began to write. His first work, translated as *Poor Folk*, was published in 1846. In 1846 his political activities led to his arrest and he was sent to Siberia where he remained for four years, after which he spent three in the army. The rest of his days were spent in writing and travelling. He died in St. Petersburg, Jan. 28, 1881.

Dostoievsky was the first and one of the greatest of the Russian realists. His works have been translated into English and include *Crime and Punishment*, his masterpiece, the autobiographical *House of the Dead*, *The Idiot*. *A Raw Youth* and *The Brothers Karamazov*. He also began *An Author's Diary*.

Dotterel Bird of the plover family. Though becoming rare in England it still breeds in Scotland. It is about 9 in. long, its plumage being brown with black and white markings. Its eggs, usually four in number, are pear-shaped, of stone colour, and laid in a slight hollow. It is found in mountainous areas and feeds on insects and grubs.

Douai Town of France. It stands on the Scarpe, 20 m. from Lille. The buildings include the churches of S. Peter and Notre Dame. The ancient fortifications are represented by two massive gateways and other remains. During the Great War Douai was occupied by the Germans. Pop. 41,598.

Douai was one of the chief towns of Flanders in the Middle Ages and here the Parliament of Flanders met. It is best known, however, as an educational centre. From 1562 to 1793 it had a university and from 1818 to 1903 a college for the training of Roman Catholic priests for work in England. The translation called the Douai Bible was issued here in 1610.

Douaumont Village of France. It stands on the right bank of the Meuse, 3 m. from Verdun, and was the scene of some terrible fighting between the French and the Germans in 1916. The fort here was taken and retaken several times between Feb. and Oct., the last time by the French.

Double Bass Largest instrument of the string variety. Shaped like its ancestor, the bass viol, the double bass, sometimes called contra bass, has four strings and corresponds in pitch to a sixteen foot organ pipe.

Doublet Male close-fitting outer garment. Of two thicknesses it was worn in Europe from the 14th to the 17th century. Originally leather belted, it became carefully blocked and even padded, with fixed or detachable sleeves. In Stuart times it became a sleeveless undergarment, the precursor of the modern waistcoat. Feminine fashions sometimes simulated it.

Doubling Folding or plaiting. It may be the doubled edge of sails or skirts, or in heraldry the ermine lining of mantles. It may also be the doubled course of roofing slates at the eaves, or an extra layer of ship's planking. Another form of doubling is the formation of yarns, cotton or woollen, from single strands, an important operation in the textile industries.

Doubloon Gold coin of Spain. It also circulated in Spanish American states. In the 17th-18th centuries it was worth about 36s. A new type, the Isabel doubloon, representing 100 reals, and worth 20s. 8d., was issued in 1848, but was discontinued after 1868.

Douche Term applied in medical treatment to a jet or column of water directed upon a part of the body. It is used in

eumatic affections such as lumbago and
tain conditions of the joints due to inflam-
ıtory exudations, also in internal complaints.

)oughty Charles Montagu. English traveller and writer. Born
g. 19, 1843, the son of a clergyman, he was
ucated at Cambridge, where he took a science
gree. Later he travelled extensively in three
ıtinents, Europe, Asia and Africa. His most
narkable journey was begun in 1876 when
made his way through parts of Arabia then
ite unknown to Europeans. He wrote an
ɔount of this as *Arabia Deserta*, a master-
ɔce of English style. Doughty wrote *The
wn in Britain*, *The Cliffs*, *The Clouds* and
ıer volumes of poems. He died at Sissing-
rst, Jan. 20, 1926.

)ouglas Capital of the Isle of Man and a watering place. It stands on
ıuglas Bay, on the east side of the island,
ere two streams fall into the sea, is connected
steamer with Liverpool, Barrow-in-Furness,
lfast, Glasgow and Fleetwood, and is one of
› most popular pleasure resorts in the
ıntry. On Prospect Hill are the buildings
the government of the island, including the
ıuse of Keys. The course for the motor
ɔle races starts and finishes in the town.
p. (1931) 20,326. **Douglas Head** is a pro-
ɔntory to the south.

)ouglas Village of Lanarkshire. It is 11 m. from Lanark, on the
M.S. Rly., and is famous for its associations
ɔh the great family of Douglas which took
name from here. There are remains of
ɔir castle and also of S. Bride's church in
ich many of them were buried. The word
ans "dark water."

)ouglas Scottish family. It takes its name from Douglas in Lanark-
re, but its chief power was in Galloway,
ɔund Castle Douglas. The family became
werful about 1200, or a little later. **Sir
mes Douglas**, called the Black Douglas, was
› of the most famous fighters of his time.
was one of the associates of Robert Bruce
d is the Douglas immortalised by Scott.
was killed fighting in Spain in 1330.
A later Douglas, **Archibald**, was made Earl
Douglas in 1358 and he and his successors
re great men in the border fights of these
ys. One is mentioned in the *Ballad of
evy Chase*. **Archibald**, the 4th earl, was made
luke of France and was killed at Verneuil
1424. In Scotland the power of the
uglases became almost equal to that of the
ıg, so in 1440 **William**, the 6th earl, was put
death. This weakened their position, but
lliam, the 8th earl, was a powerful person
til he was murdered by King James II. at
rling in 1452. The great age of the family
ɣ be said to have ended when the last earl
ıd, after a long exile, in 1488.
A Douglas became Earl of Angus in 1389, and
1633 the 11th earl was made **Marquess of
uglas**. In 1703 the 3rd marquess was made
luke and there was a Duke of Douglas until
31. Another Douglas was made **Marquess of
eensberry** in 1681 and the dukes of Queens-
ɔry were Douglases. In addition to the
ɹrquess, the family is represented in Scotland
day by the Duke of Buccleuch, the Duke of
ımilton, who bears the title of Marquess of
uglas, the Earl of Morton and Lord Tor-
lchen, who is the heir general of the house.
e Earl of Home is a Douglas in the female line.

)ouglas Stephen Arnold. American politician. Born in Vermont, April 23, 1813, he was a member of the state legislature of Illinois, 1836-40, and was State Secretary for part of that time. From 1843-47 he was in the House of Representatives at Washington and from 1847-1861 was a member of the Senate. He is chiefly known as the opponent of Lincoln, from whom, in 1858, he won a seat in the Senate. The contest was renewed when both stood for the presidency in 1860. On this occasion Lincoln was the victor. Douglas died in Chicago, June 3, 1861.

Douglas Pine N. American evergreen tree of the cone bearing order (*Pseudotsuga douglasii*). Also called Oregon pine, it forms great forests from British Columbia to Mexico. The most valued timber tree of the Pacific region, its hard, heavy, durable wood serves for all kinds of constructions, masts, spars and railway sleepers. Red and yellow fir varieties occur. It grows to a height of 300 ft.

Doukhobors Religious sect. They arose in Russia in the 18th century. Their beliefs are not unlike those of the Quakers. They object to the use of icons or images and put a mystical interpretation on the facts of the Bible. Their refusal to serve as soldiers, another article of their faith, has involved them in persecution. There are small colonies of them in Canada.

Doullens Town of France. It is 17 m. from Arras with a railway station. Its position made it important during the Great War and here, in March, 1918, a conference was held at which Marshal Foch was made Commander of all the Allied armies. There is a British cemetery near the town.

Doulton Name of a brand of ware made at the Doulton Pottery Works, Lambeth. The founder of the firm, **Sir Henry Doulton** (1820-1897) entered his father's potteries in 1835, and as the result of his experiments introduced the use of a good enamel glaze. Eleven years later, the manufacture of sanitary and drainage ware was started, and in 1870 Doulton turned his attention to the production of art pottery, employing for this purpose a number of artists whose work has become famous. Knighted in 1878, he died Nov. 17, 1897.

Doumer Paul. French politician. Born at Aurillac, March 22, 1857, he became a journalist. In 1888 he was elected to the Chamber of Deputies. In 1895-96 he was Minister of Finance, and from 1897 to 1902 was Governor-General of Indo-China. In 1905-06 he was President of the Chamber of Deputies, and in 1912 he was elected to the Senate. In 1917 he was a member of the Painlevé Cabinet and in 1921-22, and again in 1925-26, he was finance minister. In 1927 Doumer was chosen president of the Senate, and in May, 1931, was elected President of the Republic, defeating M. Briand. In May, 1932, he was shot by a foreigner when at a crowded social function, and died a few hours later.

Doumergue Gaston. French statesman. Born Aug. 1, 1863, he became a lawyer and entered the public service. Having served abroad he was elected to the Chamber of Deputies in 1893. From 1902-05 he was Minister for the Colonies; from 1906-08 Minister of Commerce, and from 1908-10 Minister of Education. In 1910 he entered the Senate and in 1913-14 was for a short time Prime Minister and Minister for Foreign

Affairs; from 1914-17 he was Minister for the Colonies. In 1923 Doumergue became President of the Senate, and in 1924 he was elected President of the Republic, the first Protestant to hold that position. His term ended in 1931.

Doune Burgh of Perthshire. It is on the Teith, 45 m. from Edinburgh, on the L.M.S. Rly. The chief object of interest is the ruined castle. Having held out for the Jacobites, this was dismantled in 1746. Restoration work has been recently done. Pop. (1931) 822.

Douro River of Spain and Portugal. It rises in Spain, and, having passed Valladolid and Zamora, reaches the frontier. For about 60 m. it forms the boundary between the two countries, after which it crosses Portugal to enter the sea near Oporto. Owing to rapids it is not of great value commercially, although it is used by the Portuguese to some extent. There are many fish in its waters and its length is 485 m. The eldest son of the Duke of Wellington bears the courtesy title of Marquess of Douro.

Dove Name denoting indiscriminately any bird of the pigeon family. In popular usage it generally designates the best-known smallest species, such as the ring dove or wood pigeon, stock dove, rock dove, whence all our domestic pigeons are derived—and the turtle dove.

Dove River of England. It rises on Axe Edge and flows S. and S.E. between the counties of Derby and Stafford. After a course of 45 m. it joins the Trent at Newton Solney.

Dovedale, the pass through which it flows, is a famous beauty spot noted also for its association with Isaac Walton. It has been proposed to make it into a national park.

Dove Flower Central American orchid (*Peristeria elata*). It is a robust plant living parasitically upon others, with a flower stalk upon whose uppermost third cluster fragrant creamy-white flowers with lilac specks at the lip-base. Its resemblance to a dove with expanded wings led the Spaniards to term it the Holy Ghost flower.

Dover Borough, seaport and market town of Kent. It stands on the Strait of Dover, 77 m. from London, and is the chief port for communication with France. It has stations on the S. Rly., and from it steamers go regularly to Boulogne, Calais, Ostend and elsewhere. The chief building is the castle with a Norman keep and here also are some of the oldest buildings in England.

The port has two harbours. One was a naval harbour until the dockyard was closed in 1920. Both have been improved to accommodate large vessels. There are good sands, a promenade and other attractions of a popular watering place.

Dover was one of the Cinque Ports (*q.v.*) and has been an important place from Roman times. Kings and armies have landed here and off the town sea fights have taken place. By the secret Treaty of Dover, 1670, Charles II. agreed to become a Roman Catholic and to help Louis XIV. in return for an annual payment. In the Great War Dover was the headquarters of the patrol responsible for guarding the straits and a base for the troops overseas. Pop. (1931) 41,095.

Dover Strait of. Stretch of water connecting the North Sea and the English Channel. It is 21 m. across from Dover to Calais. The Strait was swum by Capt. Matthew Webb in 1875 and the feat of "swimming the Channel," achieved several times since the Great War, means swimming the Strait. The proposed Channel Tunnel is planned to go under the Strait.

Dovercourt Seaside resort of Essex. It is part of the Borough of Harwich and is situated on the Stour estuary, 70 m. from London on the L.N.E. Rly. The beach is smooth and sandy, and the attractions include golf courses. Here Captain Fryatt is buried.

Dovey River of Wales. About 30 m. long, it rises on Aran Mawddwy, and flows S.W. into Cardigan Bay. For some distance it forms the boundary between Cardiganshire and Merionethshire. It has a considerable estuary, upon which stands Aberdovey.

Dow **Gerard.** Dutch painter. Born at Leyden in 1613, he studied painting under Rembrandt and became one of his most famous pupils. His many works, including a number of portraits, are in the great European galleries. Notable are "The Poulterer's Shop," in the National Gallery, London, and "The Dropsical Woman" in the Louvre, Paris. He died in 1675.

Dowager Really a widow with a dower. It is used for the widow of the holder of a title which has passed to another. Thus, the widow of a duke is the dowager duchess, to distinguish her from the wife of the present duke. Of late years the use of the word in this sense has been to some extent dropped for the Christian name which precedes the title, thus Clarice, Countess of Dorking.

Dower In law the amount allowed to a widow out of her husband's estate. By English law a husband can leave whatever he likes to his widow as a dower; by Scottish law the dower is one-third of the real property left by a dead man. The dower house, found on many landed estates, was the residence of the dowager or widow with a dower.

Dowlais District of Merthyr Tydvil. It is 172 m. from London by the G.W. Rly., and there are collieries and iron and steel works in the neighbourhood.

Down County of N. Ireland. In the east of the country, it has a long coastline on the Irish Sea. Strandford Lough penetrates the county and Belfast Lough is to the north. Downpatrick is the county town. Other places are Lisburn, Comber, Dromore, Newry, Banbridge, Dundrum, Newtonards and Bangor. There are a number of watering places on the coast, including Newcastle and Donaghadee, and in the county are some of the suburbs of Belfast. The rivers are the Bann, Lagan and Newry. The soil is fairly fertile, although hilly; in the south are the Mourne Mts. Its area is 857 sq. m. Agriculture is the main industry, but a good deal of fine linen is manufactured. Down is well served with railways, radiating from Belfast, and by canals. Down is one of the dioceses of the Church of Ireland. Pop. (1926) 209.228.

Downe Village of Kent. It is 6 m. from Bromley and 2 from Farnborough. Here Charles Darwin lived for many years and his home is now the property of the British Association.

The Irish title of **Viscount Downe** has been borne by the family of Downay since 1680. The estates are in Yorkshire.

Downham District of London. It is partly in the Borough of

Lewisham and partly in that of Bromley, being 9 m. to the S.E. of the city. Here the London County Council has laid out a housing estate.

William Hayes Fisher, a politician, took the title of Baron Downham in 1918 and the estate was named after him, as in 1919 he was chairman of the London County Council. He was in Parliament in 1885-1906 and again 1910-1918, and in 1917-18 was president of the Local Government Board. He died July 2, 1920.

Downham Market Urban district and market town of Norfolk. It is on the Ouse, 10 m. from King's Lynn, on the L.N.E. Rly. There is a trade in agricultural produce. Pop. (1931) 2463.

Downing Street London street. It is a short street leading from Whitehall and in it are the official residences of the Prime Minister, and the Chancellor of the Exchequer, and the offices of the chief whip of the party. These form three connected houses, Nos. 10, 11 and 12. On the other side of the street is the Foreign Office. The street owes its name to **Sir George Downing**, Secretary to the Treasury, 1667. All the Prime ministers since Sir Robert Walpole have lived here.

Downing College, Cambridge, was founded in 1800, with money left by a grandson of Sir George Downing.

Downpatrick City and county town of Co. Down, N. Ireland. It is 27 m. from Belfast and stands near Strangford Lough, on the Belfast and Co. Down Rly. The chief building is the cathedral. There are some manufactures. S. Patrick is said to have been buried here. Pop. 3200.

Downs Two ranges of chalk hills in S. England. They are called the North and the South Downs, and sometimes sections are called the Hampshire and the Marlborough Downs. The North Downs are in Kent and Surrey, the highest point being Leith Hill. The South Downs are in Kent and Sussex, and between the two ranges is the district called the Weald. The Downs run also into Hampshire, Berkshire and Wiltshire.

The Downs is also the name given to the roadstead off the coast of Kent between Deal and the Goodwin Sands. It is about 8 m. long and 6 wide. There were several fights here between the English and Dutch fleets in the 17th century.

Downside Monastery near Bath. It was established as a house for Benedictines in 1814, having previously been in Shropshire. The house has a fine range of buildings and the monks maintain a school, one of the leading Roman Catholic public schools in England.

Doyle Family of artists. **John Doyle**, born in 1797, was an Irishman who settled in London in 1821. He made a reputation by his caricatures of politicians and others signed H. B. Many of them are in the British Museum. He died Jan 2, 1868.

His son, **Richard Doyle**, inherited his father's gifts. For many years he was a contributor to *Punch* and he designed the cover which was used from 1849 to recent times. He also illustrated books, painted in water colours and wrote for the *Cornhill Magazine*. He resigned from *Punch* in 1850 because it criticised the Roman Catholic Church, and died Dec. 11, 1883.

Doyle **Sir Arthur Conan.** English novelist. Born in Edinburgh, May 22, 1859, he was educated there and became a doctor. He practised medicine for a time, but soon proved he had a distinct gift for writing. From 1887, when *A Study in Scarlet* appeared, he wrote incessantly and on a variety of subjects, and although he does not stand in the first rank of novelists some of his work is of very high quality indeed.

The chief of many claims to fame is the creation of the detective Sherlock Holmes, whose adventures are related in a number of volumes. His historical novels, notably *The White Company*, *Micah Clarke* and *Rodney Stone*, are among the best in the language. His power of telling a story is well seen in the delightful series dealing with Brigadier Gerard, and in his volumes of short stories. Doyle wrote a popular history of the Boer War, in which he served as a doctor, and one of the Great War. In later life he gave much time to spiritualism, in which he strongly believed. Knighted in 1902, he died July 7, 1930.

Drachenfels Hill of Germany. It overlooks the Rhine, 8 m. from Bonn. Magnificent views are obtained from the top, which can be reached by a railway from Konigswinter. It is 1065 ft. high and on it are the ruins of a castle. The name means dragon's rock and the legend is that in a cavern in the hill lived the dragon that was slain by Siegfried.

Drachm Unit of weight. It is one-sixteenth of an ounce avoirdupois, or one-eighth of an ounce in the old apothecaries' weight. Drugs are still compounded and prescriptions made up by apothecaries' weight, except in the British Pharmacopoeia, where avoirdupois weight is used. The word is often abbreviated to dram.

Drachma Standard monetary unit (silver coin) used in the Republic of Greece.

Draco Magistrate at Athens. He lived about 600 B.C. and was responsible for putting the laws in writing. These laws were severe, although not more so than others of that age, and since then the word draconian has been used for severity.

Draco is also a Latin word for a dragon. As such it is given to a constellation between the two bears, and to a genus of lizards found in India and thereabouts.

Draft Word used in several senses. One draft is an order to a banker to pay a sum of money to a certain person. Such are used when cheques cannot be employed, in foreign business, for instance. Another draft is a rough copy of a document.

In military speech a draft is a body of soldiers sent to join a unit, perhaps from the depôt to a battalion in India. During the American Civil War the word was used for conscription. In 1863 a law gave power to the president to draft all men between 20 and 45 into the army. The riots which followed were called the **Draft Riots.**

Dragon Fabulous monster typical of evil in Christian lore. It was a huge reptilian quadruped breathing fire and probably evolved from vague memories and imaginings of prehistoric saurians. It is chiefly known as the monster killed by S. George.

The dragon is a good deal used in heraldry where it is usually represented with wings. It is one of the national emblems of Wales. It also appears in the heraldry of China and Japan. An old kind of musket was called a dragon.

Dragonet Genus of brilliantly coloured spiny-finned fishes (*callionymus.*) They inhabit temperate and tropical waters. The British *C. lyra*, orange-blue with lilac and red markings, was previously called the yellow gurnard. It is smooth skinned, with pointed mouth and upturned eyes, and is the male of the coast dweller formerly called the dusky skulpin.

Dragon Fish Genus of small spiny-finned fishes. Allied to flying gurnards, they inhabit Indian, Chinese and Australian waters. Their broad, flattened bodies, with stiffened tails, are covered with movable bony plates, the long rays of the breast fins, sometimes spinous, resembling wings. They lack teeth and air bladders. The Indian *P. draco* is typical of the species.

Dragon Fly Group of winged insects. Nowadays considered a distinct order (*odonata*), it is of world-wide temperate and tropical distribution, and includes 2200 species. Only 50 are British. Large-headed, and strong-jawed, with two enormous compound eyes and short antennae, it is slender-bodied, with four large, transparent, membranous wings. The eggs are deposited in water. The larva preys on other water organisms, and reaches a nymphal stage of continued activity, instead of becoming a resting pupa, before completing its metamorphosis.

Dragon's Blood Resinous exudation from the scaly fruits of a climbing palm. This is a native of Borneo and Sumatra. The resin is formed into rough sticks or irregular pieces and when powdered is carmine-red in colour. It is soluble in oils and spirit and is used for colouring varnishes, wood, horn, marble, etc.

Dragon Tree Genus of trees of the lily order. A native of the warmer parts of Africa, Asia and Polynesia, it has long leaves, usually lance-shaped. Its small whitish flowers bear berries. Various species are ornamental foliage plants; some bearing this name belong to the allied genus *cordyline*. The dragon tree (*D. draco*) of the Canary Islands attains great size and age. One, 70 ft. high, at Orotava, Teneriffe, destroyed by a hurricane in 1867, was reputedly 6000 years old. It was then over 42 ft. in girth.

Dragoon To-day a kind of cavalry soldier. The first dragoons were infantrymen, being so called because their weapon was a musket called a dragon. Later they were mounted and were called horse dragoons. They were found in the French and other armies, as well as in the English one.

In the British Army to-day there are dragoons and dragoon guards. The dragoons consist of two famous regiments, the **First** or **Royal Dragoons** and the **Second** or **Scots Greys**. A third regiment of dragoons, equally famous, the **Royal Inniskillings**, was disbanded after the Great War. There are five regiments of dragoon guards, two others having been disbanded. They are the 1st, 2nd, 3rd/6th, 4th/7th and 5th.

Drainage Term used for the draining off of water from land by rivers, canals or other means. Drainage is adopted for the protection of low-lying lands from flooding by encroachments of the sea or river inundations, and marshes or areas liable to be flooded at high tide have been reclaimed in many instances by a system of dykes and drainage. One-third of the area of Holland represents such reclaimed land (polders) and the canal system of drainage is supplemented by pumps worked by wind, steam and electric power. Considerable areas in the eastern counties of England have been drained, the Bedford Level being the largest, and it has been suggested that part of the Wash could be drained.

Drains Short name for the system by which refuse is carried from a house or other building. In towns the drains are connected with a system maintained by the public authorities; in country districts a cesspool or a septic tank is often used.

Great attention to-day is paid to drains, as evil drains or no drains are a serious menace to health. In every building that is erected they must be approved by the surveyor to the local authority, and kept in good order. The most usual test for defective drains is the smoke test.

Drake **Sir Francis.** English seaman. Born near Tavistock about 1545, he went to sea as a boy. In 1567 he sailed with his cousin, John Hawkins, to America, and in 1570 he again crossed the Atlantic and attacked Spanish settlements and ships. He repeated the exploit in 1572, when he crossed the Isthmus of Panama. He then passed a period fighting in Ireland. In 1577, with five ships, Drake set out upon a voyage round the world. He was away for three years and lost all his vessels except *The Golden Hind*, but he fulfilled his purpose and in Oct., 1580, sailed into the Thames laden with spoil. The first Englishman to circumnavigate the globe, he was knighted by Elizabeth in 1581. In 1585 he again harried the Spanish settlements in the New World.

In 1587 Drake led an expedition to Cadiz, where he burned many Spanish ships and delayed the proposed invasion of England. In the *Revenge* he took part in defeating the Armada, himself capturing the *Rosario*. In 1589 he led another expedition to the coasts of Spain and Portugal, but this ended in the loss of thousands of English lives from disease. In 1595 Drake left Plymouth on his last voyage. He reached the West Indies where he was taken ill with dysentery and died, Jan. 28, 1596. He was buried at sea. Between his voyages Drake lived in Devonshire. He was elected M.P. for Plymouth and provided that city with a water supply from Dartmoor.

A British cruiser was called the **Drake**. She displaced 14,100 tons and was 520 ft. long. She was sunk by a torpedo, Oct. 2, 1917.

Drakenberg Mountain range in S. Africa. It separates the Cape Province from the Orange Free State and Natal. The highest point is 11,000 ft. and the general height is about 7000 ft. Majuba Hill is in this range. The name is sometimes, but wrongly called, Drakensberg; an alternative is Quathlambra.

Drama Acted story. Dramatic art employs actors and actresses who simulate real or fictitious personalities. They represent their gesture, dumb or spoken, and by dress and scenic accessories aid the illusion.

Represented in Attica on travelling wagons in the 6th century, B.C., the classical drama quickly established the unities of time, space and action which have governed all later developments. The story's unfolding, from opening to climax, should be inevitable, or at least probable. Interwoven subsidiary incidents should never distract attention from

the main action. Sometimes utilising national myths and legends, historic events or outstanding persons, the dramatist's skill, working within the literary conventions of his age, lies in creating characters whose delineation makes an individual appeal.

The early church discountenanced the travelling companies of masked comedians who perpetuated classical Roman models. Mystery and morality plays, which provided popular instruction and diversion, preluded the revival of the secular drama under Renaissance influences and the creative outburst typified by Shakespeare, Lope de Vega, Corneille and Racine. This modern drama encountered new influences in Ibsen's realism and Maeterlinck's symbolism.

Drama includes tragedy, comedy, melodrama and farce. It may be lyrical, expressed in prose or verse, associated with music in opera, or speechless as in pantomime.

Draper (Fr. *drapier*). Trader in textile and other goods. The name was originally given to a maker of cloth and was then extended to linen. The name now applies to sellers of all kinds of silks, woollens, cottons and other manufactured goods. The **Drapers' Company**, whose hall is in Throgmorton Street, is the third of the twelve great livery companies of London. Its great wealth has done much for education, especially at Bancroft's School, Woodford, and the People's Palace, Mile End Road, London, E. *The Drapers' Record*, published weekly, is the chief trade journal.

Drapier Name taken by Jonathan Swift when he wrote *The Drapier Letters* in 1724. A certain William Wood had been given a monopoly for supplying Ireland with copper coins. This privilege was disliked in Ireland and Swift denounced the transaction and helped materially to bring about the cancellation of the contract.

Draughts Indoor game. It is played with 24 pieces, or draughtsmen, on a board divided into squares. The pieces are twelve black and twelve white, and the squares on the board are likewise black and white alternately. There are 64 squares and either the black or the white ones can be used. 32 therefore are used and on 24 of them the players place their pieces, leaving eight blank squares between them.

The object of the game is to move the pieces forward and to capture the enemy pieces, which can be done by passing over one to a vacant square behind it. When a piece has reached the back row of enemy country it becomes a king and can move either backwards or forwards. If a piece is not taken when it is vulnerable, the piece that fails to take it is huffed, or removed from the board. In the United States draughts is called chequers.

Draughtsman One who draws plans and designs for buildings, machinery and the like. Draughtsmanship is a branch of drawing and is taught at schools of art and technical colleges. Draughtsmen are employed by the Admiralty on warship design, and by engineering firms of all kinds, as well as by architects. Draughtsmen are also employed in some of the textile industries and to draw maps; in the latter case they are also called cartographers.

Drave River of Europe. It rises in the Tyrol, flows through Austria into Yugoslavia and when near Belgrade it joins the Danube. It is navigable to where it is joined by the Mur, and by small craft to Villach. Its length is 450 m.

Dravidian Name denoting collectively non-Aryan peoples in S. India and Ceylon. Their speech pertains to a distinctive language family of agglutinative form. Numbering nearly 60,000,000, they are dark-skinned, curly-haired, long-headed, broad-nosed and thick-lipped. In N. India Dravidian has been more or less displaced by Aryan forms of speech, but in Baluchistan olive-skinned, brown-haired Eranian Brahuis speak a Dravidian dialect. The principal languages are Telugu, Tamil, Malayalim and Kanarese. A distinctive S. Indian style of architecture is often called Dravidian.

Drawback Repayment of money paid on customs or excise duties. It is usually given in cases where goods, having been imported and paid the necessary duties, are then exported.

Drayton **Michael.** English poet. Born in Warwickshire in 1563, his early life is rather obscure. He was associated with Shakespeare and wrote a good deal. In 1593 appeared his *Idea, the Shepherd's Garland* and in 1598 *England's Heroical Epistles*. His longest work is *Polyolbion*, a description of England, 30,000 lines in length, and his best is contained in *The Ballad of Agincourt* and his sonnets. His *Nymphidia* or *The Court of Faery* is delightful, and his last work, *The Muses' Elysium*, deserves mention. He died Dec. 23, 1631, and is buried in Westminster Abbey.

Dreadnought British warship. There have been several warships of this name. One fought against the Spanish Armada and another at Trafalgar. The latter was long used as an hospital, being moored off Greenwich. The name is perpetuated in the Dreadnought Hospital there.

The ninth Dreadnought was an entirely new type of battleship and gave her name to a large class. She was laid down in 1906 and was armed with ten 12 in. guns, earlier ships having only four. Her only other guns were small ones for dealing with torpedo boats. There were no guns of intermediate size as there had been in earlier warships. The Dreadnought was 526 ft. long and displaced 17,900 tons. Her ten guns were so arranged that eight of them could fire on either side. The idea of the Dreadnought was taken up by other navies and their strength was calculated in Dreadnoughts. After a time ships carrying still larger guns were built. These are classed as super-Dreadnoughts.

Dream Manifestation of the unconscious mind during sleep. Dreams normally attend the state between sleeping and waking when the imaginative faculty is regaining its conscious power after submergence in the unconsciousness of normal sleep. They concern material already present in the mind, and never the inconceivable, being interpreted by Freud as the fulfilment of unsatisfied desires. The images presented, being uncoordinated, lack the coherence of reverie, or day-dream.

Dredging Process of removing mud or other material under water for purposes of deepening a river, canal or harbour, or for the reclamation of swampy ground. Dredging is used also in mining for the removal of alluvial deposits containing gold, platinum, tin and other valuable ores, and for building purposes in the excavation of

sand, gravel and clay. The machines used are known as **dredgers** and of these there are many types. The **bucket dredger** is a common type and consists of a series of buckets linked together to form a ladder, at the top of which is the receiving hopper.

Dreiser **Theodore.** American writer. Born Aug. 27, 1871, in Indiana, he was educated there. In 1892 he joined the staff of a newspaper at St. Louis, but soon became an editor in New York. In 1907 he was made editor-in-chief of the Butterick Publications. In 1900 Dreiser published *Sister Carrie* and then followed novels, short stories and essays in quick succession. These include *The Financier, A Hoosier Holiday, Twelve Men, Accented and Declaimed,* and *A Gallery of Women.* His best-known work is *An American Tragedy.* In *A Book about Myself* and *Dawn* he relates his own life story.

Dresden City of Germany and the capital of the republic of Saxony. It stands on the Elbe, 110 m. from Berlin. Dresden is chiefly famous as an art centre. Its unrivalled collection of pictures, including the Sistine Madonna, is in the museum, part of a huge building called the Zwinger. The palace, in which the kings of Saxony lived until 1918, also contains some wonderful treasures. There is a magnificent theatre and also an opera house. The Altmark is the centre of the old town. Noble bridges cross the Elbe and there are promenades along its banks.

Dresden is a great industrial town. It is an important railway junction with a great central railway station and there is a good deal of trade along the river. It is an important banking and distributing centre, and there are a number of manufactures. Dresden became the capital of Saxony in 1485 and in the 16th century it was rebuilt. It has a broadcasting station, (319 M.; 0.25kW.). Pop. 619,000.

Dresden chinaware was first made in the palace at Dresden in 1709. It is noted for the delicacy of its colouring and its most valuable pieces are small figures of shepherdesses and the mark is a crown and two crossed swords. The china has been made since 1710 at Meissen.

The **Battle of Dresden** was fought Aug. 26 and 27, 1813. In it Napoleon defeated the Austrians, Russians and Prussians who were attacking the city, then in the possession of the French. The *Dresden,* a German light cruiser, was sunk by British cruisers near Juan Fernandez, March 14, 1915.

Dressing Materials used to protect a wound or injury. These are made of cotton wool, lint and other material usually treated with iodoform, boric acid or another chemical to prevent germ infection. In war, wounds are first treated at dressing stations which are established as near the fighting zone as possible.

Other forms of dressing are manure applied to land, and the process used to prepare ores before the metal is extracted from them. Another kind of dressing is the preparation of birds, etc., for the table.

Dressing Table Table for toilet use. As a distinct piece of furniture it dates from about 1700, before which time a mirror placed on a chest of drawers served the purpose. Early in the 18th century some beautiful pieces were made in walnut and other woods, and these have been extensively copied. Later they were designed by Sheraton & Chippendale. In some cases a dressing table and secretaire were combined.

Dreyfus **Alfred.** French soldier. Born in Alsace in Oct., 1859, the son of a Jewish manufacturer at Mulhausen, he entered the army. In 1894, then a captain on the general staff, he was charged with selling documents of value to the German Government. He was tried by court-martial, found guilty and sent into exile on Devil's Island, off the coast of Guiana. Later, he was re-tried by court-martial at Rennes, and sentenced to prison for ten years. He was, however, pardoned by the president and in 1906 a higher court declared him innocent. He was restored to the army and later made an officer of the Legion of Honour. He died July, 1935.

Driffield Market town and urban district of Yorkshire (E.R.). It is 20 m. from Hull on the L.N.E. Rly, and is an agricultural centre. It is connected by canal with Hull. Pop. (1931) 5916.

Driffield is called Great Driffield to distinguish it from the neighbouring village of Little Driffield.

Drift In geology term applied to the deposits of loose material forming superficial beds of varying thickness. Found in Northern Europe, Great Britain and North America, these beds are the result of glacial action and consist of sands, gravels and clays with scattered ice-borne boulders. The pebbles and rock fragments and also the underlying rocks are scratched and polished by the movements of ancient glaciers dating from the earlier part of the Quaternary period.

Drifter Small vessel engaged in fishing with the aid of drift nets. Normally about 100 ft. long, they are much used in the herring fisheries. During the Great War hundreds of them were engaged in patrolling the narrow seas, maintaining barrages and netting channels for submarines. On the Dover Patrol 256 drifters and trawlers did constant duty.

Drift nets are fastened to drifters and moved through the waters to catch herring, mackerel and other fish that are found in shoals. Cork keeps them in position at the top and weights at the bottom. Some are 120 yds. long.

Drill Corruption of drilling, a stout twilled fabric of cotton or linen used for suiting in tropical climates. It is also used for summer clothing for little boys, for corset making and various other purposes. Khaki drill is used for army wear in hot countries.

Drill Exercise to encourage discipline and to maintain health. It began with soldiers at a very early date, and by it they were taught to move together at the word of command and in general to act as a body of trained men. In all armies recruits go through a period of drill, and drilling is a recognised part of naval and military routine. There is a regular system of drill for the British Army and there are text books giving details of the various movements.

From armies drill was carried into schools and boys were drilled, usually by retired soldiers. Later it spread to schools for girls. As education became wider drill became merged into physical exercises. Swedish drill, as it is called, is a system of physical exercises which has attained much popularity.

Drill Tool used for boring holes in metal or other substances. It is rotated rapidly by hand or machinery. The ordinary

form of drill consists of a short, highly tempered steel rod with specially shaped cutting facets, and is used for boring either by percussion or by constant pressure during rotation. Rock drills are used for making holes for the insertion of explosives. For sinking artesian wells, oil wells, etc., a tubular diamond drill is employed.

Drina River of Yugoslavia. It rises in the mountains of Montenegro and flows through that country until it joins the Save, about 60 m. to the west of Belgrade. It is 160 m. long.

Drinkwater **John.** English writer. Born, June 1, 1882, the son of an actor, he became a clerk. He soon began to write poetry and his first volume was issued in 1908. He was the promoter, and, for a time, manager of the Repertory Theatre, Birmingham, after which he settled down to a literary life. In addition to poetry, Drinkwater has written essays and criticisms. He is best known, however, for his plays, *Abraham Lincoln*, *Oliver Cromwell*, *Mary Stuart* and *Robert E. Lee*. In 1928 he published a biography of Charles James Fox and in 1930 a book on Pepys. He began his autobiography in 1931 and produced *A Man's House* in 1934.

Dripstone The projecting moulding over an arch or doorway. It is also used for the stalagmite or calcareous deposit formed on the floor of caverns.

Driver **Samuel Rolles.** English divine and scholar. Born at Southampton, Oct. 2, 1846, he was educated at Winchester and New College, Oxford. His life was passed in Oxford, first as tutor at New College and then as Professor of Hebrew and canon of Christ Church. He was a member of the company that revised the Old Testament. Driver was a great Hebrew scholar and one of the leading exponents of the higher criticism of the Bible. On those subjects he wrote much, a notable book being *The Introduction to the Literature of the Old Testament*. He died Feb. 26, 1914.

Driving Guiding or controlling a vehicle on the road. At one time it referred almost solely to the guidance of horses.

Another form of driving is controlling a motor-car. Before doing this it is necessary to take out a driving licence which costs 5s. a year. By the Roads Act of 1930 the Ministry of Transport has power to make prospective drivers pass certain tests.

In London drivers of taxicabs and coaches must pass an examination before they can obtain a licence to drive. This includes a knowledge of London, its streets and principal buildings, as well as the ability to drive. In Great Britain a driver always keeps to the left of the road; in the United States and in France he keeps to the right. Other vehicles should be passed on the right.

Drogheda Borough, seaport and market town of Co. Louth, Irish Free State. It stands on the Boyne, 4 m. from the sea and 32 from Dublin, on the G.N. of I. Rly. S. Lawrence Gate is a massive relic of the city's fortifications and there are ruins of two abbeys. There is a good harbour, and considerable trade in cattle, etc., passes through the port. It is also a fishing centre.

The town is notable for its capture by Cromwell in 1649 when he put its garrison to the sword; and its surrender to William III. the day following the Battle of the Boyne. For long it was one of the most important places in the country and the residence of the archbishops of Armagh. Pop. 12,700.

The title of **Earl of Drogheda** has been held by the family of Moore since 1661. The earl's seat is Moore Abbey, Co. Kildare. His eldest son is called Viscount Moore.

Droitwich Borough, watering place and market town of Worcestershire. It is 6 m. from Worcester and 126 from London and is reached by the G.W. and L.M.S. Rlys. A small river, the Salwarpe, flows through the town which is linked by canal with the Severn. Droitwich is chiefly famous for its brine baths and for its powerful long-wave wireless transmitter. Pop. (1931) 4553.

Dromedary Name applied to racing breeds of camel, as distinguished from baggage animals. They are thoroughbreds expressly raised for riding purposes, and differ from the heavier breeds as race horses do from dray horses. They are mostly of the one-humped Arabian species, but two-humped Bactrian camels also have breeds of superior speed. *See* CAMEL.

Dromore Urban district and market town of Co. Down, Northern Ireland. It was once the seat of a bishop, but the diocese is now united with Down and Connor. Linen is made here. Pop. 2460.

Drone Name for the male of the honey bee. In size it is intermediate between the workers and the queen bee. It does not work and is stingless. At the beginning of autumn the workers turn out all the drones from the hive.

Dronfield Urban district of Derbyshire. It is 6 m. from Chesterfield, on the L.M.S. Rly. The chief industry is coal mining. Pop. (1931) 4520.

Dropmore Residence in Buckinghamshire. It is 4 m. from Maidenhead, its station being Bourne End, on the G.W. Rly. It is famous for its gardens which were laid out by Lord Grenville. Later the estate passed to the Fortescue family. *The Dropmore Papers*, which have been published, deal with events of Grenville's day.

Dropsy Morbid accumulation of watery fluid beneath the skin or in body cavities. It arises from weakening of the walls of the minute blood vessels, excessive blood pressure in the veins, or a too watery consistency of the blood. Beneath the skin it is called *oedema* when localised and *anasarca* when widespread. In the abdomen it is *ascites*, in the head *hydrocephalus*. In kidney affections it occurs after rest; in heart disease after exertion. Treatment should attack the cause. In severe accumulations tapping may be required.

Dropwort Perennial herb (*Spiraea filipendula*) of the rose order. It is a native of Europe, N. Asia and N. Africa and has smooth leaves and an erect stem, with panicles of small flowers, white or rosy outside. These distinguish it from the taller willow-leaved dropwort (*S. salicifolia*), a favourite cultivated shrub.

The **water dropwort**, (*Oenanthe crocata*), is a marsh growing umbelliferous herb, resembling celery, but is poisonous.

Drought Condition of dryness of an area due to a lack of rainfall, insufficient irrigation, or other cause. Where this condition is of a permanent character, deserts occur, such as the Sahara in Africa

and the Gobi in Asia, although many such areas were formerly fertile tracts. Australia is subject to periodical drought, the crops suffering in consequence, but this is being overcome by the sinking of artesian wells, the barrage system of conserving water, and irrigation.

Drowning Submersion in water or other liquid. Death from asphyxia follows a stoppage of the air supply, which is sometimes accelerated by heart failure from shock or syncope. The face is pale or slightly livid, with fine froth about the mouth and nostrils.

The Royal Life Saving Society promulgates approved methods for release, rescue and resuscitation by artificial respiration. The Royal Humane Society awards medals to persons who rescue others from drowning.

Treatment :—Artificial respiration should be tried perseveringly in all cases of apparent drowning, as it is frequently successful even after prolonged immersion. Send for a doctor and proceed with artificial respiration at once as follows :

Lay the patient face downwards with arms extended and face turned to one side ; kneel across his body with your hands flat over the lowest ribs, then throw the weight of your body slowly, removing the pressure without removing your hand. Repeat the movement twelve times a minute without pause. In severe cases two hours' work or more may be necessary.

During this procedure an assistant should rub the lower limbs vigorously towards the heart to help to restore circulation, and as soon as the patient begins to breathe again he must be kept warm with coverings and hot water bottles.

Droylsden Urban district of Lancashire. It is 5 m. from Manchester, on the L.M.S. Rly. It is also connected by canal with Manchester. The industries are associated with the cotton trade. There are also chemical works. Pop. 14,250.

Drug Substance of organic or inorganic origin used in medicine on account of some curative properties it possesses. Many drugs are derived from plants and may represent the entire dried plant ; others the dried leaves, roots, bark, flowers or seeds. Examples of these are chiretta (plant), senna (leaves), rhubarb (root), cinchona (bark), cannabis (flowers), nux vomica (seeds). Many extractives, alkaloids and oils from plants are used as drugs, such as cascara, croton oil, strychnine, morphia, etc. Inorganic drugs are represented by iodine and compounds of arsenic, lead, zinc and other metals, while a large number of synthetic drugs are in common use.

In Great Britain certain drugs, such as cocaine and others classed as dangerous, can only be sold under strict supervision. Acts passed in 1920 and 1923 aimed at controlling the trade in these drugs and the Home Office has an inspector to watch it. For dealing in these drugs without authority heavy fines and imprisonment can be imposed.

Druggist Term applied to one who sells drugs. As, however, such a person must be a duly registered pharmaceutical chemist, the term *chemist and druggist* is generally used. Only those persons who have passed the examinations of the Pharmaceutical Society are entitled to be registered. Stringent regulations are made with regard to the sale of poisonous drugs. They must be labelled poison and the date and particulars of the sale must be entered in a special register.

Druid Priest of the Celts of Gaul, Britain and Ireland. The chief Druid was elected by a majority of votes from the body of priests and retained his office for life. The ordinary people were completely under the control of the Druids, who looked after their morals and religion and acted as judges. The oak was regarded by them as the supreme god and oak groves were their places of worship, where they offered human sacrifice.

One of the largest of the friendly societies is known as the **Ancient Order of Druids**. It has many members in the United States as well as in Great Britain.

Drum Percussion instrument of music. There are several kinds. One is a single skin stretched on a frame open at the bottom *e.g.*, the tambourine. Another consists of two skins enclosing a cylinder *e.g.*, the side drum. A third is a single skin stretched on a closed frame *e.g.*, tympani or kettle drums.

Kettle drums are hemispheres of copper or brass, over which the head of parchment skin is stretched and secured by screws, the tightening or loosening of which raises or lowers the pitch of the sound. Kettle drums alone emit a definite musical note, other drums merely a noise.

Drumclog Moorland hamlet in Lanarkshire, It is about 2½ m. from Loudon Hill on the Ayrshire border. Here, on Sunday, June 1st, 1679, a small band of Covenanters gained a victory over Viscount Dundee (Graham of Claverhouse) and his troops.

Drumlanrig Castle in Dumfriesshire, built about 1700. A seat of the Duke of Buccleuch, it stands on the Nith, 17 m. from Dumfries.

Drummond Scottish family. It is now represented by the Earl of Ancaster who owns Drummond Castle, in Perthshire. It is famous for its gardens.

One member of the Drummond family founded, in 1712, the bank now at 49 Charing Cross Road, London, still known as Drummonds. In this Henry Drummond (1786-1863) was a partner. He was an M.P. for many years, but is best known as an Irvingite. He built the Catholic Apostolic Church at Albury, Surrey. His daughter married the Duke of Northumberland and inherited Albury Park. He died Feb. 20, 1860. The bank is now a branch of the Royal Bank of Scotland.

Drummond Henry. Scottish scientist. Born at Stirling, Aug. 17, 1851, he died March 11, 1897. He was educated at Edinburgh and Tübingen where he studied science. Trained for the ministry at New College, Edinburgh, he abandoned that career, not, however, on grounds of faith, for he was associated with the evangelistic work of Moody and Sankey. In 1877 he was made lecturer in natural science in the Free Church College, Glasgow, and in 1884 he became professor. While there he wrote *Natural Law in the Spiritual World*, an attempt to reconcile science and religion, which had an extraordinary success and made its author known. It was followed by *The Ascent of Man*. Meanwhile Drummond had travelled much in Africa, Asia and America, which led to the writing of *Tropical Africa* and other books. His addresses on religion in London and elsewhere, notably *The Greatest Thing in the World*, were very popular.

Drummond **Sir James Eric.** British diplomatist. Second son of the Earl of Perth, he was born Aug. 17, 1876. Educated at Eton, he entered the diplomatic service in 1900. In 1916 he was knighted and in 1919 he was appointed the first secretary general of the League of Nations. In 1933 he was appointed Ambassador to Rome.

Drummond **William.** Scottish poet, called Drummond of Hawthornden. Born at Hawthornden, near Edinburgh, Dec. 13, 1585, he studied law in Edinburgh and Paris. His life, however, was spent on his estate at Hawthornden, where he wrote a number of poems, described as "amorous, funereal, divine, pastoral, in sonnets, songs, sextains, madrigals." In prose he wrote *A Cypress Grove*. Among his friends were Ben Jonson and Montrose. A staunch royalist, he died Dec. 4, 1649.

Drummondville Town of Quebec, Canada, on the St. Francis River, 62 m. from Montreal. Pop. 6609.

Drunkenness Condition of being intoxicated. In English law, merely to be drunk is not an offence. It is, however, an offence to be drunk and disorderly, or to be drunk on a highway or in a public place, which includes licensed premises. The usual penalty is a small fine or imprisonment. It is a more serious offence to be drunk while in charge of a motor car or other vehicle, or while in possession of loaded firearms. Drunkenness is not a defence to a criminal charge, save in exceptional cases.

Drury **Edward Alfred Briscoe.** English sculptor. Born in London, he went to school at Oxford and then studied art. Later he studied at South Kensington and in Paris and in 1885 exhibited "The Triumph of Silenus." During the next 40 years he turned out an enormous amount of work, including decorative pieces, statues and war memorials, some being in bronze. In 1913 he was elected R.A., having been an A.R.A. since 1900.

Drury Lane Thoroughfare of London. It extends from Aldwych to Broad St., St. Giles', and High Holborn. It is called after Drury Place, a 15th century mansion of the Drury family. In this house Essex planned the rebellion of 1600 and on its site, in 1805, Astley built the Olympia Pavilion.

Drury Lane, with its theatre, has many historic connections. From here a serving man first gave notice of the outbreak of the plague in 1665. Nell Gwynn was born in Drury Court, and plied her trade by Drury Lane Theatre. Lamb, Donne, Campbell, Elliston all frequented the district which, in the 18th century, sank into ill-repute.

The theatre, one of the most famous in London, dates from 1661. In 1672, and again in 1809, it was burned down. The present building was opened in 1812, and is famous for the annual pantomimes held here under the management of Sir Augustus Harris and Arthur Collins. In 1917 it was used by Sir Thomas Beecham for opera.

Druses Syrian people professing an esoteric unitarianism. Numbering 100,000, more or less, they inhabit three isolated regions: Transjordania, Jebel Hauran or Jebel Druz; S. Lebanon, where Maronite rivals outnumber them; and Anti-Lebanon and Hermon. They hold that God appeared in successive incarnations culminating in the sixth Fatimite caliph, **Hakim** (996-1021), whose claims were advocated by one, Darazi, whence their name.

Drusilla **Livia.** Roman lady. The wife of Tiberius Claudius Nero, by him she had a son, Tiberius, the future emperor and another son, Nero Claudius Drusus. She then became the wife of Augustus, who made her husband divorce her. Their union was childless, but Drusilla retained his affection until his death. For some time after Tiberius became emperor, she had very great influence, but they soon quarrelled. She died in A.D. 29.

Drusus **Nero Claudius.** Roman soldier. He was a son of Drusilla by her first husband. As a general he won successes in Germany in the reign of his stepfather, Augustus. He was the father of the Emperor Claudius.

Earlier bearers of this name were two men called Marcus Livius Drusus. The father was tribune in 122 B.C. and the son in 91 B.C. The Emperor Tiberius had a son named Drusus.

Dryad Nymph of Greek mythology. They were tutelary minor deities of trees in which they lived, perishing at their death or destruction.

Dryburgh Ruined abbey of Scotland. It is in Berwickshire on the Tweed, 4 m. from Melrose. It was destroyed in the 16th century, but some beautiful ruins remain, including an aisle of the church in which Sir Walter Scott, his son-in-law Lockhart and Earl Haig are buried. The ruins are national property.

Dryden **John.** English poet. Born at Aldwinkle, Northamptonshire, Aug. 9, 1631, he was educated at Westminster School and Trinity College, Cambridge. He began his literary career by writing plays, but was more successful with his poems. The first of these appeared in 1659 and for the rest of his days Dryden was busy with his pen. Unlike many other writers, he was in comfortable circumstances and his private life, mainly passed in London, was uneventful. In 1670 he was appointed poet laureate, but he lost that position in 1688. He married the elder daughter of the Earl of Berkshire and before his death became a Roman Catholic. He died May 1, 1700, and was buried in Westminster Abbey.

Dryden's plays are nearly all forgotten, *Marriage à la Mode* and *All for Love* being, perhaps, exceptions, but it is otherwise with his poems. The chief of these are his satires, notably *Absalom and Achitophel*, an attack on Shaftesbury. Other poems are *Annus Mirabilis*, written on the year 1660; *The Hind and the Panther*, written to defend the Church of Rome; *The Ode for S. Cecilia's Day* and *Alexander's Feast*. He translated Virgil and Juvenal. In his own line, that of a satirist in poetry, Dryden is unrivalled.

Dry Farming Method of farming adopted in some parts of the United States, South Africa and other countries where the rainfall is inadequate. It consists essentially of the conservation of rain water in the ground by tillage, thus keeping the soil loose and thereby checking evaporation. Part of the land may be in cultivation, while the rest is kept in a loose condition to retain moisture for the following year's crop. This method is adopted for growing hard or macaroni wheats in America.

Dry-Point Method of engraving on metal. It is allied to etching

and used for reproduction of designs or drawings. As in line engraving the lines are cut into the copper by means of a pointed steel tool without the aid of an acid as in etching, where the design is scratched through the superficial film and hollowed out by chemical action. The burr, or raised edge, of metal, formed by the engraving tool, gives the soft effect so characteristic of dry point engravings.

Dryptosaur Genus of extinct land reptiles of the dinosaurian order (*dryptosaurus* or *laelaps*). A sharp-toothed, carnivorous creature, it was strong, active and predaceous, walking on its hind legs like a kangaroo. Closely allied to, and perhaps identical with, English megalosaurs, it inhabited New Jersey, Montana and other N. American regions in Cretaceous times. It was about 20 ft. long.

Dry Rot Condition of decay in timber. It is due to the attacks of fungi causing the wood to become a dry brittle mass. The commonest fungus causing dry rot is *merulius lachrymans*, which attacks deal timbers in damp houses forming white felted masses spreading over boards, beams, and even masonry, and giving rise to a peculiar and disagreeable odour. To prevent dry rot occurring good ventilation and the use of well-seasoned timber is necessary.

Drysalter One who deals in preserved or salted meats, sauces, pickles, etc. He also deals in heavy chemicals, such as sulphur, soda, salt, borax, salammoniac and commercial acids; crude drugs, such as medicinal salts, senna, rhubarb, etc., gums and resins including shellac, gum arabic, mastic and turpentine; oils such as the various essential oils, linseed, rape and cotton seed oils, paraffin, etc.

Duala Town of French Cameroons. The chief seaport of the colony, it stands on the Cameroons River, about 18 m. from its mouth. It consists of a European quarter, a native quarter and the port quarter. It is an important railway junction and has a large export trade. Duala was captured from Germany by a British and French force in Sept., 1914.

Dualism System of philosophy that seeks to explain the world by the assumption that there are in it two independent and absolute elements. The dualist may believe in the entire separation of spirit and matter, or in permanent opposition of good and evil. Dualism is opposed to both idealism and materialism. The philosophy of Benjamin Kidd is an example of dualism.

Dual Control is the control of a country's affairs by two outside powers. For some years after 1882 Egypt was under the dual control of Britain and France.

Dual Monarchy Term used for the Empire of Austria-Hungary during the period 1867-1919.

Du Barry **Marie Jeanne Bécu.** French adventuress. Born Aug. 19, 1746, she married Jean, Comte du Barry, to act as his gambling decoy, and in 1769 became mistress of Louis XV. She was banished in 1774, and guillotined Dec. 7, 1793.

Dubawnt River and lake of Canada. The river rises on the borders of Saskatchewan and flows mainly north until it falls into Chesterfield Inlet on Hudson Bay. It passes through the lake which covers about 1650 sq. m. The chief tributary is the Thelon. Its length is about 600 miles.

Dublin County of the Irish Free State. It is in the province of Leinster and has a coastline of 72 m. on the Irish Sea, covers 354 sq. m. and is served by the G.S. and G.N. of I. Rlys. Dublin is the chief town. Other places are Balbriggan, Skerries, Kingstown (Dun Laoghaire) and Howth. The county includes Lambay and other islands. The soil is fertile although there are mountains in the south.

Dublin Bay is an opening of the Irish Sea. It extends from Howth to Kingstown and the Liffey flows into it.

Dublin Capital and seaport of the Irish Free State. It stands at the mouth of the Liffey on Dublin Bay and is 61 m. from Holyhead and 6 from Kingstown (now known as Dun Laoghaire and pronounced as though written Dunieary) its outport.

Dublin has a harbour along the river and a considerable trade with British ports in cattle and other commodities. The chief industry is the manufacture of stout but there are many others, including biscuits and whisky. It is also a banking and distributing centre and the headquarters of the G. S. Rlys. The G.N. (Ireland) Rly. also serves the city, which is connected with the interior by the Grand and Royal Canals.

The buildings include the castle, long the residence of the lord lieutenant, the mansion house, the art galleries, the national museum, the city hall, the fine cathedral of S. Patrick and Christ Church. The Four Courts is where the courts of law sit; the meeting place of the old Irish Parliament on College Green is now occupied by the Bank of Ireland. Charleville House, a beautiful specimen of 18th century architecture, has been bought for an art gallery.

Phoenix Park is a magnificent open space and contains the zoological garden. O'Connell St., formerly Sackville St., is the chief thoroughfare and O'Connell Bridge one of the many bridges across the Liffey. Butt Bridge was opened in 1931. A circular road runs round the city. At Ball's Bridge the annual horse show is held.

Dublin is also an educational, literary, and artistic centre. In it are the historic university called Trinity College, with fine buildings on College Green, and University College belonging to the newer national university. Here are the headquarters of the Royal Irish Academy and the Royal Dublin Society. The Abbey Theatre is notable. It has a broadcasting station (413 M.; 1.2 kW.). Pop. 405,126.

The Royal Dublin Fusiliers was the name of a regiment of the British Army. It was formed in 1881 by a union of the 101st and 102nd regiments of the line and was disbanded in 1922. It had a brilliant record of service in South Africa and the Great War.

Dubois **Guillaume.** French cardinal and statesman. Born Sept. 6, 1656, the son of an apothecary, he became a monk. Having gone to Paris, he was selected as tutor to Philip, afterwards the Regent Orleans, over whom he obtained great influence. He became the secretary to the Duke, who on becoming regent made Dubois his chief adviser. For eight years he was responsible for the affairs of France. He pursued a policy of peace, badly needed after the exhausting wars of Louis XIV., and, forsaking the traditional friendship with Spain, made an alliance with Britain and Holland. Having been elected Archbishop of Cambrai, he was created a cardinal in 1721. He died Aug. 10, 1723.

Ducat Mediaeval coin, generally of gold. First minted about 1140 by Roger II. of Sicily for his duchy, it was therefore called *ducatus*. Adopted by Florence in 1252, and Venice in 1283, which afterwards called it the sequin, it was issued in other states and survived in Austria-Hungary down to 1914. George I. and III. issued Hanoverian ducats.

Duck Aquatic bird of the family *Anatidae*. It includes all birds of that family other than swans and geese. The male is called the drake, and in one species the mallard. There are 40 genera and 160 species of freshwater ducks found all over the world. All British domesticated breeds, including the Aylesbury, are descended from the common wild duck. Flat-billed and short-legged, usually with three front toes completely webbed, they include gadwalls, shovellers, widgeons, pintails, sheldrakes, teal and mandarin ducks. Sea ducks or diving ducks include scaups, pochards, canvas-backed and cider ducks. The whistling teal are tree ducks.

Duck shooting is practised, especially in the East Anglian Broads and the inlets of the east coast of England, either from punts with fixed or hand-carried guns, or afoot from the sides of streams, sometimes with decoys.

Duckbill Egg-laying mammal (*ornithorhynchus anatinus*). Peculiar to Australia and Tasmania, it is also called the duck-billed platypus. With toothless, horny, duck-like beak, inconspicuous eyes and glossy dark-brown fur, it burrows in river banks and stores its food, which consists of insects, molluscs and worms, in the pouches of its cheeks. The eggs have white flexible shells.

Ducking Stool Punitive instrument for the public correction of scolds. The scold was fastened in a chair so fixed to a beam that it could be projected over water and raised and lowered at will. The ducking was proportionate to the scold's shrewishness. The last recorded case of ducking in England occurred at Leominster in 1809.

Duckweed Order of minute, annual, floating, green, scale-like, flowering plants. They are allied to the arum order and grow in all standing waters. Eaten by ducks and geese, they comprise oval structures called fronds, with or without thread-like roots. In Britain they rarely develop their simple flowers, being usually propagated by budding or by bulbils, which hibernate in the autumn.

Du Cros **William Harvey.** British manufacturer. Born June, 19, 1846, in Dublin, he belonged to a Huguenot family. He became a doctor, but soon left that profession to become associated with the making of tyres by the Dunlop process. This led to his connection with other branches of the motor industry in which he was a leading figure. He was M.P. for Hastings, 1906-08, and died Dec., 21, 1918. His son, Arthur Philip Du Cros, succeeded him as M.P. for Hastings, and in 1916 was made a baronet.

Ductility Property in many metals of being permanently elongated by a tensile stress or of being drawn into wire. Ductility is influenced largely by the tenacity of the metal. It is associated with malleability, but the most malleable metals are not necessarily the most ductile. The commoner metals, arranged in their order of ductility, are gold, silver, platinum, iron, copper, aluminium, zinc, tin and lead. Gold is so ductile that one grain in weight can be drawn out into 500 ft. of wire.

Ductless Glands *See* GLAND.

Dudley County borough of Worcestershire. It is 8 m. from Birmingham and 121 from London, in the centre of the Black Country, and is served by the L.M.S. and G.W. Rlys. There are ruins of the castle; these and the grounds are now public property. The industries are connected with the iron and steel trades, being chiefly engineering works and iron and brass foundries. Motor cars and cycles are also made here. Pop. (1931) 59,579.

Dudley **Earl of.** English title held since 1860 by the family of Ward. Earlier, a famous family had taken its name from Dudley. To this belonged Edmund Dudley, the extortionate minister of Henry VII., who was put to death in 1510, and Robert Dudley, Earl of Leicester, and several who bore the title of Baron Dudley.

When in 1643 the last Baron Dudley died his estates passed by marriage to the Ward family. The earliest of the Wards was a goldsmith, Humble Ward. In 1763 one of his descendants was made Viscount Dudley. John William Ward, the 4th viscount, was Foreign Secretary, 1827-28, and was made Earl of Dudley in 1827. The title became extinct in 1833, but in 1860 it was given to William Ward, another descendant of Humble Ward. His wife, Georgiana, was a prominent social figure. William Humble Ward, the 2nd earl, was Parliamentary Secretary to the Board of Trade, 1895-1902, Lord-Lieutenant of Ireland, 1902-06, and Governor-General of Australia, 1908-11. He died June 29, 1932. Witley Court, now sold, was the earl's chief seat, and his estates include coal mines in Worcestershire and Staffordshire. His eldest son is called Viscount Ednam, and his seat is Himley Hall, Staffordshire.

Duel Single combat. It was usually arranged by challenge and fought with deadly weapons under conventional rules, to settle a personal quarrel, or decide a point of honour.

The first duels were fought with swords or rapiers, but later the pistol became the favourite weapon. They were very common in France, Italy and other countries during the 16th and 17th centuries and thousands of men were killed in them, but efforts to stop them failed. Duels are occasionally fought to-day in those countries, as they are in E. Europe and S. America, but rarely with fatal results. However, in 1930 a duel with revolvers led to the death of a former president of Paraguay as well as of his opponent. In Germany duels among army officers were fairly common before the Great War, and duels of students are a feature of university life there.

In England, as elsewhere, duelling was a development of the old combats of the knights. It began in the 16th century, and duels were fairly frequent in the 17th and 18th centuries. Many prominent men went out to fight, including the younger Pitt, the dukes of York and Wellington, Canning and Castlereagh. The Irish gentry were noted for their propensity to fight duels. In the case of a fatal termination the survivor was guilty of murder,

and a duellist was executed in 1808. Notable duels were those between Lord Byron and Mr. Chaworth; between Lord Mohun and the Duke of Hamilton, described in *Esmond*; and the one in which Aaron Burr killed Alexander Hamilton. The last duel in England was fought in 1843.

Dufferin and Ava Marquess of. Frederick Temple Hamilton-Temple Blackwood was born in Florence, June, 21, 1826. His father was Baron Dufferin and his mother a granddaughter of R. B. Sheridan; she was known for her songs, especially *The Emigrant's Farewell*. He became baron in 1841, and, having passed through Eton and Christ Church, Oxford, entered public life. He held positions in the Liberal ministry in 1864-66, and in 1872, having just been made an earl, he was appointed Governor-General of Canada. From 1884-88 he was Viceroy of India; and he was Ambassador in Rome, 1888-91, and in Paris, 1892-96. In his later years he was associated with Whitaker Wright's companies, a proceeding which involved him in considerable loss. He died Feb. 12, 1902, at the family seat, Clandeboye, Co. Down.

In 1888 Dufferin was made a marquess. His eldest son, the Earl of Ava, was killed in S. Africa in 1902. The title passed, therefore, to a younger son, Terence, who became the 2nd marquess. He was succeeded in 1918 by a brother, Frederick, who became the 3rd marquess. He was made speaker of the Senate of N. Ireland in 1921, and in 1930 was killed whilst flying from France.

Dugdale Sir William. English scholar. A member of a Warwickshire family of some note, he was born Sept. 12, 1605. In 1638 he was given an official appointment in the Office of Heralds, and in 1677 he was made Garter King-at-Arms. Knighted in 1677, he died Feb., 10, 1686. Dugdale gave his life to the study of the past, and his works still have value. The chief are *Antiquities of Warwickshire*, *Monasticon Anglicanum*, an account of the religious houses in England, and *The Baronage of England*.

Dugong (Halicore). Genus of aquatic mammals found in the Indian Ocean and along the coasts of Australia. The dugong is from 7 to 9 ft. long with flippers and a tail resembling that of the whale. It is allied to the manatee, with which it constitutes the mammalian order Sirenia, or sea cows. The appearance of the dugong, which raises its head and body from the water while supporting its young, is supposed to have originated the stories of mermaids.

Duisburg Town and river port of Germany. It stands on the Rhine, near where that river is joined by the Ruhr. It is one of Germany's great industrial centres, and said to be the largest river port in the world. Pop. 421,217.

Duke English title. A variant of the Latin *dux*, the word was first given to a military leader. Later it was used in Germany for the ruler of a large district, such as Swabia and Franconia, and was introduced into France and England. In England, Edward, the Black Prince, was made a duke in 1337. The first Scottish duke dates from 1398.

Duke is the highest rank in the British peerage, and the coronet contains eight strawberry leaves. The younger sons of the sovereign are usually made dukes. The Duke of Norfolk is the premier duke of England, and the Duke of Hamilton the premier duke of Scotland. A duke's daughter and his younger sons bear the courtesy title of lady or lord before the Christian name. His heir is a marquess. The duke and duchess are addressed as "your Grace," and occasionally a lady is a duchess in her own right, the Duchess of Fife being an example.

Dukeries District in the N.W. of Nottinghamshire. It includes the existing part of Sherwood Forest, and covers about 100 sq. m. It stretches from near Mansfield almost to Worksop. Edwinstone is its centre, and it is crossed by the L.N.E. Rly. Coal mines have been opened in the district, but much of it is still beautiful woodland. The name is due to the fact that at one time four dukes lived here. The Duke of Kingston was at Thoresby, now the residence of Earl Manvers; the Duke of Norfolk was at Worksop; Clumber is still the seat of the Duke of Newcastle; and Welbeck of the Duke of Portland.

Dukinfield Borough of Cheshire. It stands on the Tame, 6 m. from Manchester. Here are cotton mills, engineering works and coal mines. Pop. (1931) 19,309.

Dulac Edmond. French artist. Born at Toulouse in 1882, he studied art in Paris under Laurens, and in 1905 settled in London where he has achieved success by his paintings and skill in illustrating and caricature. His exhibition in 1907 of water colours on subjects from *The Arabian Nights* brought him recognition as an artist of ability. Among the works he has illustrated are Shakespeare's *Tempest*, Andersen's *Fairy Tales*, and books of a similar character.

Dulcimer Musical instrument. Of Eastern origin and great antiquity, it was possibly brought to Europe by Crusaders. It consists of a trapeze-shaped sounding board over which are stretched metal strings. These are struck by a pair of leather-headed hammers with flexible stems. Hebenstreit's pantaleon, an enormous dulcimer perfected in 1705, directly influenced pianoforte making.

Dulcin Organic substance occurring as minute white needles. It is soluble in water, alcohol and ether, and is 200 times sweeter than sugar. It is said to be absolutely harmless to man and animals, and has the advantage over saccharine in that it has no bitter aftertaste and does not mask flavours.

Dulse Fleshy seaweed of the florideous order (*rhodymenia palmata*). It has purplish-red fronds irregularly cleft or otherwise divided, and serves in parts of Scotland, Ireland, Iceland and elsewhere as a food relish, either stewed or dried, and chewed instead of tobacco.

Duluth City and port of Minnesota, U.S.A., and capital of St. Louis county. It stands at the western end of Lake Superior, and is an important railway terminus. There are iron and steel works, flour mills and other industries, but it is chiefly a shipping centre. It has a fine harbour and an enormous quantity of wheat is shipped to be carried down the Great Lakes and along the St. Lawrence. Pop., (1930) 101,463.

Dulverton Town of Somerset, and a fishing and hunting centre.

It stands on the Barle, 20 m. from Taunton, on the G.W. Rly. Pop., 1500.

Dulwich Suburb of London. It is mainly in the borough of Camberwell to the S.E. of the city, and on the S. Rly. which has several stations here. A pleasant residential area, its oldest part is still known as Dulwich Village. At one time it possessed a spa.

In Dulwich is the large public school called **Dulwich College.** This was founded by Edward Alleyn, the actor, in 1619, and has a fine range of buildings with room for about 700 boys surrounded by extensive grounds. The old buildings of the college still stand. In 1857 another school called Alleyn's School was established here.

The picture gallery, founded in 1807, contains some very fine pictures by the Dutch masters, as well as by Gainsborough, Reynolds and others.

Duma Name of a representative body in Russia. It was set up in 1905, but disappeared towards the end of the Great War. It consisted of 442 members elected for five years. Election was indirect. Delegates were sent from the different towns and districts to a general assembly, which chose the members of the Duma.

Dumas **Alexandre.** French novelist. Born July, 24, 1802, his full name was Alexandre Davy de la Pailleterie, his father being an illegitimate son of a marquis of that family. His grandmother was a negress named Dumas. He left his home at Villers-Cotterets about 1823 to become a clerk in Paris, where he soon entered upon a literary life. He found time also to fight for Garibaldi in Italy, to live magnificently, spending freely the huge sums he earned, to have matrimonial and other adventures and to mix in politics. He died at Dieppe, Dec. 5, 1870.

Dumas was responsible for over 1000 books, on a great variety of subjects. Many of these were written by collaborators and assistants, and many more were accepted and signed by him without any share whatever in their authorship. The plays, however, with which he began his literary career and the books on his early travels, are undoubtedly his own, except in those plays where collaboration is openly acknowledged. The plays include *Henry III. and his Court*, which first made him famous in 1829. His sketches include books on travels in Switzerland, Russia, Italy and elsewhere. The reputation of Dumas, however, rests upon his historical romances, a field in which he is without a rival. They attained immense popularity and have been translated into English and other languages. The chief of them are the trilogy, to give them their English titles, *The Three Musketeers, Twenty Years After*, and *The Vicomte de Bragelonne. The Count of Monte Cristo, Chicot the Jester, The Black Tulip* and *Queen Margaret* may be mentioned, but there are many others. He also wrote *Memoires* in ten volumes, but his chief title to fame, in England at least, is as the creator of Porthos, Athos, Aramis and D'Artagnan.

Dumas **Alexandre.** French writer known as Dumas fils. Born July 27, 1824, he was a natural son of Alexandre Dumas père whose name he took on being made legitimate. He made his reputation with a novel *La Dame aux Camélias*, 1848, and wrote others including *L'Affaire Clémenceau*, but it is as a dramatist that his name endures. *La Dame*, a great success when it was adapted for the stage, was followed by *La Question d'Argent, Une Visite de Noces, Denise* and a number of others, mainly problem plays. He also wrote essays and helped George Sand to prepare her work for the stage. He was elected to the Academy in 1874 and died Nov. 27, 1895.

Du Maurier **George Louis Palmella Busson.** British artist and author. Born in Paris, March 6, 1834, his grandparents were French refugees domiciled in England during the French Revolution. At the age of seventeen he went to London and studied chemistry at University College, but later became an art student in Paris. After further studies in Antwerp and Düsseldorf, he returned to England where his artistic reputation was rapidly established. He contributed illustrations to many publications including *Once a Week, The Cornhill* and *Punch*. In 1865 he became a member of the staff of *Punch*, and for years his pictorial satires of social life were a feature in its pages. Owing to failing eyesight, in later years he took to writing, his first novel, *Peter Ibbetson*, appearing in *Harper's Magazine* in 1891, with his own illustrations. This was followed by *Trilby*, 1904, which attained instant popularity and was eventually dramatised. *The Martian*, his third novel, was published after his death. He died in London, Oct. 6, 1896.

Du Maurier **Sir Gerald.** English actor. A son of George Du Maurier, he was born in London, March 26, 1873, and educated at Harrow. He made his first appearance on the stage in 1894, and soon won a reputation. In 1910 he became manager of Wyndham's Theatre, London. In 1922 he was knighted. His many successes include Captain Hook, in Peter Pan, and the part of Bulldog Drummond on the stage and in a talking film. He died in April, 1934.

Du Maurier's elder brother, Guy, wrote a popular play, *The Englishman's Home*. He was killed in action, March 11, 1915.

Dumbarton Burgh, seaport and market town of Dumbartonshire; also the county town. It is 15 m. from Glasgow on the L.M.S. and L.N.E. Rlys. The River Leven flows through it on its way to the Clyde; on one side is the town proper and on the other the suburb of Bridgend. A castle stands on the famous Rock of Dumbarton. There are shipbuilding yards and engineering works and also some shipping. Pop. (1931) 21,546.

Dumbartonshire County of Scotland. In the west of the country, it has a coast line on the Firth of Clyde. On its borders are Loch Lomond and Loch Long. Dumbarton is the county town; other towns are Clydebank, Kirkintilloch and Helensburgh. The Leven and the Kelvin are the chief rivers. Districts of the county are the Vale of Leven and the peninsula called Roseneath. The area is 276 sq. m. Officially the name is Dunbartonshire. Pop. (1931) 147,751.

Dumb Bell Term applied to a double-headed weight used in athletic training. Dumb bells are made of wood, or iron, and consist of a short bar bearing a rounded knot at each end. The name is derived from the fact that the early form was in the shape of a wooden bar with bell-shaped leaden ends.

Dumbness Inability to utter articulate sounds. It affects approximately one per 1000 in Great Britain, mostly persons deaf from birth or early infancy, but with the voice mechanism unimpaired. Sometimes dumbness results from brain defect, especially in children born of the unions of near relatives. It may result, too, from brain disease, as when due to war hysteria or syphilis, disease or paralysis of the vocal cords and the presence of tumours, whose removal may involve inserting an artificial larynx. Structural defects, such as tongue-tie or enlarged tonsils and adenoids in the throat, may impede proper word formation. Lisping, stammering and stuttering are slight forms of dumbness due to the voice mechanism being ineffectively controlled.

Dum-Dum Town of India. It is in Bengal, 7 m. from Calcutta, and consists of two distinct municipalities, north and south. It is chiefly known because it gives its name to a bullet first made at the government ammunition factory here. This was invented for use against the tribesmen of the frontier whose advances could not be stopped by ordinary bullets. The dum-dum bullet has a soft nose which causes it to flatten or expand on entering the body, thus causing a very ugly wound.

Dumfries Royal burgh of Dumfriesshire; also the county town. It stands on the Nith, 82 m. from Glasgow, on the L.M.S. Rly. On the other side of the river is the suburb of Maxwelltown. The manufactures include cloth and hosiery, and there is an agricultural trade and also a trade along the river, which is navigable. There is a monument to Robert Burns, who lived here the last few years of his life (1791-96), and who is buried here. Pop. (1931) 22,795.

Dumfriesshire County of Scotland. In the south-west, it has a coastline on the Solway Firth. It covers 1100 sq. m., and is chiefly given up to the rearing of cattle and sheep. Dumfries is the county town; other places are Moffat, Sanquhar, Annan, Lockerbie and Langholm. On the southern border is Gretna Green. The chief rivers are the Annan, the Nith and the Esk, which divide the county into three districts or dales. The scenery is very beautiful, especially in the hilly regions of the north and west, and around Lochmaben in the centre. In the east are moors. Lochar Moss is a tract of reclaimed land in the south. The chief hills are the Lowthers. The county has associations with Burns and Carlyle. It sends one member to the House of Commons. Pop. (1931) 81,060.

Dumping Throwing down rubbish in a heap. The term is also used for piling ammunition into a heap, and for a similar process with other materials.

In economics it refers to the action of exporting goods and selling at prices lower than those prevailing for home consumption in order to undercut the producer in the importing country and gain control of the market. Legislation against dumping has been passed by the United States, Great Britain and the Dominions. The Safeguarding of Industries Act of 1921 was an anti-dumping measure. The value of dumping to an industry is said to be that it enables it to maintain a high level of output, by means of mass production, and thus reduces overhead charges.

Dunbar Burgh and watering place of Haddingtonshire (East Lothian) It is situated at the mouth of the Firth of Forth, 29 m. from Edinburgh. It is served by the L.N.E. Rly., and with two harbours is a fishing port. The ruins of the castle are of interest, as is the tolbooth. Pop. (1931) 3751.

The Battle of Dunbar was fought between the English and the Scots, Sept., 3, 1650. Cromwell invaded Scotland, and with 16,000 men moved to Dunbar to be in touch with his ships. The Scots, under David Leslie, followed and took up a position on the hills. They moved down to attack the English and the battle began at daybreak. It ended quickly in a decided English victory, about 3000 Scots being killed.

The Scottish title of **Earl of Dunbar** existed in the 13th century or earlier. It became extinct in 1611.

Dunbar **William.** Scottish poet. Born about 1460 in Haddingtonshire, he became a friar and went about the country preaching. Later he entered the king's service and discharged secretarial duties at home and abroad for some years. He was probably killed at Flodden in 1513. Dunbar's most famous poem is *The Thistle and the Rose*, written to celebrate the marriage of King James IV. and Margaret, daughter of Henry VII. He also wrote *The Dance of the Seven Deadly Sins* and other satires, and *Lament for the Makaris.*

Dunblane Burgh and market town of Perthshire. It is 5 m. from Stirling and 41 from Edinburgh, on the L.M.S. Rly. The church, once a cathedral, was built in the 12th century and restored in the 19th. The town has a spa, and its chief industry is the woollen manufacture. Here is the Queen Victoria Military School. Pop. (1931) 2692.

Duncan King of the Scots. He is chiefly known because of Shakespeare's mention of him in *Macbeth*. He became king in 1034 and was killed by Macbeth, probably in 1040.

Duncan **Isadora.** American dancer. She was born in San Francisco, May, 27, 1878, and appeared first on the stage in 1890. After a few years she crossed to Europe where she won a great reputation by the originality and grace of her dancing. She appeared in London, Paris and other capitals, and opened a training school near Berlin. She died as the result of a motor car accident, Sept. 14, 1927, and in 1928 her *Autobiography* appeared.

Duncan **Viscount.** British sailor. Adam Duncan was born in Dundee, July 1, 1731, and in 1746 entered the navy. He was in several sea fights and became commander of a ship. In 1782 he was made First Lord of the Admiralty, and in 1795 was appointed to command the fleet in the North Sea. He blockaded the Dutch fleet in the Texel, and met and defeated it off Camperdown, Oct. 11, 1797. He was made a viscount and died Aug. 4, 1804. The Earl of Camperdown is his direct descendant.

Duncansby Head Promontory of Scotland. It is in Caithness and is the most northerly point of the country. Off it are three rocks called the Stacks.

Duncombe Park Former residence of the Earl of Feversham. It is just outside Helmsley

Yorkshire. The house was built early in the 18th century, and after the Great War became a school for girls. In the grounds are the ruins of Helmsley Castle.

Dundalk Market town and urban district of Louth, Irish Free State; also the county town. It stands on Castletown River, near where it enters Dundalk Bay and is 54 m. from Dublin. The chief industry is the railway works; there is also an agricultural trade. Pop. 14,000.

Dundalk Bay is an opening of the Irish Sea. It is about 6 m. long and 7 wide at the entrance.

Dundee City and seaport of Angus or Forfarshire. It is situated on the north side of the Firth of Tay, here crossed by the Tay Bridge, 60 m. from Edinburgh by rail and 42 by road. It is served by the L.M.S. and L.N.E. Rlys. The buildings include the town churches, three under one roof, (S. Mary's, S. Paul's and S. Clement's), the cathedral of the see of Brechin, and the Roman Catholic pro-cathedral, and several other fine churches. Caird Hall is the gift of Sir James Caird. University College is part of the University of St. Andrews. There are technical schools and a high school. The city has several public parks; including the Caird, Baxter and Balgay. Dundee Law, a hill behind the town, is public property.

Dundee is a centre of the jute, linen and hemp manufacture. Other industries are engineering, shipbuilding, dveing and printing. It is famed for its marmalade and is a publishing centre. There is a good harbour along the river and the port has a large trade in timber. It is also headquarters of the whaling industry. The city includes the watering place of Broughty Ferry. Pop. (1931) 175,583.

Dundee is the name of a small town in Natal. It is on the railway, 6 m. from Glencoe, and is a coal mining centre. Pop., 3000.

Dundee **Viscount.** Scottish soldier, also called Graham of Claverhouse. A son of Sir William Graham of Claverhouse, John Graham was born about 1649 and went to the University of St. Andrews. He became a soldier and saw a good deal of fighting in France and the Netherlands. He served under William of Orange, whose life he saved on one occasion. In 1678 he was sent to Scotland to put down the Covenanters, a work he did with great thoroughness. In 1688 he was made a viscount, and was killed at Killiecrankie, July 27, 1689, whilst fighting at the head of the force he had raised for the Stuarts against William III. Sir Walter Scott refers to him as *Bonnie Dundee*.

Dundonald **Earl of.** Scottish title borne since 1669 by the family of Cochrane. The first earl was Sir William Cochrane, a royalist, and the title passed from one to another until it came to Thomas Cochrane, who became the 10th earl in 1831. Born Dec. 14, 1775, he entered the navy and saw a good deal of service against France. He then entered the House of Commons, and in 1814, probably on a false charge, was expelled from the navy and Parliament.

He entered the service of Chile, and commanded that country's navy during the war of liberation, winning several successes. He commanded the Brazilian navy (1823-25), and then the Greek navy. In 1832, having returned to England, he succeeded to the earldom, and was pardoned. From 1848-51 he was Commander-in-Chief of the Fleet in N. America. He died Oct. 31, 1860.

Douglas Cochrane (b. 1852), who became the 12th earl in 1885, was a soldier. He saw a good deal of service in Egypt and elsewhere, and led the cavalry force that entered Ladysmith in 1900. From 1902-04 he was in command of the Canadian militia. His eldest son, Lord Cochrane, succeeded on his father's death in April, 1935.

Dune Term applied to slowly moving sandhills formed on the seashore or in deserts by the agency of the wind. Sand dunes on the English coast may rise to the height of 40 to 50 ft., and in the Sahara to over 600 ft. On the Cornish coast the dunes have overwhelmed much cultivated ground, and similar conditions prevail on the Lancashire and E. Anglian coasts. In Holland the dunes, partially strengthened, serve to protect the low-lying country in the vicinity of the Zuider Zee.

The **Battle of the Dunes** was fought on the dunes outside Dunkirk between the French and the Spanish on June 4, 1658. The French were besieging the town, then a Spanish possession. On the Spanish side were some English volunteers under James, Duke of York, and on the French side some regiments of Cromwell's Ironsides. Owing largely to the fighting qualities of the Ironsides, France gained a complete victory and captured Dunkirk.

Dunedin City and seaport of New Zealand. In South Island it stands on Otago Harbour, and is connected by railway with the interior. From it steamers go to Sydney, Melbourne and elsewhere, although the larger ones only come up to Port Chalmers, 8 m. away. Here is a university which is part of the University of New Zealand. The industries include refrigerating works, and the manufacture of woollen goods, boots, etc. Dunedin was founded by Scottish Presbyterians in 1848, and developed owing to the opening of the Otago gold mines. The name Dunedin is sometimes used poetically for Edinburgh. Pop. (1932), 87,400.

Dunedin **Viscount.** Scottish lawyer. Born in Perthshire, Nov. 21, 1849, Andrew Graham Murray was the son of a lawyer. He went to Harrow and Trinity College, Cambridge, and in 1874 became an advocate. In 1891 he entered Parliament as Unionist M.P. for Buteshire, and he was made Solicitor-General for Scotland, 1891-92. Again in 1895-96 he held that position, and from 1896 to 1903 was Lord Advocate. From 1903-05 he was Secretary for Scotland, and from 1905 to 1913 President of the Court of Session, becoming a Lord of Appeal in 1913. He was made a viscount in 1926 and retired in 1931.

Dunfermline Royal burgh of Fifeshire. It stands on the Firth of Forth, 17 m. from Edinburgh, on the L.N.E. Rly. The burgh was a residence of the kings of Scotland. Here Charles II. signed the **Solemn League and Covenant**. The chief industry is the manufacture of fine linen damask. The burgh includes Rosyth, and a garden city. It was the birthplace of Andrew Carnegie and is the headquarters of the Carnegie Trusts. One of these provides a large annual sum to be spent on improving the burgh. Pittencrieff Glen is public property. Pop. (1931) 34,954.

Dungannon Market town and urban district of Tyrone, N. Ireland. It is 40 m. to the west of Belfast, on the G.N. (Ireland) Rly. Pop., 3830.

Dungarvan Market town, urban district and watering place of Waterford, Irish Free State. It stands on Dungarvan Bay, 28 m. from Waterford and 120 from Dublin where the Colligan River enters the sea. It is a fishing centre and has an export trade. Across the river is Abbeyside, with a castle now used as a barracks. Pop., 5300.

Dungeness Promontory on the south coast of Kent. It juts out into the English Channel not far from Rye. On it are a lighthouse and a coastguard station. In 1652 there was a sea-fight near here between the English and the Dutch fleets.

Also, port of Queensland. Situated on the Hinchinbrook Channel, it exports sugar which is brought down the river Herbert. It is about 940 m. north of Brisbane.

Dunkeld Town of Perthshire. It stands on the Tay, 15 m. from Perth, on the L.M.S. Rly. The chief building is the church, once the choir of the cathedral, which was destroyed at the Reformation. Other parts of the building are in ruins and are national property. Near is Birnam. Dunkeld House is a seat of the Duke of Atholl. Pop., 1050.

Dunkery Beacon or hill of Somerset. It is on Exmoor, about 5 m. from Porlock. It is 1700 ft. high and about 12 m. round, and is the highest point on Exmoor.

Dunkirk Seaport of France. It is on the Straits of Dover, near the frontier of Belgium. It has two harbours well equipped with docks and quays, and there is a constant service of steamers with London, Dover, and elsewhere. Shipbuilding is carried on, and there are some manufactures. The name means the Church in the Dunes and in 1658 the Battle of the Dunes took place just outside it. *See* DUNE.

Dunkirk was long part of the Spanish Netherlands, afterwards passing to France. It was bombarded during the Great War by the Germans. Its modern prosperity is due to its nearness to the great industrial area of Belgium and N.E. France. Pop. 39,000.

Dunlin Name sometimes given to the red-backed sandpiper.

Dunlop **John Boyd.** British inventor. He was born in 1840 at Dreghorn, Ayrshire, and for many years practised as a veterinary surgeon in Belfast. In 1887 he devised a pneumatic tyre which he patented in the following year, although an earlier form of pneumatic tyre had been the subject of a patent in 1846. In 1890 Dunlop sold his patent to William Harvey Du Cros (*q.v.*), and a company was formed for its commercial exploitation. The successor of this still bears his name, and Dunlop tyres are known all over the world. He died Oct. 23, 1921.

Dunmore **Earl of.** Scottish title borne since 1686 by the family of Murray. The 1st earl was Lord Charles Murray, a son of the Marquess of Atholl, who took his title from a village in Stirlingshire. William, the 3rd earl, fought for the Jacobites in 1745. Alexander, the 8th earl, won the V.C. in 1897, when Viscount Fincastle, a title borne by the eldest son of the earl.

Dunmow Two places in Essex. Great Dunmow is a market town on the Chelmer, 8 m. from Braintree and 40 from London. It is on the L.N.E. Rly, and is a hunting centre. Near is Easton Lodge, the residence of the Countess of Warwick. Pop. 2800.

Little Dunmow, also on the Chelmer, is about 2 m. away. It is noted for the custom, paralleled elsewhere, and long observed here, of giving a flitch of bacon to any married couple who can publicly prove, having been married for a year and a day, they have not regretted the union. The examination is now held at Ilford.

Dunne **Finley Peter.** American humorist, known as the creator of Mr. Dooley. Born in Chicago in 1867 he became a journalist. He made his name by contributing to *The Chicago Times* sketches of a humorous kind under the name of Martin Dooley. He represented Dooley as an Irish-American who commented, in his own vivacious way, on the happenings of the day. The sketches have been published as *Mr. Dooley's Philosophy*, and under other titles.

Dunnottar Town of Kincardineshire. It is about a mile from Stonehaven and is famous for the ruins of its castle. One of the strongest in the country, it was besieged several times before it was dismantled in 1715. The ruins, which overlook the sea, are extensive and picturesque. Pop. 2250.

Dunois **Jean.** French soldier. Born in Paris, Nov. 23, 1402, he was a natural son of Louis, Duke of Orleans, a brother of Charles VI., and was known as the Bastard of Orleans. He became a soldier, was given a high command and soon made himself famous. He defended Orleans until it was relieved by Joan of Arc, and then entered upon a career of conquest. Gradually he drove out the English, a landmark in the campaign being the taking of Chartres in 1432. In 1450 he finally expelled them from Normandy and later from Guienne. His exploits made the Bastard a national hero before he died, Nov. 24, 1468.

Dunoon Burgh and seaside resort of Argyllshire. Situated on the Firth of Clyde. The burgh includes Kirn and Hunter's Quay; the latter, situated at the entrance to the Holy Loch, is a fashionable yachting centre. There is a regular steamer service from Greenock and other places along the Clyde. Highland Mary was born here. Pop. (1931) 8780.

Dunraven **Earl of.** Irish title held since 1822 by the family of Wyndham-Quin. It began with Valentine R. Quin, an Irish landowner who was made a baron in 1800 and an earl in 1822. He took the title of Dunraven because his son, Henry, was married to the heiress of Thomas Wyndham of Dunraven Castle, Glamorganshire. Henry became the 2nd earl in 1824. His son, Edwin, who became the 3rd earl in 1850, was a scientist and a spiritualist.

Windham Thomas, who became the 4th earl in 1871, was a soldier and a war correspondent. Later he was prominent as a politician, especially in Irish affairs, but he is best known as a yachtsman, as he built yachts to compete for the America Cup. He died in 1926, and was succeeded by a cousin. The

earl's eldest son is called Viscount Adare and his seats are Adare Manor, Limerick, and Dunraven Castle, beautifully placed overlooking the sea near Porthcawl.

Dunrobin Castle in Sutherlandshire, the chief seat of the Duke of Sutherland. It stands on the coast of Dornoch Firth, not far from Golspie. A magnificent modern building, it occupies the site of an older castle. There are two brochs, or round towers, and a museum in the grounds.

Duns Burgh and market town of Berwickshire; also the county town. It is 55 m. from Edinburgh, on the L.N.E. Rly. Near is Duns Law, a hill 700 ft. high. Pop. (1931) 1788.

Dunsany **Baron.** Irish title held since 1439 by the family of Plunkett. Sir Christopher Plunkett, a landowner in Co. Meath, was the first holder, and it passed from one to another of his descendants until it came to Edward John Plunkett as the 18th baron. He was born July 24, 1878, and became a soldier, but is better known as a writer. His works include many novels and stories, and some successful plays including *The Glittering Gate* and *A Night at an Inn*. The family seat is Dunsany Castle in Co. Meath.

Dunsinane One of the Sidlaw Hills, Perthshire. It is 8 m. from Perth, and is famous for its mention in *Macbeth*. Here the king is supposed to have been defeated by Earl Siward. An ancient fort on it is called Macbeth's Castle.

Dunsink Village of Co. Dublin, Irish Free State. It is 4 m. to the N.W. of Dublin and is the site of the observatory of Trinity College, Dublin, which dates from 1785.

Duns Scotus Friar, and one of the most influential of the mediaeval schoolmen. He was born probably at Duns, Berwickshire, and became a teacher at Oxford, where he was connected with Merton College. He became a Franciscan and went to Paris, where his skill in controversy gained for him the title of Doctor Subtilis. He died in Cologne. Nov. 8, 1308. Scotus was the founder of Scotism, metaphysical doctrines which long struggled for the mastery against Thomism, the theological doctrines of S. Thomas Aquinas. The word dunce was first applied to his followers, because of their resistance to the "new learning."

Dunstable Borough and market town of Bedfordshire. It is 37 m. from London, on the L.M.S. and L.N.E. Rlys. In S. Peter's Church, Cranmer pronounced the divorce of Catherine of Aragon. The hills near are called Dunstable Downs. Pop. (1931) 8972.

Dunstaffnage Castle of Argyllshire. It is 3½ m. from Oban, overlooking Loch Etive. The ruins are those of a building of the 15th century, but there was a castle here at a much earlier date. In it the early kings of the Scots lived and the Stone of Destiny was kept. The castle was long a seat of the Stewarts of Appin.

Dunstan English saint and prelate. Born at Glastonbury in 909, he went to the abbey school there and then to the court of King Athelstan. Later he returned to the abbey and became a monk. In 943 he was chosen abbot and soon became the chief adviser to King Edred. On Edred's death in 955 he was exiled, but returned when Edgar became king of part of England in 957. The King made him bishop of Worcester, and in 959 of London also, and he remained the principal minister of Edgar and also served his son Edward. In 979 he retired, and on May 19, 988, he died at Canterbury. He was made a saint; many churches are dedicated to him.

Dunster Market town of Somerset. It is 23 m. from Taunton and 2 from Minehead, on the G.W. Rly. Dunster Castle, long the seat of the Luttrells, stands on a hill above the town in large grounds. The chief buildings are the church, the yarn market and the Luttrell Arms. Pop. 1380.

Dunsterville **Lionel Charles.** English soldier. Born Nov. 9, 1865, he was educated at Westward Ho College and entered the army in 1884. Later he transferred to the Indian Army and saw active service on the frontier and in China. In 1918 he was in command of the force that went from Mesopotamia to Baku to save the oil wells there. He wrote an account of this called *The Adventures of Dunsterforce*. Dunsterville, who is the hero of Kipling's *Stalky & Co.*, wrote also *Stalky's Reminiscences*.

Dunwich Village of Suffolk. On the North Sea, 4 m. from Southwold, it was in Anglo-Saxon days an important seaport and the seat of a bishop. The harbour and buildings have been destroyed by the inroads of the sea.

Duodecimal Method of computation based upon the division of a scale into twelve equal parts. It is used in building and engineering calculations. Thus a foot is divided into twelve inches or primes, these into twelve parts or seconds, and similarly into thirds or fourths. A distinction is made between square and cubic feet by using the terms superficial and cubic primes, etc.

Dupleix **Joseph François.** French colonial statesman. Born at Landrecies, Jan. 1, 1697, he was the son of a merchant and in early life went to India for purposes of trade. About 1720 he settled there and soon became an official of the French E. India Co. He rose in the service, and in 1742, as Governor of Pondicherry, became the head of French India. Here he aimed at making France supreme in India. The war that broke out with Britain in 1744 gave him an opportunity. He prevented the English from obtaining Madras and held Pondicherry against them.

Although peace was made in 1748 the struggle between the Powers continued unofficially, and by controlling the native rulers he greatly extended his power. Clive, however, checked him, and in 1754 he was recalled and disgraced. He died Nov. 10, 1763.

Duquesne **Marquis.** French sailor. Abraham Duquesne was born at Dieppe in 1610 and became a sailor, like his father, who was killed in fighting the Spaniards. He himself made his reputation in seafights against the same foe. In 1643 he took a command in the Swedish navy which he led against the Danes. Again in the French service, he forced Bordeaux, which had been seized by rebels, to surrender in 1650. His services were again in demand in 1672 when war broke out with the Dutch. He won several fights, the greatest being in April,

1676, when he defeated the combined Dutch and Spanish fleets off Sicily, in an action in which De Ruyter fell. For this he was made a marquis. Before his retirement in 1684, he led a fleet to bombard Algiers. Duquesne died Feb. 2, 1688.

Dura Buried city of Syria. It is on the Euphrates and was discovered by some British soldiers in 1920. Traces of Greek and Roman civilisation have been found, including some fine sculptures. The excavation of the site has been undertaken by an expedition from the University of Yale.

Duralumin Trade name for a series of alloys of aluminium, copper, magnesium and manganese. It is used largely in aircraft work on account of its lightness, strength and hardness. In compound duralumin, zinc and nickel are added, and this alloy has age-hardening properties, becoming harder when allowed to stand for a few days after heat treatment.

Durazzo Town and seaport of Albania. It stands on the Adriatic Sea, 60 m. from Scutari. A very ancient place, it is connected with Tirana by road and railway. Durazzo, called Dyrrhachium by the Romans, was an important port when part of their empire. In 1501 it passed to the Turks, under whom its decay was hastened. In 1913 it became part of Albania, and was for a short time the country's capital. It was occupied by the Italians and then by the Austrians during the Great War. Pop. (1930) 8,739.

Durban Seaport of Natal, Union of S. Africa. It stands on Durban Bay, 812 m. by sea from Capetown and 509 m. by rail from Pretoria, and is the terminus of a railway line that runs through Natal into the Transvaal. The city is well supplied with parks and open spaces and has zoological and botanic gardens. There is a harbour adapted to the needs of modern shipping, and Durban is the only port of consequence between Delagoa Bay and E. London. The chief industries are connected with the shipping and distributing trades. It is the commercial capital of Natal, and also a whaling centre. Durban is a popular watering place, Ocean Beach being the quarter devoted to this purpose. The city was founded in 1824 and is named after Sir B. D. Urban, its first governor. Pop., 151,000.

A small town of Cape Province 6 m. from Capetown is called Durbanville.

Durbar In India a state ceremony. The word really means an audience chamber. Later it came to be used for the council of a prince, or for his officials collectively. It was also used for receptions held by the princes or by the viceroy, and finally for the ceremony held to proclaim a new emperor. Magnificent durbars were held in 1903 and 1911 to proclaim King Edward VII. and King George V. as Emperors of India.

Dürer **Albrecht.** German artist. Born at Nuremberg, May, 21, 1471, he assisted his father, a goldsmith, but soon forsook that calling to study under Michael Wohlgemut, the foremost artist in the city. Afterwards he spent some years in travel, visiting Venice and meeting Raphael. In his earlier years he devoted much of his attention to engraving on wood and copper, but after a second visit to Venice he concentrated on painting. Towards the end of his life he went to the Netherlands where Charles V. made him a court painter. He died in Nuremberg, April 6, 1528. His home there is now a Dürer Museum.

Dürer's engravings on copper reveal a remarkable power of drawing in detail and richness of invention, seen especially in *The Knight, Death and the Devil*, *The Great Horse and the Little Horse*, and *The Arms of Death*. His woodcuts, which include a series on the Apocalypse, and some done for the Emperor Maximilian, are scarcely less notable, but his portrait paintings, while showing great skill in technique, are somewhat hard and severe. His paintings include *Adam and Eve*. The British Museum has a fine collection of Dürer's work.

Durfey **Thomas.** English sign-writer and dramatist. Born at Exeter in 1633 of a Huguenot family he soon began to write. He made a name with some comedies notably *The Fond Husband*, *Madame Fickle* and *Sir Burnaby Whig*. Durfey also wrote many songs, collections of which were published; one as *Wit and Mirth* or *Pills to Purge Melancholy*. He died Feb. 26, 1723.

Durham County of England. In the north of the country, it is between the Tyne and the Tees, with a coastline of 33 m. on the North Sea. In the west it is hilly and has much beautiful scenery; in the centre and east it is a densely populated industrial area with rich coal mines. The chief rivers are the Tees and the Wear. Durham is the county town, but several others are larger, these being chiefly in the industrial area along the Tyne and the Tees such as Gateshead, S. Shields and Stockton. Sunderland and the Hartlepools are large seaports. Other places are Jarrow and Darlington. Bishop Auckland and Barnard Castle are among the places with historic associations. The county has many populous urban districts. The L.N.E. Rly. serves the county. Ten members are returned to Parliament. It is in the diocese of Durham, and covers 1013 sq. m.

Durham, owing to its position, was long a county palatine, its ruler being the bishop. He had his own courts and enjoyed great authority, a little of which was retained as late as 1836. Pop. (1931) 924,050.

Durham City, market town and the county town of Durham. It is on both sides of the Wear, 254 m. from London and 14 from Newcastle, and is reached by the L.N.E. Rly. The chief buildings are the cathedral and the castle, both standing high on land almost surrounded by the river. The cathedral, one of the most magnificent in England, has many features of interest, including the Galilee Chapel, the towers, the cloisters and the relics of S. Cuthbert. The castle, now used by the university, was once the residence of the prince bishops of Durham. Extensive restoration work was undertaken in 1927. Near it, on Palace Green, are other buildings erected for the university. The city has some old and interesting churches, one being S. Oswald's. The bridges across the Wear, especially Framwellgate, Prebend's and Elvet, are worthy of notice. Durham has some manufactures, but its chief trade comes from its position as a county, cathedral and university town. Pop. (1931) 16,223.

The **University of Durham** was founded in 1832. It consists of two parts. The older is at Durham, where it is closely associated with the Church of England, and consists of

University College and several halls. The system is residential and there are hostels for women students. At Newcastle there is Armstrong College and the College of Medicine. The university has a marine biological station at Cullercoats, agricultural research stations and an observatory.

The Durham Light Infantry is a regiment of the British Army. It consists of the 68th and 106th regiments of foot, the former of which dates from 1756. The regiment has a fine record of service and its battalions did splendid work in the Great War. The depôt is at Newcastle-on-Tyne.

Durham Earl of. English title held by the family of Lambton. The 1st earl was John George Lambton, a member of a family that had held land in Durham for centuries. He was born April 12, 1792, and succeeded to his father's estates when young. In 1813 he entered Parliament as M.P. for Durham, and his advanced opinions made him known as "Radical Jack." In 1830, having been created a peer, he was made Lord Privy Seal, and as such he had a good deal to do with the passing of the Reform Bill. In 1833 he left office and was made Earl of Durham. In 1835 he went as Ambassador to St. Petersburg, and in 1837 as Governor-General of Canada. He soon resigned, but his term of office is memorable because of the *Report* which he prepared. This recommended the union of the two Canadas, and other measures, which were subsequently carried out. He died July 28, 1840.

The earl was succeeded by his son, George, and in 1879 by his grandson, John George, born in 1855. He was Lord Lieutenant of Durham and Chancellor of the University. He died in Oct., 1928. His twin brother, F. W. Lambton, then succeeded to the title and estates, but died a few weeks later. His son, John, then became the 5th earl. The earl's seat is Lambton Castle, Durham, and his eldest son is Viscount Lambton.

Durian Tree of the mallow order. It is a native of the islands and the archipelago of Malaya, where it is widely cultivated for its fruit. This contains a delicious, almond-flavoured, custardy pulp which is highly esteemed by the natives, although when unfresh it emits offensive odours. The chestnut-like seeds are eaten roasted or pounded. The fruit is prickly and about the size of a coconut; the tree grows to about 90 ft.

Dursley Town of Gloucestershire. It is 22 m. from Gloucester and 129 from London, on the L.M.S. Rly. Agricultural implements are made here. Pop. 2601.

Duse Eleonora. Italian actress. She was born Oct. 3, 1859, near Venice, and after juvenile successes made her mark in 1879. In 1883 she achieved international fame in *La Dame aux Camélias*. She was intellectual, influenced by Arrigo Boito, and a sincere helper of Italian drama, as exemplified by Gabriele D'Annunzio. Her successes in England include "Paula" in *The Second Mrs Tanqueray*, and "Nora" in *A Doll's House*, and many others in France and Italy. She retired in 1909, but reappeared in 1921, and died in America, April 21, 1924.

Düsseldorf City and river port of Germany. It stands on the Westphalian coalfield where the Dusselbach falls into the Rhine. It is 24 m. from Cologne and is an important railway junction. Its many fine buildings include the former palace of the electors palatine, the law courts, the exhibition halls and the library. The city is well provided with parks, squares and promenades. Two bridges cross the Rhine here. One, opened in 1929, connects Düsseldorf with Neuss.

The city is famous as an art centre. The chief collections of pictures are in the academy of art and the municipal art gallery. There is a zoological garden and a stadium that will hold 50,000 people. Düsseldorf has a harbour but of greater importance are its manufacturing industries. These include iron and steel goods and chemicals. It is also a banking centre. Some of the buildings erected for business purposes are fine examples of modern architecture. Pop. 460,000.

Dust Particles of solid matter. They are present in the atmosphere from various causes. Dust of terrestrial origin is carried into the atmosphere by ascending air currents and consists of particles of soil or rocks, minute organisms, pollen of plants, particles from burning fuel, factories, etc. Some dust is of volcanic origin—that from the eruption of Krakatoa, near Java in 1883, coloured the sunsets for a couple of years—whilst cosmic dust is derived from meteorites. The formation of rain, mist and fog depend upon dust particles acting as nuclei around which moisture condenses.

Dutch Auction Form of auction in which the sales man at first offers objects at prices higher than he is prepared to accept. He lowers the price gradually until reaching one which a purchaser accepts, the object being knocked down to the first bidder at that price. Should no bid result on reaching his minimum the object is withdrawn.

Dutch Metal Brass alloy containing a larger proportion (about 92 to 97 per cent) of copper than ordinary brasses and having a gold colour and high malleability. Dutch metal may be hammered out into thin sheets or leaves of less than $\frac{1}{50,000}$th of an inch in thickness and consequently is used as a substitute for gold leaf for gilding cheap articles. It is, however, liable to blacken with moisture or from atmospheric impurities. The varying shades of colour in Dutch metal are due to different proportions of copper in the alloy.

Dutch Reformed Church Protestant body in the Netherlands, S. Africa and the United States. It is an offshoot of the National Church of the Netherlands, founded by early Dutch settlers in the United States when they first became independent of the mother church. It is Calvinistic in doctrine and Presbyterian in church government. There is a Dutch Reformed Church at Austin Friars, London, E.C.

Dutch Wars Naval wars between England and the United Provinces. The first war broke out in 1652, ostensibly because of Holland's diplomatic rebuffs to England, really because of the intense commercial rivalry between the two countries, especially in the North Sea and the East Indies. The First and Second Dutch Wars, 1652-1654 and 1664-1667, were purely trade wars. In the first, Admiral Tromp considerably injured English naval prestige, until Admiral Blake

defeated him in 1653. The wars ended with the Treaty of Westminster (1654) and the Peace of Breda (1667) respectively. The Third War (1672-74) was bound up with continental politics, and the Dutch, under William of Orange, eventually forced England to make peace.

Duty A form of tax. The taxes on beer or whisky and on certain imports, such as tobacco, watches, motor cars and matches, are called duties. Those on beer and whisky, being collected on goods made in the country, are called excise duties. The others, being on imports, are called customs duties. *See* CUSTOMS, EXCISE.

Duval Claude. Famous highwayman. Born in Normandy in 1643, he settled in England about 1660, and was at first a servant of the Duke of Richmond. Later he became a highwayman and his exploits on the road made him feared and renowned. He evaded capture for some years, but in 1670 he was taken when drunk in a London inn, and was hanged at Tyburn.

Duveen **Sir Joseph Joel.** English art dealer. By birth a Dutchman, he was born in 1843. Having settled in England, he became a dealer in antiques in Hull, and a naturalised Englishman. In 1877, with his brother Henry, he founded the firm of Duveen Brothers and they were soon among the leading picture dealers in London and New York. Duveen was knighted just before his death, Nov. 9, 1908. He presented a Turner annexe to the Tate Gallery and several pictures to the nation.

His son, **Joseph**, born in 1869, entered his father's business. He built additions to the Tate and National Galleries, and was made a baronet in 1926. In 1930 he assisted Mr S. Courtauld to establish a national institute of art.

Dux (Latin, a leader). Word meaning a leader or chief. It is used in this sense in some schools for the head of the school, or of a form or class.

Dvina Name of two rivers of European Russia. The **Northern Dvina** flows north for about 360 m. It passes Archangel and empties itself into the White Sea by five mouths. It is navigable during the summer months.

The **Western Dvina** rises in Russia and passes into Latvia, falling into the Gulf of Riga, 9 m. from the city of that name. It is navigable and is part of the continuous waterway, helped by a canal, between the Baltic and the Black Seas. There was a good deal of fighting along this river between the Germans and the Russians during the Great War.

Dvinsk Town and river port of Latvia. It stands on the W. Dvina and is an important railway junction. It began as a post of the Teutonic Order, later becoming part of Poland. In 1772 it was taken by Russia, and in 1920 was given to Latvia. There is a trade in grain and other commodities, but this is much less considerable than it was before 1914 and the population has declined by more than half. Its other names are Dünaburg and Daugavpils. Pop. (1930) 43,226.

Dvořák Antonín. Bohemian composer. Born Sept. 8, 1841, he studied music at Prague and won recognition as a composer with his Slavonic dances. In 1892 he became head of the National Conservatoire of Music at New York, and in 1901 head of the conservatoire at Prague. He died May 1, 1904. Dvořák wrote a good deal of music in which he interpreted the spirit of his own people. This included the *Stabat Mater* and a cantata.

Dwarf Term applied to man and to animals and plants when below the normal height. Certain races of mankind are of short stature, as for example, the Bushmen of South Africa, with an average height of 4 ft. 7 in., and the Akkas or Pigmies, of Central Africa, about 4 ft. 10 in. in height.

Dwarf Trees which may bear flowers and fruit are cultivated in China and Japan by a system of root pruning and reduction of the water supply.

Dyak Aboriginal people of Borneo. Some of them still live in pile huts made of bamboo and use blow guns. They were chiefly known as head hunters, but this practice has now been suppressed.

Dyarchy Term meaning government by two elements in the state. It came into use in the 20th century when changes in the government of India were under discussion. Dyarchy was introduced when the constitution was altered so as to allow Indians to share the government with the British.

Dyeing Art of imparting colour to textile and other materials. It is therefore an important auxiliary to certain manufacturing industries, notably cotton. Various substances of vegetable origin have been used, and still are to a limited extent, as dyestuffs for fabrics, but although brilliant in colour these are more or less fugitive in character. Within recent years, however, the introduction of coal tar derivatives as dyestuffs has led to the disuse of most natural dyes except for special purposes, as the synthetic products give a wider range of tints and great permanency.

The chief vegetable dyes are indigo, fustic, logwood, archil and annatto, some of these being used for staining wood as well as textiles, and others like annatto and turmeric for colouring foodstuffs. Substantive dyes are those which unite directly with a fabric while adjective dyes require a mordant—a metallic salt which unites with the dye to form an insoluble pigment or "lake."

To protect the industry an Act was passed in 1921, forbidding the import of dyestuffs into Great Britain except under licence. It was to last for ten years and under it a virile and progressive dye industry has been established in Britain. The Board of Trade has a Dyestuffs Industry Development Committee, and there is an advisory licensing committee in Manchester.

Dyer's Greenweed Common name of *Genista tinctoria*, a leguminous plant common in England and Central Europe. It was used formerly as a dye-producing plant. The flowers yield a bright yellow dye which, when mixed with a solution of wood, gives a green colour known as Kendal green. It is now superseded by more permanent coal tar dyes.

Dyke Term applied to an embankment erected on a river bank or on the sea shore to prevent the flooding of the adjacent land. These are seen in low-lying countries, such as Holland, the fen districts of England and the Mississippi region in N. America. In Holland the sea dykes are of great size and length, and are strengthened by blocks of granite and basalt, while the river dykes of lesser size are supported in places by piles or masonry. **Offa's dyke**, a dyke of

another kind, was built probably by Offa, King of Mercia, to keep out the Welsh.

Dymchurch Village and seaside resort of Kent. It is 4 m. from New Romney and was once famed for its smugglers. Dymchurch Wall is an embankment built to keep the sea from Romney Marsh. Pop. 700.

Dymoke English family which holds the office of king's champion. John Dymoke, champion at the coronation of Richard II., held the office as Lord of the Manor of Scrivelsby, Lincolnshire. Since then the championship has remained in the family, but it is now an honour only.

Dynamics Branch of physical science dealing with the nature of motion and the laws governing movement. It has its foundation in Newton's laws of motion, which state that force is necessary to change a state of rest or uniform motion, that change of momentum is proportional to the force applied, and that there is an equal and opposite reaction to every action.

Dynamite Powerful explosive. Used chiefly for blasting purposes, it consists of 75 per cent. of nitro-glycerine and 25 per cent. of kieselguhr, the latter substance (a siliceous diatomaceous earth) being used as an absorbent. The mixture, after being kneaded and passed through a sieve, forms a reddish-brown greasy powder, which can be burned without danger, but explodes violently with a detonator. To a large extent the original formula has been replaced by gelatin-dynamites in which gun cotton takes the place of kieselguhr.

Dynamo Generator of electric current in which mechanical energy is converted into electrical energy. The essential parts of a dynamo are the magnets and the armature with which are connected the commutator, and stationary brushes. The armature consists of a series of wires or conductors arranged around an iron core mounted on a shaft. It is rotated near the poles of a powerful magnet, and the current generated as the conductors cut the magnetic field carried from the armature by brushes of copper wire, or carbons rubbing on the commutator, to be used for lighting purposes or power.

Dyne Term used in physics. It is the unit of force, which, acting upon a mass of one gramme, will produce an acceleration of one centimetre per second every second. The erg or unit of work represents the work done in overcoming a force of one dyne through a distance of one centimetre.

Dysart Royal burgh and watering place of Fifeshire. It is on the Firth of Forth, 28 m. from Edinburgh, on the L.N.E. Rly. At one time coal was shipped from here but in 1928 the harbour was closed. Pop. 4600.

The title of **Earl of Dysart** is borne by the family of Tollemache. It was given in 1643 to William Murray, whose daughter married Lionel Tollemache. She became Countess of Dysart on her father's death and the title has since remained with their descendants. The earl's seat is Ham House, Petersham, and his eldest son is called Viscount Huntingtower.

Dysentery Infectious disease. It is associated with inflammatory irritation of the lower bowels, sometimes with ulceration. It may arise from a specific bacillus, entering the body in food or drinking water and occasionally presenting malarial or scorbutic complications. Tropical conditions emphasize it; great epidemics sometimes ravage armies or closely-settled communities. Ipecacuanha is sometimes efficacious, with frequent irrigation and saline administrations. Death may supervene in a few days, or the disease may recur chronically for years.

Dyson **Sir Frank Watson.** English astronomer. Born, Jan. 8, 1868, the son of a Baptist minister, he was educated at the grammar school, Bradford and Trinity College, Cambridge, where he was second wrangler. In 1894 he became assistant at the Royal Observatory, Greenwich, and in 1905 he was made astronomer royal for Scotland. After five years in Edinburgh, he returned to Greenwich as astronomer royal. In 1901 Dyson was elected F.R.S.; in 1915 he was knighted, and in 1926 received the K.B.E.

Dyson **William Henry** (" Will Dyson "). Australian cartoonist. Born at Ballarat in 1883, he was educated at Melbourne. He settled in London, and made a reputation by his cartoons in The *Daily Herald*.

Dyspepsia Word meaning indigestion. It vaguely denotes a group of symptoms involving impaired power of digestion and various forms of gastric derangement, not necessarily limited to the discomfort occasioned by food remaining in the stomach. It is sometimes definitely diagnosable as acute or chronic gastritis, gastric ulcer, or as symptomatic of a general disease. Functional or nervous dyspepsia, due to abnormal activity, retardation or modification of the digestive processes, may occur in heavy drinkers or persons subject to constant exhaustion or mental depression. Acute dyspepsia may be due to single serious errors of diet, as eating unripe fruit, unfresh or excessive food, or indulging in alcoholic excess.

Dysprosium Very rare metallic element. It was discovered in 1886 by spectroscopic examination of certain rare earths. Its symbol is Dy and it has an atomic weight of 162.5. It is found in the minerals gadolinite and euxenite associated with other rare elements, and its compounds show a strong absorption spectrum.

EAGLE Heraldic symbol. It dates from Persian, Egyptian and Roman times, and was used by Charlemagne, remaining on the imperial arms until the dissolution of the Holy Roman Empire in 1806. Russia, as the successor of the Greek Empire, and Austria used a double-headed eagle. Germany, which took the symbol in 1871, used a single-headed one.

As an American emblem the eagle was used by the Indians, and adopted by the United States as a national emblem, with a single head and in its talons arrows and an olive branch. The republic of Mexico has placed the eagle on its arms.

The eagle is the name of a gold coin of the United States. It is worth ten dollars.

Eagle Large bird of prey. Its feather-clad head, short sharply-hooked bill and habit of preferably killing its own prey distinguish it from the unfeathered head and longer bill of the vulture. The golden eagle, rarely seen in England, comes from Scotland or Ireland, where it builds its nest in inaccessible cliffs. It is about a yard long and will attack lambs, though usually it feeds on rabbits and hares. The erne, or **sea-eagle**, formerly bred in Scotland. There are many varieties in other parts of the world. A large owl occasionally seen in Great Britain is called the **eagle owl**. It is about 2 ft. long and will attack rabbits and fawns.

Ealing Borough of Middlesex. It is 6 miles from Paddington by the G.W., District, and Central London Rlys. Ealing Common and two parks, Walpole Park and Perivale Park, provide open spaces, and Gunnersbury Park, the old residence of Leopold de Rothschild, is shared with Acton. In 1901 Ealing was made a borough and Hanwell and Greenford were incorporated in 1926. Pop. (1931) 117,688.

Ear Organ of hearing. The human ear consists of three parts, outer, middle and inner. The outer ear, which consists of the pinna or auricle and the meatus, is of little importance, at least in man. In the meatus, the wax, which is dried excretion, accumulates, and may impede hearing. The middle ear, separated by the ear drum from the outer ear, has a close relationship with the brain and the throat. Any inflammation of this part of the ear may therefore be highly dangerous. The inner ear, separated by a membrane from the middle ear, is filled with fluid and in it is the cochlea, where the nerve of hearing ends.

The ear is subject to a number of diseases and complaints. Some merely affect the hearing, which usually becomes a little harder with advancing years, or may be impaired in the case of artillerymen and others who experience loud noises. Others are of an inflammatory nature and may be dangerous to life. The Royal Ear Hospital is in Huntley Street, London, W.1. *See* DEAFNESS.

Earache. This may generally be relieved by external heat, or a few drops of warm glycerine may be dropped into the ear passage which is then closed with cotton wool. If the pain is severe, use a few drops of a mixture of glycerine of carbolic and pure glycerine (1 in 7), properly mixed by the chemist.

Persistent earache or earache accompanied by a discharge or tenderness behind the ear should have immediate medical attention.

Earl Title in the British peerage. It ranks third, but historically is the oldest of all. Its equivalent in some countries is count, and an earl's wife is called a countess. An earl's eldest son bears his father's second title; the other sons use the word honourable and the daughters lady before the Christian name. The Earl of Arundel, a title of the Duke of Norfolk, is the premier English earl; the Earl of Crawford and Balcarres is the premier Scottish one.

The first earls appeared in Anglo-Saxon times. Soon they were rulers of parts of the country, *e.g.*, Earl Godwin. The office continued in Norman times and each county had its earl, who was entitled to a third part of its revenues. Soon the office became hereditary, but after a time the connection between earl and county was broken and it became simply a title of honour.

Earlestown Market town of Lancashire. It is 187 m. from London and 5 from St. Helens and is a junction on the L.M.S. Rly. The industries include railway works. Its early name was Newton Junction. Pop. 9000.

Earl Marshal English officer of state. He is the head of the College of Heralds and his duties are chiefly concerned with the arrangements for coronations and other state ceremonies. The office is an old one and since 1672 has been held by Dukes of Norfolk. There were formerly Earl Marshals of Scotland and Ireland. In Scotland, till 1716, the office of Earl Marischal was held by the family of Keith.

Earl's Court District of London. In the borough of Kensington, it is famous for the exhibitions held here from 1884 until 1914. During the war period the place was used for refugees.

Earlsfield Suburb of London. It forms part of the metropolitan borough of Wandsworth, and is on the S. Rly.

Earlston Market town of Berwickshire. It is on Leader Water, 72 m. from Edinburgh, on the L.N.E. Rly. Fairs are held and there are small manufactures. Thomas the Rhymer, who is buried here, called it Ercildoune. Pop. 1750.

Earlswood District of Surrey. It is 22 m. from London, on the S. Rly. Here is a large institution for the mentally defective.

Early Closing Term chiefly used in connection with shops. Acts were passed limiting the number of hours during which shop assistants could be employed, one being the Shops Act of 1912, providing a weekly half holiday, but earlier closing in the evenings was not made compulsory until 1928. In Great Britain shops must close not later than 8 p.m., except one evening in the week, when they may remain open until 9. Exceptions are where tobacco, sweets and certain foodstuffs are sold. There is an **Early Closing Association** at 34-40 Ludgate Hill, London, E.C.4.

Early English Style of Gothic architecture following upon Romanesque or Norman and succeeded by the Decorated. It covers approximately the period 1189-1272. In it wide, round arches became slim, steeply-pointed lancets. Simple four-part vaulting, often ribbed, slender-clustered columns and deeply-hollowed mouldings, filled with dog-tooth ornament and conventional foliage, are exemplified in the transepts of Westminster Abbey, the cathedrals at York and Ely and on the west fronts of the cathedrals at Salisbury and Ripon and the Minster at Beverley. In literature, Early English is approximately a contemporary period marking the passage of Old English, or Anglo-Saxon, into Middle English.

Earn Loch and river of Perthshire. The loch, which lies 317 ft. above sea level, is 6½ m. in length. The temperature is so level that the water is said never to freeze. Ardvorlich House, which figures in Scott's *Legend of Montrose* as Darlinvarach, stands on the shore.

The River Earn flows from the foot of the loch and runs eastward, entering the Tay near Abernethy. **Bridge of Earn,** a village and watering place, is situated on the river about 6 m. from Perth.

Earsdon Urban district of Northumberland. It is 4 m. from N. Shields, and coal mining is the chief industry. Pop. (1931) 13,086.

Earth One of the planets. It is between Venus and Mars in the solar system and has one satellite, the moon. It rotates on its axis, causing day and night in 24 hrs., and takes a year to go round the sun, from which it is 93,000,000 miles away. Its diameter at the equator is 7900 m. and its circumference 24,900. Its area is 196,500,000 sq. m. of which only 55,500,000 are land. Its age has been estimated at 2000 million years.

Earth Term applied to the early chemists to certain metallic oxides which were regarded as basic. The alkaline earths were the oxides of calcium, barium and strontium. In relation to pigments used as the basis of oil and water colours, the term earth is used for the ochres, umbers, siennas and terre verte.

In electricity earth is used for some form of conducting apparatus in contact with the ground, the uniform potential of which forms a steady background to electrical changes. In a wireless installation the earthing device may take the form of a metal plate, copper tube or wire mat buried in the soil, or the conducting wire may be attached to a water pipe.

Earthenware Non-translucent pottery, glazed or unglazed. The wares called silicon, semi-porcelain, faience, stone and granite are earthenware, likewise Roman and Greek tiling and building blocks.

Earth House Primitive underground dwelling of the early metallic age. Plentifully distributed between the Tay and Moray Firth, they are sometimes called Picts' houses. Round or rectangular walls of flags or undressed dry stones converge beehive-fashion to capstone roofs beneath artificial mounds. They are sometimes approached by stone-paved corridors some 80 ft. long. It is suggested that they were refuges or storehouses connected with timbered surface dwellings. They were occupied during the Roman occupation of Britain. Similar structures are found in Ireland and Cornwall.

Earth Pillar Isolated column of soft rock capped by a harder mass. It is due to the mechanical action of rain upon beds such as conglomerates, where the rain has washed away the softer material except where protected by an overlying stone. Earth pillars occur in moraines and glacial drifts in the Alps, Scotland and North America.

Earthquake Earth movement. Earthquakes vary from a mere tremor to a violent upheaval and dislocation of the earth's crust. The collapse of underground caverns, powerful stresses set up in strata causing the beds to snap suddenly under the strain, the infiltration of sea water into the deeper parts of the earth's crust, causing explosions in the heated rocks, or volcanic action, are among the causes. Most shocks originate along the lower regions adjacent to the great mountain ridges. It is estimated that in an area between Lima in Peru and Valparaiso in Chile there is an average of 15 earthquakes yearly. There was a destructive volcanic disturbance here in 1932.

Two terrible earthquakes of recent years were those in Sicily in 1908, when Messina was destroyed and more than 70,000 persons perished, and in Japan in 1923, when the casualties numbered 200,000. In 1906 there was one at San Francisco. In June, 1931, a distinct earthquake shock was felt in Great Britain. Serious damage was done by earthquakes in China and Italy (1933) and in Quetta (1935).

Earthwork General term for the mounds, circles and barrows constructed by early man and marking the site of megalithic settlements. Associated with the larger earthworks are the great stone circles such as Avebury and Stonehenge, and in North America the mound dwellings of Ohio, Wisconsin and Illinois. Some earthworks, such as the barrows, are sepulchral in origin; others were fortifications or underground dwellings. The word is also used for a fortification made of earth.

Earthworm Family of worms living in the soil. The common British species is *lumbricus terrestris*. Their cylindrical bodies, tapering at both ends, comprise segmented rings each bearing recurved hooks with which they burrow in the soil. They swallow this for its organic contents and void the mineral matter as worm casts. Reproduction is hermaphroditic.

Earwig Family of insects. They have short, horny, beetle-like forewings which protect thin, membranous underwings folded fanwise and crosswise. The pincer-like appendages, popularly fabled to pierce the ear, are quite innocuous. The female sits on her eggs, watching over the young until their final moulting.

Easement Legal term for a right. Examples are a right of way or a right of light. Another is the right of support, as given by one building to another. In Scots law the equivalent is called servitude.

Easingwold Market town of Yorkshire (E.R.). Here Laurence Sterne wrote the early part of *Tristram Shandy*. Pop. 2050.

East **Sir Alfred.** English artist. Born at Kettering, Dec. 15, 1849, he studied at the Glasgow School of Art and in Paris. In 1889 he visited Japan, where some of his best landscape work was done. His paintings

include "A Passing Storm," in the Luxembourg, Paris; "The Nene Valley," in Venice, and "The Golden Valley," at Leeds. Knighted in 1910, he was elected A.R.A in 1899 and R.A. in 1913. He died in London, Sept. 28, 1913.

East Africa General term for the eastern part of the continent. It includes three British protectorates, Uganda, Zanzibar and Kenya, as well as the mandated territory of Tanganyika (*q.v.*), formerly German East Africa. It also includes a large Portuguese possession known sometimes as Mozambique.

German E. Africa was conquered by the British and their Allies during the Great War. Operations began in 1914, but for some time they were not very successful, although the coast was controlled by British ships. In Feb., 1916, General Smuts took command, and the country was gradually subdued, but the last of its German defenders did not surrender until Nov., 1918.

East Anglia District in the east of England. It includes the counties of Norfolk, Suffolk, Cambridge and Huntingdon and sometimes Essex. About 620 it became a kingdom and there were kings of East Anglia for about 300 years, although most of them were only vassal kings. The most famous was Edmund, who was killed by the Danes in 870.

Eastbourne County borough and watering place of Sussex. It stands on the English Channel, 66 m. from London, and is reached by the Southern Rly. To the west is Beachy Head. The attractions include a parade along the sea front with gardens called the Meads, and a pier. The open spaces include Devonshire, Hampden and Gildredge Parks, as well as the Redoubt. Compton Place is a seat of the Duke of Devonshire who owns much of the land. Pop. (1931) 57,435. **Eastbourne College** is a public school with accommodation for about 500 boys.

Eastchurch Village of Sheppey, Kent. It is 5 m. from Queenborough, on the S. Rly. It is chiefly known as an aircraft centre. There was an important air station here during the Great War, which later became a gunnery school for the R.A.F.

Easter Ecclesiastical festival commemorating the resurrection of Jesus Christ. The name is derived from the Anglo-Saxon goddess of spring. Celebrated since the 2nd century, and depending upon the lunar calendar, Easter Day has varied through the ages. Now it is, briefly, the first Sunday after the full moon following the vernal equinox, falling between 22nd March and 25th April, both inclusive. A League of Nations committee in 1923 investigated the question of the calendar generally, and in 1928 a law was passed fixing Easter on the first Sunday after the second Saturday in April. In spite of parliamentary support, however, the Act met with considerable opposition, and there is little prospect of its adoption.

Easter Island of the Pacific Ocean. It covers only 50 sq. m. and belongs to Chile, from which it is 2300 m. away. It was discovered on Easter Day, 1722, by a Dutch sailor. It is chiefly famous for a remarkable collection of stone monuments, on which are carvings of human faces and other figures, doubtless the work of prehistoric man. The island, which has a few native inhabitants, is used as a convict station.

Eastern Church Shortened name of the Holy Orthodox Catholic Apostolic Eastern Church. Representing the Christendom established by Constantine in the East Roman Empire, it accepts the general church councils down to the Great Schism and comprises pre-eminently the Greek and Russian, besides the Armenian and Coptic Churches. Its highest dignitaries are the patriarchs at Stamboul, Alexandria, Jerusalem and Moscow.

Eastern Question Name given to political difficulties arising out of the government of areas in south-eastern Europe. The conquests of the Turks put large areas, occupied in part by Christians, under the rule of the sultan. In 1774 Russia appeared as the protector of these peoples and gradually they were freed.

In the 19th century the eastern question continually occupied the attention of European statesmen. Greece was freed and in 1878 the Congress of Berlin recognised the independence of Bulgaria, Rumania and Servia. In 1907 Austria annexed Bosnia and Herzegovina, and then came the Great War. After this the Turkish dominion in Europe was reduced to small proportions.

East Grinstead *See* GRINSTEAD.

East Ham Borough of Essex, part of Greater London. It is 6 m. to the east of the city, on the L.M.S. and L.N.E. Rlys. The chief industries are engineering and the manufacture of chemicals. Pop. (1931) 142,460.

East India Co. British company formed to trade with India and the East Indies. It was given a charter in 1600 and trading stations were established at Surat, Fort St. George, Madras and Hooghli. From these grew the three presidencies of Calcutta, Madras and Bombay. The company ruled British India until 1784 when its powers were shared with the crown, which set up a board of control. In 1857 its power was wholly transferred to the crown, and in 1858 it was abolished. The company had a house in London in which Charles Lamb worked.

In 1602 Holland established an East India Co., but this came to an end in 1798. France had a company from 1664 to 1794 and Denmark had one from 1729 to 1801.

East Indies Name used for India, Malaya, Indo-China, the islands of Borneo, New Guinea, Java and the lands adjacent thereto. Sumatra, Java and many smaller islands belong to the Netherlands, as do parts of New Guinea and Borneo. These, known collectively as the Dutch East Indies, are under a governor-general and since 1925 have had a certain amount of self-government in the form of an elected Volksraad. The total area is 733,000 sq. m. and the pop. 52,000,000.

For men who have served in the East Indies there is the East India United Service Club at 16 St. James's Square, London, S.W.

Eastlake **Sir Charles Lock.** English artist. Born in Plymouth, Nov. 17, 1793, he studied in London and Paris and for some years resided in Rome. Elected A.R.A. in 1827, R.A. in 1829, and P.R.A. in 1850, he became the first director of the National Gallery, in which is his great work, "Christ Weeping over Jerusalem." He published a number of books on art. He died at Pisa, Dec. 24, 1865.

A BURNING GHAT AT BENARES

Eastleigh Urban district of Hampshire. It is 6 m. from Southampton and is an important junction on the S. Rly. The main industry is the manufacture of railway stock. Pop. (1931) 18,333.

East London City, seaport and watering place of South Africa. In the Cape Province, it stands at the mouth of the Buffalo River and is connected with Capetown, 890 m. away, by railway. The chief industry is shipping. Pop. 23,200.

East Lothian Alternative name for Haddingtonshire (*q.v.*).

Eastman **George.** American inventor. Born at Waterville, New York, July 12, 1854, he was educated at Rochester. In 1880 he perfected a process for making sensitive gelatine dry plates. In 1884 he patented a photographic roll film and in 1888 a Kodak camera. On these and other inventions Eastman built up an enormous photographic business at Rochester. His gifts for charitable purposes are estimated at £15,000,000. Rochester received many of these, but they also include a dental clinic in London. He shot himself on March 14, 1932.

Easton Lodge Residence in Essex. It is 8 m. from Bishop's Stortford, on the L.N.E. Rly. The estate belonged to the Maynard family of which the Countess of Warwick was heiress. The house is used by Labour and Socialist politicians for conferences.

Eastwood Market town and urban district of Nottinghamshire. It is 137½ m. from London by the L.N.E. Rly., and a coal mining centre. Pop. (1931) 5360.

Eaton Hall Residence of the Duke of Westminster. It stands on the Dee, 4 m. from Chester. Built in the Gothic style in the 19th century on the site of an earlier hall, it contains some remarkable treasures and stands in a park of 400 acres.

Eau de Cologne Celebrated perfume. It was prepared in the first place by Johann Maria Farina at Cologne soon after 1700. Manufactured at first by a secret process, the perfume is now made in England and other countries, the essential oils of citron, orange, bergamot, neroli, rosemary and sometimes geranium entering into its preparation.

Ebbisham **Baron.** English politician. George Rowland Blades was born April 15, 1868, and entered the family printing business. He was elected to the city corporation of London and in 1926-27 was lord mayor. From 1918 to 1928 he was Unionist M.P. for the Epsom division. In 1918 he was knighted and in 1922 made a baronet. In 1928 he became a peer, as Baron Ebbisham.

Ebbsfleet Hamlet on the coast of Kent. It is 3½ miles from Ramsgate. Tradition has it that here Hengist and Horsa landed in 449 and S. Augustine in 597 on his mission to convert the Saxons.

Ebbw Vale Urban district of Monmouthshire. It is 162 m. from London by the G.W. Rly., and is situated on a tributary of the Ebbw River. It is in a coal mining area, but its large steel works were closed in 1930. Pop. (1931) 31,695.

Ebert **Friedrich.** German politician. Born in Heidelberg, Feb. 4, 1870, he became a trader there. In 1892 he was made editor of a socialist paper at Bremen and he gradually became one of the leaders of the social democratic party. In Nov., 1918, he was one of the small group of socialists who took charge of affairs on the flight of the emperor, signed the armistice and declared the country a republic. As provisional president, he called a national assembly which, in Feb., 1920, elected him first president, a position he held till his death in Berlin. Feb. 28, 1925.

Ebonite Hard vulcanised rubber. It is made by strongly heating a mixture of crude rubber and 20 to 30 per cent. of sulphur, the product being pressed and polished. It is a black, horny substance which is a good non-conductor of electricity and is unaffected by acids or alkalis.

Ebony Tree of the natural order *ebenaceae*. There are several varieties and in some the fruit is edible. The tree grows only in tropical areas, notably in India, Ceylon and parts of Africa. Its wood is extraordinarily hard and it is in various colours, but the black is the most useful. It takes a fine polish and is used for mathematical instruments, walking sticks and sometimes for furniture.

Eboracum Roman name of York. A legionary fort of 52 acres was established here about A.D. 75. A civil settlement arose and in the 4th century became an episcopal see. The Archbishop of York still signs himself Ebor. *See* YORK.

Ebro River of Spain. It rises in the mountains in the north of the country and, flowing mainly east, enters the Mediterranean just below Tortosa. Saragossa and Toledo are on its banks. It is 465 m. long and its tributaries include the Huerva, Gallego and Guadalope.

Ecarté Card game. It originated in France early in the 16th century. It is played by two players with 32 cards, those between two and six being discarded. Five cards are then dealt to each player and the last turned up as a trump. The rules allow the players to discard cards and take up others. Play is as at whist and a game consists of five points. The ace ranks below the jack, leaving the king as the highest card.

Ecclefechan Village of Dumfriesshire. It is 13 m. from Dumfries, and is portrayed as Entepuhl in *Sartor Resartus* by Thomas Carlyle, who was born and buried here. Pop. 670.

Eccles Borough of Lancashire. It is near Manchester, on the Irwell, and is 187¼ m. from London by the L.M.S. Rly. The cakes originally made here have become generally noted. The industries are the same as those of Manchester. Pop. (1931) 44,415.

Ecclesfield Town of Yorkshire (W.R.). It is 5 m. from Sheffield, on the L.M.S. and L.N.E. Rlys. The parish church of S. Mary, built in the Perpendicular style, was formerly known as the minster, and formed part of a priory. The industries include iron and steel works, collieries and paper mills.

Ecclesiastes Book of the Old Testament. It comprises the discourses and aphorisms of a despondent sage, Koheleth, represented as the instructor of a body of disciples. His reflections upon nature's eternal routine and the transitoriness of man's life culminate in the assertion "all is vanity."

Ecclesiastical Commission

Body appointed to manage the property of the Church of England. The commissioners include the archbishops, bishops and other prominent men, but the acting commissioners are only three in number. The commission was set up in 1836 and its offices are at 1 Millbank, Westminster, London, S.W.1. In 1931 the income managed amounted to over £3,392,000. Of this over £2,403,000 was paid to the clergy, including the archbishops and bishops, and about £615,000 was given to improve the value of livings. The property of the Church of Scotland is also managed by an ecclesiastical commission at 22 Hanover St., Edinburgh.

Ecclesiastical Jurisdiction

Exercise of jurisdiction by ecclesiastics over fellow ecclesiastics and laymen. In England the powers of jurisdiction are now somewhat limited, matrimonial and testamentary jurisdiction, to name only two, having passed from Church to State. The chief ecclesiastical courts in England are (*a*) the Court of the Vicar-General whose function it is to correct manners and confirm bishops; (*b*) the Court of Faculties which deals with marriage licences; (*c*) the Chancery Court of York; (*d*) the Consistory Courts of the various Diocesan bishops, situated in their cathedral cities; and (*e*) the Court of Arches, the Ecclesiastical Court of Appeal. Appeal from a judgment of the Court of Arches can only be made to the judicial committee of the Privy Council.

Ecclesiastical Law

The rules and laws governing the rights and obligations of a Church established by law. English ecclesiastical law is derived from common law, canon law, and statute law. Its jurisdiction, formerly exercised over such matters as probate and divorce, has been removed and it now deals only with ecclesiastical matters.

Ecclesiasticus

Alternative title of an apocryphal Old Testament book, *The Wisdom of Jesus the Son of Sirach*. Written originally in Hebrew, the author's grandson made a Greek version after reaching Egypt, 132 B.C. It welds together aphorisms pertaining to practical morality, the praises of wisdom, nature and mighty men. Fragments of the Hebrew version, rediscovered from 1896 onwards, have restored much of the original text.

Echelon

Military term. It refers to an arrangement of troops in which each division is a little to the side, either right or left, and to the rear of the one nearest to it. In a like sense it is used of warships. An **echelon lens** is one in which the plates of glass are arranged so that the edges resemble a flight of steps.

Echidna

Family of spiny ant-eaters. Allied to the duck-bills, they are mammals and are found in Australia and New Guinea. Their two eggs are hatched in a pouch beneath the body. There are five-toed and three-toed forms. The head and body bear stiff hairs and short, thick spines. The long, slender, nostril-tipped beak encloses a worm-like, extensible tongue.

Echo

Mountain nymph. She passed her time in diverting the attention of Hera from the amours of Zeus. Hera made her speechless, except that she could repeat the last words of others. Echo fell in love with Narcissus, and, failing to awaken a like passion in him, pined away.

Echo

Reflection of a sound after an interval of time from a wall or similar surface. It is produced by waves of compression or rarefaction in the air. The sound is reflected at right angles to the surface and consequently an echo from the walls at different angles and distances gives rise to multiple or repeating echoes.

The **echo sounder** is an instrument which has been used on trawlers to keep in touch with shoals of fish.

Echo Organ

Musical instrument, a novelty of the Restoration period. It consists of a repetition of the treble portion and chief stops of a church organ, softly voiced, placed distantly in a box, and played from an individual manual. It is now connected by electricity. Purcell and Handel used echo organs. Examples are in Norwich and Westminster Cathedrals.

Echuca

Town of Victoria, Australia. An important river port, it stands at the junction of the rivers Murray and Campaspe. It is about 155 m. by railway from Melbourne, and is a centre for the timber, wool, and wine trades. It also attracts trade from the Riverina district. Pop. 4137.

Eckener

Hugo. German aviator. Born Aug. 10, 1868, he was a pupil of Count Zeppelin. He piloted the Graf Zeppelin across the Atlantic with 57 people on board in Oct. 1928; in 1929 he flew round the world, and in July, 1931, to the North Pole. He has made flights to South America and other places to demonstrate the possibility of the airship as a regular means of transport.

Eckington

Market town of Derbyshire. It is 152 m. from London by the L.N.E. Rly, and has coal mines and iron and steel works.

Eclecticism

Practice of selecting philosophical opinions from different systems. Thus Cicero, influenced by Platonic scepticism, studied at Athens and professed a composite philosophy embodying Peripatetic, Stoic and even Epicurean elements. Leibnitz' mingled principles were derived from Aristotle and Descartes. Schelling welded idealist, pantheist and mystical beliefs.

Eclipse

Darkening of one of the heavenly bodies by the interposition of another, either between it and the spectator or between it and the sun. The term is generally used for the eclipses of the sun and the moon, which afford valuable astronomical information.

An eclipse of the sun is caused by the moon passing between it and the earth; it may be either total or partial. An eclipse of the moon is caused by the earth's shadow passing over it. There may be as many as seven eclipses in a year, but the usual number is four. Only occasionally are they visible in Great Britain. In 1930 there were two eclipses of the sun and two of the moon. In 1931 there were three of the sun and two of the moon. None of these eclipses of the sun were visible at Greenwich but both eclipses of the moon, April 2 and Sept. 26, were total eclipses and visible from Greenwich. Eclipses caused by the moons of Jupiter are also of great interest to astronomers.

Eclipse

Name of a racehorse regarded as the greatest of its kind. He was born May 3, 1764, and raced in 1769 and

1770, without ever being beaten. He was then used for stud purposes and from him most of the English racehorses are descended. The horse's skeleton is in the Royal Veterinary College, at Camden Town, London. The **Eclipse Stakes** is a race run at Sandown Park since 1884.

Ecliptic Apparent annual path of the sun in the heavens, but really the orbit of the earth round the sun. The plane of the ecliptic forms a standard level for comparison of all other directions. The ecliptic is inclined about 23½° from the perpendicular, but this inclination is liable to a slight increase or decrease over long periods.

Eclogue Short pastoral poem. The best known examples are those of Virgil.

Ecology Section of botany and zoology dealing with the relation of plants and animals to their environment. It involves a knowledge of both the form and structure as well as physiology. The factors of environment include altitude and degree of exposure; temperature, light and rainfall; physical and chemical nature of the soil, and the influence of other plants, animals and man. These conditions have a marked effect on distribution.

Economics Originally the science of household management. Much later the term political economy came into use to denote the production, distribution and consumption of wealth. This was first discussed in France early in the 17th century, and from there its study spread to England. The foundation of the science is usually attributed to Adam Smith, who, in 1776, published *The Wealth of Nations*. This was followed by the writings of John Stuart Mill, David Ricardo, and many French and German economists.

These early economists regarded political economy as free from all social and ethical considerations. They imagined an economic man, a being who had only material wants and who was satisfied when these were supplied. Towards the close of the 19th century economists began to take account of education and housing, even pleasure and recreation, and gradually the word political was dropped. Political economy became economics and its scope was not merely land, capital and labour, rent, interest and wages, but everything that goes to make a full life possible.

Economics is a subject of study at all the universities, and examinations therein are part of some of the degree courses. There are professors and lecturers in economics at almost all centres of higher education, as at the London School of Economics and Political Science in Houghton St., Aldwych, London, W.C. and for economists the principal publication is *The Economic Review*.

Ecuador Republic of South America. In the north of the continent, it lies between Colombia and Peru, with a coastline of about 500 m. on the Pacific. The area is put at 276,000 sq. m. and the population at about 2,000,000, of whom some 500,000 are Indians. Quito is the capital, Guayaquil the largest town and chief seaport. The two are connected by railway, but, in general, communications are bad. Much of the country is covered by the Andes, with several peaks 20,000 ft., or thereabouts in height. There are vast and valuable supplies of timber. In the cultivated area cocoa, coffee and cotton are grown. Oil is found and the land is rich in iron, copper, lead and other minerals.

Ecuador, which derives its name from the fact that the equator passes through it, became an independent state in 1830. It is governed by a president and a congress of two houses on the United States model. There is a small army recruited by universal service. The unit of currency is the gold sucre of 100 centavos; 5 sucres go to the U.S. dollar.

Eczema Properly speaking, this term covers a wide range of skin diseases, as most of them exhibit some characteristic feature of eczema at times. It is spoken of as acute and chronic, dry and moist, infective and non-infective. Normally it is non-contagious, but it is attended by more or less discharge and itching. Besides reddened skin, blisters or vesicles may form, discharging a watery or purulent serum and producing crusts or scales. A non-weeping form, dry eczema, leaves the skin, though irritable, dry and scaly. Either form may be acute, vanishing after a few weeks, or last for years, with intervals of partial recovery. For **Moist Eczema** use calamine, boracic or zinc oxide powder, and protect from the atmosphere. For **Dry Eczema**, which is a scaly skin eruption with irritation, use greasy applications such as boric ointment, cold cream, or lanoline. Do not use soap. Attention should be paid to the diet and general health, and if the condition is at all serious a doctor should be consulted as drug treatment may be necessary.

Edam Town of the Netherlands. It is 13 m. from Amsterdam and is situated near the shore of the Zuider Zee, with which it is connected by a canal. Its name is derived from the dam built on the small River Ye. The round red Edam cheese is one of the chief dairy products of the district.

Edda Norse name for two collections of Icelandic literature, the elder poetic, and the younger prose. Brynjulf Sveinsson, an Icelandic bishop, discovered the elder in 1643. It is known as the *Saemund Edda*, as it is ascribed to the historian Saemund Sigfusson (1055-1132), but it is considered by some authorities to belong to an earlier date.

The younger, in three parts, was compiled by Snorri Sturluson (1178-1241). The first part contains legends and stories of mythology. The second is a treatise on the poetic art, and the third treats of Norse prosody.

Eddington **Sir Arthur Stanley.** English astronomer. Born at Kendal, Dec. 28, 1882, he was educated at Owens College, Manchester, and Trinity College, Cambridge, where he was senior wrangler (1904). He became chief assistant at the Royal Observatory, Greenwich, and was made Plumian Professor of Astronomy at Cambridge in 1913. Eddington, who was knighted in 1930, has written much on astronomy and kindred subjects.

Eddy **Mary Baker** (1821-1910). Discoverer and founder of the religion (theology and practice) which she named Christian Science, and founder of the Church of Christ, Scientist, which was organised in Boston, Massachusetts, U.S.A., in 1879. It consists of the mother church, the First Church of Christ, Scientist, in Boston, and branches thereof throughout the world.

Mrs. Eddy wrote numerous works, the principal of which is *Science and Health with Key to the Scriptures*, the Christian Science textbook, first published in 1875.

Eddystone Rock in the English Channel. It is 14 m. from Plymouth breakwater. The first lighthouse

finished in 1700, was destroyed in 1703. The second was burned down in 1755. The third of stone, which was finished in 1759, was taken down about 1880 and has been re-erected on the Hoe at Plymouth. The present lighthouse was completed in 1882.

Edelweiss (*Leontopodium alpinum*). Hardy perennial plant of the order Compositae. Native to mountainous regions and found largely in Switzerland, it is easy of cultivation as a garden or rockery plant. The hairy leaves have a whitish woolly appearance and the flowers are greyish white clusters.

Eden Name of two British rivers. The English Eden rises in Westmorland. It flows north into Cumberland past Appleby and Carlisle into the Solway Firth. It is about 65 m. in length and is a salmon stream.

The Scottish Eden, which is 30 m. long, flows E. from the junction of two little streams in Kinross-shire and enters the North Sea by an estuary, after passing through Fifeshire.

Eden Garden of. Locality planted by Jehovah for man's first earthly abode (Gen. ii.). It was watered by a river, the names of whose fourfold branches have occasioned much research, one being commonly identified with the Euphrates. Scholars have variously located Eden in S. Mesopotamia, Arabia and the Nile Delta.

Eden Anthony. British statesman. Born in 1897, he entered Parliament in 1923; became Parliamentary Private Secretary to Sir Austen Chamberlain; and was successively Under-Secretary for Foreign Affairs, Lord Privy Seal and Minister without Portfolio for League of Nations affairs (June, 1935). In Dec., 1935, following the resignation of Sir Samuel Hoare, he was appointed Foreign Secretary in Mr. Baldwin's government, an appointment amply justified by his skill and diplomacy in the handling of international problems.

Edenbridge Market town of Kent. It is situated on the Eden near the Surrey border, on the Southern Rly., 25 m. from London. There is a trade in agricultural produce. Pop. 2993.

Edentata Order of mammals lacking incisor teeth, and sometimes cheek teeth also. It comprises the S. American anteaters, which are toothless, coarse-haired tree dwellers with worm-like tongues, and armadillos, which are short-tongued, scale-covered burrowing creatures with unenamelled cheek teeth. Sometimes classed as edentates are the herbivorous tree-dwelling sloths, of which the gigantic mylodon and megatherium occur in a fossil state. The scaly anteaters, or pangolins, of Asia and Africa and the Cape anteater or aardvark belong to this class.

Edessa Ancient city of Syria, on the site of modern Urfa. At one time the capital of a little kingdom, it is best known as a centre of Christianity in Roman times. The Romans made it a military station and gave it the name of Edessa. In the 7th century it was taken by the Mohammedans and there was much fighting for it during the crusades.

Edgar King of the English. A son of King Edmund, he was born in 944 and was only two years old when his father died. In 957, on the death of his uncle, King Edred, he was given the land north of the Thames, but in 959 his brother Edwig or Edwy, died, and he became king of the south as well. He reigned until 975 and won the name of the peaceful, his chief adviser being Dunstan. He was recognised as overlord by other rulers and was rowed on the Dee by six or eight of these lesser kings. He died, July 9, 975, and was buried at Glastonbury.

Edgar English prince called the Aetheling. He was born in Hungary, son of Edward, the exile, and grandson of Edmund Ironside. In 1066, being then in England, he was proclaimed king in the north in opposition to William I. The risings in his favour, however, were without success and he made his peace with the Conqueror. He lived in Normandy for many years, helped to reseat his nephew, Edgar, on the Scottish throne, went on a Crusade and was last heard of as a prisoner after the Battle of Tinchebrai in 1106.

Edgehill Hill of Warwickshire. It is about 3 m. from Kineton, on the border of Oxfordshire, and is noted for the indecisive battle fought here, the first in the Civil War, Oct. 23, 1642.

Edgeworth Maria. English writer. Born at Black Bourton, Oxfordshire, Jan. 1, 1767, she helped her father to write *Practical Education*. She then began to write the stories of Irish life on which her fame depends: *Castle Rackrent*, *The Absentee* and *Ormond*. She also wrote *Moral Tales for Young People* and other books, and finished her father's *Memoirs*. She died May 22, 1849.

Edgware District of Middlesex. It is 11 m. from London and is served by the L.N.E. Rly., a tube railway and trams and buses. The chief building is S. Margaret's Church, a modern structure with an old tower. Near is Canons Park, where the Duke of Chandos built a palatial residence; and here was the forge of William Powell, Handel's harmonious blacksmith, who is buried at the adjoining Whitchurch.

Edict Something proclaimed by authority; an order issued by a king or lawgiver. The first edicts were those issued by the praetor at Rome. Later the word was specially used for laws dealing with religious matters, as the Edict of Nantes.

Edinburgh Capital of Scotland and county town of Midlothian or Edinburghshire. It stands on the south side of the Firth of Forth, 393 m. from London, and is served by both the L.M.S. and L.N.E. Rlys. Since 1920, when its boundaries were greatly enlarged, it has included Leith, Portobello, Corstorphine, Colinton and other districts. It is governed by a council under a Lord Provost, and sends six members to Parliament. Its area is 32,000 acres. Pop. (1931) 438,988.

Edinburgh is rich in historic buildings and associations. Prominent are its castle, with S. Margaret's Chapel and the National War Memorial; the Palace of Holyrood; and the Cathedral of S. Giles, with the Chapel of the Order of the Thistle. An earlier national memorial is finely placed on Calton Hill, overlooking the city proper; another notable eminence is Arthur's Seat. The Church of Scotland has many places of worship, including S. Andrew's and S. George's. S. Mary's Cathedral belongs to the Episcopalians, who have a bishop here: the Roman Catholics have also a fine cathedral and an archbishop. The old Parliament House is now used as the law courts; the Advocates' Library therein, having been made into the national library of Scotland, is being removed to a fine new building. The city possesses the Scottish National Gallery, National Portrait Gallery and National Museum. The observatory

is on Blackford Hill. The Infirmary and the Royal Scottish Academy occupy fine buildings. There are zoological and botanical gardens, and the city has some 60 parks and open spaces, including the Braid Hills. In the old part, called **Auld Reekie**, are the historic thoroughfares of High St., Canongate, the Grassmarket and the Lawnmarket.

Notable houses include the one occupied by John Knox and the one in the Lawnmarket given to the city by Lord Rosebery. Other landmarks are the Mercat Cross, the Tolbooth, the Tron Church and the Greyfriars Churchyard. Princes St., with its gardens, is one of the finest thoroughfares in Europe and there are some noble squares. The city has memorials to Scott, Burns and other eminent Scotsmen.

Apart from the university, Edinburgh has colleges of art, agriculture and veterinary science, and several for theological students. The Heriot-Watt Technical College is another centre of higher education. Edinburgh Academy, founded in 1825, the Royal High School, Fettes College and Merchiston Castle School are among Scotland's leading public schools. S. Bride's and S. George's are public schools for girls.

Edinburgh is a banking and insurance centre, while much business comes from its official, legal and educational interests. Printing and publishing are leading industries. Others are brewing, distilling, the making of chemicals and biscuits, and the preparing of rubber. Race meetings are held, and the Scottish Rugby Union has a fine ground at Murrayfield.

In the 18th century Edinburgh was a great intellectual centre, and this tradition has never been lost. In 1802 *The Edinburgh Review* was started here, Sydney Smith being the first editor, and it was an influential organ until it ceased publication in 1929.

The University of Edinburgh dates from 1583. The main buildings occupy the site of Kirk o' Field, but others have been erected elsewhere for medical, scientific and other activities; the medical school has a very high reputation.

Edinburghshire Alternative name for the Scottish county of Midlothian (*q.v.*).

Edison **Thomas Alva.** American electrician and inventor. Born at Milan, Ohio, U.S.A., Feb. 11, 1847, of mixed Dutch and Scottish descent, in early life he was a telegraph operator. From 1871-76 he was Superintendent of the Law Gold Indicator Co. His inventive genius soon showed itself in the series of experiments he made with regard to the improvement of electrical transmission. His inventions include an automatic telegraph system, the quadruplex and septuplex telegraph, the micro-tactimeter and many others, covering over a thousand patents. He improved the phonograph and kinetograph, and introduced the aerophone and megaphone for amplifying sounds. Incandescent lamps, electric lighting and electric railways owe much to him. He died Oct. 18, 1931.

Edmonton Urban district of Middlesex. It is 8 m. from the centre of London, and has two stations on the L.N.E. Rly., Upper Edmonton and Silver Street. The River Lea passes through the district. Charles and Mary Lamb are buried in the parish church. Cowper and Keats both lived here, the former celebrating the Bell Inn in *John Gilpin*. Pop. (1931) 77,652.

Edmonton City and capital of Alberta, Canada. An important point on the transcontinental railway system, and the banking and distributing centre for a large district, it stands on the N. Saskatchewan River, 793 m. from Winnipeg and 958 from Prince Rupert. The city now includes Strathcona. It has huge meat packing plants and some manufactures. Pop. (1931) 78,829.

Edmund English saint and king. In A.D. 855 he became King of E. Anglia. In 870 he was taken prisoner by the Danes and, refusing to abandon the Christian faith, was put to death at Hoxne, Suffolk. Later his remains were buried at Bury, which city grew up round his shrine and was named after him Bury St. Edmunds. He was made a saint, his day being Nov. 20.

Edmund English saint, known as Edmund Rich. He was born at Abingdon and became a priest. In 1234 he was appointed Archbishop of Canterbury, and for seven years worked to free the land from the rapacious favourites of Henry III. In 1240 he left the country and died in France, Nov. 16 of that year. He was canonised in 1246 and his day is Nov. 16. He is commemorated by S. Edmund's College at Ware.

Edmund King of the English. Born about 922, a son of Edward the Elder and a grandson of Alfred the Great. In 940 he became king, and reigned for six years, defeating the Danes and conquering Cumbria. He was murdered at Pucklechurch, Gloucestershire, May 26, 946.

Edmund King of the English, called Ironside. A son of Ethelred the Unready, he was born about 981, and succeeded his father in 1016, but only reigned seven months, dying or being murdered on Nov. 30, 1016. He won some fame by fighting against the Danes, but, beaten at Assandun in Essex, agreed to divide the kingdom with Canute.

Edom District in the south of Palestine. Between the Dead Sea and the Akabah Gulf, it is a narrow, mountainous strip, 100 m. long. Its inhabitants, traditionally related to Esau, resisted the passage of the Israelites to Canaan, and were often at feud with Saul and his successors. Romanised as Idumaea, it accepted Judaism under the Maccabees. The Herods were Edomites.

Education Term in general use for mental and to some extent physical training, especially of the young. It comes from a Latin word meaning to draw out. There was some education in the ancient civilisations, but it was never general and was almost certainly under priestly direction. Modern education began with the Greeks, whose system freed the human mind and introduced ideas which have profoundly influenced human thought. No later age has approached them in their power of dealing with those branches with which they were familiar. Greek education greatly influenced Roman education, and thus communicated its ideas to the medieval and modern worlds.

With the establishment of Christianity in Europe, education became the province of the Church and owing to the close association of the Church with Rome, Latin was used as the vehicle of thought. The combination of the Latin language and the Christian Church survives to some extent in the public school system of to-day. The Church was responsible not only for the early schools but for the earl

universities. Education was given by monks in schools connected with the monasteries, but the bulk of the boys and practically all the girls received no education.

The Renaissance gave a great impetus to education and the 15th and 16th centuries witnessed the founding of many universities and schools, but education remained in the main as before.

In the 19th century, however, education was taken over by the State. Made universal and largely secular, it was given to women in the same way as to men; it included a number of new subjects, largely the outcome of scientific and industrial developments. Elementary education was distinguished from secondary. Technical education was introduced. The old universities were thoroughly reorganised, and new ones were created. Education seemed to take the place of religion, at least in W. Europe, as the nations' driving power.

In Great Britain education was made compulsory by an Act of 1870, and schools, called board schools, which later became council schools, were set up by the side of the existing church schools, a rate being levied for their support. For the wealthier classes, the public schools for boys increased in number and size, and some were opened for girls. In 1891 education in the elementary schools was made free. In 1902 the Church schools were given assistance from the rates. In 1918 the school age was raised to 14, and in 1930 to 15, but the latter did not come into force. After the election of 1935, however, the new Government pledged themselves to raise the school age.

EDUCATION AND THE CHOICE OF A CAREER. In most cases the choice of a career will be influenced, or decided, by the opportunities and the means available, but even within these limitations the choice to-day is so wide, and competition so keen, that it is necessary that a decision should be reached before formal schooling comes to a close, so that the boy or girl may, in the later stages, pursue the course which will give the best training and equipment for future work. This is the more necessary as most of the "professions" can only be entered after years of study on recognised and definite lines.

Specialised study for a particular career often begins before the child has gained the knowledge and experience necessary to decide its own future, and decisions taken by the parent alone often lead to unhappiness and failure. The wise father, therefore, will be considering his child's career from the early school days, will discuss the matter with the child's teachers, and by continuous observation and the application of our modern knowledge of vocational guidance will be ready to recognise such indications of a definite "bent" as may appear.

This does not mean that children should begin specialised study early in their school days. A sound general education is indispensable and should be continued as far as the means of the parent will permit, with an allowance for the period of special training—short or long according to the career chosen—which is essential before the boy or girl can become self-supporting.

The Elementary School.—Education between the years of five and fourteen is compulsory in this country, but there are several avenues by which this may be obtained and continued. After the Nursery Schools, which are a comparatively new development for the period up to the end of the fourth year, the poorer child will proceed to the Elementary School and thence in some cases to the Secondary School or to the newly established Central or "Modern" School, where it will remain until it is fifteen or older. Facilities are provided at this stage for further technical and commercial training, and evening classes may be attended after the day's work is done.

The Secondary School is reached from the Elementary School at the age of eleven or after, or the child may begin by attending one of the "Kindergartens" attached to the Secondary Schools. Scholarships are now freely obtainable by examination which will pay the full fees for secondary education to the age of nineteen, and in special cases some contribution towards maintenance. Full particulars regarding both Elementary and Secondary Schools and the fees required at the latter can be obtained from the offices of the local Director of Education. The majority of schools for further education in Scotland are free.

Preparatory Schools.—The child whose parents can afford for it a Public School education will usually begin in either a private or a preparatory school. There are many of these, and a list with full particulars of each will be found in the handbook—*Schools of England, Wales and Scotland,* which is published by Messrs. E. J. Burrow, 43 Kingsway, London, W.C. 2.

The choice of a preparatory school for boys is nearly always governed by the public school to which he is afterwards to go. In choosing a private school, it is well to take into consideration its proximity to the child's home—whether he is to be a boarder or a day scholar—the position of the school from a health point of view; the qualifications of the teachers; and the size of the classes.

Classes in private schools are smaller than those in the ordinary council schools, consequently more attention can be given to individual children. There is a belief that private schools are inefficient, but there are many excellent private schools. Parents should ask whether the Principal is a Registered Teacher, and should inquire closely into the health conditions—sanitation, ventilation of rooms, and the like.

Children are accepted in preparatory and private schools at five to seven years of age, and they usually remain until they are twelve or thirteen, but some private schools provide education up to eighteen.

The cost of sending a child to a preparatory or private school may range from £70 to £200 per annum, according to the standing of the school. This includes board. Entrance is gained by letter to the headmaster.

Public Schools.—For entrance to most of the public schools it is necessary to arrange the matter many years before the child is ready, since in many cases there is the formality of being elected. The age for entrance to a public school is usually from 12 to 14 years, and the leaving age is about 18 to 19.

A list of the public schools in the United Kingdom will be found in *The Public Schools Year Book,* which is published by The Year Book Press, 31 Museum Street, London. This also gives a complete list of scholarships to both public schools and universities and a list of "specialising" schools, at which certain subjects are given particular attention.

The cost of sending a child to a public school varies from about £250 per annum (entrance fee, £20; school fee, £75; house fees, £155) to £180 all in.

Secondary education may cease after the

First School Certificate has been taken at the age of sixteen or seventeen, or it may continue for a further two years in order that the Higher Certificate may be obtained. After leaving school specialised training may take the form of an apprenticeship or attendance at Business, Technical or Training Colleges, in some of which a degree may be taken for such purposes as teaching.

The Universities.—Further formal education may be obtained at one or other of the "finishing schools" at home or abroad, but the usual procedure after taking the Higher Certificate (in Scotland, after the "Preliminary Examination") is to enter a university.

Every university in the country publishes an annual "calendar," which contains full particulars of entrance, scholarships and tuition. This can be obtained by writing to the Heads of the separate colleges in the case of Oxford and Cambridge, or to the Registrar of the other universities.

The cost of a University Course varies very widely, from about £30 per annum for tuition only at the smaller universities to a minimum of £250 per annum for tuition and full maintenance during term time at Oxford and Cambridge.

It is essential at this stage to have definite ideas on the intended career, since, besides the subjects to be studied, the choice of a university will depend upon it. Thus certain branches of engineering and applied science are best taken at a provincial university. Oxford and Cambridge offer courses leading to higher posts in the Civil Service, in teaching, and in the Church, besides giving preliminary training in medicine, law and certain technical branches, such as engineering, forestry and agriculture.

Education Board of. In England and Wales a body set up in 1899 to control education. It took over the duties formerly discharged by a committee of the Privy Council. Its president is a member of the Cabinet and it has a large staff of inspectors and other officials. The offices are in Whitehall, London.

For supervising education in Scotland there is a department under the Secretary of Scotland at 14 Queen Street, Edinburgh. Each of the self-governing parts of the British Empire has an education department. In most foreign countries education is controlled by a department of State.

Edward Lake of Africa, formerly known as the Albert Edward Nyanza. It is in E. Central Africa and was discovered by Stanley in 1889. It is 44 m. long; a channel connects it with Lake George to the north-east.

Edward King of the English, called the Elder. A son of Alfred the Great, he was born about 870 and early began to help his father in the work of government. In 899 he was chosen king and he reigned until 924. He was successful in enlarging his kingdom which stretched north to the Humber and both the Danes in Mercia and the Welsh submitted to him.

Edward King of the English, called the Martyr. Born about 963, he was a son of King Edgar. When Edgar died in 975, Edward was crowned by Dunstan, but three years later he was murdered, March 18, 978, at Corfe Castle, by order of his stepmother, Elfrida, who wanted her own son Ethelred to be king. Edward's tomb at Shaftesbury became a place of pilgrimage, and he was regarded as a saint, his day being March 18.

Edward King of the English, called the Confessor. A son of King Ethelred the Unready, he was born in 1005. From 1013 to 1041 he lived in Normandy. In 1041 he crossed over to England and was chosen king in succession to his half-brother, Hardicanute. He reigned for 25 years, devoting most of his time to religious matters. He built the first abbey at Westminster. He died Jan. 5, 1066, and was canonised in 1161. His day is Oct. 13.

Edward I. King of England. Born at Westminster, June 17, 1239, he was the eldest son of Henry III. He fought against the rebellious barons, who took him prisoner at Lewes in 1264. He escaped from Hereford by a trick, and in 1265 defeated Simon de Montfort at Evesham. Later he went on a crusade and during his absence in 1272 became king.

Edward returned to England in 1274. His reign of 35 years marks him as a strong and wise ruler. He conquered Wales and Scotland, but won his most enduring fame by calling the Model Parliament of 1295, and by his improvements in the laws and legal system. He died at Burgh-on-Sands, while marching to deal with a rising in Scotland, July 7, 1307. Edward's first wife was Eleanor, daughter of the King of Castile, to whom he erected memorial crosses in several towns. His second wife was Margaret, daughter of Philip III. of France.

Edward II. King of England. The son of Edward I., he was born at Caernarvon, April 25, 1284, and was created Prince of Wales in 1301, being the first English prince to bear that title. Coming to the throne in 1307, he made peace at once with Scotland, and in 1308 married Isabella, daughter of Philip IV. of France. His reign of 20 years was marked by the dominance of favourites and the consequent revolts of the nobles. After the Battle of Bannockburn in 1314, Thomas, Earl of Lancaster, secured control of affairs. He was put to death in 1322 and the king's next favourites, the Despensers, were supreme for a time. Their overthrow was due to the queen, who collected some followers in France and landed in Suffolk. The king was deposed and, on Sept. 21, 1327, was murdered in Berkeley Castle. His young son, Edward III., succeeded him.

Edward III. King of England. A son of Edward II., he was born Nov. 13, 1312. He became king in Jan, 1327, and in 1330 he put a quick end to the usurped authority of his mother Isabella and Roger Mortimer. His reign of 50 years was chiefly occupied with the French war and was marked by the victories of Crécy and Poitiers. The Treaty of Brétigny gave him extensive possessions in France. In 1328, he married Philippa of Hainault. Their family included the Black Prince, who died before his father, and the Dukes of Clarence, York and Lancaster. Edward died June 21, 1377.

Edward IV. King of England. He was born at Rouen, April 28, 1442, and was the eldest son of Richard, Duke of York. He early began to fight for the Yorkists, and in 1460, on his father's death in battle, became their leader. After his victory over the Lancastrians at Mortimer's Cross, in 1461, he became king. In 1469, owing to the desertion of the Earl of Warwick, his mother's brother, his position became precarious and he left England, but soon returned and crushed his foes at Barnet

and Tewkesbury. In 1464 Edward married Elizabeth Woodville. He died April 9, 1483.

Edward V. King of England. Born at Westminster, Nov. 2, 1470, he was son of Edward IV. and Elizabeth Woodville. In April, 1483, he became king, with his uncle, the Duke of Gloucester, afterwards Richard III., as his guardian. With his brother he was imprisoned in the Tower, where they were both murdered. Their remains, discovered in the time of Charles II., were removed to Westminster Abbey.

Edward VI. King of England. Born at Hampton Court, Oct. 12, 1537, he was the son of Henry VIII. and Jane Seymour. He became king in Jan. 1547, and reigned for six years. During that time the country was ruled first by the Duke of Somerset, the king's uncle, and then by the Duke of Northumberland. The chief event was the establishment of the Protestant religion. Edward died at Greenwich, July 6, 1553.

Edward VII. King of Great Britain and Ireland. Born at Buckingham Palace, Nov. 9, 1841, he was the eldest son and second child of Queen Victoria and Albert of Saxe-Coburg, and was named Albert Edward. He passed some time at the Universities of Edinburgh, Oxford and Cambridge, and travelled a good deal. He was created Prince of Wales and Duke of Cornwall soon after his birth and these titles he held for nearly 60 years.

In 1863 Albert Edward married Alexandra, daughter of the prince who afterwards became King Christian IX. of Denmark. They lived at Marlborough House, London, and in Norfolk, on an estate at Sandringham bought for the Prince. On account of the queen's retirement, the Prince and Princess of Wales were for nearly 40 years the acknowledged leaders of English society. The Prince entered into every form of social activity, his love of the Turf being notable, and made the acquaintance of most of the leading men in Europe, but his mother did not allow him to take any considerable share in affairs of State. In 1871 he had a serious illness, typhoid fever; in 1875 he visited India.

On Jan. 22, 1901, the Prince became King and Emperor, taking the name of Edward VII. His coronation, postponed from June 26, 1902, owing to an attack of appendicitis, took place on Aug. 9, 1902. His short reign was marked by a keen interest in foreign affairs, which showed itself especially in earnest efforts to preserve peace. He went abroad a good deal and his relations with France were especially friendly. He discharged his many kingly duties with the tact and dignity which were his outstanding qualities, but one or two events in domestic politics caused him keen anxiety. In April, 1910, the King was taken ill with bronchitis and died in London on May 6. He was buried at Windsor, and many memorials to him have been erected. His *Life* has been written by Sir Sidney Lee. The King left four children, George V. and three daughters, Princess Louise, Duchess of Fife; Princess Victoria; and Princess Maud, Queen of Norway. Of two other sons, the Duke of Clarence died in 1892, and Prince John died the day after he was born in 1871.

Edward VIII. King of Great Britain and Ireland. The eldest son of George V., he was born at Richmond, June 23, 1894. His full name is Edward Albert Christian George Andrew Patrick David. He went to the Royal Naval Colleges at Osborne and Dartmouth, and in 1913 entered Magdalen College, Oxford. On June 23, 1910, he was created Prince of Wales and invested at Caernarvon. In 1911 he was given the Order of the Garter, and in 1918 he took his seat in the House of Lords as Duke of Cornwall. Between 1914 and 1918 he served in various theatres of the Great War. In the years after the Great War he travelled widely, but also found time for a great number of public duties. He went to Canada, India and Japan; then on a tour to Australia and more than once to Africa for hunting. In 1930-31 he visited S. America and opened the exhibition at Buenos Aires, giving on his return his impressions to business men of trade openings in S. America. On the death of his father, King George V. (Jan. 20, 1936), he succeeded to the throne.

As Prince of Wales he took a keen and continuous interest in many forms of national activity. He followed the fortunes of his agricultural estates in the west and himself bought a farm at Lenton, near Nottingham, and a ranch in Canada. He was fond of flying and had his own aeroplane and landing ground at his residence, Fort Belvedere, in Windsor Forest. He hunted in the midlands and played a good deal of golf. The numerous journeys which he made to attend public functions and meetings testified to his interest in the welfare of the people. Some at least of these activities will doubtless be modified by his accession to the throne.

Edward English prince, called the Black Prince. The eldest son of Edward III., he was born at Woodstock, June 15, 1330. He was made Prince of Wales in 1343 and fought at Crécy. Most of his time was passed fighting in France, where his father handed over to him the province of Aquitaine. He was at Poitiers and led an expedition into Spain in 1367. In 1371 he returned to England and took some part in public affairs, until on July 8, 1376, he died at Westminster. He married in 1361 Joan Holland, "the fair maid of Kent," and left a son, later Richard II.

Edward Medal Medal given for heroism in civil life. It dates from 1907. The ribbon is dark blue with a narrow yellow edge. The medal, which bears the figure of its founder, King Edward VII., is chiefly given to miners and quarrymen and bars are added for further heroic actions.

Edwards **Alfred George.** Welsh prelate. Born Nov. 2, 1848, he went to Jesus College, Oxford, and was ordained. In 1875 he was chosen head master of Llandovery College, in 1885 Vicar of Carmarthen, and in 1889 Bishop of St. Asaph. He took a leading part in the campaign against the disestablishment of the Church in Wales, and when it was effected was chosen the first archbishop under the new conditions.

Edwards **John Passmore.** English philanthropist. Born in Cornwall, March 24, 1823, he was the son of a joiner. In 1846 he settled in London and worked for many years as a journalist. From 1876 to 1896 he was owner of the *Echo*, and from 1880-85 a Liberal M.P. He died April 22, 1911. Edwards is chiefly known as the founder of libraries, settlements and the like. The Passmore Edwards Settlement is now incorporated with the Mary Ward House at Tavistock Place, London, W.C.1.

Edwin King of Northumbria. A son of Ella, King of Deira, he was born about 585 and became king in succession to his

father. Driven out by the King of Bernicia, in 617 he returned, killed his foe in battle, and united Bernicia and Deira into the Kingdom of Northumbria. He married Ethelburga, daughter of the King of Kent, and in 627, under her influence and that of Paulinus, became a convert to Christianity. He was killed in battle at Hatfield Chase, Yorkshire, Oct. 12, 633, when fighting an army led by Penda, King of Mercia. Edinburgh was founded by and named after him.

Eel Family of soft-rayed fishes with long, snake-like bodies. They lack ventral fins and external scales. Their life history is still something of a mystery. Widespread in temperate fresh water, the common European eel, *Anguilla vulgaris*, is greenish-brown, and silvery beneath. The female, which anglers call the sharp-nosed, measures 3 to 4 ft., the male, called the broad-nosed, being much smaller. The females inhabit rivers and ponds, descending seawards in the autumn, sometimes overland, for spawning in mid-ocean; the sea-dwelling males do not return. The eggs produce tiny ribbon-like creatures, once separately named *Leptocephalus*, or glass fishes, and now proved to be the larval forms from which elvers or eel fry are derived. In Great Britain there are close seasons for elvers and mature eels. *See* CONGER.

Eel Grass Popular name of two diverse genera of aquatic herbs. *Zostera marina*, usually called eel grass in the U.S.A., grows on gently sloping shores in temperate regions. It serves as a non-conductor wrapped in burlap, in artificial refrigeration.

Valisneria spiralis, or water celery, grows in the warmer parts of both hemispheres. It is a short-stemmed plant, often cultivated in aquaria. Its thread-like flower-stalks, coiling spirally, draw the flowers under water to mature the fruit. The canvas-back duck and the terrapin eat it.

Eel Pie Island Small island in the Thames opposite Twickenham. It is a popular resort for picnic and boating parties, and an angling centre.

Effigy Figure or likeness. The term is used chiefly for the head of a sovereign or other person on a coin. It is also applied to the figures sculptured on tombs. Another effigy is the figure of a detested person made in order to be burned, *e.g.*, Guy Fawkes.

Effusion A pouring forth. The term is used in pathology for an escape of a fluid into the tissues or cavities of the body, as seen in wet pleurisy. Effusion also results from inflammation and occurs in dropsy.

Egbert King of Wessex. The son of a king of Kent, he passed part of his youth at the court of Charlemagne. In 802 he was chosen King of the W. Saxons. During his reign of 37 years he conquered Mercia and other parts of England, and was the first king who was recognised by the whole country. He died in 839.

Egeria Legendary nymph in Roman mythology. Her counsel and advice were said to have aided and influenced Numa Pompilius, King of Rome. Her lamentations after the death of Numa having disturbed the rites of Diana, she was changed into a spring. To-day Egeria is a name symbolising any woman who gives mental stimulus and assistance to a man in his work.

Egg Body usually oval produced by birds, insects, reptiles and certain other creatures to reproduce their kind. Eggs are produced by the female after fertilisation by the male. Though all animal life, except the very lowest forms, starts in the egg, in the case of nearly all mammals (the platypus is a notable exception) the development of the egg takes place within the mother.

Eggs are laid by snails, shell fish and other molluscs; also by insects and fishes. Most of the reptiles, including crocodiles, lay eggs, as do all the birds. Many eggs are enclosed in a hard shell, but those of fishes, frogs, etc., that are laid in the sea and wet places, are not.

The most familiar kind of egg is that laid by the bird. These eggs vary much in size and colour, but all possess the hard shell. The largest are the eggs of the ostrich. In many cases the colouring is protective. The collecting of birds' eggs is a popular hobby. In Britain the law forbids the taking of the eggs of wild birds at certain seasons.

The egg of the ordinary fowl is a popular and nutritious article of food and millions of fowls are kept in order to lay eggs for the market. To a much lesser extent the eggs of the duck, the goose and the plover are used for food, but the sale of plover's eggs has now been forbidden by law. In 1932 the eggs of the penguin were introduced into London restaurants.

In England the consumption of eggs is estimated at 170 per person per year, and in 1931 3,111,024,120 were imported into Great Britain, in addition to dried and liquid eggs valued at £2,718,800. At Milford, Surrey, is a farm where, under the auspices of the National Utility Poultry Society, egg laying tests are held, to determine the laying qualities of the various breeds. Under the national marking scheme imported eggs must be marked with the name of the country of origin.

Egglestone Village of Yorkshire (N.R.). It stands on the Tees, a mile from Barnard Castle. The beautiful cruciform church was once part of Egglestone (or Eglistone) Abbey. Near is Rokeby Hall.

Egham Urban district of Surrey. It is 21 m. from London by the S. Rly. The church has associations with the Denham family. The Royal Holloway College for women is here, and the Holloway Sanatorium. Pop. (1931) 15,915.

Eglantine Poetic name for the sweet briar (*Rosa rubiginosa*). It is of bushy growth, the branches being thickly set with hooked prickles and bristles; the flowers are small and pink, and the foliage fragrant. It is largely grown in gardens, and is also found wild in some parts of Britain. The name is sometimes applied to the Austrian briar (*rosa eglanteria*).

Eglinton Village of Ayrshire. It is 2 m. from Irvine and gives the title of earl to the family of Montgomerie. In 1508 Hugh Montgomerie was made **Earl of Eglinton** and the title has been since held by his descendants. Archibald, the 13th earl, was made Earl of Winton, and the present earl holds the double title. The earl's eldest son is called Lord Montgomerie. **Eglinton Castle,** the family seat, was built about 1800.

Egmont **Count of.** Flemish nobleman. Born in Hainault, Nov. 18, 1522, he was baptized as Lamoral, became a soldier and saw service with Charles V. Later he served Philip II. of Spain, the ruler of the Netherlands, as an ambassador and was made Governor of Flanders. In 1567 he was arrested

by Alva and sentenced to death. With Count Horn he was beheaded at Brussels, June 5, 1568.

Egmont Earl of. Irish title held by the family of Perceval. It was given in 1733 to Sir John Perceval, Bart (1683-1748), an M.P. and one of the founders of the colony of Georgia. John, the 2nd earl (1711-70) was First Lord of the Admiralty, 1761-66, and was the father of **Spencer Perceval**, the Prime Minister. **Frederick**, who was born in 1873, lived for years as a rancher in Canada, until he succeeded as 10th earl in 1929. He died from the effects of a motor accident on May 16, 1932, leaving an only son. The family seat is Avon Court, Ringwood; formerly it was Cowdray Park, Midhurst. **Egmont** is a village in Co. Cork, Irish Free State.

Egoism Theory of self-interest or selfishness. An egoist is a person who aims at securing profit or pleasure for himself regardless of the interests or feelings of others. In philosophy, it is the doctrine that we have no knowledge of anything save our own existence. A similar word, egotism, means talking or thinking inordinately about oneself.

Egremont Town of Cheshire. A residential suburb of Liverpool and Birkenhead, it stands on the Mersey, 2 m. from Birkenhead, with which it is connected by railway. Steamers go regularly across the Mersey to Liverpool, and there is a promenade to New Brighton.

Egremont Market town and urban district of Cumberland. It stands on the Eden, 5 m. from Whitehaven. Coal and iron ore are mined. Pop. (1931) 6015.

The title of **Earl of Egremont**, borne by the family of Wyndham from 1749, became extinct when the 4th earl died in 1845. The 3rd earl, who died in 1837, left Petworth House and his estates in Sussex to a natural son who was made Lord Leconfield in 1859.

Egret Various species of small white herons, with long, narrow, loose-webbed plumes. Both the great white heron and the little egret, a rare British visitant, populate inland waters, especially in India, and are also found in S. Europe and Asia, from Spain to Japan.

Egypt Kingdom of Africa. Divided into upper, middle and lower Egypt, and predominantly the land of the Nile, it covers about 383,000 sq. m., but the only fertile area is that through which the great river flows, some 13,600 sq. m. The population, mainly concentrated in this area, is 14,217,864. Cairo is the capital and the largest city; Alexandria is next in size. Other places are Port Said, Suez, Tanta and Mansura. The chief towns and ports are linked by railway. On the east are the Red Sea and Suez Canal; on the west is the desert; to the south is the Sudan, and to the north the Mediterranean.

GOVERNMENT. In 1922 Fuad, formerly a sultan ruling under British protection, was declared king. There is a constitution on the European model. The parliament consists of a Senate and a Chamber of Deputies, and the Ministry is responsible to it. The members of the chamber are elected by universal suffrage for five years. In 1928 King Fuad suspended the constitution and ruled for a time through his ministers alone.

The State religion is Mohammedanism, but there are many native Christians, chiefly Copts. The official language is Arabic. The country has its own courts of justice, but foreigners are exempt from their jurisdiction.

ECONOMICS. The chief product is cotton. By means of irrigation works, the dam at Assuan and barrages at Assiut, Nag' Hammadi, Esna and Zifta, much additional land has been brought under cultivation. The value of the cotton crop varies, but in 1931 its export was worth over £20,241,677, other articles being responsible for a further £3,411,758. Wheat, barley and other cereals are grown and animals are kept, but everything is subservient to cotton growing.

The unit of currency is the piastre, worth about 2½d. It is coined in silver, bronze or nickel. A national bank issues paper money and there is an agricultural bank. The ardeb, the unit of capacity, is equal to 43,555 gallons. The unit of measurement is the feddan, equal to just over an acre.

Egypt has an army about 14,000 strong. To protect the Suez Canal, Great Britain maintains a small garrison including an air force. Egypt has a debt of about £90,000,000.

ARCHAEOLOGY AND HISTORY. Egypt is famous as perhaps the earliest home of civilisation, the best known remains of which are the pyramids, but there are also remains of temples and other buildings that prove the possession, thousands of years ago, of a wonderful artistic skill, to say nothing of a truly marvellous knowledge of building and engineering. The magnificent temple remains at Karnak and the discoveries in the tomb of Tutankhamen are some of the many evidences of this culture.

The ancient Egyptians had, too, a religion with elaborate rites and strong in the beliefs in the immortality of the soul, and an extensive literature, written on rolls of papyrus. They knew something of the arts of government and war, and were skilled in the industrial arts.

Egyptian civilisation may have begun 8000 years before Christ; perhaps a little later. Scholars have divided its course into civilisations first, second, third, etc., and have arranged its rulers in dynasties, also numbered. The first civilisation was prehistoric; the continuous written history of Egypt begins with the second. At this time Memphis was the country's capital.

The third civilisation, dating from about 5600 B.C., covered the periods of the first three dynasties of the kings. It was an age in which art flourished exceedingly, but in this respect it was far surpassed by the fourth civilisation. In this the great pyramids were built and the country was rich and prosperous. Egyptian art now reached its highest point and probably only one age in the world's history, that of Greece in the time of Pericles, can compare with it in the magnificence and volume of its works of art.

Decay began about 3600 B.C. with the fifth civilisation, during which the Syrians invaded the land. More serious was the arrival of the Hyksos, a people who dominated Egypt for about 1000 years. They were expelled by Aahmes about 1600 B.C., the time from which the sixth civilisation dates. Constant wars with Syria, although sometimes successful in bringing more territory under Egyptian rule, greatly weakened the country's power. There was, however, much trading activity, especially with Greece. During the seventh civilisation, which dates from 664, the Persians conquered the land and soon Alexander the Great repeated this feat. The last of the dynasties (XXX.) ended in 340.

For the next 300 years Egypt was under the rule of the Ptolemies and Greek influence was strong until the death of Cleopatra, the last

of her line. In 30 B.C. Egypt was included in the Roman Empire and it remained subject to Rome or Constantinople until A.D. 616.

In 641 it was conquered by the Arabs, and was under the caliphs of Bagdad until 868. A disturbed period without stable government followed until in 1517 it was subdued by the Ottoman Turks. It remained a province of Turkey until seized by Napoleon in 1798. Mehemet Ali became ruler in 1805 and his descendant is now on the throne.

Mehemet and his successors were vassals of Turkey and were called Khedives from 1867 until 1914, when the title of sultan was used by Hussein Kamil, brother of Fuad. Their misrule led Great Britain to invade Egypt in 1882, and from then until 1914 the country's affairs were controlled by British officials. In 1914 the British made Egypt into a protectorate and this lasted until 1922, when the country was granted its independence. Actually, however, there was still a certain dependence on Britain, which the Nationalist party in Egypt acutely resented. This condition was much aggravated in the winter of 1935-36, when King Fuad restored the Democratic Parliamentary Constitution of 1923, thus increasing the power of the Nationalists as the dominant party. Serious rioting followed; at the end of Jan. a crisis arose and a "neutral" government was formed to negotiate with Britain.

Egyptology Study of Egyptian antiquities. Material and literary treasures, unearthed in the Nile valley and elsewhere, have reconstructed the artistic, economic, literary, social, political and religious life of ancient Egypt. The Egypt Exploration Society, founded in 1882, the British School of Archaeology in Egypt, founded in 1896, and other learned societies and universities, pursue this branch of research.

Ehrenbreitstein Town of Germany. On the right bank of the Rhine, opposite Coblenz, it stands on a rock overlooking the Rhine and Moselle in a position that has been fortified since Roman times, and has a trade in wine. It was taken by the French and destroyed in 1799, rebuilt 1816-26 and modernised after 1870. Until 1918 it was one of Germany's strongest fortresses. Pop. 5500.

Ehrlich **Paul.** German bacteriologist. Born in Silesia, March 14, 1854, he studied medicine, and did research on aniline dyes. He treated diseases by chemical injections, and in 1910 prepared an arsenical compound, "salvarsan," or "606" (the 606th compound he had tried), which was a cure for syphilis. He did important work on immunity, and shared the Nobel Prize for Medicine in 1908. He died Aug. 20, 1915.

Eider Duck (*Somateria*). Genus of northern sea ducks which line their nests with down. Dwelling on N. Atlantic coasts, the common eider duck, *S. mollissima*, lays green eggs in nests on the ground. The down, valued for stuffing quilts and cushions, is collected in Iceland and other localities where the bird is practically domesticated. It breeds in the Farne Islands.

Eiffel **Alexandre Gustave.** French engineer. Born at Dijon, Dec. 15, 1832, he was one of the first engineers to use compressed air caissons for building bridges and the inventor of movable section bridges. His most important works include the bridge over the Garonne at Bordeaux in 1858, the dome of the Nice Observatory, the framework of the Statue of Liberty in New York Harbour and the Eiffel Tower, Paris, designed for the Exhibition of 1889. This colossal iron structure, 984 feet in height, is used as a meteorological and broadcasting station (1445.7 M.; 13 kW.). Eiffel died Dec. 28, 1923.

Eigg Island of the Inner Hebrides, Scotland. It is in the county of Inverness-shire, and lies about half-way between the Island of Rum and the mainland; it is 6 m. in length. The Scuir of Eigg, a hill on the island, is 1289 feet in height. Pop. 181.

Einstein **Albert.** German scientist. He was born at Ulm, May 14, 1879, and educated at Munich and Zürich. After being engineer to the patent office in Berne, he was appointed Professor at Zürich University in 1909. In 1914 he moved to Berlin. A remarkable tower was built at Potsdam for him to work in, and in 1915 he brought his famous theory of relativity before the Academy of Sciences in Berlin. In 1921 he was awarded the Nobel prize for physics and visited England; he received the Copley Medal in 1925, the gold medal of the Royal Astronomical Society in the following year, and also honours from various other countries. In 1931 he lectured on his theories at Oxford, and in 1933 at Edinburgh.

The main ideas put forward by Einstein are that time is a co-ordinate of space, that distances in the universe are relative, not absolute, and that the universe itself is constantly expanding or contracting in size. He became a prominent pacifist and zionist.

Eisenach Town of Thuringia, Germany. It stands at the junction of the Hörsel and Nesse, 32 m. west of Erfurt and close to the Thuringian Forest. Spinning, wagon building and the manufacture of beer, cigars and pottery are the chief industries. Near is the Wartburg associated with Luther. Until 1918 the palace was the residence of the Duke of Saxe-Weimar-Eisenach. Pop. 43,400.

Eisleben Town of Germany. It has a school of mining and is the chief centre of the neighbouring copper and silver mines. Luther was born here, and the house in which he died is now a museum. Pop. 25,000.

Eisteddfod Welsh bardic congress. It is held annually in different towns for encouraging national music and literature. Sprung from the Gorsedd or National Assembly, it is mentioned in early records. It was held in 1567, reappeared occasionally after 1771, and has been held almost annually since 1819. It usually lasts three or four days. The chief bard is chosen and crowned, and prizes are awarded for choral singing, instrumental playing, especially harping, and lyrical compositions and essays.

Ekaterinburg Town of Soviet Russia. It is in the Ural Mts. 175 m. from Perm, on the Trans-Siberian Rly. It was founded by Peter the Great and named after his wife Catherine. It is a great mining centre. There are two cathedrals and a university. Here, in July 16, 1918, the Tzar Nicholas II. and his family were murdered. The Soviet authorities have changed the name to Sverdlovsk. Pop. 60,000.

Ekaterinoslav City of the Ukraine, now known as Dnepropetrovsk (*q.v.*).

Elan River of S. Wales. Only 15 m. long it rises in Cardiganshire and flows into Radnorshire and Brecknockshire before it joins the Wye below Rhayader. The valley

has been dammed, and three huge reservoirs built to hold the water from which Birmingham draws its supply.

Eland Genus of large African antelopes (*Taurotragus*). The largest, also called the Cape elk, has a tufted forelock and sometimes stands nearly 6 ft. at the withers. The screw-like horns occur in both sexes. Except on small reserves in Natal the eland has disappeared from S. Africa. Herds still roam north of the Zambesi and other species are found farther north.

Elandslaagte Village of Natal. It is 16 m. from Ladysmith. On Oct. 21, 1899, a British force under Sir John French sallied out of Ladysmith to attack a Boer position in the hills near Elandslaagte, which was taken with a loss to the British of about 40 men; the Boers lost some 250.

Elasticity Term used in physics. It expresses a property of matter whereby a substance may be elongated by tension without remaining permanently distorted after the removal of the tensile force. That is, the cohesion between the constituent particles of an elastic substance is sufficient to prevent permanent strain or distortion, and consequently the particles return to their original positions. Both elasticity of form, or resistance to change of shape, and elasticity of bulk, or resistance to compression, are properties of solids; but liquids, having no shape, can only resist compression, a property shared in a high degree by gases.

Elba Island of the Mediterranean Sea. It belongs to Italy, covers 90 sq. m. and is 6 m. from the mainland at Piombino. Porto Ferrajo is the capital. Many of the inhabitants are fishermen. Here Napoleon lived in exile, May, 1814, to Feb., 1815. Pop. 30,500.

Elbe River of Europe. It rises in the Riesengebirge Mountains of Bohemia, passes into Saxony, and enters the North Sea near Cuxhaven. It is 725 m. from source to mouth and its estuary is 70 m. long. On it are Prague, Dresden, Magdeburg and Hamburg and it is navigable for small vessels nearly as far as Prague, about 500 m. from its mouth. Much shipping passes along its lower course. The chief tributaries are the Havel, Saale, Moldau, Eger and Mulde and it is connected by canal with the Oder, Trave and other German rivers.

Elberfeld Town of Germany. In the Rhine province of Prussia, it stands on the Wupper, 16 m. from Düsseldorf, recently linked with Barmen, is locally called Wuppertal-Elberfeld. An important railway centre, its textile industries have caused it to be named the Manchester of Germany. Other products are chemicals and hardware. Pop. (1930) 405,515.

ELBERFELD POOR RELIEF SYSTEM. Elberfeld gives its names to a system of poor relief which was started here. This consists in a careful examination of each case by unpaid workers who report to a central committee. For cases of emergency there are almoners who can give immediate assistance. A town is divided into districts for the purpose and the scheme tries to avoid making paupers by assisting the poor in ways other than by gifts of money. Started in 1852 the system has spread to other towns.

Elbing Seaport of E. Prussia, Germany. It stands on the Elbing, near its mouth in the Frisches Haff, 50 m. from Danzig. The industries include shipbuilding and the manufacture of motor-cars, tobacco and other goods. There is a good harbour. Elbing was founded in 1257 and was long a member of the Hanseatic League. Pop. 68,200.

Elbow In man, a joint. Joint formed by the articulation of the humerus or upper-arm bone with the radius and ulna, the outer and inner forearm bones. A prominence terminating the humerus fits into a cavity of the disk-shaped head of the radius, whose edge articulates with a deep S-shaped notch in the ulna; its gliding over the humerus rotates the forearm. A bony knob on the ulna, rising behind the humerus, prevents the joint from bending backwards. Fibrous sheaths, thickened into ligaments, help to hold the bones together, and are lined with a synovial membrane producing a lubricating fluid. The elbow may be dislocated forwards or backwards.

Elburz Mountain range of Persia. Its length is about 600 m.; breadth about 200. Mt. Demavend, a dormant volcano, is the highest peak (18,000 ft.).

Mount Elburz is the highest point in the Caucasus, the loftiest of its two peaks rising to 18,526 ft. It was first ascended in 1829. In the Republic of Georgia, Elburz is sometimes spelled Elbruz.

Elder Genus of deciduous shrubs and trees (*Sambucus*) allied to the guelder rose. They are native to all temperate regions except S. Africa. The common *S. nigra* is a rapidly growing tree, normally about 10 ft. high with cream-coloured flowers growing in flat clusters. The purplish-black berries are used for home-made wine, and elder flower water is used in confectionery. Dried elder pith balls serve for electrical experiments. The wood makes weavers' shuttles, skewers, and shoemakers' pegs. Several cultivated forms of elder occur in shrubberies, *e.g.*, the golden, cut-leaved and scarlet-berried.

Elder Ruler or officer in some civil and ecclesiastical systems of government. It is analogous to the Roman senator and the English alderman. The term was used by the Jews and in the Old Testament there are frequent references to elders or leaders of the people. Hence it passed into the Christian Church where the early officials were called elders. In the Presbyterian churches elders elected by each church form the ruling body. Members of the Corporation of Trinity House are called **elder brethren**, and retired statesmen in Japan who are called on for advice in emergencies are known as **elder statesmen**.

Eldon **Earl of.** English title borne by the family of Scott since 1821. John Scott was born at Newcastle-on-Tyne, June 4, 1751, the son of a coal merchant. He was educated there and at Oxford, and in 1776 became a barrister. In 1782 he entered the House of Commons and in 1788 he was knighted and made Solicitor General. Five years later he became Attorney General, and in 1799 a judge and a peer as Baron Eldon. In 1821 he was made an earl. A strong Tory, Eldon is best known as Lord Chancellor, an office he filled, 1801-06 and 1807-27. He died Jan 13, 1838. The earl's eldest son is called Viscount Encombe.

Scott's elder brother, **William** (1745-1836), also made a reputation as a lawyer. He was created Baron Stowell in 1821.

El Dorado Spanish phrase meaning "the gilded one." It was applied to a legendary potentate, city, and region reputed, by 16th-century explorers, to exist somewhere in northern S. America, and to abound in gold. It perhaps referred to a fabled

tribal chief who, smeared with balsam and covered with gold-dust, plunged into a sacred lake near Bogotá at a yearly festival. It developed into the story of a mythical city, Manoa or Omoa, the quest of many expeditions, including one by Raleigh which penetrated Guiana in 1595.

Eleanor Name of three English queens. One was the daughter of William, Duke of Aquitaine. In 1137 she married Louis VII. of France. The marriage being dissolved, she became the wife of Henry, later Henry II. of England. A great heiress, Henry secured with her lands in the S. of France. She was the mother of Richard I. and John, and died April 1, 1204.

Another **Eleanor** was the wife of Henry III. She was the daughter of the Count of Provence, and was married to Henry in 1236. Edward I. was her son. She died at Amesbury, Wilts, June 25, 1291.

The third **Eleanor** was a daughter of Ferdinand III., King of Castile. In 1254 she married Edward, later Edward I., and with him went on crusade, whence her devotion to him has become a legend. She died at Harby, Nottinghamshire, Nov. 28, 1290, and the king erected a series of beautiful crosses at the places where her body rested on its way to Westminster Abbey. Of these crosses only those at Geddington, Northampton, and Waltham survive.

Eleatic School The School of philosophy which flourished at Elea, Lower Italy, from about 570-450 B.C. Its leading exponents were Xenophanes, Parmenides and Zeno, who taught the unity of all phenomena ("the All is one"), and attacked the current anthropomorphic mythology.

Election In politics, the act of choosing a representative. It is usually done by ballot, and in most elections a bare majority of the votes cast is sufficient to secure a return. Where, however, there are three or more candidates the votes given to the unsuccessful candidates are together often more numerous than those given to the successful one. To remedy this proportional representation (*q.v.*) other methods have been suggested.

Elections are of several kinds. In one the electors choose their representatives directly; in another they vote for persons who in turn choose the representatives. The President of the U.S.A. and the aldermen of English county and town councils are examples of indirect election. A general election is when all the representatives on a body are elected at once; a by-election is held to replace a representative who has resigned or died. In Fascist Italy the electors can only say yes or no to a list of names submitted to them by the authorities.

In company law, directors are elected by the shareholders, but such election is usually a mere form. Members are elected to clubs by the committee. Here a small minority can usually prevent a man from securing election. This is called black-balling. *See* VOTE.

Election Theological doctrine attributing to God the choice of particular persons to receive eternal life. It is a special adaptation of the process of redemption of the wider doctrine of predestination which claims to interpret the all-embracing design in the Divine will. John Calvin maintained the doctrine in an absolute and unconditional form.

Elector In general any one who is entitled to vote at an election. In England and Wales there were in 1930 25,730,507 electors, or practically the whole of the adult population. In a special sense, the electors were the princes who chose the Holy Roman Emperor. They date from 911, but it was some time before they became a definite body. In the 13th century their number was fixed at seven and by the Golden Bull of 1356 this arrangement was confirmed. The seven were the Archbishops of Mainz, Cologne and Treves, the King of Bohemia, the Elector Palatine, the Duke of Saxony and the Margrave of Brandenburg. They formed the electoral college and each had a position in the emperor's household. The Archbishop of Mainz was president of the college. In 1648 the number of electors was raised to eight, and in 1708 to nine, the new electors being the Duke of Bavaria and the Ruler of Hanover, who later became King of Great Britain.

Electra In Greek legend, the daughter of Agamemnon and Clytaemnestra, and the sister of Iphigenia and Orestes. After her father had been murdered by his wife, she assisted her brother in avenging his death. The three famous Greek tragedians, Aeschylus, Sophocles and Euripides, have written dramas dealing with the life story of Electra, the first of the three being called *Choephoroi* from the chorus of captive Trojan women offering libations at Agamemnon's tomb, and the other two *Electra*.

Electric Fish Genus of fish which possesses the power of giving an electric shock. Three kinds of fish are known to have this power, the electric eel (*Gymnotus electricus*), a native of the rivers of Brazil and Guiana; the electric catfish (*Malapterurus electricus*), a native of the larger African rivers; and the torpedo, or electrical ray, found in warm seas all over the world. The fish use their power for defence and to stun their prey.

Electricity From early times certain phenomena related to frictional electricity have been noticed. Among the ancient Greeks, Thales recorded the attraction of light bodies by a piece of amber. In the 16th century Dr. Gilbert showed that other bodies also possessed this property, and to these he gave the name of electrics from the Greek *elektron*, or amber. From this time onward the experimental study of electricity grew, and the work of Newton and others resulted in the production of frictional machines giving a spark several inches in length.

With the Leyden jar, invented in 1745, came an understanding of the principles of induction, and seven years later, Franklin demonstrated the identity of lightning with the electric spark. In 1800 Volta discovered a new source of electricity in the contact of two dissimilar metal plates immersed in acidulated water, the prototype of the modern primary battery or cell.

The phenomena observed by this new discovery led to the foundation of electrochemistry, Davy, by his study of electrolysis, being able for the first time to decompose the alkalis and earths. The work of Faraday, Oersted and Ohm resulted in the enunciation of the laws governing electrolysis, the principles of electro-magnetism and the idea of electrical resistance.

In more recent times the researches of Hertz and many others have further increased our knowledge of the working of electrical forces, and the work of Johnstone Storey and Thomson

has culminated in the discovery of the atomic nature of electricity and the elaboration of the electron theory.

The uses which electricity has for man are many and varied. It is used as a source of power, as a source of light and heat, and is beneficial in the treatment of certain diseases.

Electricity is produced by water power on a large scale in Canada, the United States (where Niagara is utilised), Norway, Switzerland and other countries. In Great Britain, where water power is less abundant, coal is used, although some of the falls in Scotland are harnessed to the service.

In London and other cities great power stations have been erected for supplying electricity to railways, tramways, and industrial establishments, shops and private houses. These are controlled by private companies, with a certain amount of public control.

In 1926, to extend the use of electricity, a **Central Electricity Board** was established. The whole country has been divided into regions and for each a scheme to supply electricity on a large scale by means of main transmission lines (" The Grid ") has been prepared. Work has begun on some of them ; for instance a large power station for the midland area has been opened near Birmingham. Meanwhile the railway lines, especially in the London, Manchester and Liverpool areas, are being electrified and in 1931 a large scheme for electrifying the main lines was put forward.

Electricity is used to a certain extent on farms and there is an electricity department at the National Physical Laboratory.

Electric Shock *Treatment for.*—If the contact has not been broken, stand on some poor conductor (dry wood, cement) and handle the patient very carefully, if possible with rubber gloves, and in any case with some dry material between the hands and his skin. It may be necessary to knock away the wire with a dry stick after short-circuiting the current with a bar of metal dropped on the wire and with the other end on the ground. The patient has to be treated for burns and shock—the latter primarily (see SHOCK). In severe cases it may be necessary to use artificial respiration (see under DROWNING). If the patient is breathing keep him warm and quiet. Obtain medical aid as soon as possible.

Electro-Chemistry Branch of science dealing with the relation between electricity and chemical action. Some chemical actions produce electricity while in certain cases the passage of an electric current results in chemical change (electrolysis). The action in an electric storage battery is electrolytic. Electrochemistry has many modern industrial applications as in production of metals (aluminium, sodium, iron alloys, etc.), refining (gold, copper), electro-plating and the manufacture of nitrates and other synthetic fertilisers, calcium carbide, phosphorus, carborundum, etc.

Electrocution Method of inflicting the death penalty adopted in the United States. It consists of the passage of a current of electricity of very high voltage through the body of the criminal, who is seated in a specially constructed chair. It is claimed by those who advocate this form of execution that it is more nearly instantaneous and less revolting than other methods. It was adopted by the state of New York in 1888, the first execution taking place in 1890, and by Ohio in 1896.

Electrode Term applied to the points of entry and exit of electric current (positive and negative poles) of a voltaic cell, electrolytic cell, high vacuum tube, etc. The positive electrode in a primary cell is termed the anode and is usually of zinc, whilst the negative electrode or kathode may be of copper, carbon or mercury. In a secondary or storage cell the electrodes are usually of lead.

Electrokinetics Branch of physical science dealing with electricity in a state of motion, or current electricity, in contradistinction to electrostatics, which treats of electricity in a state of equilibrium, or electric charges.

Electrolysis The process of chemical decomposition by means of an electric current. If a current be passed through a conducting liquid, or electrolyte, chemical change sets in and the products of decomposition appear at the electrodes. For example, if the electrolyte is an aqueous solution of copper sulphate, metallic copper is deposited on the kathode, or negative electrode, and sulphuric acid is liberated at the anode, or positive electrode. This process forms the basis of electro-plating (*q.v.*).

Electro-Magnet *See* MAGNET.

Electrometer Instrument for measuring electrical potential differences. The term is usually confined to instruments of high sensitivity used for measuring very small charges or changes of potential. Lord Kelvin in 1857 designed two forms which have persisted with minor improvements until the present day. This Quadrant Electrometer is based in principle upon the rotation of a light delicately suspended vane between the four separate quadrants of a circular metal box, opposite pairs of which are charged to the potential difference to be measured.

Electron Smallest known particle of matter, or atom of negative electricity. The term was first used by the physicist, Dr. Johnstone Storey, the theory of electrons being substantiated later by Sir J. J. Thomson, who demonstrated the atomic nature of electricity. The weight and speeds of movement of electrons are known from experimental evidence, and the accumulated knowledge of these minute bodies has revolutionised physical science. The atom is now regarded as consisting of a group of electrons revolving round a central positively charged nucleus.

Electro-Plating Process by which a thin layer of one metal is deposited electrolytically upon another metallic surface. The metal to be deposited may be gold, silver, nickel, copper, etc., and is used in the form of an aqueous solution of a salt. The object to be plated is suspended in the liquid from the kathode, while a piece of the metal to be deposited is attached to the anode. Silver-plating is widely adopted for many articles of brass, copper and German silver. Nickel plating forms an efficient protective covering to many articles, while chromium is now extensively used. *See* ELECTROLYSIS.

Electrostatics Section of physical science dealing with electricity in a state of equilibrium, in contradistinction to electrokinetics which treats of

electricity in motion. It deals with the laws and problems relating to the forces of attraction and repulsion as seen in the phenomena of frictional electricity, also with the conditions of conductivity and non-conductivity and the laws governing these conditions. Electrostatics is concerned experimentally with various machines or devices designed to convert mechanical energy into electrical energy.

Electro-Therapy Medical term for application of electricity to treatment of disease. Direct and high frequency alternating current and static discharges of suitable strength are used. The results include benefit to the nervous system, the creation of heat at greater depths than can be reached by external application, and the destruction of certain growths.

Electrotyping Method of printing. A wax or other mould of the type to be reproduced is faced with graphite on which copper or other metal is deposited electrolytically and then strengthened by a backing of lead or similar metal. On removing the mould, the impression is used for printing copies of the original.

Electrum Term originally used by the ancients for amber. It was later applied to a natural alloy of gold and silver found in veins in Hungary and Transylvania; most of this alloy contains about 30 per cent. of silver. Electrum was also produced artificially in early times, for use in coinage and plate, and consisted of three or four parts of gold to one of silver. A modern alloy known as electrum contains nickel, copper and zinc.

Elegy Term denoting a poem of mourning. Strictly the true elegy was a lament in elegiac metre, each couplet consisting of a hexameter and a pentameter, the name referring to the form rather than the sentiment.

Famous English elegies are *Daphnaida* by Spenser, *Lycidas* by Milton, *Adonais* by Shelley and *Thyrsis* by Matthew Arnold, all commemorating, under classical names, friends of the poets. Tennyson's *In Memoriam* is another elegy; other famous ones are the *Elegy written in a Country Churchyard* by Gray, and Swinburne's *Ave atque Vale* in memory of Baudelaire.

Element According to the ancients, term applied to fire, air, earth and water, which were regarded as certain qualities determining the different forms of matter. In modern chemical terminology an element is a simple body which cannot be decomposed by any known means of chemical analysis. There are 90 elements at present known, some of these being very rare and their properties little understood. The study of radio-activity has shown that some of the elements, under certain conditions, may change one into another, as in the case of radium, uranium and lead, and recent experiments on the bombardment of elements with particles travelling at very high speeds have resulted in definite disintegration of one element into another.

Elephant (*Elephas*) Genus of mammals, comprising the largest existing quadruped. They are sometimes 8 to 11 ft. in height. The nose forms a flexible, double-barrelled proboscis or trunk, often 4-5 ft. in length, the sensitive finger-like tip of which can pick up small objects. The teeth include, in both sexes, upturned upper incisors or tusks, the source of ivory. Large tusks may measure up to 9 ft. and weigh 90 or 100 lb.

The two living species of elephant are the Asiatic or Indian, with concave forehead and small ears, and the taller African species with convex forehead and large flapping ears. A dwarf race, standing 5½ ft., occurs in French Congo. Tamed Asiatic elephants serve for ceremonial, timber and other transport; they rarely breed in captivity. The African elephant has as yet proved untameable. White elephants are albinos.

Elephantiasis Disease characterised by overgrowth of the skin and subjacent tissues. It is also called Barbadoes leg. It is caused through chronic obstruction of the lymphatic vessels. The skin becomes tense, hard and sometimes wart-like, the affected parts being permanently swollen, sometimes enormously. It may arise from several causes, but chiefly from a thread-like parasitic worm, filaria, introduced by mosquito agency. Frequent all over the tropics, it apparently originated in Asia in antiquity. It is distinct from leprosy, which is sometimes called *elephantiasis graecorum*.

Elephantine Island in the Nile, opposite Assuan, Upper Egypt. It contained the frontier station at the southern limit of the Old Kingdom Nile navigation, through which Sudan ivory passed into ancient Egypt. Its governor also regulated granite quarrying at Assuan. There is a nilometer of the Ptolemaic period on the island.

Eleusis In ancient geography, a city twelve miles from Athens, the seat of the worship of Demeter and of the Eleusinian mysteries. The events celebrated were the descent of Persephone into the underworld and her return to the light of day and her mother. There were two festivals, the greater and the less. They were intended to confirm, in the minds of the "initiated," the faith in life after death and a system of rewards and punishments. The city was destroyed by the Goths in 396. Excavations were begun in 1882, and the whole site is now exposed.

Elevator Appliance for raising a body or bodies to a higher level. The term is most frequently used for a lift for passengers. In mining, bucket chains, consisting of revolving chains with buckets attached, and hydraulic elevators are used. In America and other wheat growing countries, the term elevator is used for the great grain stores or silos, which are fitted with elevating, loading and distributing machinery.

Elgar **Sir Edward.** English composer. He was born June 2, 1857, at Broadheath, Worcestershire, and his youth was spent in a variety of choral and orchestral experiences. In 1890 his overture *Froissart* was played at the Worcester Festival and with *The Dream of Gerontius*, 1900, a violin concerto, 1910, symphonies, 1908 and 1911, and his cello concerto, he has earned a sure position as one of the great masters of music. Elgar was knighted in 1902 and received the Order of Merit in 1911; in 1924 he became Master of the King's Musick. In 1930 he produced a new *Pomp and Circumstance* march and in 1931 a *Miniature* (*Nursery*) *Suite*, dedicated to the Princesses Elizabeth and Margaret Rose. In 1931 he was made a baronet. He died on Feb. 23, 1934.

Elgin Burgh, market and county town of Moray or Elginshire, Scotland.

s 80 m. from Aberdeen and 180 m. from Edinburgh and is served by both the L.N.E. nd L.M.S. Rlys. The chief object of interest s the ruined cathedral; there are also the emains of a castle and of monasteries. The reyfriars chapel has been restored. The urgh has an agricultural trade. Pop. 7776.

Elgin Earl of. Scottish title borne by the family of Bruce since 1633. The irst earl was Thomas Bruce, and his son, the econd earl, was also Earl of Aylesbury. In 746 the title passed to the Earl of Kincardine nd since then the earls have held the double itle. The family seat is Broomhall, Fife, and he earl's eldest son is called Lord Bruce.

James Bruce, who became the 8th earl in 841, was Governor-General of Canada, 1846-4, and from 1862-63 was Viceroy of India. n the meantime he represented his country in hina. He died in India, Nov. 20, 1863. His on, **Victor Bruce,** the 9th earl, was First ommissioner of Works in 1886. From 1894-99 e was Viceroy of India and he presided over wo important royal commissions. In 1905 he as made Colonial Secretary, an office he held or three years. He died Jan. 18, 1917.

The Elgin Marbles are works of art collected y Thomas Bruce, 7th earl of Elgin, when he as British ambassador in Constantinople. hey include specimens of the work of Pheidias nd other great Greek artists. They were rought to London in 1806 and were bought in 816 for the British Museum, where they still emain.

Elginshire County of Scotland, officially known as Moray (*q.v.*).

Eli High priest of Israel in the later period of the Judges (1 Sam. i-iv). He judged srael for forty years, and the ark sanctuary t Shiloh was in his care. Samuel, the boy emple-attendant, prophesied God's anger at he wickedness of Eli's sons, Hophni and 'hinehas. Hearing of their death when the 'hilistines captured the ark, he fell down and ied.

Elia Pen name under which Charles Lamb (*q.v.*) contributed a series of essays to he *London Magazine.* The first essay, which ppeared in 1820, describes the Old South Sea louse, where he spent his first few months of usiness life 30 years before. Elia was the ame of one of his fellow clerks there.

Elibank Village of Selkirkshire, Scotland. It gives the title of viscount to he family of Murray. In 1643 Patrick Murray as made a baron and this title passed to his escendants. In 1911 the 10th baron was ade a viscount. His eldest son, Alexander furray (1870-1920) was a Liberal politician. fter serving as chief whip, he was made a eer in 1912 as Baron Murray of Elibank. He died before his father and the title passed n 1927 to Gideon Murray, as 2nd viscount.

Elie Burgh, seaport and watering place of Fifeshire, Scotland. It stands on he north side of the Firth of Forth, 10 m. om St. Andrews and 45 m. from Edinburgh. t includes Earlsferry. Pop. (1931) 1098.

Elijah Hebrew prophet (1 Kings xvii-xxi; 2 Kings i-iii). Of Gileadite rigin, he led the life of a hermit, dramatically merging to predict a drought, to summon ahab and the priests of Baal to a contest with ehovah on Mt. Carmel, or to warn Ahaziah. 'inally he disappeared in a fiery chariot. elieving in his reappearance before the coming f the Messiah, Jews still set his chair ready at the Passover meal. The New Testament, in describing the Transfiguration, calls him Elias. His day is July 20.

Eliot George. Pen-name of the English novelist, Marian or Mary Ann Evans. She was born at Arbury Farm, near Nuneaton, Nov. 22, 1819, her father, Robert Evans, being agent for a neighbouring landowner. Her early years were passed in the country, but in 1841 the family moved to Coventry. There she studied a good deal and was an accomplished scholar when, in 1849, she settled in London. She had abandoned the evangelical faith of her youth for agnosticism and her first literary work was a translation of Strauss's *Life of Jesus.* In 1851 she was made assistant editor of *The Westminster Review,* for which she wrote and through which she met George Henry Lewes, with whom she formed a union.

In 1858 Miss Evans published in *Blackwood's Magazine* her first stories, called *Scenes from Clerical Life.* Then followed three of her greatest works, *Adam Bede, The Mill on the Floss* and *Silas Marner.* In 1863 she published *Romola* and then came *Felix Holt, the Radical*; *Middlemarch* and *Daniel Deronda.* In verse she wrote *The Spanish Gypsy.* Lewes died in 1878 and in 1880 she married John W. Cross. She died Dec. 22, 1880.

One of the leading novelists of the 19th century, George Eliot is at her best in picturing, as she does with remarkable fidelity, the quiet country life of the midlands.

Eliot Sir John. English politician. Born at Port Eliot in 1592, of a wealthy Cornish family, he went to Exeter College, Oxford. In 1614 he entered the House of Commons and in 1618 was knighted. About the time when Charles I. ascended the throne he became an active critic of the policy of the king and the Duke of Buckingham, his former friend. He helped to draw up and pass the Petition of Right and in 1629, for protesting against illegal taxation, he was put in prison. He was still in the Tower of London when he died, Nov. 27, 1632. Eliot wrote *The Monarchy of Man* and other books.

Elisha Hebrew prophet, the disciple and successor of Elijah (2 Kings ii-viii, xiii). He exercised great influence on court and city life under the Israelite kings from Jehoram to Joash. His story abounds in miraculous incidents, mostly beneficent, as raising a widow's son and healing Naaman the leper. The orthodox calendar commemorates him on June 14.

Elixir Term used in pharmacy. An elixir is a preparation composed generally of weak syrup, flavouring agents, a fair proportion of alcohol and a medicinal ingredient. Examples are the elixirs of senna, rhubarb, figs and cinchona. The alchemists applied the term to the philosopher's stone and to a substance (*elixir vitae*) supposed to prolong life indefinitely.

Elizabeth Hungarian saint. Daughter of King Andrew II., she was born in 1207 and in 1221 married Louis IV. of Thuringia. On his death in 1227 she left her three children and went into a monastery. Her later days were passed in penances and self-denial in a hut at Marburg, where she died, Nov. 19, 1231. She was canonised in 1235 and her story is the subject of Charles Kingsley's *The Saint's Tragedy,* 1848.

Elizabeth Name of two English Queens. One, born about 1437, was a member of the Woodville family. She was

the widow of Sir John Grey when she met and married Edward IV. Edward V. was her son. She died in 1492.

The other, born Feb. 11, 1465, was her daughter. She was probably concerned in the plot that culminated in the Battle of Bosworth and afterwards married the victorious Henry Tudor, later Henry VII. Henry VIII. was her son. She died Feb. 11, 1503.

Elizabeth Queen of England and Ireland. Born at Greenwich, Sept. 7, 1533, she was the daughter of Henry VIII. and Anne Boleyn. In 1536 her mother was executed and her father took little interest in his daughter, who passed her time mainly at Hatfield. Her education, however, was not neglected and she was placed in the succession to the throne after Edward and Mary.

In Nov. 1558 she became queen and her reign lasted for 45 years. Its glories are one of the main themes of English history, and the Elizabethan age is regarded as one of the greatest, perhaps the greatest, the country has ever known. Its literature alone would make it memorable, even unique, but there were also glories of other kinds won by the men of action who have given eternal fame to the word Elizabethan.

The first part of the reign was occupied with the establishment of the Church of England in the form which it retains to-day. Then came the increasing hostility between the English and the Spanish seamen and the plots formed to kill the queen and replace her by Mary, Queen of Scots, her prisoner for 19 years. Tortuous negotiations with France and spasmodic assistance to the Dutch Protestants were other occupations. The execution of Mary in 1587 ended one danger and the defeat of the Spanish Armada in the following year made England supreme on the seas. The last years of the reign were troubled by risings in Ireland and by the queen's reluctance to make any arrangements about a successor. She died at Richmond, March 24, 1603.

A clever, if unscrupulous woman, Elizabeth's personal part in the affairs of state was a considerable one. From some grave mistakes she was undoubtedly saved by the wisdom of her ministers, especially the great Lord Burghley, and by the gallantry of her warriors, but at other times her own strong common sense was of inestimable value. To the end Elizabeth remained unmarried, but the possibility of winning the hand of a powerful ruler was a factor of importance in European politics for many years. She refused Philip II. of Spain; she dallied with the idea of marrying Henry III. of France, or his brother, or Don John of Austria, but these were only moves in the political game. If she loved at all, it was one of her English favourites, either Leicester or the unfortunate Essex.

Many books have been written about Elizabeth. Two of the best are M. Creighton's *Queen Elizabeth* and *Elizabeth and Essex* by Lytton Strachey.

Elizabeth English princess. Born Dec. 28, 1635, she was the second daughter of Charles I. After her father's execution in 1649, she was kept in Carisbrooke Castle, where she died, Sept. 8, 1650.

Elizabeth British princess. Born April 21, 1926, she was baptised as Elizabeth Alexandra Mary. The daughter of the Duke and Duchess of York, the princess is the third in succession to the throne.

Elizabeth Empress of Russia. A daughter of Peter the Great and Catherine, she was born Dec. 18, 1709. Having lived a retired life for some years, she appeared in 1741 at the head of the party that deposed the young Tsar, Ivan VI. She then became empress and ruled Russia until her death, Jan. 5, 1762. A good part of her reign was occupied in fighting against Frederick the Great. She founded the University of Moscow.

Elizabeth Queen of the Belgians. Born July 25, 1876, she was a daughter of Charles, Duke of Bavaria. In 1900 she was married to Albert, who in 1909 became King of the Belgians. Their family consists of two sons and a daughter.

Elizabeth Queen of Bohemia. Born at Falkland, Fife, Aug. 19, 1596, she was the eldest daughter of James VI. of Scotland. In 1613 she married Frederick, the Elector Palatine, who, in 1619, was crowned King of Bohemia. She shared his troubled fortunes and with him became an exile in the Netherlands. After Frederick's death in 1632, Elizabeth remained there for some years in considerable distress, made worse after the death of her brother Charles I. At this time she met the Earl of Craven, who devoted his life to her. In 1661 she settled in London, where she died, Feb. 13, 1662. The queen's large family included Sophia, the mother of George I., and the soldier prince, Rupert.

Elizabeth Queen of Rumania. A daughter of the Prince of Wied, she was born Dec. 29, 1843, and in 1860 was married to Charles, or Carol, who became later prince and then King of Rumania. She was Queen Consort until her husband's death in Oct., 1914. Her own followed on March 2, 1916. The queen is best known as a writer of poems and stories under her pen-name of Carmen Sylva. Some of them have been translated into English.

Elizabeth Madame. Name given to the French princess, Elizabeth Philippine Marie Hélène. Born at Versailles, May 3, 1764, she was the granddaughter of Louis XV. and sister of Louis XVI. In 1792 she tried to escape with the king, but was caught at Varennes and imprisoned. On May 10, 1794, she was sent to the guillotine.

Elk Largest species of deer (*Alces machlis*). It is native to northern Europe, Siberia and America, where it is called the moose. Fossil remains occur in the Thames valley. The Alaskan elk is a gigantic animal, standing 8 ft. at the withers, with broad, palmate antlers weighing 50-60 lb. In Scandinavia the elk is hunted on snowshoes with trained dogs, and is rapidly diminishing in numbers. Americans transfer the name elk to the wapiti deer, *Cervus canadensis*. A gigantic elk, once inhabiting Ireland, is now extinct.

El Kantara Town of Egypt. It stands on the Suez Canal, about 20 m. from Port Said and has a station on the railway line to the coast. In Jan. and Feb., 1915, the Turks attacked British forces defending the canal here, but were beaten back.

Ell (Latin, *ulna*; A. S. *eln*). Old measure, used chiefly for cloth. It is of varying lengths in different countries; the English ell is 45 inches, the Scottish 37, the Flemish 27, and the Jersey 48 ins. In Holland the modern ell is the metre, 39.37 ins. Ell wand was the old name for a measuring rod an ell in length.

Elland Town and urban district of Yorkshire (W.R.). It is situated on the River Calder, 3 m. from Halifax. There are textile works, flagstone quarries, tile making and fireclay works. Pop. (1931) 10,327.

Ellenborough English title borne by the family of Law. Edward Law, a Cumberland man, born Nov. 16, 1750, was made Lord Chief Justice and a baron in 1802. He resigned in 1818 and died in the same year. His son, Edward Law, born Sept. 8, 1790, then became the 2nd baron. He was Lord Privy Seal and President of the Board of Control in 1828. From 1841-44 he was Governor-General of India, being responsible for the annexation of Sind. In 1846 he was First Lord of the Admiralty and in 1858 was again President of the Board of Control. In 1844 he was made an earl, but this title became extinct on his death, Dec. 22, 1871. His barony, however, passed to a kinsman and is still in existence.

Ellenborough is a village in Cumberland, just outside Maryport.

Ellen's Isle Small island of Loch Katrine, Perthshire, associated with Scott's poem *The Lady of the Lake*.

Ellerman **Sir John Reeves.** English shipowner. Born May 15, 1862, he became a clerk in a shipping office. In 1902 he purchased part of the Leyland line of steamers and founded the Ellerman Line. Soon he controlled a large shipping fleet, including the Ellerman, Hall, City and Bucknall Lines. In 1905 he was made a baronet.

Ellesmere British island. Situated in the Arctic regions of North America, it is 40,000 sq. m. in area, but uninhabitable.

Ellesmere Market town and urban district of Shropshire. It is 11 m. from Whitchurch, on the G.W. Rly., and is also served by a canal. Near are several meres. Pop. (1931) 1872.

The title of **Earl of Ellesmere** has been held since 1846 by the family of Egerton. The first earl was Lord Francis Leveson-Gower, a younger son of the 1st Duke of Sutherland. On the death of the last Earl of Bridgewater in 1829, he inherited the estates of the Egertons and took that name. He was made an earl in 1846 and the present earl is his descendant. The earl's seat is Worsley Hall, Manchester, and his eldest son is called Viscount Brackley.

Ellesmere Port Town of Cheshire. It is 7 m. from Chester and stands on the Mersey at the junction of the Ellesmere and Manchester Ship Canals. There are large docks and the other industries are dyeing and the manufacture of chemicals. With Whitby it forms an urban district. Pop. (1931) 18,898.

Ellice Islands Islands of the Pacific Ocean. The group of nine islands forms part of the Gilbert and Ellice Islands colony, which became a British Protectorate in 1892 and was formally added to the Empire in 1915. Area, 14 sq. m. Pop. 3741. *See* GILBERT ISLANDS.

Elliot **Walter Elliot.** British politician. Educated at Glasgow Academy and at the university there, he became a doctor. In 1914-18 he served with the R.A.M.C. in France. In 1918 he was elected Conservative M.P. for Lanark; in 1923 he lost his seat, but in 1924, 1929 and 1931 was elected for Kelvingrove. In 1923-24, and again in 1924-26, Major Elliot was Under-Secretary for Health for Scotland; in 1926-29 he was Under-Secretary for Scotland, and in 1931 Financial Secretary to the Treasury Since 1932 he has been Minister of Agriculture. He was made a P.C. in 1932.

Ellipsis Figure of speech in which a word or words are omitted, although their meaning is implied. The nominative is often omitted as in the sentences, "Who steals my purse steals trash," and "Would he were here," or the antecedent is omitted before the relative pronoun as in "Whom the gods love die young."

Ellis **Henry Havelock.** British psychologist. Born at Croydon, Feb. 2, 1859, after teaching for four years in New South Wales, he took his medical degree in London. He soon afterwards abandoned his practice for literary and scientific work. He writes on scientific subjects in a clear literary style, and has written amongst other books: *Man and Woman* (1894-1904), *The Soul of Spain* (1908), *The Task of Social Hygiene* (1912), *Essays in Wartime* (1916), *Kanga Creek* (1922), *The Dance of Life* (1923), *Essays of Love and Virtue* (1931). His greatest work is to be found in his *Studies in the Psychology of Sex*, in seven volumes published over a number of years.

Ellora Ruined city of Hyderabad, India. It is 13 m. from Aurangabad and is noted for its temple and caves, which are among the wonders of India. Extending along the front of a hill for over a mile, these caves were cut in the rocks and the rock temples include Buddhist, Brahmin and Jain examples and date from the 5th, 9th and 10th centuries. The Kailas temple, a famous ruin, is here also.

Ellwood **Thomas.** English writer. Born in 1639 at Crowell in Oxfordshire, he was converted to Quakerism about 1659. He is chiefly known as the friend and assistant of Milton, whom, from 1662, he served by reading to him. He suggested the idea of *Paradise Regained*. Ellwood wrote a good deal in defence of the Quaker faith and also an *Autobiography* which is full of interest. He died March 1, 1714.

Elm Genus of trees and shrubs (*Ulmus*), native to N. temperate regions. The common *U. campostris*, a tree growing up to 130 ft., rarely perfects its winged, one-seeded fruits in Britain, where it is usually propagated by layering or suckering. The hard, tough close-grained timber serves for keels, tackle-blocks, coffins, wheel-naves and common turnery. The indigenous Scotch or wych elm, *U. montana*, which is almost as tall, yields timber much employed for boat and coach building, because it is flexible when steamed.

Elms are subject to a disease which causes the tree to die back. This became serious in France and Belgium after the Great War and in 1927 appeared in England.

Elman **Mischa.** Russian violinist. Born Jan. 20, 1891, son of a Jewish schoolmaster, he made his first appearance in public in St. Petersburg in 1904. In 1905 he played in London and was soon recognised as one of the world's masters. In 1920 he was naturalised as an American and made his home in New York.

Elmham Name of several English villages. The largest, **North Elmham** is on the Wensum, 5 m. from East Dereham and 127 m. from London, on the

L.N.E. Rly. Pop. 900. **South Elmham** is about 5 m. from Bungay.

Elocution Art of speaking effectively in public. A course in elocution is part of the training of an actor. It is also studied by preachers and those who wish to become public speakers. Much depends upon the natural qualities of the voice, but, however good these are, they can be improved by some knowledge of correct pronunciation, the control of the breath, the right use of expression and gesture and other such matters.

El Paso City, river port and watering place of Texas, U.S.A. It stands on the Rio Grande river, on the Mexican border, and is served by Mexican as well as American railway lines. There is a trade in the minerals, lead, copper and silver, mined in the neighbourhood, and the industries include large smelting works for lead and copper. There is a trade along the river and the city has some manufacturing industries. It is the centre of the Rio Grande reclamation project, and the large quantities of cotton grown on the reclaimed land have brought fresh industries to the city. Pop. 102,421.

Elsinore Seaport of Denmark. It stands on the Island of Zealand and on The Sound, and is connected by railway with Copenhagen. The place has a shipping trade and some manufactures and from here a ferry goes to Helsingborg in Sweden. It is the reputed scene of Shakespeare's *Hamlet*. Pop. 13,800.

Elstow Village of Bedfordshire. It is just outside Bedford. In 1628 John Bunyan was born near the village, in which he lived after his marriage. Pop. 500.

Elstree Town of Hertfordshire. It is 7 m. from St. Albans, on the L.M.S. Rly. and is also reached by the Metropolitan Rly. The place has become a centre of the film industry and here and at Boreham Wood are large studios. In 1936 about 5 acres of studio buildings were destroyed by fire. Pop. 2230.

Elswick District of Newcastle-on-Tyne, on the Tyne within the city boundaries. Here are the extensive works founded by Sir William Armstrong, which now belong to Vickers, Armstrong, Ltd.

Eltham District of London. In the Borough of Woolwich, it is 7 m. from London Bridge, on the S. Rly. It is also served by tramways and motor omnibuses. The open spaces include Eltham Common, Avery Hill and Eltham Park. Old Eltham contains some interesting old houses. Nearer Woolwich is New Eltham. The early kings had a palace here. Most of it has disappeared, but the hall remains. Eltham has associations with Sir Thomas More, whose house still stands.

A township of North Island, New Zealand, is called **Eltham**. It is on the railway from Wellington and is the centre of a dairy farming district.

Ely City, market town and urban district of Cambridgeshire. It is on the Ouse, 16 m. from Cambridge and is served by the L.N.E. Rly. It is the chief town of the Isle of Ely and has an agricultural trade. Ely is famed for its cathedral, one of the finest and largest in England. The tower, 170 ft. high, is of rare beauty. Pop. (1931) 8382.

The Irish title of **Marquess of Ely**, taken from a village in Fermanagh, Ireland, has been held since 1800 by the family of Loftus. The eldest son of the marquess is called Viscount **Loftus**.

Ely Isle of. District of England. It is part of the county of Cambridge for some purposes, but has its own county council which meets at March. The district, in the north of the county, stretches from Ely to Wisbech and is famous for its market gardens. Pop. (1931) 77,705.

Elysium In classical mythology, the fair land, also called the Elysian Fields, where the souls of the good dwell after death. Homer depicts it as being on the western margin of the earth, by other writers it is called the Isles of the Blessed, or Fortunate Islands, and in a later age it is described as being in the nether world. A land of flowers, sunshine and happiness, great heroes were supposed to pass there without death.

Elzevir Name of a Dutch family famous as printers. In 1583 Louis Elzevir began business as a printer at Leiden and the business was continued by his descendants, first there and later at Amsterdam, until 1712. The Elzevirs won a great reputation by the excellence of their printing.

Embalming Method of preserving a dead body. It was practised among the ancient Egyptians, Peruvians and many other races, and has been revived to some extent in modern times in Europe and America. In Egypt the body was embalmed by several methods described by Herodotus and Diodorus, the internal organs being removed and preserved in special jars. Various aromatic resins and astringents, natron and bitumen, were used according to a definite ritual. Not only human bodies but cats, crocodiles and sacred birds were embalmed.

Embankment Originally a bank or mound made to keep water from flowing over the land. Now it is usually confined to such works along river banks, encroachments of the sea being dealt with by piers or breakwaters. Embankments usually include a roadway, the best known example being the Embankments along the Thames in London. Another kind of embankment is the earthwork made along the sides of a railway line when it passes through a cutting or depression.

Embargo Primarily a temporary order to prevent the arrival or departure of a ship. It was usually enforced on enemy vessels on the outbreak of war. The term is now used for the temporary stoppage of a particular trade. For instance there may be an embargo on the export of arms or on the import of drugs.

Embassy Building where an ambassador lives. The word is also used to designate the ambassador and his staff collectively. As a building the embassy is regarded as being on the land of the country that owns it. By a similar convention, an embassy is freed from rates and taxes.

Ember Days Four seasons for prayer and fasting observed in the liturgical churches of W. Christendom. They comprise the Wednesday, Friday and Saturday of the weeks, called Ember Weeks, which begin with the 1st Sunday in Lent, Whitsunday, Holy Cross day (Sept. 14) and S. Lucy's day (Dec. 13). The Anglican communion appropriates the Sundays following them for ordinations, the Roman Catholic church the Saturdays of the Ember Weeks.

Embezzlement In English law the offence of appropriating money by a servant or agent, as when an agent or collector keeps for himself money paid to him on account of his employer, or where a shop assistant puts in his pocket money paid to him for goods sold.

Emblem Device or picture made to embody a spiritual idea or to symbolise a quality. In art, emblems have been attached to most of the saints, and even to Jesus Christ. Instances are the lily of the Virgin, the keys of S. Peter and the lamb of St. John the Baptist, and there are thousands of others. Printers call the marks they use on their works emblems. The modern substitute of the emblem is the badge.

Embolism Medical term for the condition of obstruction in the arteries or capillaries due to some substance carried in the blood. Usually this condition is caused by masses of fibrin detached from a blood clot formed in a vein on the heart, but it is sometimes caused by foreign bodies which have entered the blood stream. An embolism occurring on the brain may cause paralysis, and when formed in a limb may be followed by gangrene.

Embroidery Method of decorating materials by means of needle and thread. Beautifully embroidered work was made in Babylon and Greece and the Christian church has always made much use of embroidery to adorn vestments and hangings. Wonderful patterns were worked with remarkable skill and patience and sometimes, as in the Bayeux Tapestry, historical scenes were depicted.

To-day, the more elaborate forms of embroidery are rarely practised except by professional workers for churches and so on. Women's garments are sometimes adorned with embroidery, but much of this is machine made.

Embryology Section of biology dealing with the developmental stages of an animal or plant from the egg to the mature organism. This science has become of great importance, as it is only by the study of the early stages that the true relationships of many organisms can be ascertained, as in the case of the barnacles whose embryology shows that they belong to the Crustacea, although, from anatomical observations they were classed by the older naturalists as mollusca.

The individual plant or animal usually starts its life cycle in the union of two germ cells or gametes, one the sperm cell or spermatozoon, the other the ovum or egg cell. The ovum, after fertilization, undergoes cell division resulting in the formation of tissues and organs, the details of these early stages varying greatly in different types. Further, the evolutionary history of the race is in some way stamped upon the germ cells with the result that the individual recapitulates more or less the stages through which it has evolved.

Emden Seaport of Prussia, Germany. It stands on the estuary of the Ems, on the borders of the Netherlands, 50 m. from Oldenburg. A short ship canal links the harbour with the River Ems, and Emden is also the terminus of the important canal to Dortmund. The town has a considerable trade for which there are extensive harbours and it is a fishing centre. Another industry is shipbuilding. Pop. 27,800.

The Emden was the name of a German light cruiser. She displaced 3,600 tons and early in the Great War did a good deal of damage to British shipping in the Pacific and Indian Oceans. On Nov. 9, 1914, she was caught and destroyed by the Australian cruiser, *Sydney*, at North Keeling Island. A later light cruiser of this name, launched in 1915, was surrendered by Germany at the armistice.

Emerald Precious stone, the green variety of the beryl. It is a silicate of beryllium and aluminium, the colour being due to a minute proportion of chromium compounds and varying from a grass-green with a yellowish tinge to a deep emerald green. The lustre of the emerald is vitreous with a velvety effect in the finest gem stones; few specimens are flawless or have uniform colouring. The finest stones are found at Muzo in Colombia.

Emerson **Ralph Waldo.** American author. Born in Boston, May 25, 1803, he was the son of a Unitarian minister. He was educated in his native town and at Harvard, and became a teacher. In 1829 he was selected as minister of a Unitarian church in Boston, but three years later he resigned because his views were unacceptable to his congregation. He then visited England where he began his lifelong friendship with Carlyle, and met Coleridge and Wordsworth. Soon after his return, he settled at Concord and earned a living by preaching and lecturing, but his reputation was really made by his writings, especially his essays and poems. He kept up a close connection with his English friends and lectured in England in 1847. He died at Concord, April 27, 1882, and was buried in Sleepy Hollow cemetery.

Emerson's first book was called *Nature*, 1836, and in it and its successor, *The American Scholar*, he outlined the principles of his philosophy, called transcendentalism. The organ of this movement was *The Dial*, which he edited for two years. In 1841 he published his first volume of essays and in 1847 his first volume of poems. *Representative Men* are lectures delivered in England, his visit to which country inspired *English Traits*. His later volumes include *The Conduct of Life*, 1860; *Society and Solitude*, 1870; and *Letters and Social Aims*, 1876.

Emery Dark brown or greyish-black variety of corundum. It is composed of alumina mixed with the iron oxides, magnetite and haematite, and is used as an abrasive on account of its extreme hardness. It is found in bands or irregular granular masses in crystalline limestones associated with metamorphic rocks in Naxos in the Aegean Sea, but its chief commercial sources are Ontario, New York State and the Transvaal. The rock is reduced to various grades of powder, which is used for grinding, cutting and polishing metals, etc.

Emetic Substance which, when taken into the stomach or injected subcutaneously, induces vomiting. It is used in cases of whooping cough and bronchitis to remove accumulations of mucus, in some forms of dyspepsia where evacuation of the stomach is necessary, and in many cases of poisoning. Emetics in general use are mustard or salt in warm water, sal volatile, ipecacuanha wine and sulphate of zinc, while apomorphine is injected beneath the skin as a powerful but non-irritant emetic.

Emigration Act of leaving one's native country in order to settle

in another. From the earliest times there have been emigrations of people from one land to another, but emigration in the modern sense only began in the 17th century when Europeans crossed the Atlantic to settle in America. There were also emigrations within Europe such as those of the Huguenots after the revocation of the edict of Nantes. In the 19th century emigration to North America reached enormous proportions, Ireland and Scotland being two of the countries that contributed greatly to it. Australia and parts of South Africa were also peopled by European emigrants.

After a time, as the new countries filled up, they began to place restrictions on immigrants. This took the form of requiring them to possess a certain capital, or a certain standard of education, or freedom from disease. Still more drastic measures were taken in the United States, Australia, Canada and elsewhere to keep out coloured immigrants, on the ground that their lower standard of living was a menace to the white man.

After the Great War, for these reasons and also for others, *e.g.*, pensions, insurance and other benefits which made people more reluctant to leave the homeland, there was a great decline in emigration. For instance in 1913, 196,278 emigrants left the United Kingdom for Canada, 77,934 for Australia and New Zealand, and 77,014 for U.S.A. In 1933 the corresponding figures were 28,391, 12,195 and 22,189.

The United States adopted a policy of only allowing a limited number of immigrants from each nation. For each a quota, based on the number of each nationality already in the country, was fixed, and only this number was admitted each year. In 1933 the number allowed was 23,068 divided as follows :

British Isles	..	1317	Italy	.. ..	3477
Germany	..	1919	Other Nations	..	16,355

In order to encourage emigration, the British Government has an Oversea Settlement Department at Caxton House, Westminster, S.W.1. Suitable emigrants can be helped, and under the Empire Settlement Act of 1922 over 50,000 were assisted to emigrate in 1927.

Emir Arabic word for a ruler or commander. Other forms of it are ameer and amir. The form emir is only used in Africa, where it refers to an independent chieftain.

Emmaus In Biblical geography, a village in Palestine. Its exact position is unknown, but it was not far from Jerusalem. It was for a long time identified with the Emmaus, rebuilt by Vespasian under the name of Nicopolis, now known as Amwas. Others identify it with Koloniyeh and El Kubebe, both about ten miles from Jerusalem.

Emmet **Robert.** Irish politician. He was born in Dublin, the son of a doctor, in 1778, and went to Trinity College there. Influenced by a stay in France, he decided to make an attempt at securing independence for Ireland. He planned a rising in Dublin, but this was made known to the authorities and Emmet, having fled to Wicklow, was caught. Found guilty of treason he was hanged, Sept. 20, 1803.

Empedocles Greek philosopher and poet. He was born at Agrigentum in Sicily. He set up a democracy there, but later left Sicily and settled in Peloponnesus. His works, all in verse, include a poem on medicine, on purification and on natural science. He held there were four unchangeable elements, fire, air, earth and water, and two opposing forces, love and hate, which bind or separate.

Emperor Word taken from the Latin *imperare*, to rule, and used for a ruler more powerful than a king. Julius Caesar called himself *imperator* and his nephew, Augustus, was the first of the Roman emperors. The title was used by those who claimed to be the successors of the Roman emperors. *See* EMPIRE.

A large butterfly found in the south of England is called the **emperor**, or **purple emperor**, on account of the purple lustre on the male. There is also an emperor moth which is found in Great Britain.

Empire Term used loosely for a state of the most powerful kind which is ruled by an emperor or empress. It comes from the Latin word *imperium*. The German word for it is *Reich*. The first empire was the Roman. Later the word was used for the great states that existed before Rome, and men speak of the Assyrian, Persian, Babylonian and other empires.

The Roman Empire was continued by the Byzantine and the mediaeval empires and on the ruins of the latter arose the Austrian Empire in 1804 and the German Empire in 1871. Both these disappeared in 1918, while the Russian Empire, which also claimed succession from Rome through Byzantium, was destroyed a year earlier. The title of Emperor of the French was taken by Napoleon in 1804 and France was an empire for 10 years. This was the first French Empire. The second lasted from 1852 to 1871 and its ruler was his nephew, Louis Napoleon, known as the Emperor Napoleon III.

In the 19th century, too, the term empire began to be used for the lands under the King of Great Britain and Ireland. India was made an empire when the title of empress was given to Queen Victoria in 1878. In America two empires, Brazil and Mexico, arose, but each had only a short life. The only empires in the world since 1918 are the British and the Indian, one within the other, and the Japanese, but neither of these has any resemblance to the earlier empires.

THE HOLY ROMAN EMPIRE. The Empire, in full the Holy Roman Empire, known also as the Mediaeval Empire, lasted from 800 to 1806. It was created by Charlemagne, who was crowned emperor in Rome by the Pope and believed himself to be the successor of Augustus Caesar. It consisted of the lands under his rule, which included the countries now known as France, Germany, part of Italy and other European lands. This empire was divided after his death and in the 9th and 10th centuries it fell to pieces.

The Empire was revived in 962 by Otto the Great, Duke of Saxony, who was crowned, like Charlemagne, in Rome by the Pope. His empire, however, did not include France, but consisted chiefly of Germany and Italy. Otto's son and other descendants succeeded him, but the idea grew up that each must be elected and be crowned by the Pope. The Electors at first were all the princes of Germany, but gradually they were narrowed down to seven, the Archbishops of Mainz, Treves and Cologne, the King of Bohemia, the Count Palatine of the Rhine, the Margrave of Brandenburg and the Duke of Saxony.

The Saxons, descendants of Otto the Great, were emperors until 1002. Then came the Franconian or Salian, emperors who ruled

until 1124. During this time there took place the tremendous struggle for supremacy between the Papacy, under Pope Gregory VII., (Hildebrand) and the emperors. The Franconian emperors were succeeded by the Swabian house of Hohenstaufen and during their reigns the fight was renewed. On the whole the popes had much the better of it and when Frederick II. died in 1250 the Empire was in a state of chaos.

After a period without a ruler, Rudolph of Hapsburg was elected German king in 1273, but he was not crowned at Rome and so is not reckoned as an emperor. For the next 50 years or so there was continual fighting for the imperial crown and, although various princes were crowned emperors, no one had any real authority. In 1346 Charles, King of Bohemia, became ruler of Germany and later was crowned emperor. By this time Italy had been lost and the Empire consisted of little more than Germany, although the titular connection with Rome was maintained.

Charles was followed by his two sons, Wenceslaus and Sigismund, and on the death of the latter Albert of Hapsburg secured the Empire. From then until 1806 the Empire was in practice, though not in theory, the possession of that great family. One after the other its members were elected and took the imperial title, but, especially after 1648, the Empire was but a loose collection of rival states over which the emperor had little authority. The greatest Hapsburg emperor was Charles V.; the last was Francis, who resigned an empty dignity in 1806. He belonged to the family of Hapsburg-Lorraine, for he was descended from the marriage of Maria Theresa, the heiress of Charles VI., and Francis, Grand Duke of Lorraine.

Empire Day In Great Britain an annual celebration. It takes place on May 24, the birthday of Queen Victoria, and dates from 1904. The idea is due to the 12th Earl of Meath. Empire Day is not a bank holiday.

Empire Free Trade *See* IMPERIAL PREFERENCE.

Empire Marketing Board British Government organisation, founded in 1926, to advise the government on matters connected with marketing Empire produce. In 1933 its services were transferred to the Imperial Economic Committee. Publicity was an important activity, while by grants to suitable institutions at home and in the colonies it encouraged research in connection with Empire agricultural products suitable for the home market.

Empire Style Neo-classical style of French decoration, in vogue during Napoleon's consulate and empire. Following the Directoire style, it derived its impulse from Napoleon's campaigns in Egypt, which popularised the sphinx, and from the discoveries then recently made at Pompeii and Herculaneum. Architecture simulated Roman grandeur; furniture displayed rectangular forms, sometimes with swelling curves, as in sofas, and curvilinear motives, such as wreaths and bows; textiles bore the bee, eagle and Napoleonic N. Its influence lasted until 1840.

Empiricism Knowledge which rests solely on experience and induction, not on the study of laws and general principles. It is used for a school of philosophy in which these are the essential ideas. The philosophers who have taught empiricism include Hobbes, Locke and John Stuart Mill.

Employer One who engages another to work for him or her at a wage or salary, either temporarily or permanently. An employer must, in his dealings with his employees, observe the laws concerning the relations between master and servant; such laws include the length of notice necessary to terminate an engagement, etc. Between the employer and employed there is a contract.

At common law an employer is liable to pay damages to a servant who is injured in the course of his employment. This was dealt with in detail in the **Employers' Liability Act** of 1880. The matter is also dealt with in the various Workmen's Compensation Acts, and a person who is injured may decide under which he shall take action. To-day the majority of cases are dealt with under the Workmen's Compensation Acts. Employers usually insure themselves against the risk of injuries to their employees.

Employment Exchange In 1905 local authorities in Great Britain were empowered to open labour exchanges as they were called, and in 1910 a national system was established. Buildings for the purpose were erected or bought all over the country. In 1916 the name was changed to employment exchanges. They were at first controlled by the Board of Trade, but later passed under the Ministry of Labour. These exchanges are responsible for paying out benefits to those insured against unemployment (*q.v.*).

Empress Female ruler, or the wife of an emperor. It comes from the Latin *imperatrix* and was used for the female rulers at Byzantium. Several rulers of Russia were empresses, as were the wives of the French, German and Austrian emperors; but the last-named were not sovereigns.

Some of the boats of the Canadian Pacific Line are named empress, *e.g.*, *Empress of Scotland*.

Ems River of Germany. Rising in Thuringia it flows for 210 m. through Westphalia and Hanover to the North Sea. Emden stands near its mouth and it is connected with Dortmund and other places by the Dortmund-Ems canal.

Emsworth Seaport of Hampshire. At the mouth of the little River Ems, it is 76 m. from London and 9 from Portsmouth, on the S. Rly. There is a small harbour. Pop. 2200.

Emu Large bird found only in Australia and the adjacent islands. Though smaller, it resembles the ostrich, having only rudimentary wings. It can run very fast and swim well. Emus live in flocks in uninhabited parts and feed chiefly on fruit. They are hunted with dogs and will breed freely in captivity. The male is smaller than the female and incubates the eggs, which are green.

Enamel Term applied to either a hard, smooth, resistant coating on metal, pottery, etc., or to a varnish paint or lacquer on wood, metal and leather. The first kind consists of a glossy material applied in paste form to an article which is afterwards heated in a furnace. Its application in coloured designs was brought to a fine art by Egyptian, Greek, Roman, Byzantine and mediaeval craftsmen.

The second kind consists of a pigment added either to a linseed oil varnish containing kauri gum or other resins, or to a resin dissolved in pyroxylin or cellulose nitrate.

Encaenia Annual festivals in memory of the dedication of particular churches. An instance is that commemorating the Temple at Jerusalem. The annual commemoration of the founders and benefactors of Oxford University in June is called the Encaenia.

Encaustic Method of painting by means of pigments with melted wax as a medium. It was used by the Greeks and Egyptians of the Graeco-Roman period. In one process the pigments were mixed with white wax and moulded into sticks or cakes and the tints were blended with a heated metal tool, the rhabdion; in another method the brush was used for laying on the colours, the whole picture being then heated.

Encke Johann Franz. German astronomer. He was born at Hamburg, Sept. 23, 1791, and after service in the army, became director of an observatory near Gotha in 1817. Director of the observatory at Berlin from 1825-63, he died at Spandau, Aug. 26, 1865. Encke gave his name to a comet. This was discovered by a French astronomer in 1818, but Encke did valuable work in calculating its movements; he also made observations on the transits of Venus.

Enclosure Common land converted to the use of a private individual. In England, in the Middle Ages, there was an enormous amount of common land, but gradually much of it was enclosed by the lords of the manor. By law they could do this, provided they left enough unenclosed for the use of the tenants. In the 18th century by special Acts of Parliament dividing the land between the lord of the manor and the tenants, about 5,000,000 acres were enclosed, and the practice continued until 1845, when commissioners were appointed and further enclosures were few and small.

Encyclical Circular letter addressed by an ecclesiastical authority to its members. In the Anglican communion the word nowadays denotes letters summarising the episcopal conclusions formed at the periodical Lambeth conferences. In the Roman Catholic communion it is reserved for letters addressed by the pope to all bishops on topics interesting the church at large.

Encyclopaedia Word of Greek origin meaning the whole circle of knowledge. It is used for books that give, in alphabetical order, information on all subjects of human interest and sometimes for works not arranged on the alphabetical plan. Books dealing in similar fashion with one branch of knowledge, *e.g.*, education or chemistry, are sometimes called encyclopaedias.

Encyclopaedias go back to the time of the Greeks. The first English example appeared in 1704, and in 1728 Ephraim Chambers published one. *The Encyclopaedia Britannica* first appeared in 1771 and until it passed under American control was the leading British example. The most famous of all was the *Encyclopédie* edited by Diderot and D'Alembert. The group of brilliant men who wrote for it were called the Encyclopédistes and included Voltaire and Rousseau. In recent years the tendency has been to make encyclopaedias shorter and handier, and the present work is written with this end in view.

Enderby Land District in Antarctica. Situated in about 50° E. long., due S. of Madagascar, and within the Antarctic Circle, it was named by John Biscoe, who discovered it in 1831, when sailing in the London whaling brig *Tula* belonging to Enderby Brothers. The Enderby quadrant designates one of the four map-sectors constituting the south polar region.

Endocrinology Study of the endocrine (internal secreting) glands and their secretions (hormones). These glands include the thyroid, thymus, supra-renal, pituitary, pineal body, carotid and coccygeal glands, which yield up their secretion to the blood stream without the intermediary of a duct; and others (pancreas, ovary, testes) which though provided with ducts for certain secretions, manufacture also others (endocrines) which reach the blood directly. Thus the term "ductless glands" is not synonymous with endocrine glands.

The internal secretions govern nutrition, growth, metabolism; deficiency in some may produce abnormalities such as cretinism or dwarfism; excess may cause glantism, and in the case of the thyroid, exophthalmic goitre. Both physical conformation and mental make-up are affected by their functioning. Defects may be remedied by the administration of glandular preparations or by surgical removal of portions of the glands. *See* GLAND.

Endogamy *See* EXOGAMY.

Endorsement Writing on the back of a document constituting a sanction. Cheques, bills of exchange and other documents must be endorsed before they can be paid into a bank. The endorsement usually takes the form of the signature of the person to whom the document is made out.

Endowment Money settled on an institution or society. The term is generally used for money given or bequeathed to a religious, educational or philanthropic institution which, being corporations, can hold land or other property in perpetuity. In Great Britain a vast sum of money is held as endowments, some of it being controlled by the Charity Commission.

Endowment policies, as they are called, are issued by insurance companies to provide money for educating a son or daughter, or starting them in life, or for some other purpose.

Endymion In Greek legend, a youth of remarkable beauty, variously described as a king, shepherd or hunter. He was kissed by Sĕlēne (the moon) when asleep in a cave on Mount Latmus in Caria. Sĕlēne caused him to sleep for ever that she might be able to kiss him without his knowledge. Keats called his most considerable poem *Endymion*.

Enema Fluid injection into the bowel. Enemata may be cleansing, comprising water with or without soap and purgatives; nutrient, when stomach derangement prevents digestion; sedative for painful bowel irritation; destructive, for threadworms; and healing, as for intestinal ulcers. A rubber ball syringe or a funnelled tube passes the fluid through a round-ended nozzle into the rectum.

Energy Term used in physics for the power of doing work. This power is not necessarily active; it may be stored up in a body, as in the case of a coiled spring, which possesses potential or static energy. Work implies the action of force and motion, and when the spring is released these factors become active in the performance of work.

In **static energy** there must be that which will cause the continuance of the force in spite of motion as in the elasticity of the spring. In **kinetic energy**, the energy of motion, there is inertia or momentum to ensure the continuance of the motion against resistance. A leaden weight moving rapidly will produce a greater effect than a ball of wool moving at a high speed. Energy is measured in units of work or foot-pounds, one foot-pound being the amount of work required to raise one pound vertically one foot.

Enfield Market town and urban district of Middlesex. It is 10½ m. from London on the L.N.E. Rly. The New River passes through the town. Enfield Lock, where is the Royal smallarms factory, is a district near.

Enfield Chase, fragments of which survive in Hadley Wood and elsewhere, was at one time a noted hunting ground and a palace was built here. The greater part of the palace was demolished in the 18th century. What remained has been used as a school and then as a club. A section of a cedar brought from the W. Indies about 1780 and believed to have been the first cedar to be planted in England, is preserved in Enfield library. Pop. (1931) 67,869.

Enfranchisement Liberation or the admission to political privileges. Persons are enfranchised by being given the right to vote, as was done in 1918 and 1928 in Great Britain when women were made voters. Another kind of enfranchisement is turning a leasehold tenure into a freehold one.

Engadine Valley of Switzerland. The upper part of the valley of the River Inn, it is on the borders of the Tirol. About 60 m. long it is famed for its beauty and climate. It is divided into two parts, upper and lower, and in it are several places visited for health and pleasure, such as St. Moritz and Pontresina.

Engelberg Pleasure resort of Switzerland. It stands at the base of the Titlis Alps, 14 m. from Lucerne. The chief building is a Benedictine abbey with a fine and valuable library and an old church. The place is noted for its cheese. Pop. 2500.

Enghien French prince, the last of the Condé family. Louis Antoine Henri de Bourbon Condé was born Aug. 2, 1772. He commanded a royalist army against the republicans before 1801, when he settled in Baden, but three years later, falsely accused of conspiracy, he was arrested by Napoleon's orders, tried by a mock court-martial and shot, March 21, 1804.

Engine Mechanical appliance used for converting one form of energy into another. The conversion of heat into mechanical energy is seen in the steam engine and in gas, oil and internal combustion engines.

Formerly the term was applied to any complex machine, such as a beer engine or water engine, and in a military sense to any appliance used in war. Of modern types of engines the internal combustion engine and the Diesel oil engine are noteworthy.

Engineer One engaged in any engineering work. There are engineer officers in the navy. These pass through courses at Keyham and Greenwich and then enter the navy, where they rank as engineer lieutenant, engineer commander and so on up to engineer vice-admiral. Owing to the increase in the power of warships, this branch of the service is of much greater importance than formerly. In the army engineers belong to the corps of royal engineers; engineers are also employed in the air force.

In civil life engineers are employed on a great variety of work and are classed accordingly. They are trained in colleges and at the universities, most of which give degrees in engineering. Engineers are employed by the Board of Trade, the Post Office and other Government departments, but more find work with railway companies, shipbuilders and contractors, whilst there are many openings with local authorities and companies that possess electric light, gas and water plants. Every large city or town has a city or borough engineer with a staff.

Skilled artisans engaged in making engines, boilers and the like are called engineers. These form a powerful trade union, the Amalgamated Society of Engineers. The word was first used in England in the 13th century as a military term.

Engineering **Civil engineering** is concerned with the design and construction of bridges, roads and docks and with irrigation and its associated mechanical devices. **Mechanical engineering** deals with the machinery for generating motive power and with mechanical appliances for trades and manufacturing processes. **Electrical engineering** is concerned with all forms of electrical machinery for generating power and the methods of electric lighting and heating. Further specialisation has resulted in the important branches of **mining, metallurgical, agricultural, chemical** and **wireless engineering.**

The principles of engineering science and their practical application in many directions appear to have been known in very ancient times as is demonstrated in the remains of constructional work in Egypt, Crete and elsewhere. The remains of double-cylinder force pumps used by the Romans show a high state of development of mechanical knowledge.

Civil engineering as a definite branch began in the 17th century, and the discovery of the steam engine and the progress of scientific knowledge brought about the specialisation of other sections.

The interests of the science are fostered by the Society of Engineers in London and by the Institutions of Civil, Mechanical and Electrical Engineers, whose headquarters are also in London. The British Engineering Standards Association exists to assist the profession. At the National Physical Laboratory there is a research department for engineering, and at South Kensington there is an engineering museum.

ENGINEERING AS A CAREER.—It is said, and with some truth, that engineers, like poets, are born, not made. At all events a "feeling" for machinery is necessary to the would-be engineer if he is to find success and happiness in his craft.

To become a skilled artisan it is necessary to enter a workshop at the age of 15 or 16, and to serve an apprenticeship of four or five years at a nominal wage. The artisan's pay is not high—usually somewhere in the region of £3 10s. to £5 per week.

Technical apprentices are those who propose to take up engineering work of a higher grade, and are usually boys of 16 to 18 years, and of good education. Their apprenticeship period is three or four years.

It is also generally possible, and a great advantage, to take a degree in engineering at a university or a diploma at a technical college, either before, or concurrently with, experience in or on works—but it should be remembered that the latter is essential.

Training will vary according to the particular branch of engineering it is intended to enter, and it is advisable to decide this at the outset. Full information of training, qualifications necessary and examinations which may be taken, is obtainable from the secretaries of the various technical institutions representing the particular branches of engineering. *See also* CIVIL ENGINEERING.

AUTOMOBILE ENGINEERING.—No new industry has made such progress of recent years as that of the manufacture of motor cars. The possibilities for an automobile-engineer are undoubtedly good for the able, trained and enterprising man, but like most other departments of engineering, it is at present somewhat overcrowded. The wage rate varies widely, but there are real opportunities for ultimate advancement for qualified men in the private car and commercial vehicle factories, the passenger carrying concerns and maintenance.

Those contemplating training for this branch of engineering should consult the Institution of Automobile Engineers (Watergate House, York Buildings, Adelphi, London, W.C. 2), the council of which has given considerable thought to the correct procedure for the trainee—and is therefore in a position to advise, through its secretary, on such questions as suitable works apprenticeship, Technical Evening and Part-time Day Classes, Full-time University Courses, and Full-time Courses at certain specialised colleges.

CIVIL ENGINEERING.—Under the term "Civil Engineering," as it is popularly understood, may be grouped work on railways, canals, harbours, docks, etc., structural steelwork and municipal engineering (waterworks, sewage, etc.).

As with the other branches of engineering, practical experience and scientific knowledge are the essentials, the latter being obtainable in a variety of ways. Advice on the possible avenues of training and the qualifications necessary should be sought at an early date from the Institution of Civil Engineers, Great George Street, Westminster, London, S.W.1. (It should be noted that the conditions of admission to this Institution are such as to be capable of fulfilment by one who has been trained in any branch of engineering.)

There is a field for Civil Engineers both at home and abroad. Pay usually commences at about £250 and may rise to £1000 or more, with suitable adjustments to conditions of living abroad.

ELECTRICAL AND WIRELESS ENGINEERING.—Electrical Engineering is divided into two classes, manufacturing and operating. It is advisable to take a thorough course in the theoretical side, and the usual apprenticeship is necessary. The student should qualify for membership of the Institution of Electrical Engineers (Savoy Place, Victoria Embankment, London, W.C. 2).

The possibilities of advancement for the electrical engineer are perhaps more promising than in any other department of engineering. The field of manufacture offers the widest scope for advancement and remuneration, but the development of Wireless Telegraphy and Broadcasting has introduced extensive possibilities in technical and administrative positions.

The more responsible posts carry salaries from £200 upwards, sometimes rising to £1000 a year or more. Abroad, in the Dominions and Colonies, salaries usually commence at £400 to £600 a year.

MINING ENGINEERING.—There is scope for the Mining Engineer, both at home and abroad, in commercial firms (which in the British Isles implies chiefly coal, with some iron ore, lead and tin), as mine inspectors and surveyors under the Mines Department and occasionally for Government posts in the Colonies.

Practical experience is essential, while the scientifically trained man (preferably a University Graduate) is more and more in demand for coal mining, metalliferous mining or oil-field development. Depending on the branch or branches of mining engineering adopted, the student should qualify for membership of one or more of the recognised technical Institutions, viz.; The Institution of Mining Engineers; The Institution of Mining and Metallurgy, both of 225 City Road, London, E.C.1, and the Institution of Petroleum Technologists, Aldine House, Bedford Street, London, W.C. 2.

Salaries for trained engineers range from £250 upwards per annum; mine managers earn £500 and upwards, while abroad the rates may be considerably higher. British qualifications are accepted in all parts of the world.

Engineers **Royal.** Corps of the British Army. It is organised into electric, field, fortress, postal, printing, railway and surveying companies, as well as a bridging, tracing and a searchlight battalion. In time of war they take the field in companies attached to various divisions or brigades. The corps may be said to date from 1772. Its strength in peace time is about 20,000 officers and men; but in 1918 it had risen to 340,000. The engineers are commonly called the sappers. Entrance to the corps is by competitive examination, after which the successful candidates pass through a course at Woolwich.

England Chief part of the island of Great Britain. Once a separate kingdom, it has become the nucleus of the United Kingdom and of the British Empire. Its king has become the ruler of vast areas including India, and its Government has, with modifications, been extended over large parts of the globe. Its area is 50,874 sq. m. Its population at the census of 1931 was 37,354,917, of whom 17,844,709 were males and 19,510,208 were females. London is the capital.

PHYSICAL FEATURES.—The country, including Wales for this purpose, is almost an island, its only land boundary being where it touches Scotland. Its extreme lengths are 430 m. and 370 m., and it has a coastline of about 1800 m. Most of the country is fairly

level without any ground over 1000 ft. high. In the N.W., however, are mountainous areas. The country is well watered. The chief rivers are the Thames, Severn (partly in Wales), Trent, Tyne, Tees, Great Ouse, Yorkshire Ouse, etc. Round the coast are many excellent harbours and river mouths on which are great ports such as London, Liverpool, Hull, Bristol, Southampton and Plymouth. A network of railways covers the land, but canals are less general. Off the coast are a number of islands, the largest being the Isle of Wight.

DISTRIBUTION OF POPULATION.—England is divided into 40 counties, which vary much in size and population, the largest being Yorkshire and the smallest Rutland. The population is very unevenly distributed, as for nearly 200 years the land has become more industrial and less agricultural. It tends to gather in great industrial areas. More than half the population live within an easy radius (say 25 m.) of London and Manchester. In the 20th century there has been a tendency for industry to congregate in the south, a reversal of the process of the 18th and early 19th centuries when it congregated in the north. In the agricultural counties, Lincolnshire, Norfolk, Wiltshire and Somerset, for example, the tendency is for the population to decline; if it does not do so it is because of its proximity to an industrial area. The largest cities after London are Birmingham, Liverpool, Manchester and Sheffield, all with over 500,000 inhabitants. Leeds, Bristol, Hull, Bradford, Newcastle, Stoke, West Ham and Nottingham have each over 250,000, whilst Portsmouth, Leicester, Salford and Croydon are very near that figure.

England **Church of.** National Church of England and the recognised parent of the Anglican Church throughout the world. It dates from the 6th century, when S. Augustine settled at Canterbury and began to preach Christianity in the country. It was soon organised into dioceses under bishops, and this organisation has continued. The main influences came from Rome, but Celtic influences were mingled with these.

Under Henry VIII. the Church of England broke away from Rome. Its doctrines were reformed under Edward VI., and since the time of Elizabeth there has been no fundamental change. Its doctrines are in the 39 articles, and its services are contained in the Book of Common Prayer, both legalised in that reign.

After the Great War the Church in Wales, hitherto an integral part of the Church of England, was disestablished, and now forms an independent branch of the Anglican Church under its own archbishop. The Church of England is organised in two provinces, Canterbury and York, each under an archbishop, and in 43 dioceses. The two archbishops and 22 bishops sit in the House of Lords.

The Church of England is controlled by the state, and no alterations can be made in its doctrines, or its form of worship, without the sanction of Parliament. In 1927 and 1928 attempts to revise the prayer book were rejected by the House of Commons. Under Parliament, it is governed by a national assembly, a body set up in 1920 and consisting of three houses, bishops, clergy and laity. There is also an older body called Convocation (*q.v.*). In addition there is an annual church congress, and periodically a conference of all Anglican bishops meets at Lambeth.

In 1931 the beneficed clergy in the Church of England numbered 12,773. There were during the year 1930 200,000 confirmations and 430,621 baptisms. There were 2,401,635 communicants at Easter.

Englefield Green Village of Surrey. It is 1¼ m. from Egham and near Windsor Park. The village is the scene of Mrs. Oliphant's *Neighbours on the Green*. Another Englefield is a village in Berkshire, about 6 m. from Reading.

English Channel Arm of the sea, between England and France. On the west it connects with the Atlantic Ocean and on the east with the North Sea. It is narrowest between Dover and Calais (21 m.), and widest between Lyme Regis and St. Malo (145 m.). Its length is 280 m. The English coastline is 400 m., and the French nearly 600. The French call it La Manche, the sleeve. *See* DOVER.

Engraving Art of cutting a design upon wood, metal or stone to obtain an impression of the drawing in ink upon paper. The woodcut was the earliest form of engraving and was at its height in the 15th century; in this process the parts to appear white on the print were cut away on the wood block leaving the black parts in relief. In engraving on copper and later on steel-coated copper, popular in the 19th century, but now largely superseded by photographic and lithographic processes, the drawing is incised by means of a steel graver or burin. Engraving on stone is known as lithography. There is a fine collection of engravings in the British Museum.

Engrossing Form of writing in a fair, round, legible hand which is used for copying or writing legal documents. Formerly the engrossing of documents was done in a peculiar script modified from the ancient court hand and often far from legible.

Engrossing is also applied in a legal sense to the wholesale purchase of goods to create a monopoly for the purpose of raising prices. At one time it was an offence against the law.

Enham Village of Hampshire. It is 2 m. from Andover. After the Great War it became a centre for the treatment and training of disabled soldiers. The full name is Knight's Enham.

Enlistment Act of enlisting or enrolling oneself in the ranks of the army or air force. A recruit enlists on certain conditions of pay, etc., and for a certain period. If accepted as fit he signs an attestation paper, takes the oath of allegiance and becomes subject to military law.

Ennerdale Lake of Cumberland. About 3 m. long and ½ m. broad, it provides Whitehaven with a water supply.

Ennis Urban district and county town of Co. Clare, Irish Free State. It stands on the River Fergus 25 m. from Limerick and is served by the G.S. Rlys. Its port is Clare Castle. The trade is agricultural and there are some industries. Pop. 5500.

Enniscorthy Urban district and market town of Wexford, Irish Free State. It stands on the River Slaney, 77 m. from Dublin, on the G.S. Rlys. The chief object of interest is the castle, now a

private residence, and near the town is Vinegar Hill, the site of a rebel camp in 1798. The town has brewing and distilling industries. Pop. 5500.

Enniskillen Market and county town of Fermanagh, N. Ireland. It is 116 m. from Dublin and 88 m. from Belfast on the G.N. (Ireland) Rly. and stands on an island in the River Erne, with suburbs on both sides. There is an agricultural trade, also some river traffic. Pop. 4850.

Enniskillen or Inniskilling, a great Protestant centre in the time of William III., gives its name to two regiments of the British Army. These are the 28th Foot, known as the **Royal Inniskilling Fusiliers** and the **Royal Inniskilling Dragoons.** In 1921 the latter regiment was disbanded and its name transferred to the 5th Dragoon Guards.

The title of **Earl of Enniskillen** has been borne since 1789 by the family of Cole. The earl's eldest son is called Viscount Cole, and his seat is Florence Court, Enniskillen.

Ennius **Quintus.** Roman poet. One of the founders of Latin literature, he was born at Rudiae in Calabria about 240 B.C., and died in Rome about 170 B.C. He served with the Roman army in Sardinia and was taken by Cato to Rome, where he taught Greek. His great work was the *Annales*, a chronological account, written in hexameters, of Roman history, of which only fragments survive.

Enoch Name of four Old Testament patriarchs. One, the seventh in descent from Adam, the son of Jared and father of Methuselah, "walked with God" and, after living 365 years, "was not, for God took him" (Gen. v., Heb. xi.).

The apocryphal **Book of Enoch**, comprising primitive literary fragments compiled after 200 B.C. and completed under Herod the Great, is quoted in Jude 14. The other Enochs were a son of Cain, a grandson of Abraham and Keturah, and a son of Reuben.

Ensign Flag carried by a ship to show her nationality. Each nation has its own ensign, usually one for the navy and one for the mercantile marine. Great Britain has three ensigns. The white is for the royal navy, the blue for the royal naval reserve and the red for the merchant navy. Ships of the Royal Yacht Squadron have the privilege of flying the white ensign. Each ensign has the Union Jack in one corner. The ensign flying upside down is a sign of distress. In 1931 an ensign for aircraft was authorised. It is of light blue with a dark blue cross, edged with white, and has the Union Jack in the first quarter.

Ensign Former rank in the British Army. It was the equivalent of the second lieutenant of to-day. The duty of the ensign was to carry the regimental colours. The rank was abolished in 1871.

Ensilage Method of preserving green fodder or other crops. The material (silage) is stored in pits, stacks or towers (silos) so as to retain its succulency. It is necessary to exclude the air after fermentation is complete, otherwise over-heating of the silage takes place and the presence of organic acids gives rise to souring. Modern silos are built of wood, iron or concrete; the stack form is useful for saving hay crops in wet seasons.

Entablature In classical architecture the horizontal superstructure surmounting the columns and resting upon the capitals. It usually comprised three members, the architrave, carried from column to column, pier or wall; the frieze, if present; and the projecting, protective cornice. All these members, originally of timber, preserved when translated into stone, some reminiscent features, *e.g.*, triglyphs represented beam ends. The frieze was utilised for decorative sculpture and painting, but sometimes tended in late classical times to become overloaded and incongruous.

Entail Legal term for the rule by which real property is settled on a succession of heirs. In England a great deal of land was once settled in this way, but the amount gradually grew less since an entail could be broken with the consent of the heir. The system was finally ended by the Law of Property Acts of 1925. Real property can only be dealt with now by an ordinary settlement, although such is sometimes called an entail.

Entebbe Town of Uganda. It stands on a northern opening of Lake Victoria, and is the administrative capital of the British protectorate. Steamers go from here to other places on the lake, and there are also a mail and telephone service and an aeroplane landing ground.

Entente Cordiale Term for the friendship between Great Britain and France that began early in the 20th century and resulted in the alliance that carried on the Great War.

Enteric Fever Disease more properly termed typhoid fever (*q.v.*).

Enteritis Inflammation of the mucous membrane of the intestine, popularly called inflammation of the bowels. It receives specific names according to its locality, *e.g.*, appendicitis. Its most marked symptom is diarrhoea. It may be due to eating unripe fruit; may accompany certain infective diseases caused by micro-organisms, such as cholera and typhoid fever, which is often called enteric fever; or may be a chronic sequel to dysentery. Epidemic enteritis in young children is termed summer diarrhoea. *See* COLITIS.

Entertainment Amusement or diversion, any public spectacle, such as a cinema or theatrical performance, sporting event, etc. In Great Britain there is a tax on entertainments. It was introduced in 1916 and is in a scale which varies according to the price charged for admission.

Entertainments in schools and educational institutions are exempt from the tax, which in 1935 produced just over £9,724,280.

Entomology Branch of zoology concerned with insects. Most jointed invertebrates, including spiders, mites and centipedes, were formerly included, but the word is now restricted to the true or six-legged insects. Economic entomology considers insects in relation to mankind's interests. The **Entomological Society** of London, 41 Queen's Gate, S.W.7, founded in 1834, and various foreign societies, specialise in this study. There is an **Imperial Institute** of Entomology with headquarters at the Natural History Museum, London, S.W.7.

Entrepôt Term used for a store or bonded warehouse. It is also used for a seaport through which goods

pass. London is an entrepôt of the world's commerce.

Enver Pasha Turkish leader. Born in Constantinople in 1881, he became a leader of the Young Turk Party, and was active in the deposition of Abdul Hamid II. in 1909. He fought against the Italians in Tripoli and was Minister of War during the second Balkan War, in which also he led an army in the field. During the Great War, Enver, who had been an attaché in Berlin strongly favoured the German side. When peace was made in 1918 he escaped to the Caucasus and did all he could to upset the peace treaties. On Aug. 4, 1922, he was killed at Bokhara.

Environment Conditions that influence growth or development. It plays a prominent part in theories of evolution. Living beings must have a certain power of adapting themselves to their environment or else they die, but the extent of this power cannot be precisely ascertained.

Envoy Person sent on an errand, especially on a diplomatic one. It is used for one who is sent on a temporary mission, for instance to a coronation, in contradistinction to an ambassador whose mission is more permanent. An ambassador, however, is also called an envoy extraordinary.

Enzyme Active principle of a ferment. Enzymes belong to the class of catalysts, or substances whose mere presence induces chemical change in other molecules, but an enzyme will usually act on one or a few closely related chemical compounds only, and will refuse to touch any molecule coming outside its own limited range of specificity.

The amount of an enzyme present in any biological material is almost vanishingly small, but methods of extraction from such material in a state approaching purity have been worked out. Enzymes are now considered to be definite chemical compounds, anchored to "carriers" of much larger molecular size.

Eoanthropos Oldest known European race of man. It is one of a number of words, the first part of which is *eo* (a form of the Greek ēōs, dawn) used chiefly in palaeontology, in the sense of first beginnings.

Eocene Oldest division of the Tertiary system of geological deposits. It represents the period of the dawn of animal life and followed the Cretaceous period. Eocene strata usually rest upon the denuded surface of the underlying beds of white chalk and often form basin-like areas showing, by their character and fossil contents, their origin in estuaries and shallow seas. The beds consist of sands, clays, marls and, in S. Europe, N. Africa and Asia, a great development of limestone.

Eolith Name given to certain very early flint implements. They have been found near Ightham in Kent and elsewhere in S. England. Eoliths are generally flat on one surface, rounded with an ochreous patina on the other, and chipped to form a scraping edge or notches.

Eos Greek goddess of the dawn, regarded as identical with the Roman Aurora (*q.v.*).

Epact Term denoting the moon's age at the beginning of the year or the excess of the solar month or year over the corresponding lunar period. It is expressed in the number of days, and is given in almanacs for each year. The epact is used in calculating movable ecclesiastical feasts.

Epaminondas Theban general and statesman. He was born about 418 B.C., and in 371 was one of the generals at the Battle of Leuctra; in 370 he invaded Peloponnesus, where he founded Messene and Megalopolis. In 362 he invaded it for the fourth time, and while he gained a brilliant victory over the Lacedaemonians at Mantinea, he was himself slain. Thebes for a short time held the supremacy of Greece, but lost her position almost immediately after his death.

Epéhy Town of France. It is 13 m. from Cambrai and came into prominence during the Great War. In April 1917, it was taken by the British from the Germans, who had held it since the invasion of France in 1914. The Germans regained it in March, 1918, and kept it until the following September. Between Sept. 12 and 25, 1918, the British, assisted by some French divisions, attacked strong German positions and gained considerable ground. These successes made possible the attacks on the Hindenburg line. Nearly 12,000 prisoners and 100 guns were taken.

Épernay Town of France. It is about 19 m. from Châlons, in the department of the Marne. The town is a great centre of the champagne industry, and there are large rock cellars in which the wine is stored, and works for making casks, corks, etc. In July, 1918, there was some fierce fighting around the town, but it was held by the French, aided by a British contingent. Pop. 21,800.

Ephah Hebrew measure of capacity. It contained 10 omers and was used for dry goods such as flour and barley. It is said to have had the same capacity as the bath, which was a liquid measure, and to have contained from 4½ to 9 gallons. The word is apparently of Egyptian origin.

Ephemera Family of insects popularly called may-flies. They have a long, jointed abdomen, with three bristle-like tails. The aquatic larvae, living in ponds and sluggish streams, pass into a chrysalid stage which, in *E. vulgata* and *E. dancia*, two of the commonest of Britain's 50 species, furnish the bait that anglers call green drake and grey drake respectively. The perfect insects, which can be seen in May fluttering their lace-like wings in dense clouds, do not eat, and exist only for a day or two, or sometimes for a few hours only.

Ephesians **Epistle to the.** Tenth book of the New Testament. Written during S. Paul's first imprisonment in Rome, about A.D. 62, it was apparently a circular letter addressed to the churches of Asia Minor which Tychicus carried simultaneously with that addressed to the Colossians.

Ephesus In ancient geography, the chief of the twelve Ionian cities on the coast of Asia Minor. It was a great commercial centre. There are numerous interesting ruins, a great theatre (Acts, xix.), an odeum, or building for musical purposes, a stadium and the famous temple of Diana or Artemis, built in the 6th century B.C., and rebuilt in the 4th. This was regarded as one of the wonders of the world. Six important

councils of the Christian Church were held there between the 2nd and 5th centuries.

Ephod Surplice worn by Jewish priests when officiating at the altar. The high priest's ephod was of linen, fastened by a girdle and supported by two shoulder straps. On each strap was an onyx stone on which were engraved the names of the twelve tribes of Israel. There are several biblical references to it, notably in Exodus, xxviii., xxix., xxxix.

Ephraim Younger son of the patriarch Joseph. He was exalted over his elder brother Manassch in the paternal blessing. His descendants formed two of the tribes of Israel established in N. Palestine. Ephraim led the tribal opposition against the kingdom of Judah which resulted in the formation of the separate kingdom of Israel.

Epic Poem which deals with a great event in a lofty and dignified manner. The *Iliad* and the *Odyssey* are perhaps the world's greatest epic poems; another is *Paradise Lost*.

Epictetus Greek stoic philosopher. He was born at Hierapolis in Phrygia, and died at Nicopolis in Epirus. His dates are not known, but he died after A.D. 118. He lived in Rome as a slave in the house of Epaphroditus, a favourite of Nero, who emancipated him. When Domitian expelled the philosophers from Rome, he withdrew to Nicopolis. His great rule of life was "endure and abstain" which teaches men to judge what they can and ought to control, and what they ought to bear as being beyond their control.

Epicureanism Greek school of philosophy. It was founded by Epicurus who was born in Samos, 341 B.C., and came to Athens, where he taught and died, 270 B.C. According to him happiness consists in pleasure or rather in the absence of pain. But man needs a correct idea of the nature of pleasure; it is not individual pleasure, but complete mental tranquillity (*ataraxia*), for which virtue is indispensable. The mere sensual enjoyment of the later Epicureans was rejected by Epicurus.

Epidemic Term applied to a disease prevailing among a number of people at the same time. It is spread by infection, usually by the agency of micro-organisms. Among such epidemic diseases are influenza, measles, scarlet fever, whooping cough, etc. The term endemic is used when the disease is local in character and pandemic when affecting very large areas. Epidemics are less frequent than in former times, owing to various preventive methods and the greater attention paid to sanitation.

Epidemiology is the branch of medical science devoted to the study of epidemic disease.

Epidermis Outer layer of the skin in animals, and the superficial cell layer in the higher plants. The animal epidermis, also called the cuticle, may be one or many layered, and in the higher animals, may be covered by a superficial horny layer.

Epiglottis In man a thin flap-like structure containing elastic cartilage. It is situated in front of the glottis or entrance to the larynx and behind the root of the tongue. In its ordinary position it is directed forward and in some types may extend over the edge of the soft palate. It prevents food passing into the air passage to the lungs.

Epigram Concise, pointed saying, often in verse. The earliest epigrams were written by the Greeks as inscriptions on tombs and memorials, one of the most famous being that written by Simonides on the heroes who fell at Thermopylae. The Romans, too, were very good at making epigrams, and Martial ranks as one of the world's great epigram makers.

After the revival of learning the epigram became a short poem on a single subject, ending with a witty or sarcastic remark. Of modern nations the French are perhaps the best at epigrams, Voltaire being outstanding in this respect. There are many excellent epigrams in English, those of Pope being notable. As an example, Coleridge's epigrammatical definition of an epigram may be given:

> What is an Epigram? A dwarfish whole,
> Its body brevity, and wit its soul.

Epigraphy Study of inscriptions. It is usually concerned with those occurring on rigid materials, as stone, metal, bone, shell and wood, or materials capable of becoming rigid as clay. It includes incidental scratchings, as graffiti, but leaves to palaeography, or ancient writing, inscriptions on such flexible materials as papyrus, parchment and paper.

Epilepsy Nervous disorder, manifested by attacks of sudden insensibility. It is also known as falling sickness. When accompanied by convulsions it is major epilepsy or *grand mal*; when convulsions are absent it is minor or *petit mal*. In Jacksonian epilepsy the convulsive movements concern single groups of muscles, consciousness being retained; this is often remediable by surgical operation upon the brain lesion, usually caused by external pressure. Epileptic fits are often preceded by warning sensations, and sometimes masked by outbreaks of epileptic fury.

Epilogue Conclusion of a literary work or peroration of a speech. Specifically it was an independent commentary in verse after a drama, sometimes by another pen, appealing to the hearer's or reader's indulgence or deprecating criticism; it especially characterised 17th-18th century English drama.

Epinal Town of France. The capital of the dept. of Vosges, it stands on the Moselle, 46 m. from Nancy. It has many industries, one being the production of cheap images and pictures for children. The fortress, built after 1870, is one of the most important defence works of France. Pop. 30,000.

Epiphany Christian festival. It is celebrated on Jan. 6, the twelfth day after Christmas. Originally part of the 12 day commemoration which included Christ's nativity and baptism, the adoration of the magi or three kings, and the Cana miracles, the nativity feast was transferred to Dec. 25, Twelfth Day being appropriated in the East for baptisms, in the West for commemorating the three kings. Symbolic offerings of gold, frankincense and myrrh are made in the king's name at the Chapel Royal, London, on Epiphany Day.

Epirus In ancient geography, a country in the N.W. of Greece. It flourished under Pyrrhus (295-272), and formed part of the Roman Empire from 146 B.C. to A.D. 1204. The modern Epirus, which includes

part of N. Greece and S. Albania, was conquered by the Turks in the 15th century, and now forms part of Greece.

Episcopacy Form of church government of which bishops are the head. It grew up in the 2nd century and has since been the rule in the Roman Catholic Church, which claims for its bishops an unbroken descent from those times. The Anglican and Greek Churches are both episcopal and both regard the "historic episcopate" as essential to their life and work. Bishops can only be ordained by other bishops and in this way the apostolic succession, as it is called, is maintained. Episcopacy also prevails in the Lutheran, Moravian and Methodist Episcopal churches. *See* BISHOP.

Epistle Writing or letter. It is applied especially to the letters included in the New Testament, sent by S. Paul, S. Peter and other apostles to churches and individuals. Such are the epistles to the Corinthians and to Timothy. Other epistles were those written by Horace and later poets, a fashion copied by English writers in the 18th century.

Epitaph Inscription on a monument or tomb. Epitaphs have been found on Egyptian, Hebrew and other early tombs. The Greeks used them freely and the Romans were skilled in the art of stating the facts of a man's career in a few pregnant words. From Rome the custom spread all over the civilised world, and for many years Latin was much used for epitaphs, as it is to some extent to-day. In the 18th century humorous epitaphs were very popular on tombstones. Collections of them have been made. Notable epitaphs are the one on Sir C. Wren in S. Paul's Cathedral, London, *Si monumentum requiris circumspice* (If you wish for his memorial look around), and "O rare Ben Jonson" in Westminster Abbey. A curious epitaph in a Lancashire churchyard is as follows :—

> John Nott all lies here & that's enough,
> The candle's out & so's the snuff
> His soul's with God, you need not fear,
> And what remains lies buried here

Epithalamium Marriage song invoking blessings. In ancient Greece the epithalamium was sung by boys and girls before the bridal chamber on the marriage night and on the following morning; the Romans modified it to a song by girls only on the departure of the wedding guests. Pindar and Anacreon among the Greeks, Catullus of the Romans, Ronsard, Scarron and Malherbe among the French; and Spenser, Ben Jonson, Donne and Tennyson among English poets have written epithalamia.

Epithelium Animal tissue formed of epithelial cells. It forms the epidermis (*q.v.*), lines the alimentary tract (mouth to anus), and the windpipe, and occurs in glands. Its functions are protective, secretory or sensory, and it varies in form from the layer of ciliated cells in the windpipe to the stratified multilayered epithelium of the epidermis. *See* SKIN.

Epoch In astronomy a date fixed for reckoning the place of a star or planet. It has therefore come to be used for a period marked by important events, as the Napoleonic epoch.

Eponym Person after whom anything is named. In Greece it was the unofficial title of magistrates after whom the year was named and of the heroes who gave their names to a tribe or people. Thus, Pelops was the eponym of the Peloponnese.

Epping Urban district and market town of Essex. It is 17 m. from London, on the outskirts of Epping Forest, on the L.N.E. Rly. The town is a busy agricultural centre. Pop. (1931) 4956.

Epping Forest District of Essex. It occupies about 6000 acres between the Rivers Lea and Roding, with Leytonstone, Epping, Chingford, Woodford and Loughton on its borders. Acquired by the corporation of the city of London and opened in 1882 it is a popular pleasure resort. It is wooded and contains two ancient camps, Ambresbury and Loughton. In 1928 Knighton Wood, 37 acres, was added.

Epsom Urban district and market town of Surrey. It is 14 m. from London, on the S. Rly. On the downs nearby the Derby, Oaks and other races are run. **Epsom College** is a public school associated with the medical profession. Woodcote Park is the country home of the Royal Automobile Club, and The Dirdans was the residence of Lord Rosebery. Pop. (1931) 27,089. *See* DERBY, The.

Epsom Salts Magnesium sulphate in the form of small white crystals. Dissolved in water, it is used medicinally as a purgative. The name is derived from a mineral spring at Epsom from which it was at one time obtained.

Epstein **Jacob.** British sculptor. Of Russo-Polish parentage, he was born in New York, Nov. 10, 1880, and studied art in New York and Paris, where he came under the influence of Rodin. In 1908 he executed a series of figures on the façade of the British Medical Association building in the Strand, London, a work assailed at the time by much criticism. His figures of Venus, his Rima and Genesis, and the groups entitled Day and Night on the Underground building in Westminster have also provoked lively criticism. His portrait busts are by many considered his best work.

Epworth Town of Lincolnshire. It is situated on the Isle of Axholme, and is 183 m. from London by the L.N.E. Rly. At the rectory here John Wesley was born. Pop. 1836.

Equation In algebra, a statement or formula expressing the equality of two quantities. The two parts of the equation are separated by the sign of equality, as for example, $3x = 21$.

The term **chemical equation** is used for the symbolic representation of a chemical reaction, the symbols of the reacting substances being placed on the left and those of the substance produced by the reaction on the right, as in $H_2 + Cl_2 = 2\ HCl$.

Equator Circle drawn round the earth equally distant from the poles. Its plane cuts the earth's axis at right angles and it divides the globe into two halves, the northern and southern hemispheres. Latitude is measured north and south of the equator by small circles parallel to it, the equator being regarded as 0° of latitude. At the equinoxes the sun at noon is directly over the equator.

Equerry Official of the royal household. The crown equerry is the head of the royal mews. Other equerries are members of the royal household who attend

upon the king on ceremonial occasions. The Duke of York and other members of the royal family have equerries.

Equilibrium State in which forces acting upon a body are so determined that they balance one another, giving no resultant at any point. In the case of a heavy body resting upon the ground, the weight of the body and the normal reaction of the ground are exactly equal and opposite. If a body returns to its position after being moved it is in stable equilibrium.

Equinox Period when the equator lies in the plane of the earth's orbit and day and night are equal in length in all parts of the world. The vernal or spring equinox occurs on March 21-22, the autumnal equinox on Sept. 21-22. The vernal equinox also marks the point in the heavens where the sun crosses the equator, this position being known as " the first point of Aries."

Equitation Horsemanship, especially for military purposes. The British army has a school of equitation at Weedon and there is one for the Indian army at Saugor.

Equites (Lat. horsemen.) Name of a class in Roman society ranking between the senators and the commoners. Originally applied to those wealthy enough to serve as horse soldiers, the term became, on the development of the paid army, somewhat synonymous with knights.

Equity (Lat. *aequus*, equal). Term denoting moral right or justice, something based on the law of nature, not on legislation. In England in early days there were many cases where right could not be done, or wrong redressed, by the processes of the ordinary law. It became the custom to refer such cases to the chancellor as the keeper of the king's conscience. Ignoring the common law, he gave decisions according to the principles of equity, and in time a body of law and precedents grew up which was known as equity. This was administered by the court of chancery which proceeded usually by way of injunction and specific performance. Within its scope were all matters relating to trusts, etc., and others for which the common law did not provide. Since 1873 all the courts have administered both common law and equity, which is therefore no longer the sole privilege of the chancery courts.

An **equity of redemption** is the right which the mortgager has to redeem the mortgaged property on payment of the mortgage money and interest, although the mortgagee is in possession. The right is lost if the mortgagee has exercised his power of sale or has completed a foreclosure.

Era Epoch from which years are counted and the series so reckoned. An historical event usually determines the choice, *e.g.*, the Greek Olympiads, from 776 B.C., the Roman, from Rome's foundation, 753 B.C., the Hindu Saka, from A.D. 78, the Mohammedan, from A.D. 622 and the Christian from Christ's nativity. The pre-Christian is reckoned backwards.

Erasmus **Desiderius.** Dutch scholar. Born at Rotterdam, Oct. 28, 1466, he was an illegitimate son of a certain Gerard who figures in Charles Reade's novel, *The Cloister and the Hearth*. He took his father's name, but soon changed it to the one, half Latin, half Greek, by which he is known. He was educated at Deventer and was for six years an Augustinian monk. In 1496 he visited England, and became a close friend of Sir Thomas More. He studied Greek with Linacre and afterwards taught that language at Cambridge, where he was Lady Margaret Professor of Divinity. In 1517 he settled at Louvain and in 1521 at Basel, where he died, July 12, 1536.

Erasmus was one of the great humanists. In religion he was a Roman Catholic and by birth a Dutchman, but his intellect could not be confined to one creed or one nationality. He sympathised with Luther and the Reformation, but was too great a scholar to be a keen partisan.

Erasmus did much literary work, chiefly editing the works of Latin writers, both secular and ecclesiastical. His great edition of the New Testament, Greek text and Latin translation, appeared in 1516. *Encomium Moriae* or *In Praise of Folly* and *Colloquia* are true revelations of his mind. His letters are interesting for their comments on England as he saw it.

Erbium Rare metallic element. Its atomic weight is 167.7 and specific gravity 4.77. It exists as a silicate in the mineral gadolinite and a few other minerals. Its oxide, erbia, obtained by ignition of some of its salts, is an earthy substance with a faint rose-red colour, a character shared by other compounds of the metal.

Erckmann-Chatrian Name used by two French writers for their joint work. They were Émile Erckmann and Alexandre Chatrian, both natives of Lorraine. Their literary partnership lasted for 30 years, from 1848. Their best works are those dealing with the Napoleonic wars. They have been translated into English, notably, *The History of a Conscript* and *Waterloo*. Their plays include the popular *Polish Jew*, produced in London as *The Bells*. Erckmann was born May 20, 1822, and died March 14, 1899. Chatrian was born, Dec. 18, 1826, and died Sept. 3, 1890.

Ercole da Ferrara Name taken by the Italian painter, Ercole di Giulio Grandi. Born about 1462 he lived chiefly at Ferrara, where he was employed by the duke. Two of his pictures, " The Madonna and Child " and " The Conversion of S. Paul," are in the National Gallery, London. He died in 1531.

Erebus In Greek mythology, a god of the underworld. He was the husband of Night, who bore him Light and Day.

Erebus Volcano of Antarctica. In Victoria Land, it is situated on Ross Island and was discovered in 1841 by Capt. James Ross. It is 12,370 ft. high and has been active in recent years.

Erechthēum Temple at Athens. It was the original sanctuary of the tutelary deities of Athens, Athena Polias (Athena of the city), Poseidon and Erechtheus. It stood on the Acropolis, close to the Parthenon. Burnt by the Persians in 480, it was rebuilt in the time of Pericles and was finished about 409.

Eretria City of Greece. Situated on the west coast, 15 m. S.E. of Chalcis, its stubborn resistance to the Persian advance occasioned its destruction in 490 B.C. Its importance declined under Macedonian and Roman rule. American excavations at the

foot of the acropolis, 1890-95, exposed remains of theatre, temple and gymnasium.

Erfurt City of Prussia, Germany. It stands on the Gera, 14 m. from Weimar, and is an important railway junction. Its cathedral is one of the finest Gothic edifices in Germany and the palace was once the residence of the electors of Mainz. The industries include the making of railway stock, machinery, clothing, etc., and the market for vegetables and flowers is important. Erfurt was once a member of the Hanseatic League. In the Augustinian monastery Luther lived for some years. In the 19th century its fortifications were pulled down and its limits extended greatly, as it became a busy manufacturing centre. Pop. 148,200.

Erg In physics, unit of energy or work done. It is the quantity of work done by a force of one dyne moving through a distance of one centimetre. Power is expressed in ergs per second.

Ergosterol Unsaponifiable part of a natural fat, sterol (*q.v.*). Named from its discovery in ergot of rye, ergosterol is found also in yeast. It is present in minute proportion as an impurity of cholesterol found in all animal cells. When irradiated by sunlight, ergosterol in superficial tissue cells (skin, etc.) yields up the anti-rachitic vitamin D essential to health. Ergosterol in solution, irradiated by ultra-violet rays, is used to supply natural bodily deficiency in this vitamin, and is included in the 6th edition of the *British Pharmacopoeia*.

Ergot (*Claviceps purpurea.*) Fungus which attacks the flowers of cereals and grasses. It shows three well-marked stages in its life history, each stage being formerly regarded as distinct fungi. The honey dew, or *sphacelia*, stage consists of a network of threads ramifying through the ovary and producing spores and honey dew; the winter, or *sclerotium*, stage forms a hard curved purplish body (ergot) and the spring, or *ascospore*, stage which forms thread-like spores. Ergot of rape is used in medicine as a haemostatic and peristaltic agent. The eating of bread made from rye or other grain infected with ergot gives rise to a condition of chronic poisoning known as ergotism.

Ericht Loch of Scotland. It is on the borders of the counties of Perth and Inverness and is 14½ m. long. The River Ericht, which flows from it to Loch Rannoch, 5½ m. away, is used to generate power for the national scheme for providing electricity. It has been widened and deepened and a dam has been built across it.

Eridanus In Greek legend, a river god. He was the son of Oceanus and Tethys and was called the king of rivers. It is also the name of a constellation of stars, part of which is below the horizon of the northern hemisphere.

Eridge Village of Sussex. It is 3 m. from Tunbridge Wells and 38 from London, on the S. Rly. **Eridge Castle**, the seat of the Marquess of Abergavenny, is a modern building standing in a large park.

Erie One of the Great Lakes of North America. It is the most southerly of the five, but the fourth in the chain, and covers 10,000 sq. m. Its length is 250 m., and its greatest breadth 60.

Its waters come by the River Detroit from the three higher lakes and pass by the Niagara River into Lake Ontario. The Welland Canal (*q.v.*) enables shipping to pass between these two lakes. One side of the lake is Canadian and the other American. On the American side are the great cities of Buffalo and Cleveland.

Erie City and lake port of Pennsylvania. It is 88 m. from Buffalo on Lake Erie, and is well served by railways. There are a number of manufactures, but the shipping is of greater importance. For this there is a fine natural harbour formed by Presque Isle, on which a French fort was built in the 18th century. Pop. (1930) 115,967.

Erie Canal Waterway of the United States. It is 361 m. long and connects the Hudson with Lake Erie, its termini being Buffalo and Albany.

Erin Name for Ireland. Its origin is uncertain, but its general use dates from the time of Thomas Moore's poems. It occurs in the phrase Erin go bragh, or Erin for ever.

Erinus Variety of starwort, suitable for the rock garden. It is of low growth and bears purplish blue or white flowers in early summer. It grows in the Alps and is called erinus alpinus.

Eris In Greek legend, the goddess of discord. Angered at not being invited to the wedding feast of Peleus and Thetis, she threw a golden apple amongst the guests. This was to be given to the fairest and was claimed by Hera, Athena and Aphroditē. The question was submitted to the judgment of Paris.

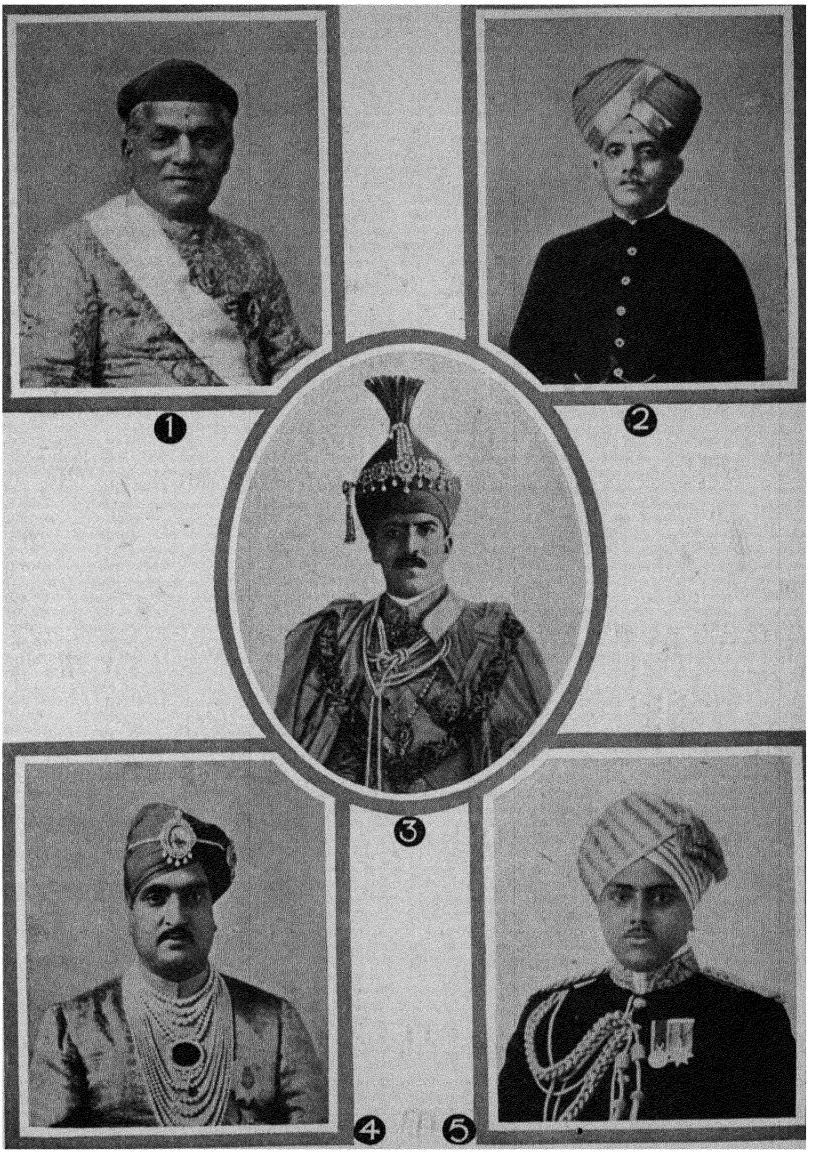
Erith Urban district of Kent. It is on the Thames, 14 m. from London, and is served by the S. Rly. It is an engineering and yachting centre. At one time a borough and a naval station, Erith became an industrial district in the 19th century. Pop. (1931) 32,780.

Eritrea Colony of Italy. It is on the Red Sea, with a coastline of 670 m. Its other boundaries are the Anglo-Egyptian Sudan and Abyssinia. Asmara is the capital. The ports are Massawa and Assab. The area is 45,754 sq. m. and the population (1931) 621,776, of which 4681 are Europeans. Sheep, goats and camels are kept and the products include ostrich feathers, palm nuts and hides. Some gold is found. There is a railway line 258 m. long from the sea to the capital and beyond. Italy took possession of the land in 1885, and it was formed into a colony in 1889. The earliest Italian attacks on Abyssinia were launched from Eritrea.

Erivan Capital of the Soviet Republic of Armenia or Hyastan. It was formerly the capital of the Trans-caucasian Government of Erivan, and stands on the Sanga, 40 m. from Ararat. Erivan was ceded to Russia by Turkey in 1828. Pop. 75,000.

Erl-King In German mythology an evil forest spirit. He was inimical to children and was gigantic, draped, bearded and crowned with gold, Herder's *Stimmen der Volker*, 1778, in translating *The Elf King's Daughter* confounds *elle* (Danish elf) with *erle* (German alder). The mistake was perpetuated and the Erl-King established as an alder wraith.

Ermine (*Mustela erminea.*) White fur, with black-tipped tail. It is the winter coat of the stoat, which is native to Britain and to temperate and subarctic regions. It is largely used on state and judicial robes. In heraldry it is usually symbolised by black arrow heads crowned with three dots on a white ground.



1. H.H. The Maharajah Gaekwar of Baroda, G.C.S.I., G.C.I.E. 2. H.H. The Maharajah of Mysore, G.C.S.I., G.B.E. 3. H.E.H. The Nizam of Hyderabad, G.C.S.I., G.B.E. 4. H.H. The Maharajah of Jammu and Kashmir, G.C.S.I., G.C.I.E., K.C.I.E., K.C.V.O. 5. H.H. The Maharajah Scindia of Gwalior.

Ermine Street Early English name for an ancient British highway leading from London through Lincoln to York and Hadrian's Wall. It was one of four reputedly enjoying royal protection, and coincided in part with the Romano-British road system.

Erne Old English name of the brown, white-tailed, sea eagle (*haliaëtus albicilla*). Distributed throughout northern regions, it formerly bred in the wildest parts of Scotland and Ireland. Though distinguished by its broad-scaled toes and lack of leg-feathers, it is often confused with the golden eagle. The female sometimes reaches 3 ft. in length.

Erne River and lake of Ireland. The river rises in Longford and passes through the counties of Cavan and Fermanagh into Donegal. Near Ballyshannon it enters Donegal Bay. Its length is 72 m. Enniskillen is the chief town on its banks. It passes through two lakes called upper and lower **Lough Erne.** The upper is 13 m. long and the lower 20 m., and between them there is a distance of 10 m. In both are many islands and the lakes are rich in fish.

The Irish title of **Earl of Erne** has been borne since 1789 by the family of Crichton. The family seat is Crom Castle, Fermanagh, and the earl's eldest son is called Viscount Crichton.

Ernest King of Hanover. Fifth son of George III. of Great Britain, he was born at Kew, June 5, 1771, and educated at Göttingen, became an officer in the army of Hanover and saw service against the French. In 1799 he was created Duke of Cumberland and Teviotdale and for over 30 years took part in English politics as an antagonist of reform. In 1837, on the death of William IV., he became King of Hanover and ruled that country until his death, Nov. 18, 1851.

Eros Greek name of the god Cupid (*q.v.*). It is also the name of an asteroid, discovered in 1898, when it came nearer to the earth than Mars. In 1901, and again early in 1931, it approached the earth; in the latter year, as near as within 16 million miles.

Erosion Denudation of the earth's surface by the action of wind, rain, the atmosphere, ice, rivers and sea. By these agents the forms of hills and valleys, cliffs and shore gradually become modified, rivers deepen their channels and silt up their estuaries, and lakes become marshes or dry valleys. *See* COAST.

Erroll **Earl of.** Scottish title held by the family of Hay. It was given in 1453 to **William Hay,** constable of Scotland, and has since been held by his descendants. The earl is still lord high constable of Scotland. His estates are in Aberdeenshire. The earl's eldest son is called Lord Kilmarnock.

Victor Alexander Hay (1876-1928), the 20th earl, was in the diplomatic service. In 1919 he was sent to Berlin as the first British representative there after the war. From 1921-27 he was British high commissioner in the Rhineland, being known as Lord Kilmarnock until he succeeded to the title on his father's death, July 8, 1927. He died Feb. 19, 1928. **Josslyn Victor Hay,** the 21st earl, was born in 1901.

Erse Word denoting the Celtic population, their speech and writing. It anciently migrated from N.E. Ireland to Scotland, and because of its Irish origin, Lowland Scots applied the word to the speech of the Highlanders, who themselves called it **Gaelic.** Nowadays it sometimes denotes the Goidelic language-group, embracing Scottish **Gaelic,** Irish Gaelic and Manx.

Erskine **Baron.** Scottish lawyer. Thomas Erskine, born in Edinburgh, Jan. 10, 1750, was a son of the Earl of Buchan. He was called to the bar in 1778. He sat in Parliament as a Whig in 1783, and again in 1790-1806. In 1806 he was made lord chancellor and a peer, but held office only for a few months. He died Nov. 17, 1823.

Henry Erskine, Erskine's elder brother, was also a successful lawyer. He was lord advocate of Scotland in 1783 and again in 1806-07. He died Oct. 8, 1817.

Ervine **St. John Greer.** Irish writer. Born in Belfast, Dec. 28, 1883, he early began to write plays and made his name as a dramatic critic. Among his plays are: *Jane Clegg, Mary, Mary Quite Contrary* and *The Second Mrs. Fraser.* He has also written novels, including *The Foolish Lovers* and *The Wayward Man,* short stories, and *Lives* of Parnell and General Booth. *The Theatre in My Time* appeared in 1933.

Erysipelas Acute contagious disease, characterised by redness of the skin, especially of the face. It is due to a specific micro-organism, *Streptococcus pyogenes,* introduced through a wound or abrasion, sometimes in the tear duct, or through a cut whilst shaving. Clothing and bedding may convey it. There is sometimes swelling and delirium. Attacks last from 7 to 21 days, but are usually followed by a recovery. Ichthyol, iron perchloride and other internal preparations are sometimes administered; injections of antistreptococcic serum often, but not invariably, prove beneficial.

Erzerum City of Turkey. It is 120 m. south-east of Trebizond and lies to the north of Lake Van on the River Kara-su or Western Euphrates. Situated in a wide pastoral plain hemmed in by mountain ranges, it is an important town on the trade route between Persia and Europe. Lignite and salt are found near. It was the scene of Armenian massacres in 1895 and 1915. Pop. 30,800.

Erzgebirge Range of mountains in Central Europe. They form part of the boundary between Saxony and Bohemia, rising in places to over 4000 ft., and sloping gradually on the northern side and more precipitously on the south. A great variety of metallic ores, chiefly lead, tin, copper, silver and iron, abound on both Saxon and Bohemian sides.

Esau Son of the patriarch Isaac, and Jacob's elder twin brother. He sold his birthright to his brother for a meal of lentils, and thereby lost the paternal blessing.

Esbjerg Seaport of Denmark. The construction of an excellent harbour has transformed it from a small village into the chief port of West Jutland. Fishing is an important industry and its exports include bacon, dairy produce, beef and cattle. Pop. (1930) 27,405.

Escalator Moving stairway. It has been adopted in many stations on the London tube railways. It is driven by electric power and consists of an endless chain of steps passing round rollers at the top and bottom of the escalator, each step being fixed to a framework having two wheels not set in the same line. It requires less attention

and carries more passengers in a given time than the ordinary type of lift.

Escarpment Term applied to the steep abrupt slope of strata. It is due to the denudation of the softer underlying beds leaving the outstanding hard rock as a cliff-like ridge in one direction, and a gentle dip-slope in the other. One of the commonest forms of land surface, it occurs usually in areas of gently inclined beds. The North and South Downs, the Cotswolds, Snowdon and Scafell show good examples of escarpments.

Escheat Word meaning the return of land to its original owner. In feudal times the theory was that land was held from the king, and that when a man died without heirs it reverted to him. Similarly, land let out to vassals by other landowners reverted to them under like conditions. Until abolished in 1925, it was the law of England that the land of all who died without heirs reverted to the crown.

Escudo Coin current in various countries. It replaced the milreis as the monetary unit in Portugal at the 1911 revolution, having a par value of 4s. 5½d., divided into 100 centavos. One thousand escudos make a conto. In Spain and Chile also the escudo is current.

Escurial Palace in Spain, one of the largest in the world. Designed for Philip II. it is situated amid the mountains, 26 m. from Madrid. The form is rectangular and the style Doric. In the centre is a fine church, and the Pantheon where the kings and queens of Spain are buried. Among the buildings, which cover 10 acres, are also a convent and a valuable library.

Esdras **Books of.** First two apocryphal books of the Old Testament. The Vulgate calls the canonical books Ezra and Nehemiah 1 and 2 Esdras, making these apocryphal scriptures 3 and 4 Esdras. The earlier virtually repeats the last two chapters of 2 Chronicles, followed by Ezra and Nehemiah, incidentally interpolating an apocryphal story of three pages at Darius's court, iii.-v., 6. It was written for Alexandrian Jews between 300 B.C. and 100 B.C. The other is apocalyptic, chiefly describing seven visions vouchsafed to Ezra, and was probably written under Domitian, A.D. 81-96.

Esh Town of Durham. Situated 5 m. W.N.W. of Durham, it is near Ushaw Moor colliery. Here is the Roman Catholic College of S. Cuthbert, founded in 1804 for the dispossessed seminary at Douai. The chief industry is coal mining. Pop. 10,175.

Esher District of Surrey, an outer suburb of London. Forming with the Dittons an urban district, it is 15 m. from the city on the S. Rly. The Bear Inn is interesting. **Esher Place** once belonged to Wolsey and a tower of his palace still stands. Later it was the residence of Lord D'Abernon, who sold it in 1928 to the Shaftesbury Homes. Sandown Park racecourse is near. Pop. (1931) 17,075.

Esher English title held since 1897 by the family of Brett. **William Baliol Brett** was born Aug. 13, 1817, and educated at Westminster and Caius College, Cambridge. He became a barrister in 1840 and in 1866 a Conservative M.P. In 1868 he was made solicitor-general and in the same year a judge. In 1883 he became Master of the Rolls and in 1885 was made a baron. He retired and was made a viscount in 1897 and died May 24, 1899.

His son and successor, **Reginald Baliol Brett,** the 2nd viscount, was born June 30, 1852, and educated at Eton and Cambridge. From 1880-85 he was Liberal M.P. for Penrhyn-Falmouth, and from 1895 to 1902 secretary to the Office of Works. In 1904 he was chairman of the committee of inquiry concerning the War Office. He was joint editor of *The Letters of Queen Victoria.* He died Jan. 22, 1930, when his son, **Oliver,** became the 3rd viscount.

Esk Name of several British rivers. One flows through the counties of Dumfries and Cumberland into the Solway Firth and is 36 m. long.

The North Esk is formed by a union of the Lee and the Mark at Invermark. It flows through the counties of Forfar and Kincardine into the North Sea near Montrose and is 29 m. long.

The **South Esk** rises in the Grampians and flows through Forfar for 49 m. and enters the sea at Montrose. A small stream in Midlothian is called the **Esk.** It rises in Dalkeith Park and joins the Firth of Forth at Musselburgh.

Eskimo N. American Indian people. They inhabit the Arctic coast from E. Greenland for 5000 m. westward across the Bering Strait to Siberia, and number about 30,000. They live by hunting the musk ox, reindeer and seal. They occupy in summer conical skin tents, in winter earth huts half underground called igloos. Their one-man skin canoes (kayaks) and larger cargo or women's boats (umiaks), show constructional skill.

Eskimo Dog Breed of dog used as a draught animal by the Eskimos. They are tamed rather than domesticated, the females being often crossed with wild wolves, from which they differ by having the dog's characteristic upturned tail. They are trained to pull sledges, and usually work in four-pair teams.

Esmond **Henry Vernon.** Pseudonym of H. V. Jack, an English dramatist. Born Nov. 3, 1869, he became an actor and playwright. In 1895 he won a success with *Bogey,* and others followed. Perhaps the most popular are *Eliza Comes to Stay, The Dangerous Age* and *Birds of a Feather.* He died April 17, 1922.

Espalier Term denoting a lattice work or a row of timber stakes, preferably larch, upon which fruit trees, bushes and flowering plants are trained. Its purpose is to provide freer air circulation, better exposure to the sun and easier access. The term also denotes the tree so trained, with a main stem whence the branches extend horizontally right and left in ascending tiers.

Esparto Grass (*Stipa tenacissima.*) Tall perennial grass native to S. Spain and N. Africa. Also called halfa, its grey-green tufts serve when young as cattle food, but after several years furnish a very tough and tenacious fibre, useful for making cables, baskets, matting, sandals and paper. Another grass, *lygeum spartium* also supplies esparto fibre. It is an important ingredient in the making of paper.

Esperanto Artificial, international auxiliary language. Invented by Dr. Zamenhof, a Polish oculist, and published in 1887, it quickly became the leading system purporting to establish ready communication between persons of different native speech.

Phonetically spelt, it adopts about 2500 selected roots, with 30 word-forming prefixes and suffixes, logically applied.

An international academy and a language committee, centred in Paris, exercise control. More than 4000 books have been issued, 100 magazines appear regularly, and various commercial schools hold classes. Annual international congresses are held, and nearly 50 broadcasting stations systematically transmit Esperanto programmes. Esperanto is officially recognised as a telegraphic language.

Esquiline Hill *See* ROME.

Esquimalt Seaport of British Columbia, Canada. Situated on Vancouver Island, it is 3 m. from Victoria, and has a fine harbour. It is a base of the Canadian Navy, and has large docks, etc. Shipbuilding is the chief industry. The town is on the C.P. and C.N. Rlys.

Essay Trial or experiment. It refers now almost invariably to a written composition dealing with a single subject. Some essays are literature of a very high order such as the *Essays* of Bacon and Montaigne, and Lamb's *Essays of Elia*. Other notable essayists include Joseph Addison, William Hazlitt, Lord Macaulay, Matthew Arnold, Robert Louis Stevenson, and more recently Augustine Birrell, Max Beerbohm, E. V. Lucas, Arthur Symons, Mrs. Meynall, G. K. Chesterton and Hilaire Belloc. Notable American essayists are Emerson, Holmes, and Lowell. Pope's *Essay on Man* is in verse.

Essen Town of Prussia. It is on the Westphalian coalfield, 22 m. from Düsseldorf and is well served by railways. The minster is one of the oldest churches in Germany. Here are the gigantic engineering works of Krupp. Before and during the Great War, these turned out huge quantities of war material. Pop. (1931) 629,564.

Essence Solution of the more important constituents of certain substances. In most essences the solvent is alcohol, but in a few water is used. In medicine drugs containing oils soluble in alcohol are sometimes used in the form of essences. Many alcoholic essences are used in perfumery.

Essential Oils Oils, present in many plants, which tend to evaporate in contact with the air. This property accounts for their alternative name of volatile oils. They form the principles which give aroma to plants, and are used in perfumery. The oils are obtained by steam distillation, or by means of a volatile solvent and maceration with fats or fixed oils.

Essex County of south-east England. It is 1530 sq. m. in area and lies just north of the Thames with a very irregular coastline on the North Sea. It includes Canvey, Mersea and other districts which are islands at high tide, also Epping Forest. The land is mainly flat, with some hills in the centre and north-west.

The chief rivers are the Colne, Stour and Crouch, which form large estuaries. The Thames divides it from Kent and the Lea from Middlesex and Hertford. Other rivers are the Blackwater, the Chelmer and the Roding. Chelmsford is the county town. Other boroughs are West Ham, East Ham and Walthamstow, which are within the London area; Maldon, Colchester, Saffron Walden, Southend-on-Sea, Harwich and Barking (made a borough in 1931). Harwich is the chief port. The chief watering places are Southend, Westcliff, Clacton, Frinton and Dovercourt. Essex is served by the L.N.E. and L.M.S. Rlys. It is in the diocese of Chelmsford and sends 8 members to Parliament. The population of the administrative county was 1,198,601 in 1931. This showed the enormous increase of 278,460 during the 10 years, 1921-1931.

The Essex Regiment, formerly the 44th and 56th Foot, dates from 1741. The castle and key on the regimental badge commemorate their service at the siege of Gibraltar (1779-83). Many battalions served in the Great War. The regimental depot is at Warley.

Essex Earl of. English title held by the families of Bohun, Devereux, Capel and others. The first Earl of Essex was appointed soon after the Norman Conquest, and one of the earls was the famous **Geoffrey de Mandeville.** The Bohun family held the earldom for some time in the 13th and 14th centuries and there were other earls, including **Thomas Cromwell**, created earl in 1540. In 1572 **Walter Devereux** was made Earl of Essex and the title was held by his son and grandson, but became extinct in 1646. In 1661 **Arthur Capel** was made earl and his descendants still hold the title. Cassiobury Park, Watford, long the family seat, has been sold. The earl's eldest son is called Viscount Malden.

Essex Earl of. English courtier. Robert Devereux, the famous favourite of Queen Elizabeth, was born Nov. 19, 1566, and succeeded his father as 2nd earl in 1576. He was with the English forces in the Netherlands, and was sent to Ireland as governor-general in 1599. For leaving his post without permission, he was imprisoned. Soon after his release he led a rebellion which was a failure and he was executed Feb. 25, 1601.

His son, **Robert Devereux,** born in 1591, was restored to the earldom in 1604. He, too, was a courtier and a soldier, seeing service in Germany and against Cadiz. In 1642 he was appointed commander-in-chief of the parliamentary army and he kept that position until 1645. He died Sept. 14, 1646.

Es Sinn Village of Iraq, or Mesopotamia. It is 7 m. from Kut-el-Amara, and here in Dec., 1915, the Turks had a strong position. This was attacked in March by the British force advancing to the relief of Kut, but it was found impossible to dislodge the Turks before the garrison under Sir C. Townshend surrendered.

Establishment Position of some religious bodies in relation to the State.

An established church is one officially recognised as *the* church of a nation. Generally such recognition has a legal basis and is coupled with State endowment. Christianity was first made a State religion by the Emperor Constantine in the 4th century. After the Reformation the English Church became established, but not the (Presbyterian) Church in Scotland. It was partly an objection to State control which later led to the founding of the Independent and Baptist Churches.

Estaires Town of France. It is 13 m. from Lille and was the scene of much fighting in 1918. On April 10, 1918, after a fierce fight, the Germans captured it from its British defenders, but they were driven out in the following September.

Estate Term used for property, especially landed property. It may refer

to a considerable amount of land, owned by a single person, or to the whole of a person's property. Originally it meant a state, as in the Prayer Book, "The good estate of the Catholic Church."

Estate agent is the term used for a man who undertakes to manage and to buy or sell property. There is a college of estate management at 35 Lincoln's Inn Fields, London, W.C.2. Estate agents are usually paid by a percentage on the amount they collect or obtain from sales. This is 5 per cent. on small amounts, grading down to 1½ per cent. on large ones.

Estate Duty Name given to one of the duties paid on the money left by persons at death. The other duty is the legacy duty. The estate duty was introduced in 1894, and is payable on all property left. It is graduated according to the amount. In 1930 the scale was fixed as follows :

£500	to	£1,000	..	2 per cent
£1,000	,,	£5,000	..	3 ,,
£5,000	,,	£10,000	..	4 ,,
£10,000	,,	£12,500	..	5 ,,
£12,500	,,	£15,000	..	6 ,,
£15,000	,,	£18,000	..	7 ,,
£18,000	,,	£21,000	..	8 ,,
£21,000	,,	£25,000	..	9 ,,
£25,000	,,	£30,000	..	10 ,,
£30,000	,,	£35,000	..	11 ,,
£35,000	,,	£40,000	..	12 ,,
£40,000	,,	£45,000	..	13 ,,
£45,000	,,	£50,000	..	14 ,,

From this the rate rises until it becomes 40 per cent. on an estate between £1,000,000 and £1,250,000, and 50 per cent. on an estate worth £2,000,000 and over. Money or property given away during the three years before death is charged with duty; estates under £500 pay an inclusive fee of 50s. or 30s., which include all charges. Interest at the rate of 4 per cent. is charged on the amount due.

Este Famous Italian family. It takes the name from a city, 20 m. from Padua. Dating from about 1000, its earliest members were lords of Este. In 1452 one of them was made Duke of Modena and then Duke of Ferrara. **Beatrice** (1475-97), Duchess of Milan, was famous for her beauty and culture. Another notable member was **Ippolito d'Este**, who became a cardinal and built the Villa d'Este at Tivoli. The family lived in great state at Modena until 1797, when the duchy was taken from them and, in 1803, **Ercole**, the last male member of the family died. His daughter, Maria Beatrice, married a son of the Emperor Francis I. of Austria and their son regained Modena, which was held by the family of Hapsburg-Este until 1859. Maria Beatrice, wife of James II., was a member of the Este family.

Esterhazy of Galantha. Noble Hungarian family. Of the three branches of the family, that of Forchtenstein bulks most largely in history. Nicholas (1582-1645) fought long to free Hungary from the Turks, defeating them himself in 1623. His son, Paul (1635-1713), founded the princely branch of the family. He helped to deliver Vienna from the Turks in 1683, was a devoted supporter of the Hapsburgs, and was made a prince of the Holy Roman Empire in 1712.

Nicholas Joseph (1714-90) was both a brilliant soldier and a patron of the arts. As general music director of his court for thirty years, Joseph Haydn (*q.v.*) wrote many of his compositions for his private orchestra. His grandson, Nicholas (1765-1833), a great art collector, raised troops and fought against Napoleon. He was offered the kingship of the Magyars in 1809, but refused the honour.

Paul Anthony (1786-1866) was ambassador in London after the Napoleonic wars, and in 1848 was foreign minister in the first responsible Hungarian ministry. He died in comparative poverty, the fruit of his reckless extravagance.

Esther Book of. Book of the Old Testament. It narrates an episode at the court of the Persian King Ahasuerus (Xerxes) in Susa, 5th century B.C. The royal consort Vashti was deposed, and her place taken by Esther, related to a Jewish exile, Mordecai. Esther and Mordecai frustrated the plots of the grand vizier, Haman, against the Jewish people, whose deliverance was thereafter commemorated by the Purim festival. Written after 300 B.C., the Book of Esther was expanded by Maccabean additions which form a separate section of the Old Testament Apocrypha.

Estimate Calculation of probable cost; a provisional valuation. In building, printing and other business transactions it is usual for the prospective customer or client to ask for a statement giving an estimate of probable cost. He often asks for two or more estimates from different firms in order to compare one with another.

In parliamentary procedure the proposed expenditure of the country is put before the House of Commons in the form of estimates. These are divided into navy, army, civil service and other branches and each shows the amount of money required for the coming financial year. After they have been passed the Chancellor of the Exchequer can frame his budget. Each year the House appoints a committee to examine the estimates and report on them.

Eston Urban district of Yorkshire (N.R. It is 243 m. from London by the L.N.E. Rly. Iron ore is mined, and there are iron and steel works. Pop. (1931) 31,142.

Estonia Republic of Europe. On two sides its boundaries are arms of the Baltic Sea, on the south is Latvia, and on the east Lake Peipus and Russia. It covers 18,353 sq. m., and its population is (1932) 1,120,000. The capital and chief seaport is Tallinn (Reval). The next largest place is Tartu (Dorpat), where is the national university. The republic is divided into eleven districts and includes Oesel, Dago, Moon and other islands in the Baltic. In religion the people are chiefly Lutherans.

From 1721 to 1917 Estonia was part of Russia, and before then part of Sweden. Its independence was proclaimed in 1918, and in 1920 was recognised by Europe. The constitution consists of an assembly of 100 members elected by all adult citizens for three years. The assembly chooses the prime minister and the other ministers. Agriculture and dairy farming are the chief industries. Rye, wheat, barley, oats and potatoes are grown. Butter and other farm produce and timber form the chief exports. Military service is compulsory. The unit of currency is the kroon, worth about 1s. 1½d. and divided into 100 cents. The national flag is blue, black and white in horizontal stripes.

Estuary Mouth of a river, where river waters meet the sea, the effect of the currents causes a gradual mixing of the waters, and where the river is large, as in the Thames, the surface of the estuary may be fresher than at a greater depth.

Étaples Town of France. It is 17 m. from Boulogne at the mouth of the little river called the Canche. Fishing is carried on and there are some small industries. In 1492 the treaty of Étaples was made between Henry VII. and the French king. Pop. 6000.

During the Great War Étaples was an important British base, with training grounds, hospitals, etc. There is now a large cemetery near the town.

Etching Method of engraving on metal. The design is engraved by means of an acid solvent or by the use of special tools for cutting directly on the metal. In the acid process the metal plate (generally of copper) is covered with a ground or coating of wax, bitumen or other resinous material, the design or drawing being traced through the ground by means of fine or coarse steel points or etching needles. The plate is then treated with nitric acid, or other solvents in the case of other metals, and on completion of the process the wax layer is removed by the use of turpentine. Albrecht Dürer was one of the earliest etchers, and Rembrandt the greatest.

Ethelbert King of Kent. A descendant of the Saxon invaders of England, he is believed to have reigned between 560 and 615. Counted as one of the bretwaldas or overlords of Britain, he issued some laws which are still extant; but he is best known as the husband of Bertha, a Frankish princess and a Christian, who invited missionaries to England. In 597 he was baptised by S. Augustine.

Ethelred Name of two English kings. **Ethelred I.**, a son of Ethelwulf, King of Wessex, became king in 866 in succession to his brother Ethelbert. He spent his time fighting the Danes, being assisted by his young brother Alfred. His death on April 23, 871, was caused by wounds received in battle.

Ethelred II., was a son of King Edgar. He began to reign in 973, when only ten, and was on the throne for nearly 40 years. His inability to deal with the Danish peril won for him the name of the Unready. He began the payment of Danegeld, and in 1002 was responsible for a massacre of the Danes. He died in London, April 23, 1016.

Ether Colourless, volatile and very inflammable liquid. It is prepared by distilling alcohol with sulphuric acid. Owing to its solvent action upon fats, oils, resins and alkaloids, it is used in the preparation of coal tar dyes, artificial silk, cordite, collodion and many medicinal compounds, and in wet plate photography.

As it evaporates rapidly, producing a sensation of cold, ether is used as a local anaesthetic in minor operations. It is also used by inhalation, as a general anaesthetic, since it causes less depression on the heart than chloroform. Ether for medicinal purposes is prepared from pure alcohol, but for ordinary commercial use from methylated alcohol.

Ether Name given to the subtle medium that was assumed to fill all space (including that between atoms and electrons), in order to explain the propagation of light, heat and other electro-magnetic waves. The necessity for the assumption of such a medium has now been overcome.

Etherege **Sir George.** English dramatist. Born in 1634, he became a lawyer and a courtier. In 1664 his comedy, *The Comical Revenge* or *Love in a Tub* was produced in London, followed by *She Would if She Could* and *The Man of Mode*. From 1685 to 1688, he was ambassador in Ratisbon, and died in 1690.

Ethics Science of moral values. Zeno of Citium in Cyprus, in the 3rd century B.C. was one of the first to set up a scientific system of ethics. Virtue is the only good and baseness the only evil; all else is *adiaphora* (indifferent). The correct knowledge of virtue is acquired by *phronêsis* (practical wisdom), and the aim of life should be "to live in complete agreement with nature." The wise man knows and can do everything; he is rich in poverty, free in chains, happy in sickness, even at death.

Ethiopia Official name for Abyssinia. The name was used by the Greeks for the people of Africa in general who, to them, were Ethiopians, meaning "people with burned faces." They are mentioned in both Homer and Herodotus. In the 11th century B.C. there arose a kingdom of Ethiopia and early in the Christian era another was set up. *See* ABYSSINIA.

Ethnography Description and classification of human races and peoples according to their geographical distribution. It furnishes the material for ethnology.

Ethnology Study of the distribution and development of human races. It treats of those racial distinctions which attend the material and intellectual elements of human culture, calling in the aid of specialised inquiries dealing with the primary needs of food, clothing and shelter, and the social, artistic, economic, political and religious elements in human life.

Assuming a single origin for mankind, the ethnologist makes a general classification of past and present races, which he summarises as brown, black, yellow and white. He finds that racial admixture has been operative throughout all human history, and that physical development is unaffected by language relationships, there being peoples, *e.g.*, the Celts, united more closely by speech than by race. The study of tribal customs and relations is of importance in the administration of native peoples.

Ethyl Organic radical, or group of atoms capable of behaving like an element, having the chemical formula C_2H_5. It forms a number of important compounds, such as ethyl alcohol, ethyl chloride and ethyl nitrate. Of recent years the term **ethyl petrol** has been used for petrol containing lead tetraethyl to form an "anti-knock" compound.

Ethylene Colourless gaseous hydrocarbon. It was formerly known as olefiant gas and is prepared by strongly heating alcohol with sulphuric acid. Ethylene is very inflammable, burns with a luminous flame and is explosive when mixed with oxygen. A considerable quantity of ethylene is present in coal gas and imparts to it much of its luminosity. Several of its compounds are of value, *e.g.*, ethylene bromide, which is used in medicine and in the preparation of ethyl petrol.

Etive Sea loch of Scotland. It is an opening of the coast of Argyllshire and is about 20 m. long. The River Etive, which flows into it, is noted for its salmon.

Etna Volcano of Sicily. It is situated near the east coast and rises gradually to

a height of about 10,865 feet, forming a large cone, cleft on one side by the Valle del Bove and a number of smaller cones. The base of the volcano covers over 400 sq. m. and consists of a large expanse of fertile soil. Over eighty eruptions have been recorded since the one described by Pindar in 476 B.C. The eruptions of 1923 and 1928 caused considerable damage.

Etna is famous in classical mythology, chiefly perhaps as the place where Vulcan had his forges.

Eton Town and urban district of Buckinghamshire. It stands on the Thames opposite Windsor, which is its station, and is 21 m. from London. Pop. (1931) 2005.

ETON COLLEGE. One of the great public schools. It was founded in 1440 by Henry VI. The head of the foundation is the provost, but the headmaster is the head of the school. It consists of about 1114 boys, of whom 70 have scholarships and live in college. The rest are oppidans and live in houses outside the college. The school has its own customs and games, including the wall game of football. Many great men have been educated here.

Etretat Watering place of Normandy. It stands on the English Channel 16 m. from Havre. The attractions include a casino, gardens and bathing. Pop. 2000.

Etruria District of Italy, now known as Tuscany. Before the rise of Rome it was inhabited by a people who have left traces of a remarkably high civilisation, to which it is almost certain Rome owed a good deal. The sculptured tombs and the paintings found on vases and other pottery display not only a keen artistic sense, but also the possession of gold, silver and other metals used for decorative purposes. The Etruscans were also acquainted with music.

Etruria District of Staffordshire now included in the city of Stoke-on-Trent. It has a station on the L.M.S. Rly. Josiah Wedgwood opened his pottery works here in 1769, imitating Etruscan and other ancient vases.

Etruria marls are beds of marl and clay found in the north and midland counties of England and used for the making of pottery.

Ettrick District of Scotland, called Ettrick Forest. A forest only in name, it is chiefly in Selkirkshire, with portions in the counties of Midlothian and Peebles. The kings of Scotland hunted here. The poet, James Hogg, is known as the **Ettrick Shepherd. Ettrick Water** is a river of Selkirkshire. It is 32m. long and joins the Tweed near Selkirk. **Ettrick Pen** is a hill in the county.

Etty William. English artist. Born at York, March 10, 1787, he studied at the Royal Academy School and under Sir Thomas Lawrence. Elected R.A. in 1828, he was a brilliant colourist and flesh painter. His best known works are *Youth at the Prow*, in the National Gallery, London, *The Combat* in Edinburgh, and *Ulysses and the Sirens* in the Royal Institution, Manchester. He died Nov. 13, 1849.

Etymology Study of the derivation and original significance of words. A modern study, much attention is paid to it by students of languages, especially in Germany. In English there is a valuable *Etymological Dictionary* edited by W. W. Skeat.

Euboea Largest island of the Aegean Sea. Belonging to Greece, it is separated from the coast by Euripus Strait, which is bridged at Chalcis, the capital. It is 90 m. long, and occupies 1430 sq. m. Mt. Delphi, 5725 ft. high, rises in the centre from fertile lowlands, which produce corn, wine, oil, fruits and cattle. Hot sulphurous springs, esteemed by Sulla, still function and many minerals and ores are mined here. Pop. 154,500.

Eucaine Drug used as an anæsthetic. Prepared artificially, it is an alkaloid not unlike cocaine, but less powerful. It is used by dentists.

Eucalyptus (Gr. *eu* well, *kalyptos*, concealed). Genus of evergreen trees and shrubs of the order Myrtaceae. The name is derived from the protective covering on the buds which is shed when the flowers open. The blue gum, *E. globulus*, yields an aromatic oil with antiseptic and medicinal qualities, which is used in affections of the throat and lungs. The trees grow chiefly in Australia.

Eucharist One of the names for the sacrament of the Lord's Supper. The word, denoting thanksgiving, was applied to the consecrated elements, and then to the whole celebration, which passed into the sacrifice of the Mass. At the Reformation, the Anglican church adopted the term Holy Communion; some other Protestant churches adhere to the original name, the Lord's Supper. The Roman Catholic Church and high churchmen in the Anglican church use the term Eucharist.

Euchre Card game. It can be played usually by two players. Of the pack, the 2, 3, 4, 5, and 6 of each suit are discarded, and of the remaining cards the dealer gives five to each player, turning up the top one of the balance to fix the trumps. Each player in turn can decide to play or to pass; if he plays he is entitled to the trump card in exchange for one of his own. Two cards make a trick, three tricks make a point, and five points make a game. Euchre can be played by four persons.

Euclase Rare mineral. It is composed of hydrated silicate of beryllium and aluminium and contains 1·7 per cent. of beryllium oxide. It is found at Minas Geraes in Brazil, in Austria and in the Ural Mountains in the form of extremely brittle striated prisms, which may be colourless or yellow, green or blue.

Euclid Greek mathematician. He taught at Alexandria about 300 B.C., and was the founder of mathematical literature. Of his numerous works, we still possess his *Stoicheia* (Elements of Mathematics), which were used until comparatively recent times as the foundation of all geometrical text books. They are in fifteen volumes, of which the thirteenth and fourteenth were added by Hypsicles. Other extant works are *Data*, 95 geometrical propositions, and an astronomical treatise *Phaenomena*.

Eucleides Greek philosopher. He flourished about 400 B.C. and was a pupil of Socrates. He founded the Megarian school, which was chiefly known for its cultivation of dialectics. The school unites the doctrines of Socrates with those of the Eleatics, and identifies that which exists with the good; that which is not good does not exist. The good is unalterable, one and similar, always the same; it is the intelligence, the reason, God.

Eudiometer Instrument used for analysing gaseous mixtures. It consists of a graduated straight or U-shaped glass tube sealed at one end and open at the other, with two platinum wires inserted near the closed end to allow of the passage of an electric spark. The tube is filled with mercury and inverted in a mercury pneumatic trough. The gases are introduced and a spark passed through the mixture, the analysis being determined by the diminution of volume.

Eudocia Name of two East Roman empresses. (1) **Eudocia Augusta**, a Greek sophist's daughter, was converted by Pulcheria, sister of Theodosius II., whom she married in 421. Banished in 440, she retired to Jerusalem, and was the author of several literary compositions. (2) **Eudocia Macrembolitissa** was the consort of Constantine X. At his death she married Romanus IV. in 1068, but abdicated in 1071 to become a nun.

Eugène Italian prince and soldier. The son of a prince of Savoy, he was born in Paris, Oct. 18, 1663, his mother being a Frenchwoman. He served his life as an officer in the Austrian army, being almost continuously in the field. He fought first against the Turks and then in Italy against the French. In 1697 he won one of his great victories at Zenta, against the Turks. In the war of the Spanish Succession he ranked with Marlborough as a leader of the Allies. The two won Blenheim together and later Oudenarde and Malplaquet; in the meantime Eugène had taken Turin.

Having helped to make peace in 1714, Eugène was able in 1716 to command an army which defeated the Turks, and took Belgrade. In 1734 he fought his last battles, once more against France, and died April 21, 1736.

Eugenics Study of the factors which may improve or impair the physical and mental racial qualities of future generations. The modern science owes its inception to Sir Francis Galton (*q.v.*), whose anthropometrical studies led to the collection of valuable statistics relating to the problems of inheritance. A further advance in eugenics was made by the Mendelian research into the laws governing the transmission of hereditary physical characters. There are now specialised branches dealing with such questions as the encouragement of procreation of children by individuals of sound stock, the reduction and prevention of mental deficiency and general preventive measures of hygiene and social reform.

Eugénie Empress of the French. She was born at Granada, Spain, May 5, 1826, the daughter of the Spanish count of Montijo; her maternal grandfather was a Scot named Kirkpatrick. She met the emperor Napoleon III. in Paris in 1851, and the two were married in 1853. Her career was divided into two parts. From 1853 to 1870 she was the centre of a brilliant and luxurious court; from 1871 to her death she was an exile in England. She lost her husband in 1873 and her only child, the Prince Imperial, in 1879. She lived at Chislehurst and then at Farnborough, but died in Spain, July 11, 1920. She was buried at Farnborough.

Eugenol Substance obtained from cloves. It is obtained by distillation of the oil and also from the oil of the pimento leaf. It is used in medicine as a carminative and in cases of toothache. It is also used to make vanillin.

Eulenspiegel Tyl. A popular German character, and the title of a sixteenth century chapbook. The son of a peasant, born at Kneitlingen in Brunswick, in the fourteenth century, he played practical jokes and tricks on tradespeople, priests, princes, and especially innkeepers. In England, his tricks became anglicised, and were attributed to Robin Goodfellow

Eumaeus In Greek story, the swineherd mentioned in Homer's *Odyssey*. He was in the service of Penelope, during her husband's absence, and to him Odysseus made himself known when he arrived home in disguise.

Eumenides (The kindly.) In Greek mythology, a name given to the Erinyes or Dirae (the Furies). Three in number, Tisiphone, Megaera and Alecto, they were the ministers of divine vengeance, who punished the guilty by plague, war and the stings of conscience. After they had ceased to persecute Orestes for slaying his mother Clytaemnestra, they were called Eumenides, and a temple was erected by him in their honour. They were represented in black garments, with serpents instead of hair. The Eumenides is the title of a tragedy by Aeschylus.

Eunuch Word denoting bedkeeper, applied to a chamberlain in Western Asia and Egypt, and, later, at the Byzantine court. He was generally an emasculated man, but the term was extended to any castrated attendant of bedchambers or of women's quarters in polygamous households, the position, in princely establishments, often conferring great political influence. At one time male choristers, retaining their boyish voices through castration, sang on the Italian stage, and even in the Sistine chapel, Rome, but the practice ceased in 1878.

Eupen Town of Belgium. It stands on the Weser, 10 m. from Aix-la-Chapelle, and is a busy industrial centre. The French name for it is Neaux. Pop. 14,000.

Eupen is the capital of a fertile district or circle which has been a subject of European concern. It was part of the Austrian Netherlands before it became French in 1801. In 1814 it was given to Prussia, who retained it until 1919, when, with Malmédy, it was ceded to Belgium. The combined area of Eupen and Malmédy is 382 sq. m., and the population 60,213. In 1925 they were joined to the province of Liège.

Euphemism Figure of speech which describes an offensive or unpleasant thing in an indirect way. An example is to describe a lie as a terminological inexactitude.

Euphonium Brass musical instrument. It is a member of the saxhorn family, and is identical with the tuba in B flat. Its pitch is an octave lower than that of the cornet, and it is the chief bass solo instrument in military bands.

Euphrates Largest river of W. Asia. It is formed by the union of two rivers, the Kara Su and the Murad Su, which rise, the former in the Dumlu Dagh, the latter in the Ala Dagh. Piercing the Taurus Mountains, the stream flows south by west until nearing Aleppo, it turns south-east and runs through Syria and Iraq, joining the Tigris to form the Shatt-el-Arab. It has a total length of 1800 m. Babylon stood upon its banks.

Euphuism Affected English prose style fashionable in the late 16th

century. It was introduced by John Lyly in *Euphues, the Anatomy of Wit*, 1579, and *Euphues and his England*, 1580. Characterised by bombastic vocabulary, balanced antithesis, abundant alliteration and classical allusion, it had but a short vogue.

Eurasian Indian term originally denoting the children and their descendants of Hindu mothers and European, especially Portuguese, fathers. Chee-chee is an alternative term. The Indian census now calls them Anglo-Indian. Generically the term denotes any individual of mixed European and Asiatic blood, and also physical or ethnic characters common to both continents, *e.g.*, the Eurasian steppe.

Eureka Exclamation, "I have found." It was reputedly made by Archimedes when, after prolonged research, he suddenly recognised, while taking a bath, a hydrostatic method of detecting the amount of alloy in the golden crown of the Syracusan king, Hiero. The exclamation connotes any triumphant discovery, real or supposed.

California adopted it as its state motto, and has made it the name of one of its cities. **Eureka Springs** is the name of a city of Arkansas.

Eurythmics Translation of music into bodily movement. Rhythmic appreciation being most naturally expressed by bodily reactions, Jacques Dalcroze of Geneva invented a system of symbolic movement. The crotchet is taken as the time unit. The feet step the note values, the arms beating time. Certain standardised gestures represent modifications of regularity in the music. In their simplest form, eurhythmic exercises ensure right comprehension of time values even by young pupils. Elaborated, to represent the emotions of music, they become a plastic art.

Euripides One of the three great Greek tragic poets. He was born about 480 B.C., reputedly on the day on which the Greeks defeated the army of Xerxes, King of Persia, at Salamis. The constant ridicule and envy to which he was subjected made him leave Athens and retire to the court of Archelaus, King of Macedonia, where he received great friendship and where he died in 406 B.C. He was known as "the philosopher of the stage," and had the reputation of being a woman hater. Of his eighteen extant plays the chief are *Medea, Hippolytus, Alcestis, Iphigenia at Aulis*, and *Iphigenia in Tauris*.

Euroclydon Strong wind of the Levant. The word designates the wind from Central Cretan Mountains which caught S. Paul's ship when sailing from Fair Havens to Phenice, and occasioned his shipwreck at Malta (Acts xxvii., 14).

Europa In Greek mythology, a daughter of Agenor, King of Phoenicia. Zeus fell in love with her, and, in the form of a bull, carried her off whilst she was gathering flowers. The god crossed the sea to Crete, where he married her. She bore him Minos, Sarpedon and Rhadamanthus, who became judges of the underworld.

The Europa is a German liner belonging to the North German Lloyd. She has a tonnage of 46,000, and is used on the Atlantic service. In May, 1930, she crossed the Atlantic in 4 days, 17 hrs., 6 min., thus making a record.

Europa Point and Europa Bay are near Gibraltar.

Europe Smallest of the world's continents. On the map it looks like an outpost of Asia, but from time immemorial it has been regarded as a separate continent. It covers about 3,750,000 sq. m., and its population is about 475,000,000. It is bounded on three sides by the sea and on the other by the Ural Mountains, which separate it from Asia. The seas are the Arctic Ocean, the Atlantic Ocean and the Mediterranean Sea, which divides it from Africa. A short land boundary is formed by the Caucasus Mountains in the south. Its length from Cape St. Vincent in Spain to the Urals is about 3200 m. From Cape Matapan in Greece to the North Cape in Norway it is about 2400 m.

PHYSICAL FEATURES. The soil of Europe is on the whole fertile. There are no great deserts and the area covered by mountains is not very extensive. The chief range is the Alps, but there are many smaller ranges, chiefly in the south and west. It is well watered and most of the rivers are navigable; the Rhine and the Danube are the most important; the Volga is the greatest. Owing to its dense population and settled civilisation, man has done much in the making of roads, railways, canals and harbours to increase its productivity and prosperity. Vast supplies of food are grown and the baser metals are abundant. For cotton, oil, gold, and silver, however, Europe is mainly dependent upon outside sources.

CULTURE. Although small compared with other continents, Europe has been the seat of the world's greatest empires. It owes much, doubtless, to Asia, where the earliest civilisations flourished, but since the time of the Greeks has been in this respect the foremost of all the continents. The Greek civilisation was followed by the Roman and later arose the wonderful civilisations of Italy, France, Britain and Germany. In trade, too, Europe has long dominated the world. The Spaniards, the Portuguese, the Venetians and the Dutch are all European races. This domination is due to many causes; a temperate climate, an accessible seaboard, natural wealth and native energy.

DIVISION INTO STATES. Much of Europe was included in the Roman Empire, on the fall of which separate states began to rise, although the idea of a central authority was carried on by the Holy Roman Empire until 1806. Between these states there were constant wars and frequently changes of boundary, but certain tendencies proved irresistible. The smaller states were gradually joined to form larger ones and so the powerful monarchies of France, Spain and Great Britain and later Italy and Germany, came into being. The changes that followed the Napoleonic wars helped to forward this movement and in the 19th century five, and later six, countries ranked as the Great Powers, not merely of Europe, but of the old world. They were Britain, France, Germany, Austria and Russia, joined later by Italy. Austria and Germany claimed to be the successors of the Holy Roman Empire; Russia was a great new empire that dwarfed all others in size and population.

The chief events in European history between Waterloo and the Great War were the rise of Germany and the decay of Turkey, whose place was taken by a group of countries known as the Balkan States. Germany's ambitions provoked, or at least hastened, the world conflict of 1914-18, and the settlement that followed this altered considerably the map of Europe. It did not, however, concern Russia,

which had just embarked upon the experiment of creating a new form of state, a Soviet republic.

To-day Europe consists of 33 separate countries. Its empires have disappeared, but 12 kingdoms remain. Only one of these bears a new name, *i.e.*, Yugoslavia, or the kingdom of the Serbs, Croats and Slovenes. Hungary is a kingdom without a king. Of the 16 republics, seven came into existence as a result of the Great War. These are Finland, Lithuania, Latvia, Estonia and Poland, all five formerly part of Russia, Austria and Czechoslovakia. Two others, Germany and Russia, changed from a monarchical to a republican form of government, and in 1931 Spain followed their example. Greece, a republic from 1924, in Nov., 1935, voted for the restoration of the monarchy, and later in the month King George II. arrived in Athens. The four states that are neither kingdoms nor republics are the three little hereditary states of Liechtenstein, Luxemburg and Monaco and the new state of the Vatican. The Irish Free State and Iceland are sometimes ranked as separate states.

Europium Rare element. Its symbol is Eu, its atomic weight 152, its atomic number 63, and it is found associated with samarium. It was discovered in 1896 by E. A. Demarçay and first isolated in 1901.

Eurydice In Greek mythology the daughter of Nereus and Doris and the wife of Orpheus (*q.v.*). Fleeing from Aristaeus, she was bitten by a serpent and died. Orpheus brought her back from Hades by his magic power of music, but lost her again through looking back to see if she followed.

Eusebius Ecclesiastical historian. Born in Palestine about 264, he studied under Pamphilus—hence calling himself Eusebius Pamphili—after whose martyrdom he lived in Egypt. Made bishop of Caesarea by Constantine the Great about 313, he was prominent at the council of Nicaea in 325. His *Historia Ecclesiastica* and other writings made him father of church history. He died in 340.

Eustachian Tube Canal leading from the pharynx to the tympanic cavity of the ear (*q.v.*). By admitting air to the inner side of the ear drum it maintains an air pressure equal to that existing on the outer side.

Euston Name of one of the great London railway stations. It is in Euston Square, just off the Euston Road, one of London's great thoroughfares. Before 1923 it was the headquarters of the L. & N.W. Rly. It now belongs to the L.M.S. system.

Euston is also the name of a village in Suffolk, 3 m. from Thetford. Here is Euston Hall, a seat of the Duke of Grafton, whose eldest son is called the Earl of Euston. It is on the L.N.E. Rly. and has an interesting church.

Euthanasia Comfortable death. Medical practice sometimes employs methods for rendering as painless as possible the sufferings of persons dying from incurable diseases. Induced euthanasia of the aged has sometimes been advocated by philosophers, as by Plato and More.

Eutyches Founder of the Eutychian heresy. Superior of a Constantinople monastery, he taught, contrary to Nestorius, that Christ had but one nature, the divine. This teaching, ultimately condemned by the council of Chalcedon, 451, passed into the monophysite position of the Jacobite Church, which is still extant in Armenia, Egypt and Abyssinia. Eutyches was born about 380 and died in 456.

Evangelical Pertaining to the Christian evangel or gospel. The term may denote the first four books of the New Testament. The principles conformable thereto, *i.e.*, evangelical doctrine, or communions governed by scripture alone, *i.e.*, Protestant evangelical churches. In 18th century England an evangelical revival developed a Low Church movement within the Anglican Church, and occasioned John Wesley's Methodist movement.

The World Evangelical Alliance, founded in 1846, comprises individual Christians of various communions co-operating in Christian work; it organises annually united meetings for prayer in the first week of January. The Evangelicals hold a conference every summer at Keswick.

The Evangelical Union, founded by the Rev. J. Morison of Kilmarnock, and other ministers of Arminian leanings in 1843, was a union of churches in Scotland. In 1896 these were amalgamated with the Congregationalists.

Evangelism The term is derived from two Greek words which together mean "good news" or "gospel." It may be defined as the endeavour on the part of Christians to win others to the acceptance of the Christian faith.

Evangelist Proclaimer of good news. The term was first applied to preachers appointed by the New Testament apostles. It afterwards designated both the authors of the four gospels and travelling preachers. Nowadays it usually denotes an itinerant preacher.

Evans **Edith Mary.** English actress. Born in London, she made her first appearance as "Cressida" in *Troilus and Cressida* in 1912, and later played in Vedrenne and Eadie productions and with Ellen Terry. She has played a great deal in Shakespeare and Shaw, and in revivals of Restoration comedies, at the Lyric, Hammersmith. In 1932 she took the chief rôle in *Evensong*.

Evans **Edward Radcliffe Garth Russell.** English sailor and explorer. The son of a barrister and born in 1881, he entered the navy in 1897. In 1902-4 he was with the *Discovery* relief expedition in the Antarctic. In 1909 he went with Scott on his expedition, and, as second in command, took charge after Scott's death. During the Great War, as commander and then captain, he served with the fleet, and in 1917, in command of the *Broke* and the *Swift*, defeated six German destroyers. In 1929-31 he was Rear-Admiral Commanding the Royal Australian Navy. He received the D.S.O. and the C.B., and many honours from learned societies, and wrote *South with Scott* and other books.

Evans **Sir Arthur John.** English archaeologist. Born in Hertfordshire, July 8, 1851, his father was Sir John Evans (1823-1908), who won a reputation by his studies of ancient coins and antiquities. Arthur Evans was educated at Harrow, Brasenose College, Oxford, of which he became a fellow, and Gottingen. He began his archaeological researches in Dalmatia, but after some years turned his attention to Crete (*q.v.*), with which his name is mainly associated. Between 1900 and 1908 he excavated the palace of Minos at Cnossus and did other work there that was equally valuable. In 1911 he was knighted, and he has received numerous other honours,

including the F.R.S. From 1884 to 1908 he was keeper of the Ashmolean Museum, Oxford, and he was twice president of the British Association. He has written several books on his discoveries.

Evaporation Process by which a liquid passes into a state of vapour. Evaporation is increased by the application of heat and by lowering the pressure upon the liquid. If evaporation is carried out in a confined space at a given temperature a point is soon reached where the space becomes saturated with the vapour, equilibrium is established and the process ceases. Boiling commences when the pressure of the saturated vapour, which increases with the temperature, becomes equal to the atmospheric pressure.

Eve Name given by Adam to his wife, because she was "the mother of all living" (Gen. iii. 20). Her sons were Cain, Abel and Seth. The Genesis story describes her creation from a rib taken out of Adam's flesh as a "help meet for him," and her participation in the Temptation and the Fall.

Evelyn John. English diarist. Born at Wotton House, near Dorking, Surrey, Oct. 31, 1620, he was educated at Balliol College, Oxford. A man of wealth, he spent some years abroad, and in 1652 made his home at Sayes Court, Deptford. Evelyn was secretary of the Royal Society, treasurer of Greenwich Hospital, and held other public positions. He wrote on agriculture, forestry, and a number of other subjects. He died at Wotton, Feb. 27, 1706. His many friends, his wide knowledge and his acute intellect make his *Diary* one of the outstanding books of its kind and an invaluable mine of information concerning the life of his time. It was discovered in an old clothes basket at Wotton in 1817.

Evening Primrose Biennial herb (*Oenothera biennis*), of the order Onagraceae, a native of the United States. A favourite in English gardens, it has flower stems four to five feet in height, bearing spikes of large yellow flowers which only open towards sunset.

Everest Highest mountain in the world. It stands on the borders of Nepal and Tibet and is 29,141 ft. high. It is named after Sir George Everest (1790-1866) Surveyor-General of India. In 1922 and again in 1924 expeditions under Col. C. G. Bruce set out to reach the summit. Both failed, but on the second occasion some of the climbers ascended to over 28,000 ft.

In 1933, after elaborate preparations, another expedition was made over Mount Everest by the Houston Mount Everest Flight Expedition, led by Air-Commodore Fellowes and the Marquess of Douglas and Clydesdale, and about the same time the Ruttledge Expedition attempted the climbing of the mountain. In 1936 Mr. Ruttledge was a leader of a new attempt on Mt. Everest.

Everglades District in the South of Florida, U.S.A. It is hot and swampy and largely overgrown with vegetation, but parts have been drained and used for growing sugar. In it are many lakes with islands. It extends for about 120 miles from north to south.

Eversley Village of Hampshire. It is 14 m. from Basingstoke. Charles Kingsley, who was rector here, 1844 to 1875, is buried in the churchyard of the 13th-century church.

Eversley Viscount. English title borne by **Charles Shaw-Lefevre.** Born Feb. 22, 1794, he was a member of parliament from 1830 to 1857. From 1838 to 1857 he was Speaker of the House of Commons. He was made a viscount in 1857 and died Dec. 28, 1888, when the title became extinct.

Eversley's nephew, **George John Shaw-Lefevre,** who was born June 12, 1832, was a Liberal M.P. from 1863 to 1895. He held office under Gladstone, 1869-74 and again 1881-84. In the Liberal ministry of 1892-95 he was first Commissioner of Works and then President of the Local Government Board. In 1906 he was made a baron. In 1919 he published a volume of *Reminiscences,* and he died April 19, 1928. Baron Eversley did a great deal to preserve commons and footpaths for public use.

Everton District of Liverpool. On the north side of the city, it gives its name to a toffee originally made here.

The Everton Football Club is one of the leading professional clubs playing the Association game. It was founded in 1879 and was one of the original members of the Football League. The club won the Association Cup in 1906 and 1933, and was champion of the League in 1891, 1915, 1928 and 1932. The ground, at Goodison Park, Liverpool, holds 60,000 people.

Everyman English morality play. Its authorship is unknown, but it dates from about 1500. Possibly a translation from the Dutch, it tells the story of Everyman's journey through the world, a journey which, by means of Death, God summons him to take.

The Everyman Theatre is at Hampstead, London, and was opened in 1920.

Evesham Borough and market town of Worcestershire. It stands on the Avon, 15 m. from Worcester and 106 from London on the G.W. Rly. The town is the centre of a fruit-growing district known as the Vale of Evesham. Pop. (1931) 8799.

The Battle of Evesham was fought here, Aug. 4, 1265, when Prince Edward, afterwards Edward I., defeated the barons under Simon de Montfort. An obelisk marks the site.

Eviction Turning a tenant out of his house or lands. Before 1914 a landlord could evict a tenant without offering any reason, providing proper notice had been given. Since the passing of the Rent Restriction Acts, the tenant of a controlled house can only be evicted by an order of the court for non-payment of rent or if the landlord requires the premises for his own use. The eviction of tenants was carried out on a large scale in Ireland during the land troubles late in the 19th century.

Evidence Testimony or information given in a court of law. By English law all evidence must be given on oath and one who gives false evidence can be prosecuted for perjury. The two main rules of evidence are that it must be the best available, primary evidence, as it is called, and that it must be relevant to the issue. In the former case it means, for example, that a copy of a document will not be accepted as evidence if the document itself is in existence. Hearsay evidence is not regarded as evidence, although there are exceptions to this rule. Since 1908 the husband or wife of an accused person can give evidence in a case. The phrase, king's evidence, is used for the testimony of a criminal who gives evidence against his fellow criminals.

Evil Eye Faculty of fascinating persons or things to their harm by looking at them. Belief in the evil eye, possession of which was involuntary, was common to the Hebrews, Greeks and Egyptians and was rife throughout Europe in the Middle Ages; it still persists among Italian and Irish peasants. Most savage races have been found to believe in it. Charms and amulets as well as certain offensive actions such as spitting, are supposed to avert it.

Evolution Process by which plants and animals have developed by gradual modification from previously existing forms of life. Evidence of such changes are afforded from anatomical and embryological data as well as from a study of fossil remains. It is only by reference to the theory of evolution that the resemblances and differences of structure in various groups of plants and animals can be satisfactorily explained. It elucidates also the appearance of features, permanent in lower forms, in the developmental stages of the higher animals, *e.g.*, the possession of fish-like characters and later of reptilian characters in the early stages of the embryo of a mammal. Fossil remains, though necessarily incomplete, supply many indications of the evolution of complex types from simpler ones. In general the changes are progressive, but in some cases evolution is retrogressive.

Evora City of Portugal. It stands on a fertile plain, 72 m. from Lisbon. It contains a temple and other remains of a Roman colony, also examples of Moorish architecture. It is an archiepiscopal see and has a beautiful 12th century cathedral. The city walls still exist and Evora trades in wine and has textile industries. Pop. 16,148.

Évreux City of Normandy. It stands on the Iton in the department of Eure, of which it is the capital. It is famous for its cathedral, which has been restored, but remains a wonderful monument of Gothic art. The city is an agricultural centre. At Old Évreux, 4 m. away, Roman remains have been found. Pop. 19,000.

Ewell Village of Surrey. It is 13 m. from London, on the S. Rly, and a residential area for Londoners. Between Ewell and Cheam is Nonsuch Park. Pop. 3900.

Ewing **Sir James Alfred.** Scottish scientist. Born in Dundee, March 27, 1855, and educated at the University of Edinburgh, he began his lifework as assistant to Lord Kelvin. His first important post was Professor of Engineering at Tokio, 1878-83. From 1883-90 he was Professor at University College, Dundee, and from 1890 to 1903 Professor of Mechanism and Applied Mechanics at Cambridge. In 1903 he was made Director of Naval Education, and in 1916 Principal of Edinburgh University. He retired in 1929 and died in 1935. During the Great War Ewing was a member of the explosives committee. His many honours included a knighthood (1911), an F.R.S., the presidency of the Royal Society of Edinburgh, and the presidency of the British Association (1932). Ewing did much for the improvement of electrical apparatus.

Examiner One who conducts an examination, or part of it. Examiners are usually members of the teaching staff of a university or college.

In the high court in London lawyers, called examiners, are empowered to examine witnesses.

The examiner of plays is an official in the Lord Chamberlain's department, to whom a copy of any new play or altered old play must be sent at least seven days before it is produced. He has the power to prohibit the acting of any play that is indecent.

Excalibur Magic sword of King Arthur. It was given to him by the Lady of the Lake to ensure his immunity from severe wounds and loss of blood. After his final defeat King Arthur caused Excalibur to be cast into the lake, whence a hand arose and drew it from sight.

Excavator Mechanical device for the removal of large quantities of earth or similar material. It is employed in building, mining and quarrying operations. The crane, navvy or power shovel, used largely in quarrying, consists of a movable crane working a dipper at the end of an arm. Another type is a modification of a dredger, with an endless chain of buckets having cutting edges; it is used for removing surface materials.

Excess Profits Duty Tax imposed by the British Government to meet the expenses of the Great War. It was introduced in 1915, when it was 50 per cent. on all profits made in business in excess of the normal. The rate was raised to 60 per cent. in 1916 and 80 per cent. in 1917. Farmers and professional men were exempt. The tax was abolished in 1921. In 1920-21 it produced £186,000,000. A similar tax was introduced in the British Dominions and some foreign countries.

Exchange In finance, the transfer of the money of one country into that of another. The enormous volume of international trade and the amount of international loans make the question of the exchanges very important, and many firms are engaged in the business of buying and selling bills of exchange and other forms of currency. Each day the rates of exchange are given in the papers, and a merchant in London can calculate exactly what he will get for goods he sells in New York, Paris or Berlin.

After the Great War there were serious fluctations in the various rates of exchange which made business very difficult, but gradually most of the countries stabilised their currencies, and to-day variations are usually very slight indeed. The rate of exchange is influenced by trade balances, the volume of gold in a country, and other such matters.

Exchange Name for a building in which merchants meet for the transaction of business. In England the principal one is the Royal Exchange, London, but this is no longer used for its original purposes. Exchanges are now confined to a single line of business, *e.g.*, the stock exchanges in London and other large cities; also the wool, hop and coal exchanges in London, and the corn exchanges in many agricultural centres. Membership is usually confined to those engaged in the particular business concerned.

Exchequer Name given in England, in Norman times and later, to the department responsible for collecting the king's revenues. The name comes from chequer, a board resembling a chequer or chess board being used to help in calculating the amounts due. The name survives in the Chancellor of the Exchequer and the Exchequer and Audit Department.

The exchequer was first at Winchester, but later removed to Westminster, and there is in

existence a book the *Dialogus de Scaccario*, which describes its working in the time of Henry II. To an official meeting twice a year the sheriffs of the counties came and accounted for the money they had collected. The exchequer continued its duties, although they varied from time to time, until in 1834 its duties were handed over to the Treasury with the Chancellor of the Exchequer as its head. Scotland and Ireland had each an exchequer until this was abolished in the 19th century.

A law court, **the court of exchequer**, grew out of the exchequer. The judges of this were called barons and it lasted until 1876, when its duties, chiefly concerning revenue cases, were handed over to the King's Bench division of the High Court.

The Exchequer and Audit Department was set up in 1866 to audit the public accounts. It is independent of the Treasury. The offices are on Victoria Embankment, London, E.C. 4.

Exchequer bonds are bonds issued by the British Government from time to time when money is needed for temporary use. They are usually issued for three or five years. They were introduced in 1853 and replaced the **exchequer bills** by which the government had borrowed money since 1696.

Excise Word used for the duties levied on goods produced within a country, as distinct from customs duties, which are levied on goods entering a country. Under a system of Free Trade every customs duty is counterbalanced by a corresponding excise duty.

In England the earliest excise duties date from the 17th century, when they were placed on beer and other drinks. Others were added and in the 18th century they became very numerous and their collectors, the excisemen, were a detested class. In the 19th century many of them were removed and to-day they are only levied on a few articles, chiefly beer, spirits, patent medicines, table waters and matches. Licences for dogs, menservants, etc., and the entertainment tax are also classed as excise duties. In 1931-32 the total receipts from the excise duties was £119,843,470. They are collected by the Board of Customs and Excise, but before 1909 were collected by the excise branch of the Inland Revenue Department.

Excommunication Exclusion of offending members from the rights and privileges of a religious communion. It may be temporary or permanent, partial or total. It is based upon synagogue practice, and early ecclesiastical procedure involved congregational assent, but bishops, however, gradually assumed the prerogative of excluding offenders from the sacraments for heresy, immorality or disobedience. Pope Gregory VII. first deposed a monarch by excommunicating the Emperor Henry IV. in 1077; Innocent III. placed England itself under an interdict and excommunicated King John; Luther's, Henry VIII.'s and Elizabeth's excommunications were incidents in the Protestant Reformation.

Excretion Discharge of waste matter from the body; also the substances so excreted. Excretion takes place through the skin, lungs, bowels and kidneys. Of these the most important are the two kidneys, which filter out from the blood the waste products normally resulting from metabolism. Of the 50 oz. or so of urine excreted per diem about one-twentieth is solid waste matter. In the process of perspiration (*q.v.*) water is discharged through the sweat glands of the skin, this excretory process aiding temperature regulation. Carbon dioxide and water are exhaled from the lungs, while the bowel passes out undigested food material, bile salts and pigments, bacterial remains and cell residue. *See* KIDNEY; SWEAT; URINE.

Exe River of Devon and Somerset. It rises in Somerset on Exmoor and flows S. across Devon, entering the English Channel by a navigable estuary 6 m. long. It is 55 m. long and its chief tributaries are the Barle and other streams rising on Exmoor. It passes Exeter, and Exmouth stands at its mouth.

Execution Act of carrying out something, especially a decision of a court of law. One kind of execution is a distraint on the goods of a person who has not paid a debt after being ordered to do so by a court. It can only be carried out by officers of the court.

Another form of execution is putting a person to death after sentence has been passed. This is done in Great Britain by hanging; in France by the guillotine; and in parts of the United States by the electric chair. Until 1868 executions in England were public. Formerly persons of rank and political offenders were beheaded, the last cases being in 1746. Soldiers and sailors sentenced to death are shot.

Executor Person appointed to carry out the provisions of a will. There may be one, two or more executors. Their duties are to prove the will and, having obtained the probate, to wind up the estate of the deceased person. They should first pay the debts and then distribute the remainder of the property as stated in the will. An executor is liable for any breach of trust, but a legatee cannot sue him for his legacy until a year has passed. An executor is not entitled to any remuneration unless it is stated in the will that he is to be paid, but he can employ a solicitor to act for him and charge his expenses to the estate. When money is left in trust the same person is often appointed both executor and trustee. *See* WILL.

Exegesis Exposition or interpretation of any literary work or passage, pre-eminently of Holy Scripture. It accepts the text as it stands, the consideration of its origin and authenticity being the task of Biblical criticism. It seeks to determine the exact meaning of the words.

Exeter City and county town of Devonshire. It stands on the Exe, 171 m. from London, and is served by the G.W. and S. Rlys. The chief building is the cathedral, dedicated to S. Peter; it was restored in the 19th century and contains interesting architectural and other features including a minstrels' gallery. Near are the bishop's palace and the college of priest vicars. The Guildhall, one of the finest buildings of its kind, dates from Elizabethan times. In Rougemont Park are the ruins of Rougemont Castle, and parts of the city walls still stand. There is a University College founded in 1865 and greatly enlarged since. **Exeter School,** founded in 1629, is a large public school in modern buildings. Exeter is the agricultural and business centre for a wide district. A ship canal connects it with Topsham on the estuary of the Exe. Pop. (1931) 66,039.

Exeter **Marquess of.** English title borne by the family of Cecil. **John Holland, half-brother of Richard II., was made**

Duke of Exeter in 1397, but he was executed in 1400. **Thomas Beaufort** was duke from 1416 to 1425, and in 1443 **John Holland**, son of the former duke, was created duke. In a few years, however, the title was again extinct.

In 1525 **Henry Courtenay** was made Marquess of Exeter, but he lost the title when he was executed in 1538. In 1605 **Thomas Cecil**, Lord Burghley, was made Earl of Exeter, and in 1801 the 10th earl was made a marquess. The title has since been held by the Cecils. The eldest son of the marquess is called Lord Burghley and his seat is Burghley House (*q.v.*). **Lord Burghley** (born 1905), son of the 5th marquess, is a famous athlete, proving himself, at the Olympic Games and elsewhere, one of the greatest hurdlers of the age. In 1931 he was elected Conservative M.P. for Peterborough.

Exhaustion *See* FATIGUE.

Exhibition Kind of scholarship. It is used at the Universities of Oxford and Cambridge for grants of money which are of less value than scholarships. Most of the colleges award them and they are also awarded by other educational authorities. The Whitworth exhibitions for engineering students are notable examples.

Exhibition Term for a show or display of any kind. International and other exhibitions are now held for business purposes in the great commercial centres. Some of these are general, but others are confined to a single industry, as the exhibition of agricultural machinery. The first great international exhibition was held in Hyde Park in 1851. The British Empire Exhibitions held at Wembley in 1924 and 1925 were notable. Some cities, *e.g.*, Barcelona, have permanent buildings for exhibitions.

Exhumation Act of taking a dead body from its burial place for purposes of examining it. In Great Britain it is illegal to disturb a grave, but an exhumation can be ordered by the Home Secretary if foul play is suspected, or for any other good reason. Bodies are also exhumed sometimes in order to be buried elsewhere, but this can only be done by consent of the authorities.

Exile Banishment from country or home. It may be self-imposed or by authoritative decree, and is distinct from the compulsory deportation of aliens, which is banishment to their native land.

Exmoor Moorland tract of Somerset and Devonshire. It lies in the north of the two counties and was once a forest. It covers about 20,000 acres of wild and beautiful scenery. Dunkery Beacon, 1700 ft., is the highest point. Simonsbath is the centre of the moor, and on its borders are Minehead and Dulverton. It is the only place in England where the red deer is wild. A good deal of it belongs to the National Trust and it is the scene of R. D. Blackmore's *Lorna Doone*.

Exmouth Seaside resort and market town of Devonshire. It is situated at the mouth of the River Exe, 1¼ m. from Exeter on the S. Rly. It was once a seaport of some importance, and in the reign of Edward III. sent ships to take part in the siege of Calais. It has good sands and bathing, and beautiful scenery in the neighbourhood. Industries include fishing and lace-making. Pop. (1931) 14,584.

Exmouth Gulf is an opening, 65 m. long, on the west coast of Australia.

Exmouth Viscount. English title held since 1816 by the family of Pellew. Edward Pellew was born at Dover, April 19, 1757, and entered the navy. He rose to command a ship and then a fleet. In 1816 his fleet bombarded Algiers and compelled the ruler to release 2000 slaves. In 1796 Pellew was made a baronet, in 1814 a baron and in 1816 a viscount. He died Jan. 23, 1833.

Exodus Book of. Second book of the Old Testament. Describing the release of the Hebrews from their Egyptian bondage, it continues the Genesis story and deals with the life of Israel in Egypt, the preparation of Moses, the ten plagues, the institution of the passover, and the flight across the Red Sea to Sinai (i.-xviii.). The remainder records the prolonged sojourn in the Sinai wilderness, the promulgation of the Ten Commandments, and the Book of the Covenant (xix.-xl.).

Exogamy Primitive custom requiring marriage to be effected outside the social group. Its impulse is probably economic rather than biological, although its eugenic value as a corrective to in-and-in breeding is undoubted. Where kinship groups are highly specialised, as in aboriginal Australia, the exogamy pertains to totemic families, forbidding marriages between persons of the same totemic name. Some Hindu castes recognise a special variant called hypergamy, under which women may not marry except into castes higher than their own. The prohibition of marriage outside the social group is called endogamy.

Exophagy Custom among certain cannibal peoples of eating only the flesh of persons outside their own social group. Some eat relatives who have died naturally, to acquire their qualities, but slay for food only persons of another kin. The custom usually characterises those forms of man-eating instigated by revenge, *e.g.*, among the Maories in ancient times.

Exorcism Expulsion by ritual methods of evil spirits from persons or places. In all ages belief in intrusive demons as causing bodily or mental ailments has suggested attempts to expel them by incantations fortified by material aids. Present in Babylonia, the practice reached the Hellenistic world, was rife in New Testament times, and still lurks in Roman Catholic and other baptismal rites.

Expansion Enlargement of a body in bulk or surface. A rise in temperature causes expansion of volume in solids, liquids and gases, and the expansion of unit, length, area or volume, per degree centigrade of increase in temperature, is known as the coefficient of expansion. A copper rod will increase in length by 0.0017 of its length for a rise from 0° to 100° C., and the linear expansion of steel railway lines and bridge girders, and all sensitive metal instruments must be allowed for or compensated.

Expectation Something that one thinks will happen in the future. Actuaries and insurance officials use the phrase expectation of life for the number of years persons may be expected to live, and on their information, derived from experience, base their rates for annuities, life insurances and the like. A rough method of calculating this, is to reckon the expectation of life at two-thirds of the difference between the present age and 80. Thus, if a man is 44, his

expectation of life is a further 24 years, or a total age of 68. 24 is two-thirds of 36, the difference between 44 and 80. To-day, however, the expectation is a little more than this, owing to the increased attention paid to public health. The expectation of life is rather different for women than for men.

Expeditionary Force Name given to the divisions of the regular army kept ready for active service. It was planned when the army was reorganised in 1907, and consisted of six divisions of infantry and one of cavalry, with suitable artillery. Its total strength was about 130,000 men and 480 guns. In Aug., 1914, five divisions, one being cavalry, were landed in France, just after the declaration of war on Aug. 4, and were in action at Mons on Aug. 23.

Experimental Farm Farm or station where experimental work in agriculture is carried out under scientific supervision. The result of statistical and other investigations are published. The oldest of these farms is the one at Rothamsted in Hertfordshire, under the Lawes Agricultural Trust; others are at Woburn in Bedfordshire and Pumpherston in Scotland. There are many experimental farms, under public control, in Canada.

Exploration Travelling in unknown lands in order to gain information about them. The term is usually confined to the journeys of white men in the unknown parts of continents outside Europe. The exploration of America began with the arrival there of Columbus, and continued until almost the whole of the two continents was mapped out. There are still, however, immense areas in Brazil and other parts of S. America which have been only slightly explored. In the 19th century Australia and then Africa were explored, until something was known about practically the whole of their surfaces. At different times much exploration work has been done in Asia, but in the centre of that continent are tracts still unknown. More recently exploration has concentrated on first the Arctic and then the Antarctic regions. Both poles have been reached, and much valuable knowledge has been gained.

Explosive Explosive agent. A large number and great variety of explosives are used in war and in mining, quarrying, and for similar purposes. These substances, which may be in solid or liquid form, vary much in their disruptive power. The original explosive, gunpowder, has become superseded, largely by such compounds of nitroglycerine and nitrocellulose as dynamite, gun cotton and cordite; and by ammonium nitrate, picric acid, and the nitro-derivatives of the aromatic hydrocarbons such as trinitrotoluene.

Owing to obvious dangers in the manufacture, storage and conveyance of explosives, the industry is strictly regulated by the Explosives Act, 1875, and other legal restrictions. To see that the regulations about the use of explosives are observed the Home Office has a staff of inspectors.

Exports Term used for the goods sent out of a country. In Great Britain they are valued by the authorities at the custom houses, and every month particulars about them are published by the Board of Trade. The difference between a country's exports and imports is called the balance of trade. Invisible exports are sums paid for shipping, insurance and the like. Re-exports are goods imported in order to be sent to another part of the world.

In 1926 the British Government started a scheme of export credits. The idea was to help trade by guaranteeing credit to reputable firms. The scheme was for five years and was under the Department of Overseas Trade. Its offices are at 9 Clements Lane, Lombard St., E.C. 4. In 1930 it was decided to extend the scheme for a further four years until 1935.

In 1913 Great Britain's exports were valued at £634,800,000. In 1928 they totalled £843,780,000 but there was a decline in 1929, and this continued with only slight interruptions throughout 1930, 1931 and 1932. It was, however, partly accounted for by lower prices.

Extenuation Act of representing anything as less serious than it really is. In English law, a jury can add to a verdict of guilty a statement that there were extenuating circumstances to account for the crime in question, and the judge will usually take this into account when passing sentence.

Extradition Delivering up, by one government to another, of fugitives from justice. It is usually the subject of treaty and if there is no extradition treaty the fugitive is usually safe. Great Britain has extradition treaties with many countries, but not with some of the republics of S. America. Political offenders are usually excepted from extradition treaties.

Extraterritoriality Term of international law. It denotes the immunity of certain persons, property or places, from the laws which obtain in the state in which they are. In most countries, foreign sovereigns and titular heads of states, even when incognito, are exempt from local jurisdiction. Diplomatic residencies are immune, and foreign communities in some non-Christian countries. Public vessels, and the crew and passengers, are exempt when the ship is in the water of a friendly Power, but this does not apply to private vessels. In some foreign countries, as in China for instance, whole communities are regarded as extra-territorial for purposes of civil and criminal jurisdiction, being subject to national laws administered by their consuls.

Extreme Unction Sacrament of anointing for persons apparently dying. General since the 9th century, it is the fifth of the seven Roman Catholic sacraments, supplementing that of penance, and is administered by a priest after the Viaticum or Holy Communion.

Exudation Discharge of a liquid from a surface, usually through pores or from incisions. Many economic plant products are exuded. Some are due to the decomposition of cellulose, like the true gums, others to the action of bacteria like the wattle gums, or to incisions in the bark, like caoutchouc and many resins.

Eyam Village of Derbyshire. It lies 5 m. from Bakewell and 12 m. S.-W. of Sheffield. The old church is dedicated to S. Helen, and the churchyard contains an old Runic cross. In Sept., 1665, the plague was carried here by means of an infected parcel from London, and over three-quarters of the population perished. Pop. 1120.

Eyck Hubert Van. Flemish painter. He was born in Holland, about 1366. About 1420 he was at Ghent engaged upon the

large altar-piece, "The Adoration of the Lamb" in S. Bavon's Church, a work which was completed by his brother, **Jan** (1385-1440). A fine example of Jan's painting is shown in his "John Arnolfini and his Wife" in the National Gallery, London. Hubert died at Ghent, Sept. 18, 1426.

Eye Borough and market town of Suffolk. It is 94 m. from London by the L.N.E. Rly., and 10 from Ipswich, and is situated on the Dove, a tributary of the Waveney. Brewing is carried on. Pop. (1931) 1733.

Eye Organ of vision. It comprises an eye-ball, about 1 in. in diameter, set on each side of the face, in a hollow orbit, the foremost protruding portion being covered by a transparent cornea, the rest of the envelope forming the opaque sclerotic. Behind the cornea is the aqueous humour and a contractile curtain, perforated by the pupil, called the iris, whose colour varies in different persons from light blue to dark brown. These confront a double-convex crystalline lens, behind which a transparent jelly called the vitreous humour is backed by the retina. This receives images from the lens which the optic nerve transmits to the brain.

A number of medical men, called **ophthalmic surgeons**, specialise in dealing with affections of the eye. In addition there are qualified opticians, who fit persons with glasses. There are several hospitals for eye troubles in London. The largest is the Moorfields Eye Hospital in the City Road.

EYE, BLACK. A severe blow on the eye, causing discolouration, should first be bathed in cold water. After a few hours, bathing with hot water will help to reduce the discolouration and swelling. If the surrounding flesh is bruised, apply vaseline. A severely blackened eye may require medical attention.

EYE, DISCHARGE FROM. A doctor should be consulted at once when any discharge is noticed from the eye. In the meantime the eye can be bathed with clean cotton wool dipped in boracic lotion (1 teaspoonful of boric acid in a tumblerful of boiling water, allowed to cool). Discharge from the eyes is also a symptom of measles.

EYE, INFLAMMATION OF. (*Conjunctivitis.*) Bathe with cold, freshly-made boracic lotion (a small teaspoonful of boric powder to a tumblerful of boiling water, allowed to cool). Prevent the spread of infection to the sound eye by the use of a shade. If severe, consult a doctor.

EYE, SOMETHING IN. Grit, dust, or an insect may be removed with a clean handkerchief. If it is under the upper lid, lift the lid and pull it down over the lower one. If this does not dislodge it, place a match or a knitting needle on the upper lid and roll the lid back until the object can be seen.

A splinter which has penetrated the eye, or any harmful substance such as acid must have immediate medical attention, but relief may be obtained by bathing with warm water and putting a drop of olive or castor oil in the corner. In the case of quick lime, vinegar should be dropped in before the oil to neutralise the lime.

Eyebright Annual herb (*euphrasia officinalis*), of the order Scrofulariaceae. It is a native of north temperate regions and grows throughout Britain in meadows and heathlands. It is parasitic upon grass roots and has egg-shaped or lance-shaped leaves, and small flowers which are white or lilac in colour stained with purple, the lower lip's mid-lobe being yellow.

Eyemouth Burgh and seaport of Berwickshire. It is 8 m. from Berwick and 343 m. from London by the L.N.E. Rly., and is situated on the little River Eye. Its harbour is used by the North Sea fishing fleet. Pop. 2560.

Eyra Wild cat of S. America (*Felis eyra*). It inhabits the region between S. Brazil and N. Mexico. It is about the size of a small domestic cat, and is reddish yellow in colour, with an elongated, weasel-like body, short legs, and a long tail. It is fierce in its habits and preys on poultry.

Eyre Lake of S. Australia. It covers 4000 sq. m. and although two rivers flow into it, is dry during much of the year. Attention is being paid to the commercial possibilities of its salts, and air surveys have been made.

Eyre **Edward John.** English explorer. Born Aug. 5, 1815, at Hornsea, Yorkshire, the son of a clergyman, he went out to Australia in 1833. For some years he explored the unknown districts in the centre of the continent, and discovered the lake named after him. In 1846 he was made Governor of New Zealand and, after a term in St. Vincent, was appointed Governor of Jamaica in 1864. In 1865 he put down a rising of the negroes with great severity. This caused an outcry in England, and Eyre was recalled and prosecuted for having hanged a man on imperfect evidence. He was acquitted and later was pensioned and repaid his expenses. He died Nov. 30, 1901.

Eyres-Monsell **Sir Bolton Meredith.** English politician. Born in 1880, a son of Lieut.-Colonel Bolton Monsell, he entered the navy in 1894. In 1904 he married and took the additional name of Eyres. He left the navy in 1906 and in 1910 was elected M.P. for S. Worcestershire, now Evesham division, which he represented until 1935. In 1914 he returned to the navy and was mentioned in despatches. In the Coalition of 1919-22 he held a household appointment, and was Civil Lord and then Financial Secretary to the Admiralty. In 1923-24 and 1924-29 he was Parliamentary Secretary to the Treasury. From 1923 to 1931 he was chief whip of the Conservative Party. He was made a privy councillor in 1923 and awarded the G.B.E. in 1929. In 1931 he became First Lord of the Admiralty in the National Government, a post he retained after the General Election of 1935. In 1935 he was raised to the peerage as Viscount Monsell of Evesham.

Ezekiel **Book of.** Prophetical book of the Old Testament. Ezekiel was a priest of Jerusalem, one of the prominent Jews exiled to Babylon by Nebuchadnezzar, 597 B.C. The book comprises the prophet's ecstatic experiences (i.-iii.), prophecies of judgment uttered before Jerusalem's fall (iv.-xxiv.), prophecies against seven foreign nations (xxv.-xxxii.), discourses of the period following the news of the city's fall (xxxiii.-xxxix.), and visions of the ideal theocracy (xl.-xlviii.).

Ezra **Book of.** Historical book of the Old Testament. Ezra was a Jewish scribe living in captive exile in Babylon under Artaxerxes Longimanus. Recording Cyrus's decree for rebuilding the Jerusalem Temple, the book describes the return of the first company of exiles under Zerubbabel, and the course of the rebuilding (i.-vi.), then Ezra's return with a smaller company and the reforms he effected (vii.-x.). It was finally edited as a continuation of the two Books of the Chronicles.

FABIAN SOCIETY English political society. It was founded in 1884 to forward Socialism by means of the steady and deliberate methods that are associated with the name of the Roman general, Fabius Maximus, or undermining the enemy's strength. Its founders believed in "the inevitability of gradualness." It has exercised an enormous influence on the progress of the Socialist movement, and has always attracted the more intellectual members of the party. Its headquarters are at 11 Dartmouth St., Westminster, London, S.W.

Fabius Maximus Quintus. Roman general. Appointed consul in 233 B.C. he received a triumph for his victory over the Ligurians, and he assisted Carthage to demand reparations after Saguntum, 218 B.C.; Hannibal's defeat of the consul Flaminius at Trasimenus, 217 B.C., led to a Fabian dictatorship. By delaying tactics, whence his surname Cunctator, he avoided engagements, while his more impetuous colleagues were defeated at Cannae in 216 B.C. Consul for the fifth time, he inflicted losses on Hannibal, and recaptured Tarentum in 209 B.C. He died six years later.

Fabre Jean Henri. French naturalist. He was born in poor circumstances Dec. 21, 1823, and was self-educated to a large extent. During his early life, when a teacher in a small school, he showed his bias towards science and particularly entomology.

Later he became Professor of Philosophy at Ajaccio and at Avignon, and began his researches into insect life. His published works show remarkable powers of observation and literary ability. He died Oct. 11, 1915.

The following, which have been translated into English, are among the most important:—*Story Book of Science, The Life of the Grasshopper, The Life of the Fly, The Hunting Wasps, The Mason Bees, The Life of the Spider.*

Face Front of the head. Extending from the top of the forehead to the chin and from ear to ear, it possesses 14 facial bones, 12 of which occur in pairs; the two single bones are the vomer, a bone of the nose, and the lower jaw. The temporal muscles, operating between temples and mandibles, take part in mastication; these and the muscles of expression are served by pairs of nerves, the former by the fifth, or trigeminal, and the latter by the seventh, or facial nerves.

Factor Word for an agent. Legally, a factor is one who buys and sells for another; there are corn and other factors. Usually, factors, unlike brokers, actually handle the articles which they buy and sell. Their relations with their principals are regulated by the Factors' Act of 1889. In Scotland a factor is a man who manages an estate for another.

In engineering work, including the making of aeroplanes, there is a **factor of safety**, as it is called. This is reached by calculating the maximum strains which the parts may have to bear and allowing for a margin over these. In mathematics a factor is one of the two or more quantities which, multiplied together, yield a given product, and the word is also used for anything having an influence on a particular result.

Factory Building where goods are manufactured. The older ones are, for the most part, grimy and unsightly erections, but in the newer ones much attention is paid to lighting and ventilation, whilst they are frequently by no means unpleasing from the architectural point of view.

The factory system was introduced into England from Italy about 1700, but its development was due to the invention of machinery, the use of which superseded gradually the system of spinning and weaving by hand in the homes. At first, factories were subject to no law, hence employees, including women and children, had to toil for long hours and low wages under appalling conditions judged by modern standards. In the 19th century, however, factories began to be regulated by law, the first Act in Great Britain being passed in 1802. A number of others were passed in the 19th and 20th centuries. Under these laws, all factories are subject to strict inspection by Home Office officials.

Faculty Ability to do a certain thing, *e.g.*, to talk or sing. It has also meanings of a special kind, in educational and ecclesiastical usage. The studies of a university are grouped into faculties, such as arts, law, science, etc. A kindred use is for the Scottish faculty of advocates.

In ecclesiastical law a faculty is a permission to do anything, *e.g.*, to erect or remove a memorial in a church. In these cases the chancellor of the diocese hears the case and decides whether or not to grant a faculty. The Archbishop of Canterbury has a court of faculties, presided over by the judge of the Court of Arches. Among other matters within the jurisdiction of the archbishop, this court grants special marriage licences.

Faeroe Group of islands in the Atlantic Ocean. They are 200 m. to the north of the Shetlands and 250 m. from Iceland and belong to Denmark. There are 21 islands and they cover 540 sq. m. Stromo and Sudero are the largest. Thorshavn on Stromo is the capital. The people are engaged in agriculture and fishing. Sheep and cattle are raised and barley and potatoes are grown. The islands, having been Norwegian, became Danish in 1380. They elect one member to each house of the Danish Parliament and have a council for local affairs. Pop. (1930) 24,200.

Fagan James Bernard. Irish dramatist and producer. Born May 10, 1873, a son of Sir John Fagan, the surgeon, he was educated at Clongowes and then at Trinity College, Oxford. He became an actor, but made his reputation in 1899 by his play, *The Rebels.* Other successes include *The Prayer of the Sword, Under Which King, Hawthorne, And So to Bed, The Greater Love* and *The Improper Duchess.*

Fahrenheit Gabriel Daniel. German physicist. Born at Danzig, May 14, 1686, he used mercury for thermometers and devised, about 1726, the scale which is in common use in England. He died in Holland, Sept. 16, 1736.

In the Fahrenheit scale the freezing point of water is fixed at 32° and the boiling point at 212°, the intervening space being divided into 180 equal degrees. In the centigrade scale freezing point is 0° and boiling point 100°. Conversion of these scales is effected as follows :—

$$°C = 5(°F - 32)/9,$$
$$°F = (°C \times 9 - 5) + 32.$$

Faience Generic term for various kinds of glazed pottery painted with decorative designs. It is derived from Faenza in Italy where pottery with a fine vitreous surface was made in the 15th century. Examples of Italian faience are the Gubbio and Della Robbia ware, and of French workmanship Palissy and Limoges ware, while Wedgwood ware is a modern type.

Failsworth Urban district of Lancashire. It is an outer suburb of Manchester, and is 191 m. from London by the L.M.S. Rly. Cotton manufacture is the principal occupation. Pop. (1931) 15,724.

Fainting An incipient attack of fainting can usually be prevented by sniffing smelling salts and sitting with the head between the knees for a few moments. Thirty drops of sal volatile in water is a safe and effective restorative. If loss of consciousness actually occurs, carry the patient where he may have fresh air and quiet; lay him down with the head lower than the feet. If attacks are frequent the sufferer should consult a doctor.

Fair Place where traders offer their wares for sale. In the Middle Ages buying and selling was chiefly done at fairs and amongst the hundreds of fairs held were the important ones in London (Bartholomew Fair), Winchester, Oxford and Stourbridge, near Cambridge. Some fairs have disappeared, but in many places they are still held for the sale of horses and cattle. Fairs were held, too, all over Europe and one of the most famous, the Leipzig Fair, is still held every year.

Some fairs were gradually turned into occasions for pleasure and of these a few remain, such as Gorse Fair, Nottingham, one on Blackheath and St. Giles Fair at Oxford. Here the attractions include roundabouts, coconut shies, games of all kinds for testing skill or luck and a variety of amusements. Ireland was noted for its fairs and the most notorious, Donnybrook, was suppressed because of the disorder caused by it. Another kind of fair is the one at which farm servants are hired, but these are now almost extinct.

In recent years the fair has been revived as a means of promoting trade. Every year the **British Industries Fair** is held in two sections, one in London and the other in Birmingham at Castle Bromwich. In 1933 a "World's Fair" was held in Chicago.

Fairbanks **Douglas.** American motion picture actor and producer. He was born in Denver, Colorado, May 23, 1883, and educated at the Colorado School of Mines and Harvard. He acquired stage experience in Shakespearean drama and other plays and once played a small part in London. His first screen appearance was with D. W. Griffith in *The Lamb* and he became so popular that later he had his own producing company. His speciality is athleticism and his most famous pictures are *The Mark of Zorro, Robin Hood* and *The Thief of Bagdad*. In 1920 he married Mary Pickford. Divorced 1935.

Fairfax **Baron.** Thomas Fairfax, English soldier, born at Denton, Yorkshire, Jan. 17, 1612, a son of Ferdinando Fairfax, the 2nd baron. He saw military service in the Netherlands and against the Scots and, with his father, joined the parliamentary forces at the outbreak of the civil war. The elder Fairfax was given the command of the troops in Yorkshire, but he was not very successful. The younger Fairfax, however, an abler soldier, was made commander-in-chief in 1644 and was partly responsible for the victory at Naseby and for crushing the royalists in Essex in 1648. He refused to attend as one of the judges appointed to try Charles I., and in 1650 he resigned his commission in the army and received a pension of £5000 a year. Later he aided Monk in placing Charles II. on the throne. He was elected M.P. for Yorkshire in 1660 and died Nov. 12, 1671.

Fairfield Municipality of New South Wales. It is 14 m. west of Sydney, of which it is practically a suburb, and with which it is connected by railway. Pop. 7400.

Fairford Village of Gloucestershire. It is on the Coln, 25 m. from Oxford, and is the terminus of a branch line of the G.W. Rly. from that city. It is famed for its 15th century church, with its stained glass from the Netherlands, telling the story of the creation and the work of Jesus Christ. Near are Fairford Park and Hatherop Castle. There is trout fishing in the river. Pop. 1400.

Fair Head Promontory on the coast of Antrim, Ireland. Also called Benmore. It is situated between Ballycastle and Marlough Bays, stands 636 feet above the sea, and is composed of huge greenstone columns.

Fair Isle Island of Scotland. It is one of the Shetland Islands, and is 16 m. S.S.E. of Mainland, and midway between the Shetland and Orkney groups. There are two lighthouses. The inhabitants engage in sheep rearing and fishing, and in making woollen garments, including the celebrated Fair Isle jerseys. Pop. 140.

Faith Healing Cure of disease by faith in the Divine Power. The cure is elicited by prayer, without recourse to medical advice or methods. In Christendom the practice is largely based on James v. 14. Christian Science seeks to cure by instilling into the patient the belief that pain is an illusion conquerable by faith. The tradition of apostolic cures passed in the 3rd century into trust in the curative power of relics. Medical opinion attributes faith cures at Lourdes and other pilgrim resorts to a psychological action.

Fakenham Market town of Norfolk. It stands on the Wensum, 24 m. from King's Lynn, on the L.N.E. and L.M.S. Rlys. Pop. 3000.

Fakir Religious devotee. The term is used chiefly in India, where they number 1,000,000. They are partly orthodox ascetic mendicants of the dervish orders, partly irresponsible nomads and also Hindus. Some of the latter pertain to the yogi orders, who claim miraculous powers and practise severe mutilations and austerities. Others are merely degraded and filthy vagabonds.

Falaba Town of Sierra Leone, W. Africa. It is 170 m. from Freetown and is a trading centre. Pop. 6000.

Falaise Town of N. France. It stands on the River Ante, 20 m. from Caen, and is chiefly famous as the birthplace of William the Conqueror. The extensive ruins of the castle in which he was born overlook the town. Falaise is an agricultural centre and has important horse and cattle fairs. Tanning is an industry. Pop. 6900.

Falcon Sub-family of birds of prey. They have stout, hooked beaks, notched in the upper mandible, and long, sickle-shaped claws. Resident British forms include the black-crowned peregrine, 15 in. in length, which was formerly trained for hawking (*q.v.*), a popular sport in England at one time, and lays red-spotted, yellowish eggs; the kestrel, 13 in. long, which lays similarly tinted but smaller eggs; and the still smaller merlin, laying deep-red eggs. The hobby is a summer visitor; the Norway gyrfalcon and Iceland and Greenland falcons are rarer.

The Order of the Falcon is an Icelandic order. It was founded in 1921 after Iceland had separated from Denmark, and appointments to it are made by a committee.

Falernian Wine A sweet still wine made in the Campanian district of Italy from Roman times.

Falkenhayn Erich von. German soldier. Born Nov. 11, 1861, he entered the army in 1880 and ten years later joined the general staff. In 1900 he saw service in China and rose to be chief of the staff of the 4th army. In 1913 he was appointed Minister of War and when the World War began he held that position. In Dec., 1914, he succeeded Moltke as chief of the general staff and directed operations until he was superseded in Aug. 1916. He then took command of the army that invaded Rumania and was afterwards in charge of the Turkish Armies. He died April 8, 1922.

Falkirk Burgh and market town of Stirlingshire. It is 22 m. from Glasgow, on the L.M.S. and L.N.E. Rlys. The chief industries are coal mines and iron works, but there are other manufactures. The town is also important for its cattle fairs. Its port is Grangemouth on the Firth of Forth, 3 m. away. The burgh includes Grahamstown, Laurieston and Camelon. Pop. (1931) 36,565.

Two notable battles have been fought at Falkirk. In one, on July 22, 1298, Edward I. of England defeated the Scots under Sir William Wallace. The day was decided by the English archers. The second battle was fought Jan. 17, 1746. The Highlanders, under Prince Charles Edward, were returning from Derby, when they met a small English force, which was soon routed.

Falkland Burgh of Fifeshire. It is 21 m. from Edinburgh, on the L.N.E. Rly. Here is the palace built by James V. on the site of the castle in which earlier kings lived. After 1603 it fell into decay, but it was restored by the Marquess of Bute about 1890. Pop. (1931) 791.

Falkland Viscount. Scottish title borne by the family of Cary since 1620. The first viscount was Sir Henry Cary, a Devon man, who was Lord Deputy of Ireland under James I. The most famous holder was his son, Lucius, the 2nd viscount, who succeeded in 1633. In 1640 he entered parliament and in 1642 became Secretary of State. He fought for Charles when war began, but his dislike of the strife is shown by the words attributed to him before the Battle of Newbury, that he would be "out of it ere night." Riding forward he met his death there, Sept. 20, 1643.

Sir J. A. R. Marriot has written *The Life and Times of Lucius Cary, Viscount Falkland.* The title is still in existence and is held by a descendant of the 1st Viscount, but he is only related collaterally to the great Lord Falkland.

Falkland Islands A group of islands in the South Atlantic, 300 m. east of the Straits of Magellan, discovered by John Davis in 1592. They were taken by the French in 1764, ceded to Spain in 1767, and finally yielded to Great Britain in 1771.

They now form a British Crown Colony under a governor assisted by executive and legislative councils.

Only two—East and West Falkland—are important, covering, with the neighbouring small islands, 4618 sq. m. South Georgia (about 1000 sq. m.), the S. Shetlands, the S. Orkneys, the Sandwich Islands and Grahams Land are dependencies extending the territory to the South Pole. Stanley, on East Falkland, is the capital and only town, and has a good harbour. Sheep farming is carried on and the islands are a centre of the whaling industry. Pop. (1931) 2,392.

BATTLE OF THE FALKLAND ISLANDS. On Dec. 8, 1914, a naval battle was fought near the Falkland Islands, between the British and the Germans. After the destruction of the British Fleet at Coronel in Oct., 1914, two battle cruisers were sent to find the victorious Germans. With some old armoured cruisers they reached Port William in the Falklands and were coaling there when the German squadron was sighted. It consisted of the two armoured cruisers called *Scharnhorst* and *Gneisenau* and three light cruisers. Knowing he was no match for the British battle cruisers, which he had not expected to meet in these waters, the German Admiral, Count von Spee, turned away. The British ships, under Vice-Admiral Sir D. Sturdee, put to sea and the fight began. Both the German armoured cruisers were sunk by gunfire after a battle lasting about four hours. The light cruisers, *Leipzig* and *Nuremberg*, were sunk by the British cruisers, but the *Dresden* escaped. The Germans lost 2100 men; the British, 7 killed and 12 wounded.

Fallacy Any mistaken statement used in argument. Specifically it is a piece of false reasoning, or a mistaken belief or opinion, founded on correct reasoning from untrue premises, or on incorrect reasoning from true ones. Systems of logic include the classification of fallacies under a number of headings mainly following those of Aristotle, among the more common being irrelevancy or *ignoratio elenchi*, question begging, or *petitio principii* and an unjustified conclusion, or *non sequitur*.

Fallières Clément Armand. French statesman. Born at Agen, France, Nov. 6, 1841, he became a lawyer. In 1876 he was elected to the Chamber of Deputies and in 1880 he became a minister. In 1883 he was premier and between 1880 and 1890 held offices almost continuously. In 1890 he entered the Senate and from 1899 to 1906 was its president. In 1906 he was elected president of the republic and was largely responsible for the alliance with Russia and the entente with Great Britain that came to fruition in 1914. His term of office ended in 1913. He died June 22, 1930.

Fallow Term used in agriculture for land ploughed but left unplanted

to allow the soil to recover from the exhaustion due to previous crops. With the adoption of rotation of crops and scientific fertilising, fallowing became less necessary, because the different requirements of the crops in the rotation ensure that the supplies of the various plant foods in the soil are not exhausted.

The Fallow deer is a small European species, commonly found in English deer parks.

Falmouth Borough, seaport and market town of Cornwall. It is on the G.W. Rly., 12 m. from Truro and 291 from London. The harbour is formed by the River Fal, which enters the sea here. The port has dry docks and can hold all but the largest vessels. It is also a fishing and yachting centre. The old town lies along the river, whilst on the sea front is the newer district called Gyllyngvase, which has good sands and is a popular resort. In the harbour are the *Cutty Sark* and the two old warships, *Implacable* and *Foudroyant*. Near the town is Pendennis Castle, built by Henry VIII., and around is much beautiful scenery. Pop. (1931) 13,492.

The title of Viscount Falmouth has been borne since 1720 by the old Cornish family of Boscawen. From 1821 to 1852 the viscounts were also earls of Falmouth. The family seat is Tregothnan, near Truro.

False Acacia Tree of the leguminous order *Robinia pseudacacia*, also called bastard acacia or locust tree. It is a native of North America and attains a height sometimes of 60 or 80 ft. It is widely cultivated in Britain and Europe, its long sprays of fragrant white or rose-purple flowers closely resembling those of the yellow laburnum. It is usually called acacia erroneously, as the true acacia is a mimosa.

False Pretences Phrase used in English law. It is an offence to obtain, or attempt to obtain, goods or property on false pretences, which is "a false representation by words, writing or conduct of an existing fact." To convict a person of this offence, it must be shown that he acted with intent to defraud and that he knows that the statement he made was false.

Falsetto Forced or false voice with a range above the natural. It is used chiefly of men's voices, when they cultivate high notes in order to sing alto parts, although their ordinary range is that of a baritone or a bass.

Famagusta Seaport town of Cyprus. Situated south of the ruins of Salamis, it was built in 274 B.C. by Ptolemy Augustus, and originally named Arsinoe. It is connected by a light railway with Nicosia, the capital. Of its mediaeval glories only the fortifications, the castle and the fine Gothic cathedral, now a mosque, remain. Two acts of Shakespeare's *Othello* are laid here. Pop. 8979.

Family Unit of society consisting of father, mother and their offspring. It is used also for a larger unit, brothers, sisters, and their offspring, and we speak of the royal family and the Cavendish family meaning a group of relatives.

Many scholars have enquired into the early history of the family and although they disagree on many points they agree that it goes back to the beginnings of human society. It evolved from a society in which unions were promiscuous and paternal parentage uncertain, and became one of the bases on which our modern civilisation is built.

The family was mainly patriarchal and under the rule of the father, and in many countries it included his children by various wives and concubines. In some societies it was matriarchal, the mother being the recognised head, but this state of affairs has long passed away, except perhaps among one or two primitive peoples. In the western world, protected by the power of the Christian Church, it took the form which it now retains.

Family is used by zoologists and botanists for a group of organisms that in certain vital principles resemble each other. A family in this sense consists of several genera.

Family is also used for a group of languages, *e.g.* the Aryan or Indo-European family.

FAMILY ENDOWMENT. The steady fall in the birth-rate has given prominence to the principle of regulating salaries and wages to some extent by the number of a man's family. For long payments for children have been made to ministers in the Wesleyan Methodist church and the scheme has been introduced into one or two educational establishments. In New South Wales there is a state scheme of this kind. Employers pay a tax on the amount paid by them in wages, and this goes in allowances to those workers who have dependent children. This family endowment principle was introduced in 1927. There is in London a society for introducing something of the kind into Great Britain.

Famine General scarcity of food leading to starvation and frequently death. From earliest times famines have been prevalent and millions have died during their course. They are caused by the failure of the crops, which in its turn may have been due to drought, war, or pestilence. They have been most terrible in the densely populated countries of the east, where the population increases very rapidly and any serious decrease in production quickly brings about a famine.

Famines are mentioned in the Bible. During the 1st century whole provinces in India were depopulated. There was a terrible European famine in 1162 and a potato famine in Ireland in 1846-47. The Thirty Years' War, and, to some extent, the World War, led to famines.

The severity and frequency of famines has been greatly mitigated by the greater productivity of the soil, brought about by irrigation and modern methods of farming, improved means of transport, methods of preserving food and attacks on the diseases that destroy food crops. Famines are practically unknown in the more civilised countries, but there are still, from time to time, terrible famines in parts of India, China and Russia, where the population is much closer to the means of subsistence than it is in Europe and North America.

Fan Implement for agitating the air to obtain a cooling draught on the face or person. Employed in hot countries from remote antiquity, fans composed of palm leaves or feathers mounted on long handles were royal attributes in West Asia and India. Their use in Imperial Rome survives in papal processions.

Folding fans, made of paper on bamboo framework, originated in Japan, and this form has become generally popular in Western Europe, especially in Spain. At one time painting on fans was a very popular art. In the East a form of fan known as a punkah is employed. It is composed of an oblong sheet, hung from the ceiling and oscillated by man or other power.

Fan A machine consisting of a number of blades set round an axle at an angle to their plane, capable of being rotated, on the axle, at a high rate of speed, enclosed in a case and used for moving air out of or into closed spaces. It finds practical application in cooling and ventilating, drying, the transport of light materials, such as cotton, lint, grain, etc., and for providing a supply of air under pressure.

The common electric fan is of this type, but is not enclosed, as its object is to create a current of air in a room.

FAN VAULT. The idea of the open fan was copied in Gothic architecture at a late period in its development. The stone ribs used in vaulting are carved to open out like a fan. There is a beautiful example of this fan tracery in Henry VII's chapel, Westminster Abbey.

Fang Term applied to the poison teeth of certain snakes, particularly the viper and rattlesnake. The poison fangs are usually larger than the ordinary teeth and are grooved or traversed by a duct from the poison gland. When a snake strikes its prey, the venom is pressed out of the gland into the duct by muscular contraction and thence conducted into the wound made by the fang.

Fannich District and loch of Scotland. The district is in the County of Ross and Cromarty and consists of a group of mountains and a deer forest. Near these is Loch Fannich, a lake about 6¼ m. long. A short stream, called Fannich Water, carries off its waters.

Fanning Island of the Pacific Ocean. Of coral formation, it covers 15 sq. m. and is a British possession, being attached to the Gilbert and Ellice Islands Colony. It is a station for the cable between Canada and Australia. It owes its name to an American soldier, Edmund Fanning (1737-1818) who discovered it in 1798.

Fantasia Musical composition free from formal restrictions and often descriptive. Originally a fantasia was a composition for instruments variously combined, but without voices. As composed by Byrd and his contemporaries the fantasia was the immediate precursor of the sonata. Bach, Mozart and Beethoven carried on the tradition.

Fao Village of Iraq. It stands on the Shatt-el-Arab, about 3 m. from the Persian Gulf. It was seized by the British in Nov., 1914, and, when fortified, was used as a base for the operations in Mesopotamia.

Farad Electrical unit of capacity. It represents that capacity which one coulomb of electricity will charge to the pressure of one volt. As the farad is too large for practical purposes, the micro-farad, equal to one-millionth of a farad, is generally used.

Faraday **Michael.** English chemist and physicist. He was born in London, Sept. 22, 1791, of humble parentage. He was apprenticed to a bookbinder, but found time to study science and in 1813 became assistant to Sir Humphry Davy. In 1827 he succeeded Davy as Professor of Chemistry at the Royal Institution and became one of the greatest scientists of his time. His lectures at the Royal Institution were very popular and he wrote a great deal. He belonged to the Glassites and was a devout Christian. He died Aug. 25, 1867.

Faraday's researches in electrolysis laid the foundations of electro-chemistry, and were followed by many important discoveries in electro-dynamics (including the laws which are the basis of modern electrical power), and in various departments of pure and applied chemistry, particularly in the liquefaction of gases, the manufacture of glass, the metallic alloys and the vaporisation of mercury.

The **Faraday Society** was founded in his honour in 1903, and in 1931 the centenary of some of his greatest discoveries was celebrated.

Farcy Ulcerative disease affecting horses. It is of the same nature as glanders and is notifiable in England and Wales. It is of a contagious nature and can be contracted by human beings as well as other animals.

Fareham Seaport, urban district and market town of Hampshire. It stands on an opening of Portsmouth Harbour, 8 m. from Portsmouth, and is a junction on the S. Rly. There is a shipping trade and the industries include brewing. In the Middle Ages and later Fareham was a flourishing port, but, as only small ships could approach it, its trade declined. Pop. (1931) 11,575.

Farewell Cape of Greenland, the country's most southerly point. Situated on an island, it is perilous to sailors on account of currents and drift-ice.

Farina Term applied to a number of starchy substances, such as potato starch in this country, maize starch in the U.S.A. and cassava starch in S. America. Starch is the commonest storage material of the ordinary plant hence many seeds, stems and roots are farinaceous.

Faringdon Market town of Berkshire, sometimes called Great Faringdon. It is 17 m. from Oxford, on the G.W. Rly. Faringdon is an agricultural and hunting centre. Pop. 3070.

The title of Baron Faringdon has been held since 1916 by the family of Henderson. Alexander Henderson, the 1st baron, was born in London, Sept. 28, 1850, and became a stockbroker. For a time he was chairman of the G.C. Rly. From 1898-1906, and again 1913-16, he was a Unionist M.P. In 1902 he was made a baronet and in 1916 a baron. His seat is Buscot Park, near Faringdon.

Farm Piece of land with house and the necessary buildings used for agricultural purposes. It is usually owned by one person and rented and worked by another, the farmer, and this is the original meaning of the word, but to-day many men own the farms which they work.

There are several classes of farms, as much depends upon the soil. A large expanse of poor land will serve as a sheep farm, but a dairy farm requires much better soil. Other farms may be chiefly devoted to the cultivation of wheat, oats, and potatoes, whilst other farms may embrace all these. In England and Wales, in 1928, there were 400,895 farms and in Scotland 75,866. In Ireland, where they are much smaller in size, there were 572,574. (*See* DRY FARMING).

A settlement where men are put to work on the land is called a **farm colony.** These were started by the Salvation Army and after the Great War several were founded for ex-servicemen.

FARMING AS A CAREER. *See* AGRICULTURE.

Farman Name of a type of aeroplane built by the brothers Henry and Maurice Farman. They were the sons of an English journalist. Henry, born in

France in 1874, became a champion racing cyclist and later a racing motorist. Then he started works for the manufacture of cars and bicycles. Turning to aeronautics, he designed and built an aeroplane which made its first trial in 1907. A year later he started a school for aviation near Versailles. His brother, Maurice, opened an aeroplane factory, and in 1912 they combined to erect works at Billancourt. During the Great War they supplied aeroplanes to the French and other armies.

Farmer **John.** English musician. He was born Aug. 6, 1836, at Nottingham, studied music abroad and became Music Master at Harrow in 1864. In 1885 he was appointed organist at Balliol College, Oxford. He died July 17, 1901.

Farmer composed the music for many school songs, his most famous being *Forty Years On*, and he also edited music for public school use.

Farnborough Urban district of Hampshire. It is 33 m. from London, on the S. Rly. On Farnborough Common is the aircraft factory of the Royal Air Force. The Empress Eugénie lived on Farnborough Hill, where she built a Roman Catholic Church, containing a mausoleum in which lie the remains of herself, her husband, Napoleon III., and her son. The Benedictines have an abbey here. The town has a military camp, being in the Aldershot area. Pop. (1931) 16,359.

Another Farnborough is a village in Kent. It is 4 m. from Bromley and is a centre for motor bus services.

Farnborough **Baron.** English historian. Thomas Erskine May was born Feb. 8, 1815, and educated at Bedford. In 1831 he secured a position in the library of the House of Commons and in 1838 became a barrister. He passed his life in the service of parliament, and, having been clerk assistant since 1856, he was chosen clerk of the House of Commons in 1871, a position he held until just before his death, May 17, 1886. In 1886 he was made a peer, but the title became extinct. Erskine May, by writing a book on the *Privileges, Proceedings and Usages of Parliament*, made himself the chief authority on this subject. Almost equally valuable is the *Constitutional History of England*, 1760-1860.

Farne Group of islands off the coast of Northumberland. The largest, Inner Farne, is about 1¼ m. from the mainland, the other 20 or so being more to seaward. They are mainly uninhabited islets. On Longstone, associated with Grace Darling, is a lighthouse.

Farnese Famous Italian family. In 1493 Pope Alexander VI. created Alexander Farnese a cardinal. He belonged to a family who were lords of Farneto in Tuscany and his sister was the mistress of the pope. In 1534 Alexander became pope as Paul III. He had a family and to one of his sons he gave the Duchy of Parma, which remained in the possession of his descendants until the family became extinct in 1731. One duke of Parma, Alexander, was the Spanish soldier who led the army that was intended to invade England in 1588. Elizabeth Farnese became the wife of Philip V., King of Spain.

Paul III. was responsible for the **Farnese Palace**, one of the finest buildings in Rome. It was completed by Michelangelo and is in the Renaissance style. In 1874 it was bought by France to serve as an embassy. The Farnese Bull, one of its treasures, is now in Naples.

Farnham Market town and urban district of Surrey. It stands on the Wey, 38 m. from London, on the S. Rly. The industries include brewing, and hops are grown in the neighbourhood. Near the town are Waverley Abbey and Moor Park. Pop. (1931) 18,294.

Farnham Castle was long the residence of the Bishops of Winchester. A fine building, mainly of the 17th century, it stands on a noble park, part of which now belongs to the town. The castle is used for church purposes, as the bishop ceased to live there in 1926.

Farnol **John Jeffery.** English author. He was born Feb. 10, 1878, and educated privately. In 1902 he went to America, where he contributed stories to magazines and for two years painted scenery for the Astor Theatre in New York. His first novel, *Lady Caprice*, published in America, appeared afterwards in England as *The Chronicles of the Imp*. Returning to England in 1910, the publication of *The Broad Highway* made him immediately popular with the readers of romantic adventure. This was followed by others, notably, *The Amateur Gentleman*, *The Honourable Mr. Tawnish*, which was dramatised, *Beltane the Smith*, *Black Bartlemy's Treasure*, *Martin Conisby's Vengeance*, *Peregrine's Progress*, *Sir John Dering*, *Another Day*, *Over the Hills* and *The Jade of Destiny*. He also published a volume, *War Impressions*, in 1918.

Farnworth Market town and urban district of Lancashire. It is 3 m. from Bolton on the L.M.S. Rly. The main industries are cotton spinning, engineering and coal mining. Pop. (1931) 28,711.

Faro Card game. Reputedly of Italian origin, it was in vogue under Louis XIV. in France, whence it reached the American Colonies. A picture of Pharaoh formerly appearing on one of the cards occasioned its name. It nowadays requires expensive apparatus, comprising a layout and a faro-box, with spring releasing the cards in pairs, giving 25 turns, the top card, *soda*, and the lowest, *in hoc*, not counting. Bets are made that any specific card will win or lose.

Farrar **Frederic William.** English divine and author. Born in Bombay, Aug. 7, 1831, he was educated at King William's College, Isle of Man, King's College, London, and Trinity College, Cambridge. He became a schoolmaster and was ordained, serving at Marlborough and for 15 years at Harrow. In 1871 he was chosen head of Marlborough and from 1876 to 1895 he was canon of Westminster and rector of S. Margaret's. He was dean of Canterbury from 1895 until his death, March 22, 1903.

Farrar wrote a great deal and his religious views, liberal for his day, had a considerable influence. His *Life of Christ* (1874) was immensely popular and his *Life of S. Paul* had a great sale. His books for boys, especially *Eric, or Little by Little*, were also great popular successes, although their sentiment makes no appeal to a later generation.

Farren **Elizabeth.** English actress. Born about 1759, the daughter of a surgeon at Cork who took to the stage and left his family in poverty, Elizabeth made her first stage appearance in 1773. Four years later she played in London, at the Haymarket theatre, appearing as Miss Hardcastle in *She Stoops to Conquer*. From 1788 until her retirement in 1797, she played at Drury Lane, where

she was a great success as the impersonator of the fine ladies in the works of Sheridan and Congreve. She married the 12th Earl of Derby in 1797 and she died April 23, 1829.

Farrier Man whose business it is to shoe horses. It was also used for the man who attends to their ailments, but he is now known as a veterinary surgeon. The Farriers' Company is one of the London livery companies. Its offices are at 140 Leadenhall St., London, E.C. 4., and it takes a special interest in veterinary matters.

Farthing Smallest British coin. Equalling one fourth of a penny, it is legal tender up to four at a time. It was coined in silver from the time of Edward I. to that of Mary I., and in copper under James I. and later. Under Charles II. tin farthings inset with a circle of copper were struck. Copper half-farthings were circulated between 1842-69 and in 1860 they became bronze, $\frac{1}{6}$ oz. in weight.

Farthingale Hooped petticoat or hooped framework of whalebone worn beneath the petticoat to extend it. Of Spanish origin, the fashion appeared in England during the reign of Queen Elizabeth. It developed gradually into a circular contraption of immense proportions, with a flat surface radiating from the waist. The crinoline of a later period was a modified form.

Fascism Political and social movement in Italy. It began about 1919 amongst those who were dissatisfied with the conduct of affairs at a time when the country was suffering from the effects of the Great War. They called themselves fascists from the Latin word *fasces*, bundles. Mainly composed of men who had served in the War, they organised themselves on military lines and the movement grew rapidly. Fascism was at first republican and socialistic in its aims and its members wore the black shirt as their distinctive garb. Benito Mussolini soon stood out as the guiding spirit of the movement.

In 1920 Fascist candidates stood for the Chamber of Deputies and local councils. Some were elected, but the activities of the organisation were more articulate in other directions. Abandoning gradually their early creed, they stood out as the opponents of communism, then strong in Italy, and in several towns there were riots. In 1921, 38 Fascists were elected to the Chamber and at a congress a national programme was adopted.

In Oct. 1922, there took place the march on Rome, a great event in the history of Fascism. The city was entered by 200,000 armed fascists, the government was overthrown and a new one under Mussolini set up. Otherwise civil war would have broken out. Since then Fascism has been supreme in Italy and Mussolini far more a dictator than a premier.

Fascism has consolidated its power by altering its constitution more than once. In 1924 and again in 1928, by changing the electoral law, Mussolini secured a majority in the Chamber and this he has since retained. Only those are eligible for election to the Chamber who are on a roll prepared by the Grand Council of the Fascists, and there is a similar grip upon the minor governing bodies. In much the same way industry is controlled by Fascist organisation. Although antagonistic to all ideas of constitutional government, Fascism has undoubtedly done a great deal to make Italy prosperous.

There is a society of British Fascists at 99 Buckingham Palace Road, London, S.W.1 and the movement has adherents in other countries.

Fashoda Town of the Anglo-Egyptian Sudan, formerly known as Fashoda Kodok. It stands on the White Nile, 468 m. to the south of Khartoum and is a caravan, trading and official centre. In Sept., 1898, it was occupied by a small French force under Marchand, although within the British sphere of influence. Marchand was asked to withdraw, but refused and the position was for a short time serious. However, in Nov. the French Government ordered him to abandon the post and signed an agreement, March 21, 1899, which provided a definite boundary line between the British and French spheres.

Fast Ruined castle of Berwickshire. It is situated on a promontory of the cliffs near St. Abb's head, and was once a fortress, accessible only by a drawbridge over a chasm which separated it from the mainland. Garrisoned by English troops in 1410, it was retaken by one of the Dunbars. At the time of the Gowrie conspiracy it was intended to imprison James VI. of Scotland in the fortress, which was at that time in the possession of Logan of Restalrig, one of the conspirators. In Scott's *Bride of Lammermoor* it figures as Wolf's Crag, the residence of the Master of Ravenswood.

Fasting Abstention from food. It may be either total or partial. The Mosaic law imposed an annual fast on the day of atonement and the Jews still observe this and other days as fasts. The Anglican Church prescribes days of fasting or abstinence during the 40 days of Lent, Ember days, Rogation days, all Fridays except Christmas day, and the vigils of various festivals, leaving to the individual conscience the manner of observing them. The Roman Catholic Church makes fasting compulsory. Its most usual form is to eat no meat on Fridays, but in religious houses, especially during Lent, it takes more severe forms. Roman Catholics and high churchmen in the Anglican Church believe that the Holy Communion must only be taken fasting.

Fastnet Rocky islet off the coast of Co. Cork, Irish Free State, the site of a lighthouse.

Fat Oily substance of animal or plant origin which is solid or semi-solid at ordinary temperatures, becoming an oily liquid with increase of temperature. In animals fat acts as a reserve from which the body can maintain heat. In plants it is stored in many seeds and fruit. Most fats are valuable either as food or for industrial purposes.

Fatalism Doctrine that all things are preordained by an inexorable necessity. First taught by Epicurus and the Stoics in Greece, it appears in Christian theology in association with views concerning predestination and election. Mohammedanism calls for man's calm acceptance of the decrees of Kismet, an absolute power transcending all physical law.

Fata Morgana Kind of mirage. Specifically it is that seen across calm water in the Messina Strait which separates Sicily and Italy. Inverted images as of ships appear in the sky above actual objects. Norman settlers associated it with the mediaeval fairy Morgana, who, according to mediaeval romances, was King Arthur's sister.

Fates In classical mythology, three goddesses who presided over human

destiny. The Greeks knew them as the Moirai, daughters of Zeus and Themis, or of Erebus and Night; the Roman name was Parcae. Clotho, the youngest, held the distaff and span the thread of life; Lachesis determined its quality and length; Atropos, with the shears, severed it at the inevitable moment. Even Zeus was unwilling to interfere with their fateful decrees.

Father A male parent. In English law a father is responsible for the maintenance of his offspring until they can maintain themselves. By analogy the word is used for God, especially as the first person of the Trinity, and Christianity teaches the doctrine of the fatherhood of God, that He is the lover and protector of His children, to whom He has revealed Himself in Jesus Christ.

Father is used for priests and members of monastic orders in the Roman Catholic and to some extent in the Anglican Church. It is also used for the senators of Rome, for any venerable person, and for the first or oldest person in a community, as the father of the chapel in the printing industry and the father of the House of Commons.

The Fathers of the Church are the writers who lived in the early ages of Christianity, and whose writings are regarded as only of less importance than those in the Bible. They include S. Jerome and S. Ambrose.

Fathom Linear measure used only for nautical purposes, especially sounding. Originally the distance a man could stretch with his arms spread, it is now 6 ft.

Fatigue Condition resulting from prolonged muscular or mental activity. As this condition affects the nervous system, fatigue is characterised by inability to work, pay attention or think, and by a failing memory. The study of industrial fatigue, which results in diminished capacity for work due to excessive labour, monotony and other factors, has become one of great importance. A good deal of research work has been done on this subject by the Home Office and the Institute of Industrial Psychology.

Fatigue in metal, responsible in many instances for fracture of parts of machines, is the result of local deformation of the metal when subjected to prolonged vibratory stress.

The word is also used for **military duties,** especially those connected with routine work of a camp or barracks.

Fatima Daughter of Mahomet. The child of his first wife, Kadijah, she was born about 606 and was called by the prophet one of the world's four perfect women. She married Ali, and bore three sons, Al-Hasan, Al-Husein and Al-Huhsin. From the first two sons the Fatimite caliphs were descended. She died in 632.

Fatimites (or **Fatimides**). Arabian dynasty, claiming direct descent from Fatima, daughter of the prophet Mahomet, and her husband. The dynasty, founded by Obaidallah in 909, ruled in Egypt for nearly 200 years. At first their claim was unquestioned, but as they became more powerful, the Caliphs of Bagdad were at great pains to discredit it. The last caliph of the dynasty died in 1171.

Fault Geological term for the fracture of strata due to earth movements. Resulting in the formation of fissures, faults may be small or may extend to a considerable depth and for a great distance. The plane of fracture is termed the fault plane, and the side upon which the beds are depressed, the downthrow side. In a normal fault the beds are displaced downwards, in a reversed fault they are shifted upwards.

Faun In Roman mythology, a rural deity, patron of flocks, herds and agriculture. He is sometimes identified with Pan, whose attributes he shares. Ancient fancy peopled the woods with fauns or demi-gods resembling men except that they were goat-footed and tailed and had sprouting horns.

Fauna Term used collectively for all the animal life of a given geographical region or geological period. In a similar way flora designates the plant life. The preservation of the fauna of an area is now beginning to interest responsible authorities such as the Society for the Preservation of the Fauna of the British Empire.

Faure **François Félix.** French statesman. Born in Paris, Jan. 30, 1841, he became a merchant and shipowner at Havre. As a volunteer officer he fought throughout the Franco-Prussian War. In 1881 he became a member of the National Assembly, and in 1882 Under-Secretary for the Colonies. On the resignation of Casimir-Périer in 1895, Faure was elected President. The chief events during his administration were the Franco-Russian Alliance, the Fashoda affair, and, in 1898, the re-trial of Dreyfus. He died Feb. 16, 1899.

Faust Historical figure in 16th-century Germany, famous in legend and poetry. Dr. Johann Faust, a profligate necromancer and charlatan, passed into legends which attributed to him a pact with the devil. A collection of tales about him issued in 1587 became widely known; Marlowe's tragedy of Dr. Faustus was published in 1604. Goethe developed the theme of man's eternal struggle with temptation in his great drama called *Faust*, which was begun in 1773 and completed in 1832. Gounod's opera on the subject appeared in 1859; and on Goethe's version W. G. Wills based the tragedy produced by Sir H. Irving in 1885.

Faustina Name of two Roman empresses. Both were charged by contemporary historians with gross profligacy. The elder (c. 104-141) married Antoninus Pius; a temple in Rome to her memory, and a colossal bust in the Vatican, still remain. Her daughter, like her mother named Anna Galeria, married Marcus Aurelius. Both emperors founded institutions, called Faustinian, for educating orphan girls, in memory of their wives.

Faversham Borough, river port and market town of Kent. It is 9 m. from Canterbury and 52 from London, on the S. Rly. Faversham Creek is an opening of the Swale and on it there is a little shipping. There is also an agricultural trade and brewing is carried on. Here are oyster beds. A very old place, Faversham had an abbey, and in the 12th century or later was one of the Cinque Ports. Pop. (1931) 10,091.

Favre **Jules Claude Gabriel.** French statesman. Born at Lyons, Mar. 21, 1809, he studied law in Paris and became a keen republican. After the Revolution of 1848 he was elected deputy for Lyons, and bitterly and violently opposed the election of Louis Napoleon to the presidency. From 1863-70 he led the republican opposition. In 1870 Favre was Foreign Minister and Vice-President. After his mismanagement of the armistice, June 28, 1871, and later of the

Treaty of Frankfort, Favre resigned. Elected to the senate in 1876, he died Jan. 20, 1880.

Fawcett Henry. British politician and economist. Born at Salisbury, Aug. 25, 1833, he was educated at London and Cambridge, and in 1858 was totally deprived of his sight through a shooting accident. Nevertheless, he became Professor of Political Economy at Cambridge in 1863; he was elected Liberal M.P. for Brighton in 1865, and in 1875 for Hackney. In 1880 he became Postmaster General under Gladstone. He died Nov. 6, 1884. His wife, **Millicent Garrett Fawcett**, was a leading advocate of women's suffrage and a writer on political and educational subjects. She died Aug. 5, 1929.

Fawkes Guy. English conspirator. Born at York, April 16, 1570, he enlisted as a soldier of fortune in the Spanish army in Flanders, returning to England in 1604 at the suggestion of Thomas Winter, one of the conspirators in the Gunpowder Plot. To Fawkes was left the actual execution of the plot, and he was arrested at his post, Nov. 4, 1605, when the plot was discovered. This was the day before the one fixed for the meeting of Parliament. He confessed under severe torture, and with other conspirators was hanged, Jan. 31, 1606. *See* GUNPOWDER PLOT.

Fayolle Marie Émile. French soldier. Born at Le Puy, May 14, 1852, he entered the French army as lieutenant of artillery in 1875. In Aug. 1914, he commanded the 70th division of infantry, and from 1915-19 his commands included the 33rd army corps, the French 6th and 1st armies on the Somme, and the army of the centre on the Aisne. He was commander of the French forces in Italy in 1917. In 1919 he commanded the French army of occupation in Germany, and in 1920 he was French military representative at the League of Nations. He became a marshal of France in 1921, and died Aug. 27, 1928.

Feather Outgrowth from the skin constituting the protective covering of birds. A tubular quill fixed in the skin develops into a squarish, tapering, pith-filled shaft, supporting a vane of lath-shaped barbs which, except in flightless birds, are interlocked. Shaftless down feathers with discontinuous barbs, forming in many birds thick undercoats, are acquired in the egg or shortly after hatching.

Featherstone Urban district of Yorkshire (W.R.). It is a coal mining town, 176 m. from London and 2 from Pontefract, on the L.N.E. Rly. Pop. (1931) 14,952.

Featherweight Term used in sport. In racing, a featherweight is the least weight that may be carried by a horse when running. In boxing, featherweights form a class between the light-weights and the bantam-weights. In Great Britain the rules are that a featherweight must be below 126 lb. in weight.

Febrifuge Old term for a substance which allays fever. It is also applied to such external remedial agents as cold baths and wet packs, the more modern term being antipyretic. Quinine is the most popular of febrifuges, but many others have been introduced such as phenacetin, antipyrin, salicylate of soda, etc.

Fécamp Town and seaport of Normandy. It stands where the river of the same name falls into the English Channel, and is 28 m. from Havre. There is a harbour and the industries are chiefly shipping and fishing. Benedictine is made here. In the Middle Ages Fécamp had a nunnery which later became a famous Benedictine abbey. Pop. 17,200.

Federalism System of government in which states are united for certain purposes, but for others are independent, each managing its own affairs. The United States, Germany, Brazil and Switzerland are federal states, as, in the British Empire, are Canada and Australia.

The division of power between the federal government and the separate states is laid down in the constitution and varies between one and another. Some matters, foreign relations, defence and tariffs, for instance, are almost always given to the federal government; education is usually left to the states. In some constitutions, the states retain all rights not expressly handed over to the federal government; in others the states have only the powers specified as belonging to them.

The government of a federal state is usually by a legislature of two houses and a cabinet of ministers. One house represents the people and the other, the upper house, represents the states. In the United States, each state sends two members to the Senate; in other countries the number depends on the population. In addition each state has its own legislature. The federal government often sets aside for its own capital a piece of land which is outside all the states. Washington and Canberra are examples of this federal territory. The Federated Malay States are a group of states in the British Empire united in a kind of federation. *See* MALAY STATES.

Federal Reserve System

Banking system of the U.S.A. designed as a means of bank control, it was instituted in 1914, when it was considered necessary to take control out of the hands of the Government. There is a board of seven directors, and under them a chain of twelve local banks. All national banks must subscribe for, and between them hold, all the stock. These banks, which have wide powers of authority, issue currency and paper money at their discretion.

Feilding Robert. English rake, known as Beau Feilding. Born about 1651, he squandered a fortune and became notorious for his amours at the court of Charles II. He commanded a regiment for James II., and at the Revolution followed him to Ireland, being a member of the Irish Parliament in 1689. Seven years later he was permitted to return to England. Swift and Steele satirised him, and his portrait was painted by Lely. He died May 12, 1712.

Feisal King of Iraq. Born in Arabia in 1885, he was a son of Hussein, who became King of the Hejaz, but was a vassal of the Sultan. He was educated in Constantinople and was one of the group that deprived Abdul Hamid II. of his throne in 1909. Returning to Arabia, he was occupied in fighting and in 1916 he was in arms against the Turks. In 1918 he helped the British in Palestine and Syria, and he attended the Peace Conference in Paris in 1919. In March, 1920, he was proclaimed King of Syria, but abdicated in July. In August, 1921, he was elected and proclaimed King of Iraq. He died in 1933.

Felix Name of five popes. Felix I. was Pope, A.D. 269-274, and Felix II. from 356-58. Felix III. reigned from 483-92 and Felix IV. from 526-30. Felix V. was Duke

of Savoy from 1416 to 1434, and in 1439, although still a layman, was chosen Pope in opposition to Eugenius IV. He was never recognised in Rome and was the last of the anti-Popes. He died Jan. 7, 1451.

Felix was also the name of a monk who came to England in the 7th century and was made Bishop of Dunwich. Felixstowe is named after him. The word means happy or fortunate.

Felix Roman official in Judaea. He is known only because S. Paul preached before him at Jerusalem (Acts xxiii.-xxiv.). He was then procurator of Judaea under the Emperor Claudius. In A.D. 62 he was recalled to Rome because he was accused of having oppressed the Jews.

Felixstowe Watering place and urban district of Suffolk. It is on the estuary of the Orwell, 16 m. from Ipswich and 84 from London, on the L.N.E. Rly. Steamers also go along the river to Ipswich.

There is a fine promenade and the sands and bathing are good. A station is established for flying boats. Pop. (1931) 12,037.

Fellah Egyptian word for a peasant, or labourer on the land. About 62 per cent. of the native population belong to this class. They are chiefly Mohammedans and live in villages under chiefs. The word is also used for similar classes in Palestine and Syria. The plural is fellahin or fellaheen.

Felling Urban district of Durham. It is a mile from Gateshead, on the L.N.E. Rly. The chief industries are coal mining and engineering, largely shipbuilding. Pop. (1931) 27,041.

Fellmonger Dealer in fells, or skins. Fellmongering includes the process of removing the wool from sheepskins, which is done by various means, including "sweating," soaking in a solution of lime, and by chemical treatment of the hides.

Fellow Word for a male person. It meant originally a companion or equal. In a special sense it is used for a member of the governing body of a college at Oxford and Cambridge. Such consists of a head, fellows and scholars. The fellows are elected, sometimes after examination, and usually from the most brilliant members of the university. Members of the governing bodies of certain schools, *e.g.*, Eton and Winchester, are called fellows, and colleges at London, Durham and elsewhere have fellows. The members of learned societies are called fellows, examples being: F.R.S., Fellow of the Royal Society, and F.B.A., Fellow of the British Academy.

Felo de Se One who commits murder upon himself; a suicide. The act may be unintentional, as when, in attempting maliciously to kill another, a man runs upon his antagonist's weapon, or is killed by the discharge of his own. A *felo de se* was formerly buried on the highway with a stake through his body. In 1823 this was replaced by night burial in the usual burial place without Christian rites; in 1882 night burial was abolished, and a religious service permitted.

Felony Class of crime in English law. All crimes are either felonies or misdemeanours, the more serious ones falling into the former category. Felony includes such crimes as murder, manslaughter and burglary. Until 1870 the goods of a felon, *i.e.*, one convicted of felony, were forfeited to the Crown.

Felsite Hard, close-grained rock representing an ancient devitrified lava. It contains scattered porphyritic crystals of quartz and felspar.

Felspar Group of minerals met with in most eruptive rocks. They consist of silicates of aluminium with varying proportions of lime, soda or potash, hence the names of potash felspar, soda felspar, etc. They vary in colour and form but have approximately the same hardness and specific gravity and similar crystalline shape.

Felsted Village of Essex, also called Felstead. It is 3 m. from Great Dunmow and 42 from London, on the L.N.E. Rly. Here is Felsted School, founded by Lord Rich in 1564. Now a large public school, it has modern buildings holding about 300 boys, and extensive grounds. Pop. 2100.

Felt Fabric made by beating or pressing together the moist fibres of wool and certain kinds of hair. Wool owes its property of felting to the interlocking of the scales on the fibre when subjected to rubbing or beating. Usually waste wool and mixtures of various fibres are used for this purpose. Felt is employed for making carpets, hats, gun wads and pianoforte hammers. Cow hair is used in making roofing felt. The **Feltmakers' Company** is one of the London livery companies.

Feltham Urban district of Middlesex. It is 15 m. from London, on the S. Rly. There are many market gardens in this neighbourhood, and here the London County Council has an industrial school. Pop. (1931) 16,316.

Felucca Name given to a small vessel used in the Mediterranean. It has one or two masts, a lateen sail, and often a rudder at each end.

Feminism (Lat. *femina*, a woman). Term used for the movement that aims at putting woman on an equality, politically, legally and economically, with men. It began in the 19th century, and soon after the Great War its advocates had achieved most of their aims. In Great Britain women were given educational advantages, hitherto confined to men; they secured the vote and with it equal rights of citizenship. The learned professions were opened to them, save only the ministry of the Church of England and some other churches. A woman can sit in Parliament and in the Cabinet, and can hold most public offices. In other countries the amount of freedom given to women varies, but in practically all feminism has made enormous strides since about 1900.

The aims of the feminists to-day are to break down the few remaining barriers to their entrance into public life and to secure economic equality with men, not only in the civil service, but throughout professional and industrial life. To secure this involves the abandonment of a principle, hitherto regarded as fundamental, that the wages of a man are not individual, but family wages.

Fen Flat, low-lying land, at times wholly covered with water. Certain marshy districts in Lincolnshire and other E. counties are known as the **Fen District.**

Fencible Word used in the 18th century for a regiment raised for home defence only. They consisted of both horse and foot soldiers, and were disbanded when the need for their services was over.

Fencing Pastime for which the two combatants use a light weapon called a foil, sabre or épée. In the 15th and 16th centuries a knowledge of swordsmanship was

part of the education of a gentleman, who might at any time be called upon to take part in a duel. In the 16th century light swords began to be used for this purpose, and in this way fencing originated, being practised with blunt or protected weapons, as a preparation for the real combat, in which the bare weapon was used. In England fencing died out when pistols became the regular duelling weapons, but it lived on in France and Italy, where duels continued to be fought with light swords.

As a pastime fencing was taken up in England in the 19th century and prospered greatly from about 1900. The teachers came principally from France, where there were many famous schools of arms, and instruction was given in the use of the weapon. To avoid injury the fencers are masked and wear a guard over the head, whilst the weapon is fitted with a button on the point. Clubs were formed and fencing was taken up at the universities. A little later women began to fence, and the Olympic games recognised fencing with foil, épée and sabre as events. International matches are held to which Great Britain has sent teams since 1903, as well as being represented at the Olympic games. There are championships confined to English fencers, one being for women, who invariably use the foil.

The London Fencing Club at 7 Cleveland Row, London, S.W. 1.. is the chief fencing centre. Other noted centres are the Epée Club and the Salle Bertrand. Competitions are held regularly. One form of combat is a pool in which six or eight fencers take part. Each fights the five or seven others, victory going to the one who makes the most hits.

Fender In domestic use, a low metal guard placed round the hearth to prevent hot cinders or ashes from falling into the room.

A **ship's fender** is a bundle of rope or wood suspended over the side of a vessel to protect the hull from damage at the wharfs. A large ball of rope used for this purpose is called a pudding fender. The name is also given to a contrivance on railway engines and tramcars to prevent loss of life in the event of an accidental collision with pedestrians.

Fénelon **François de.** French ecclesiastic. Born in Perigord, Aug. 6, 1651, he was ordained priest, and in 1689 was appointed tutor to the Duke of Burgundy, a grandson of Louis XIV. In 1695 he became Archbishop of Cambrai. His interest in Quietism and the writings of Mme. Guyon brought him into conflict with Bossuet, and resulted in his condemnation by the papal court in 1699. He was the author of several instructional and educative works. These include *The Adventures of Telemachus* and some *Fables* written for his royal pupil, *Dialogues of the Dead*, and a Treatise on the Education of Girls. He died Jan. 7, 1715.

Feng Yu-Hsiang Chinese general, known as the "Christian general." Born at Chaohsien, Nganhwei province, in 1880, he was trained for the army, and adopted Baptist Christianity. He first saw active service in Tibet in 1909, and since has had a distinguished career, holding important military and civil posts. A stern disciplinarian, he has earned high praise for the excellence of his civil administration and the thorough training of his troops.

Fenian Name given to a member of a revolutionary association that flourished in Ireland in the 19th century. It comes from Finn, the name of a mythical warrior whose followers were called Fianna. The movement was started about 1848 and found strong support among the Irish in the United States, but for some years little was heard of its activities. In 1867 some Fenians tried to seize the castle at Chester and to blow up the prison at Clerkenwell, and during the next 20 years there were constant outrages, both in England and Ireland, due undoubtedly to the Fenians. Some were taken and executed, but many more escaped.

Fenn **George Manville.** English author. He was born at Westminster, Jan. 3, 1831, and after unsuccessful attempts as teacher, printer and newspaper proprietor, became a popular contributor on various publications, including *All the Year Round* and *Chambers's Journal*. In 1867 he published his first book for boys, which he followed with many others and also novels. In 1870 he was appointed editor of *Cassel's Magazine*, and in 1873 became proprietor of *Once a Week*. He died Aug. 26, 1909.

Fennec Small, large-eared African fox (*vulpes zerda*). It is found in all the coastlands of N. Africa from Egypt to Senegambia and inland to Nubia and Kordofan. A slender-bodied, bushy-tailed animal, creamy white in colour and with blue eyes, it dwells in burrows and hunts only at night.

Fennel Name of various perennial umbelliferous herbs. It is particularly applied to the aromatic *foeniculum vulgare*, a native of Britain. Varieties are cultivated in Europe, America and India for their seeds, which yield fennel water, a carminative and stimulant used chiefly in veterinary practice.

Fenny Stratford Urban district of Buckinghamshire. An agricultural centre, it is 48 m. from London, by the L.M.S. Rly., and is situated on the Ouzel. Pop. (1931) 5200.

Fenton District of Stoke-on-Trent. Until 1910, when it was absorbed in Stoke, it was a separate urban district. It is on the L.M.S. Rly., and makes chinaware and pottery.

Fenton **Lavinia.** English actress. Born in 1708, she made her first stage appearance in 1726 at the new Haymarket Theatre. Rapidly she attained great popularity. In Jan., 1728, she created the character of Polly in Gay's *Beggar's Opera*. Nevertheless, she left the stage in June of that year, becoming the mistress of the 3rd Duke of Bolton, whom she married on the death of his wife in 1751. She died at Greenwich, Jan. 24, 1760.

Ferdinand Name of three emperors of the Holy Roman Empire.

Ferdinand I. was the younger brother of the Emperor Charles V. He was born March 10, 1503, and was educated in Spain. In 1521 he married Anna, daughter and heiress of the King of Hungary and Bohemia, a marriage that brought these two countries under the rule of the house of Austria. He was king there from 1526 until his death, but his time was mainly occupied in fighting his enemies. In 1558 he succeeded Charles as Emperor, and died in Vienna, July 25, 1564. His successor was Maximilian II., from whom the existing Hapsburgs are descended.

Ferdinand II., a grandson of Ferdinand I., was born July 9, 1578. He was a nephew of the Emperor Maximilian II., and a cousin of the Emperors Rudolph and Matthias. A strong Roman Catholic, he was selected to succeed

Matthias, and he became King of Hungary and Bohemia, and in 1619 Emperor. He had a good deal to do with the outbreak of the Thirty Years' War, and it was still raging when he died, Feb. 15, 1637.

His successor was his son, **Ferdinand III.** Born July 13, 1608, he saw the end of the war in 1648, and died April 2, 1657. The next Emperor was his son, Leopold I.

Ferdinand King of Bulgaria. Born in Vienna, Feb. 26, 1861, he was the youngest son of Augustus, Prince of Saxe-Coburg-Gotha, and Clementine, daughter of Louis Phillipe. While serving in the Austrian army, he accepted the offer of the vacant throne of Bulgaria. On Aug. 14, 1887, he took the title of prince, but was not recognised by Russia until 1896. In 1908 he proclaimed the independence of Bulgaria and assumed the title of Tsar. In 1915 he entered the Great War on the side of Germany, and in Oct., 1918, abdicated in favour of his son, Boris.

Ferdinand King of Rumania. Born at Sigmaringen, Aug. 24, 1865, he was the son of Prince Leopold of Hohenzollern-Sigmaringen and a nephew of Charles, first King of Rumania. Ferdinand was declared heir presumptive in Mar., 1889, and on June 10, 1893, married Marie, daughter of the Duke of Edinburgh and grand-daughter of Queen Victoria. He came to the throne in 1914, and in 1916 entered the Great War and led his army against the invading Austro-Germans. He died at Sinaia, July 20, 1927, and was succeeded by his grandson, Michael, a child, who, three years later, was deposed in favour of his father, Carol II.

Ferdinand Name of several kings of Spain. The early ones were kings of the kingdom into which that country was divided. One of these, **Ferdinand V.**, became King of Aragon in 1479. Previously he had married Isabella, who became Queen of Castile in 1474. Under their rule Spain became a single kingdom with an immense empire overseas, as the Moors were crushed and the New World discovered. He died Feb. 23, 1516, and his lands passed to his grandson, later the Emperor Charles V.

Two other Ferdinands, members of the Bourbon family, were Kings of Naples and Sicily. **Ferdinand I.** was king from 1759 until his death, Jan. 4, 1825. **Ferdinand II.** was king from 1830 until he died, May 22, 1859. He was the infamous ruler who was known as Bomba, and both Ferdinands were noted for their oppressive rule.

Ferdinand VII. King of Spain. He was born Oct. 14, 1784, the son of Charles IV. Upon the death of his first wife, in 1806, he approached Napoleon, in opposition to his father's wishes, to ask for the hand of his niece. Charles, thereupon, had him imprisoned, but two years later was forced to abdicate in his favour. He himself, however, was almost immediately made to abdicate by Napoleon and was imprisoned in France. Reinstated in 1814, he proved so vicious and despotic a king that Spain was in a constant state of unrest, and in 1823 the aid of the French army was needed to keep him on the throne. He abolished the Salic law in order that his daughter Isabella might succeed him, and died Sept. 29, 1833.

Fergusson **Sir Charles.** British soldier. Born in Edinburgh, Jan. 17, 1865, he became the 7th baronet in 1907. Educated at Eton and Sandhurst, he joined the Grenadier Guards in 1883. In 1895 he joined the Egyptian army and saw service in the campaigns of 1896-99. A brigadier-general in 1907, in the Great War he commanded the 5th division at Mons, and subsequently the 2nd and 17th army corps. Military governor of the occupied German territory, 1918-19, he was Governor-General of New Zealand, 1924-30. He received the G.C.B. in 1932.

Fermanagh County of Northern Ireland. Wholly inland, its chief natural feature is Lough Erne. Agriculture and fishing are the chief industries. Enniskillen is the county town. Other places are Newtown Butler, Lisnaskea and Rosslea. The G.N. (Ireland) Rly. serves the county. Its area not including the water surface, is 653 sq. m. Pop. (1931) 57,984.

Fermentation Series of changes due to the action of certain complex nitrogenous bodies upon organic compounds. These nitrogenous bodies, known as ferments or enzymes, are secreted in living organisms. The commonest is the one in the yeast cell, which produces alcohol and carbon dioxide from sugar, but bacteria, moulds and animal secretions also set up fermentation of various kinds. Diastase in germinating seeds changes starch into sugar, and enzymes are the cause of the fermentation of lactic and acetic acids.

Fermoy Market town and urban district of Co. Cork, Irish Free State. It is on the Blackwater, 15 m. from Mallow and 23 from Cork, on the G.S. Rly. The industries include agriculture and some fishing. Races are held here. In 1920 there was serious rioting in Fermoy. Pop. 7000.

Fern Order of flowerless plants. Mostly perennial herbs with fibrous roots or creeping root stocks, a few, *e.g.*, tree ferns, have woody trunks. They reproduce by means of microscopic spores in capsules on the back or margin of the fronds; these develop a green, leaf-like scale or prothallium, beneath which male and female elements, stimulating floral anthers and ovaries, produce sexually another spore-bearing plant. The 2500 species of ferns are cosmopolitan, preferring humid temperate and tropical regions; many grow in India, and nearly 50 are British.

Fernandez **Juan.** Spanish navigator. Born in Cartagena, he attained distinction as a navigator by observing the course of the trade winds and the currents off the west coast of South America. During one of his voyages, he discovered, in the S. Pacific, the islands now bearing his name, one of which became famous as the residence of Alexander Selkirk. He obtained a concession of them in 1572 and attempted unsuccessfully to found there a colony of Indians.

Fernando Po Island of Africa. In the Bight of Biafra, it belongs to Spain and covers about 800 sq. m. Santa Isabel is the capital. The island is mountainous, but much of the soil is very fertile. The chief export is cocoa, and coffee, rice, bananas, sugar cane, tobacco, cotton and yams are also grown. A Portuguese island from 1471, it was ceded to Spain in 1778. Pop. 20,800.

Ferndale Market town of Glamorganshire. Near Pontypridd, it is in a coal mining district, and is 167 m. from London by the G.W. Rly. Pop. 18,144.

Ferney Village of France, 4 m. from Geneva, being just over the

French frontier. It is famous for its associations with Voltaire and is now called Ferney-Voltaire. The château which he built, and where he lived from 1758 to 1778, contains memorials of his life there. Pop. 1200.

Ferns Town of Wexford, Irish Free State. It is 74 m. from Dublin, on the G.S. Rly. Ferns was once an important place, being the residence of the kings of Leinster and the seat of a bishop, whilst for 200 years it sent two members to the Irish Parliament.

Ferrara City of Italy. It is situated about 30 m. from Bologna near the River Po, in the north of the country, the capital of the province of the same name. The castle still stands and there are remains of the city walls. There is a university dating from 1264, which has a valuable library. The great age of Ferrara was the 15th and 16th centuries, when it was the chief residence of the family of Este and produced some noted painters. It is now a trading centre. Pop. (1931) 115,883.

Ferrel **William.** American meteorologist. He was born at Fulton, New York, in 1817. At first a teacher, he later joined the Coast Survey, and in 1882 became Professor of Meteorology at Washington. He died in 1891.

Ferrel's Law states that if a body moves in any direction on the earth's surface except east or west, it is deflected, owing to the earth's rotation, to the right in the northern hemisphere and to the left in the southern hemisphere.

Ferret Half-domesticated variety (*putorius*) of the polecat. Originating in N. Africa or Spain, and used in Italy for rabbit hunting, it has been known in England, where it is employed for hunting rabbits and rats, for six centuries at least. Commonly pale-coloured, and not infrequently a pink-eyed albino, it interbreeds readily with the wild polecat.

Ferric Salts Group of iron compounds. They are derived from ferric oxide or sesquioxide of iron, which occurs in nature as haematite iron ore and is used in powder form as a pigment and polishing material (jeweller's rouge). The most important of the ferric salts is ferric chloride, used in medicine as a tonic.

Ferricyanides Salts formed by the action of ferricyanic acid upon metals. The most important is ferricyanide of potassium, commonly known as red prussiate of potash. This salt occurs as ruby red crystals and, when combined with ferrous salts such as ferrous sulphate, forms a blue precipitate used as a pigment known as Turnbull's blue.

Ferro-concrete *See* CONCRETE.

Ferrocyanides Salts formed by the action of ferrocyanic acid upon metals. Ferrocyanide of potassium, also known as yellow prussiate of potash, is made on a large scale by fusing together animal refuse with potassium carbonate and iron. It occurs as lemon yellow crystals, and, in combination with ferric salts such as ferric sulphate, forms a deep blue pigment, Prussian blue, which is used in calico printing, paper staining, and as a paint.

Ferrol Seaport of Spain. It is on a bay on the north-west coast, and has one of the best harbours in Spain. It is a naval station, is well fortified, and has dockyards and other accommodation for warships, as well as for commercial shipping. In 1805 the port was taken by the British. Pop. 30,500.

Ferrous Salts Compounds of iron derived from ferrous oxide or protoxide of iron. Ferrous chloride is used in medicine, and ferrous sulphate, or green vitriol, is employed in making ink and in tanning and dyeing. Other salts used in medicine are ferrous iodide and ferrous phosphate.

Ferry Passage over a river, across which a boat carries passengers and sometimes goods. The earliest ferry boats were wooden ones propelled by a single ferryman, and there are still a number of these on the English and Scottish rivers. Some of the ferries are private property and are protected by charter or custom. On the busier rivers, such as the Thames, Mersey, Clyde and Forth, large steamboats which can carry motor cars and other vehicles, as well as passengers, are employed. Some of these are free, but usually fares are charged. A further development is the train ferry, in which a train is taken on to the steamer and conveyed across the water. Several are established in Sweden and Denmark, while one operates between Harwich and Zeebrugge, Belgium.

Ferry **Jules François Camille.** French statesman. Born at St. Dié, Vosges, April 5, 1832, he studied law. In 1869 he was elected republican deputy for Paris and as prefect of the Seine was responsible for the government of Paris during the siege of 1870. He became Minister of Education, then of Foreign Affairs and was twice Premier, 1880-81 and 1883-85, being largely responsible for the expansion of the colonial empire of France. He was murdered by a lunatic, Mar. 17, 1893.

Ferryhill Town of Durham. It is 6 m. from Durham and 245 m. from London, by the L.N.E. Rly. There are collieries and iron is worked. Pop. 10,133.

Fertilisation In biology the union of two dissimilar sexual cells or gametes to form a new individual. Reproduction is thus secured by most animals and plants. The male gamete or spermatozoid is usually smaller than the female cell or ovum. The ovum is generally rounded and its protoplasm is provided with numerous fatty or albuminous yolk granules.

Fertiliser Agricultural term for plant food added to the soil other than in the form of farmyard manure, such as guano from Peru, potash salts from Germany and nitrate of soda from Chili. It is also used in connection with the artificial manures, the manufacture of which is an important industry in many countries. Deposits of calcium phosphate occur in many places and the material is rendered soluble by suitable treatment, forming the well-known superphosphate of lime. Sulphate of ammonia was added to the list of fertilisers as the by-product from gas works. More recently the huge supplies of nitrogen in the atmosphere have been drawn upon for the manufacture synthetically of nitrogenous fertilisers. The farmer is now provided with a complete range of material for supplementing the natural supplies of plant food in the soil and for meeting the exact requirements of the crop.

Fesse In heraldry a horizontal band across the shield. It is one of the nine ordinaries. When charged, it occupies one-third of the field; when uncharged it is narrower. The middle of the shield is the fesse point. Charges lying in horizontal rows are "in fesse"; those divided by horizontal lines are "per fesse."

Festival Day or days publicly reserved for religious observances. The ritual may be solemn or joyous, feasting being a frequent but not necessary incident, and ordinary work is usually suspended. The Jewish festivals of the Passover, Pentecost and Tabernacles passed into the Easter, Whitsuntide and Christmas festivals of Christendom, and have been augmented by many others commemorating saints and martyrs. Islam has the Ramadan Bairam terminating the Ramadan fast, and the Qurban Bairam 2 months later: India and China have also their festivals.

Festubert Village of France. It is 3 m. from La Bassée, and here there was much fighting during the Great War. On Nov. 23, 1914, the Germans stormed some trenches held by the British, but later in the day the lost ground was regained. On May 15, 1915, a British attack was delivered at Festubert, and some ground won by the 2nd and 7th divisions. Fighting continued for some days after, and in this the Canadians took part.

Festus **Porcius.** Roman official. He is known for his association with S. Paul. About A.D. 58 he was made procurator of Judaea: S. Paul was brought before him and was sent by him to Rome for trial. The facts are found in Acts xxiv.-xxv., and are also related by Josephus.

Fetishism Form of magico-religious belief, common among the negroes of Africa. It holds that the services of a spirit may be appropriated by possessing its material embodiment. A fetish may be an animal plant or stone, and may house a disembodied soul. It is a guardian spirit rather than a superior being, and devotion to it is not idolatry: hence the fetish may be rebuked and even beaten. The American Indians cherish objects sheltering impersonal powers, called by analogy fetishes.

Fettes College Public school of Scotland. It is near Inverleith Park, Edinburgh, and was founded by Sir William Fettes (1750-1836), Lord Provost of that city. It was opened in 1870, and has extensive buildings with accommodation for about 250 boys.

Feuchtwanger **Lion.** German author. Born in Munich, July 7, 1884, he soon began to write plays and became a successful dramatist. He became known in Britain in 1926 when his novel, *Jew Süss*, was translated into English. In 1927 came another, *The Ugly Duchess*, and in 1928 a volume of plays, including one on Warren Hastings.

Feudalism Social and economic system that existed in much of western Europe from the 11th to the 16th centuries. The word comes from the Latin *feudum*, a piece of land, and the central principle of the system was the holding of land in return for services. The king was regarded as the holder of all the land, but much of this he let out to barons, who were his tenants-in-chief and who, in return for the land, agreed to perform certain services, usually to provide him with a certain number of soldiers in time of war.

These tenants-in-chief, in their turn, let out land to others on like conditions, and so the process was continued down the scale. When a tenant died it was usual for his successor to pay a fine to his overlord before he could succeed to the estate. In France and elsewhere, although not to the same extent in England, feudalism was a danger to the king, as his vassals could collect large numbers of armed men to make war on him. In England the minor or mesne tenants, as well as the tenants-in-chief, owed allegiance to the king. The tenants were called vassals, and in theory it was the lord's duty to protect them.

A variety of causes led to the decay of feudalism, which broke down in England in the 14th century, or perhaps earlier. Trade increased, towns sprang into existence, methods of warfare changed, and as money became more plentiful, it became more convenient to pay cash than to render services, to receive cash than to demand them.

Nevertheless, something of the system continued to exist, and it was not until the time of Charles II. that the feudal incidents, as they were called, were abolished. There were payments made to the king or overlord on succeeding to an estate and on other recognised occasions, such as the knighting of his eldest son and the marriage of his eldest daughter. In France relics of feudalism persisted until they were utterly swept away by the Revolution.

Fever Condition of the body, generally characterised by high temperature. Normal temperature ranges between 98.4° and 98.8° F., and is governed by the skin's heat-regulating mechanism. Interference with this may have such causes as sunstroke, but usually results from the toxic action of micro-organisms which occasion specific fevers, *e.g.*, typhoid and diphtheria. Fevers commonly begin with a shivering fit: the hot stage reaches a crisis, often accompanied by discharge of perspiration or otherwise, after which the symptoms subside. A temperature of 106° F. means hyperpyrexia or excessive fever: should it exceed 107-8° F. for any period death usually supervenes. Intermittent fevers exhibit symptoms with periodic rise and fall.

In Great Britain cases of certain specific fever must be notified to the medical officer of health for the district, and patients are usually moved to a hospital for infectious diseases, many of which are found throughout the country.

Feverfew Wild perennial plant (*chrysanthemum parthenium*) allied to the chamomile. It has branched stems, broad, deeply-toothed leaves, and clustered flower heads of small, white, daisy-like flowers. The plant has an aromatic odour and bitter tonic properties. It was formerly esteemed by herbalists as a febrifuge, hence its name.

Fez *The Tarboosh.* Round brimless cap of cloth or felt, usually red with a tassel of black. The caps were originally made at Fez, in Morocco, hence the name. In common use in Egypt and N. Africa generally and in Turkey, where, however, their use was made illegal after the foundation of the republic.

Fez City of Morocco, one of the country's capitals. It is about 100 m. from the coast at Rabat, the two places being linked by railway. The city, which is surrounded by walls and gates, has a Mohammedan university which possesses a fine library. Pop. 107,843.

Ffestiniog Urban district and town of Merionethshire. It is 16 m. from Dolgelly and 226 from London, and is served by the G.W. Rly. It is famous for its slate quarries, the slate being taken by a narrow gauge railway to Portmadoc. The town stands amidst magnificent scenery, which attracts visitors. A noted beauty spot is the Cynfael Falls. Pop. (1931) 9072.

Blaenau Ffestiniog is 3 m. away.

Fiacre Saint of Irish descent. He founded a monastery and guest-house at Breuil, near Paris, dying there about 670. His remains were transferred to Meaux cathedral; he is commemorated on Aug. 30.

French hackney coaches, established in Paris in 1640, were named fiacres because their first stand was at the Hôtel de S. Fiacre, Paris.

Fiat Legal term meaning "it must be done," issued by judges and other high officials of the law courts in certain circumstances, and differing from an order proper, in not being drawn up in formal style. For instance, legal action can only be taken in certain cases after the attorney-general has given his consent, or issued his fiat.

Fibre Thread-like filament of mineral, plant or animal derivation. Plant fibres are of diverse origin and composition: the hairs of cotton and the fibres of flax and ramie represent nearly pure cellulose; in jute, esparto and sisal, lignin is present, and in raffia and hemp, cutin is a constituent. Plant fibres may take the form of hairs, bast fibres, wood fibres, the cuticle of leaves or the whole stem itself. The hair or fur of animals supplies wool, mohair and other textile fibres, the silk-worm provides silk, and the mineral asbestos forms an incombustible fibre.

Fibula Brooch or buckle, especially one dating from the early metal ages. Neolithic bone pins were later reproduced in bronze: by looping one end and bending the other until the point reached the loop, safety pins arose. The Hallstatt period developed bold decorative forms, succeeded by a series of La Tène designs, which are invaluable for dating antiquities of the iron age.

The slender bone on the outside of the leg is called the fibula. It is bound by ligaments to the tibia or inner bone, its lowered end forming a bony knob outside the ankle.

Fichte **Johann Gottlieb.** German philosopher. Born May. 19, 1762, he was educated at Jena, Leipzig and Wittenberg, and later taught and wrote for a living. He came under the influence of Kant and submitted to him *A Critique of Revelation*, which was highly approved by the great philosopher. In 1794 he became Professor of Philosophy at Jena, and there wrote many philosophical books. He had to resign in 1799 and retired to Berlin. He died Jan. 27, 1814.

Fiction Word used for imaginative prose literature. The fiction of to-day takes the form of novels, but the romances of an earlier day are equally fiction.

A legal fiction is defined by Blackstone as an idea put forward "to prevent a mischief, or remedy an inconvenience that might result from the general rule of law." Legal fictions were invented by the lawyer to overcome difficulties in the way of obtaining justice. "The king never dies" is an example.

Fief Name given to a landed estate in feudal times. It was land which was held on condition that the holder rendered certain services, usually in time of war, to his overlord. The word fee comes from it, as does the Scottish feu.

Fieldfare Large species of thrush (*turdus pilaris*). Breeding in northern Europe in pine and birch forests, multitudes spend autumn and winter in Britain, where they nest in colonies, and feed on grubs, slugs and berries. The male, 10 ins. in length, has a reddish-yellow throat and a black-spotted breast. The song note is low and twittering, the call note loud and harsh.

Fielding **Henry.** English novelist. Born in Somerset, April 22, 1707, he was educated at Eton and then went to Leiden. After his return to England, he wrote plays and studied law for some years until in 1749 he was appointed a magistrate for Westminster, where he sat fairly regularly until his death at Lisbon, Oct. 8, 1754.

One of England's greatest novelists, Fielding is known as the author of *Joseph Andrews*, *Tom Jones* and *Amelia*. *Tom Jones* deals with episodes in the author's own life, and is regarded as one of the greatest works of fiction ever written, full of humour, although coarse according to modern ideas. He also wrote *Jonathan Wild*. Thackeray in his *English Humorists* pays homage to Fielding's genius.

Fielding **William Stevens.** Canadian statesman. Born at Halifax, Nova Scotia, Nov. 24, 1848, in 1864 he became a reporter on the Halifax *Morning Chronicle*, and later, managing editor of that paper. In 1882 he was elected to the legislature of Nova Scotia, and from 1884-96 was Prime Minister. In 1896 he entered the Dominion House of Commons and from then until 1911 was Minister of Finance under Sir Wilfred Laurier. He occupied the same position from 1921 to 1925 when the Liberal party was again in power, and died, June 23, 1929.

Field Marshal Highest rank in the British army. It dates from 1736. There must not be more than eight field-marshals, apart from those of honorary rank, such as the king of the Belgians. A Field-marshal carries a baton as a sign of his rank, and wears on his uniform the representation of two crossed batons. The equivalent rank in the navy is admiral of the fleet, and in the air force marshal of the air. The term marshal is used in the French and other European armies.

Field Mouse Popular name of several rodents which are not house mice. They include the long-tailed, *mus sylvaticus*, and various species of voles, especially the short-tailed and the red field mouse or bank-vole, all very destructive to British field and forest produce.

Fiery Cross Ancient summons to arms in Highland Scotland. Two crossed sticks of light wood were charred at the ends and dipped in goat's blood. Sent by clan chieftains from place to place by swift messengers, it rendered any clansman, who did not answer the call, liable to the death penalty. It lingered until the rebellion of 1745.

Fiesole City of Italy. It stands on the Arno, 3 m. from Florence, and is visited for its beautiful surroundings. Fiesole was a flourishing city of Etruria before the foundation of Rome. Straw plaiting is now its chief industry. Pop. 10,506.

Fife Small transverse flute intermediate between the flute and piccolo. The modern fife, used in drum and fife bands, has six finger holes and four, five or six keys. The B flat fife supplies the melodic substance of the music and is accompanied by piccolos and flutes in F or E flat.

Fife County of Scotland. It is a peninsula between the Firths of Forth and Tay, covers 504 sq. m., and is partly hilly. Cupar is the county town; other places are Dunferm-

line, Kirkcaldy, St. Andrews and Buckhaven. The county has some rich coal mines and there is a good deal of fishing. It is served by the L.N.E. Rly. The Eden and Leven are the principal rivers. Historically, the kingdom of Fife, as it is called, is one of the richest parts of Scotland. St. Andrews and Dunfermline especially are full of memories of the past, and there are many small burghs, Kinghorn, for example, that have historic and interesting associations with the old Scottish kings. Pop. (1931) 290,000.

Fife **Duke of.** British title held by the family of Duff. In 1735 William Duff, who had large estates in Banffshire and Aberdeenshire, was created an Irish baron, and in 1759 Earl Fife and Viscount Macduff. James, the 5th earl, was created a British peer in 1857 as Baron Skene. He died in 1879 and was succeeded by his son, Alexander William George, who, on his marriage in 1889, to Louise, eldest daughter of the Prince of Wales, was created Duke of Fife. On his death, Jan. 29, 1912, his Irish title, that of Earl Fife, became extinct, but the British dukedom and earldom, under the special remainder, passed to his elder daughter, Princess Alexandra, who became Duchess of Fife. She was born May 17, 1891, and in Oct. 1913, married her cousin, Prince Arthur of Connaught. Their son, the heir to the title, is known as the Earl of Macduff. The Princess Royal, wife of the duke, died Jan. 4, 1931.

Fig Genus of fruit bearing trees (*ficus*). The common *f. carica*, cultivated from antiquity in the Mediterranean region, bears pear-shaped receptacles containing nearly closed cavities within which the flowers are fertilised, largely through the agency of wasps, assisted artificially. It was introduced into England in Tudor times, but fruit ripened there cannot rival the figs of commerce which come from Asia Minor and thereabouts. The sycamore fig, *f. sycomorus*, yielded the light wood which the Egyptians used for mummy cases. *See* Bo-Tree.

Figaro Chief character in Beaumarchais' comedy, *The Barber of Seville*, 1775. He reappeared as a valet in *The Marriage of Figaro*, 1784, and as a subdued philosopher in *La Mère Coupable*, 1792. He personified adroit wit, courage and gaiety. Rossini utilised the first play and Mozart the second, for still better known operas. The name was adopted by a satirical Parisian journal founded in 1826, and revived in 1854. It still exists as a morning daily, with a literary supplement and an illustrated monthly.

Fighting Fish Small freshwater spiny-finned fish (*betta*). It is found in both Asia and Africa and seldom exceeds 4 ins. in length. In Siam one species, *b. pugnax*, is bred for sporting contests, under recognised rules, the combats being watched by numerous spectators and associated with heavy betting. Normally greyish-brown, the fish assume dazzling liveries during the breeding season and when fighting.

Fighting Top Term applied to a structure of varied character built high up on the mast of a war vessel. In ancient times it served as a place for archers and later for riflemen. In modern vessels the fighting top is used as a station for officers in charge of the fire control.

Figwort Genus of herbs of the snapdragon order (*scrophularia*). They are natives of Europe, temperate Asia, N. Africa and, rarely, of America. Often fetid, they are mostly possessed of creeping rootstocks and opposite leaves, the panicles of greenish-purple or yellow flowers bearing two-valved capsules. A decoction made from the knotted figwort, *s. nodosa*, is an empirical remedy for swine scab.

Fiji Group of islands in the Pacific Ocean. They form a British Crown Colony and cover 7083 sq. m. Of the 250 islands about 80 are inhabited. The three largest are Viti Levu, Vanua Levu and Taviuni, and since 1880 the colony has included the island of Rotuma, some distance from the main group. Suva on Viti Levu is the capital. The soil is very fertile and sugar, coconuts, bananas and other tropical products are exported. The islands, which are inhabited by a native race, were discovered by Tasman in 1643. In 1874 they became British. They are under a governor who is also high commissioner for the Western Pacific, an executive council of eight members and a legislative council of 21, partly elected and partly nominated. Pop. (1931) 185,573, of whom 93,414 are Fijians; 76,722 Indians and 5058 Europeans.

Filbert Fruit of cultivated varieties of hazel (*corylus avellana*). A leathery husk encloses the nutshell. It grows especially in Kent, and is much esteemed in America. Larger varieties are known as cobs. The name comes from S. Philibert, whose day, Aug. 22, fell in the nutting season.

Fildes **Sir Luke.** English artist. Born at Liverpool, Oct. 18, 1844, he studied at South Kensington and the Royal Academy Schools, and for a number of years produced black and white illustrations for books and magazines. His paintings, of which *The Doctor* in the Tate Gallery, London, is a well-known one, are of a sentimental and somewhat mechanical character. From 1887, when he was elected a Royal Academician, he did little but portrait painting. He was knighted in 1906 and died Feb. 27, 1927.

File Steel tool furnished with sharp edged ridges or points. It is employed for smoothing irregular metal surfaces and to sharpen saws. Some are round or square, others triangular or flat and either parallel edged or tapered. A float-cut file has parallel furrows, whilst a cross-cut file has the furrows crossed.

Another kind of file is a folder, often fitted with clasps, in which records and correspondence are kept.

Another file is a body of soldiers ranged one behind another: hence the phrase rank and file.

Filey Urban district and watering place of Yorkshire (E.R.). It is 9 m. from Scarborough, 240 from London, on the L.N.E. Rly. The town has good sands, bathing and other attractions for visitors, including the gardens. It stands on Filey Bay; to the north is a ridge of rock nearly 1000 yds. long called Filey Brig. Pop. (1931) 3730.

Filigree Ornamental work carried out in fine wires of gold, silver, copper or other metal. The wire is arranged in the required pattern upon charcoal and is exposed to heat when, the charcoal being reduced to ash, the welded filigree work is left. Granular filigree was made by the Etruscans by welding together very minute globules of gold to form wire-like designs of great beauty and delicacy. Often filigree is combined with work in enamel and precious stones.

Filipinos Collective name for the Christianised natives of the Philippine Islands. Of Malay descent, they number 8,500,000 : the remaining 3,500,000 inhabitants of the islands are largely Moslems and pagans. Before the American occupation, 1898, a **Liga Filipina** sought to improve their condition. *See* PHILIPPINE ISLANDS.

Fillmore **Millard.** American president. Born Feb. 7, 1800, in the state of New York, he began life as a teacher, later becoming a lawyer at Aurora. In 1829 he was elected to the state legislature. He sat in the House of Representatives, 1833-35 and 1837-43. In 1848 he was elected vice-president and on the death of Zachary Taylor in 1850 he became president. His short term of office, which ended in 1852, was not very distinguished. In 1856 he was a candidate for the presidency again, but only one state voted for him. He died at Buffalo, March 8, 1874.

Film In photography the flexible material used instead of glass in the making of negatives. It was first introduced for general photographic work by the Eastman Co. in 1891. The particular value of the film for cinematographic work was soon recognised by Edison, who used it first in his kinetoscope, since when the cinematographic film has grown in importance. Celluloid was originally used as the material of films, but owing to its inflammability a non-inflammable film made from cellulose acetate is now in use.

The making of films for the cinema houses is an enormous industry, in which perhaps £400,000,000 is invested. Its chief centre is Los Angeles, but films are also made in the studios at Elstree, Shepherd's Bush, Ealing, and other places in England. A duty is charged on all films imported into Great Britain and since 1927 it has been compulsory for a certain proportion, increasing each year to 1936, of British films to be shown. Films are censored by a board appointed by the trade. In 1932 it was decided to establish a national film institute from funds obtained from the Sunday opening of cinemas. *See* CINEMATOGRAPH.

Filter Apparatus for separating suspended particles from a liquid. A great advance has been made during recent years in the study of filtration and the designing of filters. The pervious materials for filters are very varied and range from special absorbent paper and various fabrics to sand, powdered glass, quartz, charcoal, stoneware, asbestos and iron gauze. Public water supplies are filtered through sand and thus, not only suspended solids, but also pathological bacteria are removed. Filtration is an important process in many industries ; for example, in the manufacture of sugar, beer, oils, chemicals, paint, etc.

Finance Management of money. National finance concerns the income and expenditure of the nation and similarly there are local and other kinds of finance. The finances of business houses have passed largely into the care of trained accountants. The proposals put forward each year by the Chancellor of the Exchequer are embodied in the **Finance Act.**

Finch Name of various small perching birds (*fringillidae*). Members of the finch family are distributed over all temperate regions except Australasia. The name occurs almost always in composition, *e.g.*, the common British resident bullfinch, chaffinch, goldfinch, greenfinch, and hawfinch, and the casual visitors citril, serin and snow-finch. Closely allied are the resident siskin, bunting, house sparrow, linnet and redpoll, and the migrant brambling. Their hard, conical, smooth-edged bills facilitate the shelling and eating of seeds.

Finchley Urban district of Middlesex, really a suburb of London. It is about 6 m. to the north of the city and consists of several districts. Pop. (1931) 58,961.

Findhorn River of Scotland. It rises in the mountains of Inverness-shire and flows through Elgin and Nairn to the Moray Firth. It is 62 m. in length. There is a small seaside resort of the same name on the east side of Findhorn Bay, an opening of the Moray Firth.

Findon Village of Kincardineshire. It stands on the coast, 6 m. from Aberdeen and is a fishing centre. The Findon or Finnon haddock takes it name from here.

An English **Findon** is a village in Sussex. It is near the Downs, just outside Worthing.

Fine Arts Term used to include such forms of art as painting, drawing and sculpture, to distinguish them from those which are more mechanical, utilitarian and of the nature of crafts. The term, however, is a somewhat loose one, as obviously the various branches of art overlap one another.

To look after matters affecting fine arts in Great Britain a **Royal Fine Arts Commission** was set up in 1924.

Finedon Urban district of Northamptonshire. It is 68¼ m. from London by the L.M.S. Rly., and is 3 m. from Wellingborough. Iron is mined, and shoes and boots are manufactured. Pop. (1931) 4100.

Fingal Scottish hero, corresponding to the Irish hero Finn. He was king of Morven in Argyllshire and was a great warrior, who was killed in battle. He is remembered by many legends and by the cave in Staffa, called **Fingal's Cave.** Discovered in 1772, it is the most famous cave of its kind, with columns of basalt on which the light makes wonderful effects.

Finger Terminal member of the hand. Each hand has five, the name being sometimes reserved for the four digits, excluding the thumb. The three joints are united by ligaments, whose back and front tendons straighten and bend the digits. Two small arteries and nerves line each side. The skin is strong and sensitive, the tip being specialised into a nail : the finger itself lacks muscle or flesh. The sense of touch is in the fingers and in some persons, especially the blind, is highly developed.

Finger-and-Toe Popular name of a destructive plant disease. It causes malformation of cruciferous root crops, such as turnips, radishes and cabbages. Also called anbury and club root, it is caused by a microscopic slime fungus, *plasmodiophoria brassicae*, whose spores in the soil enter the root, producing nodules or warty outgrowths which sometimes swell and rot with offensive odour. The disease is infectious and difficult to eradicate : lime dressing sometimes reduces it. Diseased roots should be burnt and not fed to stock.

Finger Print Impression of the human finger. It was used in ancient times in the East as a potentate's sign manual.

Sir W. Herschel introduced it into Bengal

THE FLAGS OF THE NATIONS



1. Great Britain, Union Jack. 2. Great Britain, White Ensign (Royal Navy). 3. Canada. 4. Australia. 5. India. 6. United States of America. 7. Irish Free State. 8. New Zealand. 9. Germany. 10. France. 11. Union of South Africa. 12. Italy. 13. Japan. 14. Belgium. 15. Russia (Union of Socialist Soviet Republics). 16. Norway. 17. Netherlands. 18. Spain. 19. Austria. 20. China. 21. Sweden. 22. Poland.

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law courts for purposes of identification in 1858, and Sir E. Henry into the Bengal police for crime detection. Sir F. Galton laboured long to show the unchanging character and individuality of every finger tip's ridges and furrows. Henry devided a practical system of classification for the London metropolitan police, based on arches, loops, whorls and composites, with seven sub-classes, only simple recording appliances being required. A classified finger print index to all known criminals, exceeding 250,000, is kept by the London police.

Finistèrre Cape of Spain. It is the north-west point of the country, owing its name (land's end) to its position. Here the British fleet gained a victory over the French on May 3, 1747. For this Admiral George Anson was made a peer.

A department of France is named **Finistère.** This is part of Brittany, in the north-west of the country. Quimper is the chief town.

Finland Republic of Europe. Russia, Sweden and Norway form its land boundaries, whilst on the south and most of the west its borders are the Baltic Sea, on which it has 1200 m. of coast line. Its area is 132,589 sq. m. including the Aland Islands and a number of other islands. Most of the land is flat and there are many large lakes. Part of Lake Lagoda and a piece of Lapland are in the republic. Helsingfors (or Helsinki) is the capital and the largest town. Others are Abo (Turku), Tammerfors, Viborg and Vasa.

For some centuries Finland was part of Sweden, but in the 16th century it became a grand duchy. In 1809 it was handed over to Russia, which had previously secured part of it and the tsar became grand duke. Later there was a good deal of trouble between the Finnish and the Swedish elements in the population.

The country was, in 1917, declared a sovereign and independent state. It is governed by a president, elected for six years by universal suffrage, and a council of state. These are responsible to a house of representatives of 200 members. Socialism is very strong in the country and against communism repressive measures were found necessary in 1930. The chief occupation is agriculture. Rye, barley and oats are grown. There are immense areas of forest and timber and pulp are the principal exports. Horses and cattle are kept, and butter is made. The railways are state owned and transport, especially of timber, is facilitated by the numerous lakes which are joined by canals. Finland has an army recruited by universal service, a small navy and an air force. Lutheranism is the national religion. The country adopted prohibition, but in 1932 it was abandoned.

The unit of currency is the markka, worth 1¼d. and stabilised at 39.70 to the dollar. The Bank of Finland is the state bank. The metric system of weights and measures is used. The population of the republic is 3,667,067. Of these 342,916 speak Swedish, nearly all the others are Finns.

The **Gulf of Finland** is a branch of the Baltic Sea. It is 250 m. long and lies between Finland and Estonia.

Finn Legendary hero. He is associated with both Ireland and Scotland and many stories are told about him. He was the son of a king and became the leader of the Fianna. The word Finn means fair one. In Scottish legend he is known as Fingal.

Finsbury Metropolitan borough of London. It is in the north of the city of London and includes Clerkenwell. In it are the Charterhouse and Bunhill Fields. Finsbury Pavement, Finsbury Square and Finsbury Circus are in or near the borough. Pop. (1931) 69,888.

Finsbury Park is a district just outside the boundary of the county of London. The name is primarily that of a recreation ground opened in 1869, but has become attached to a great railway junction and traffic centre, where the L.N.E. and Underground Rlys. connect.

Finsen Light Apparatus invented by a Dane, Niels Ryberg Finsen (1860-1904) for the treatment of the virulent skin disease, lupus. The actinic rays from an arc lamp are transmitted through a light filter and, after being concentrated by passing through quartz lenses and cooled by a stream of water, are brought to bear upon the diseased part.

Fir General name for various resinous cone-bearing trees yielding useful timber. The true, or silver, fir, *abies pectinata*, abounds in central and S. Europe, often reaching in English parks a height of 90 ft. The Norway spruce fir, *picea excelsa*, Europe's stateliest tree, may reach 170 ft. Other genera yield the hemlock, Douglas and Japanese parasol firs. The needle-like leaves of firs grow singly on the shoots, not in sheathed clusters, as in larches and pines: the Scotch fir, *pinus sylvestris*, is properly a pine.

Firdausi Persian poet. His real name was Abul Kasim Mansur, and he lived from about 940 to 1020. His great work is the epic poem, *Shahnamah* or *Book of Kings*, which contains 60,000 lines and relates the history of Persia from the earliest times.

Fire Any manifestation of glowing heat, more particularly the visible heat and light produced by high temperature on combustible or inflammable substances. Combustion may be attended by flame, with or without non-luminous vapour or smoke. Fire is generated naturally by solar radiation and other means. After being recognised by primeval man as a physical fact, it was slowly brought under control, utilised for defence against wild beasts, preserved, artificially produced at will and converted into a mighty auxiliary of man's conquest of the globe.

The worship of fire is still practised by some primitive people of Africa, Asia and America. In ancient Mexico, in pre-Aryan India and in early Persia, fire worship was an important element of the popular religion.

FIRE INSURANCE.—Insurance against loss by fire is one of the oldest and most important branches of insurance. It is undertaken by all large offices and practically every building in the civilised world is insured against fire, as well as furniture and other household possessions. In Great Britain the premium on an ordinary house or shop is very low, but it is higher on factories, especially those where any inflammable material is used. The premium is reduced in cases where fire extinguishing apparatus is installed.

Fire Alarm Device for giving an alarm on the breaking out of a fire. There are many types, most of which depend upon the expansion of a substance when heated. In one an electric bell circuit is connected with two platinum wires fused into a thermometer tube; one wire is in con-

tact with the mercury in the bulb, the other is placed at a point above the mark of normal temperatures. When the mercury rises to the upper wire, the circuit is completed and the bell rings. In 1930 a fire alarm of the loud-speaker type was installed in Edinburgh.

Firearm Weapon discharged by means of gunpowder or other explosive. In the 14th and 15th centuries primitive cannon or bombards were made of wood, leather or iron bars, and threw stone balls: these in the 16th century were replaced by cast iron, brass or bronze cannon and mortars. Soldiers were armed first with the arquebus and later with the matchlock, musket and pistols. In the 19th century, with the adoption of the percussion cap, the breechloader came into use, followed by the rifle and revolver.

A person may not possess, use or carry a firearm unless he holds a certificate which costs 5s. for the first year and 2s. 6d. afterwards, and in addition with a few exceptions, either a gun licence (costing 10s. a year), or a game licence (costing from £1 for 14 consecutive days to £3 for a year) is necessary.

Fire Brigade Body of men equipped and trained to deal with outbreaks of fire. Every town and urban district has its fire brigade. The larger ones consist of paid men always on duty; the smaller ones of volunteers. The equipment consists of powerful motor pumps, hose, ladders, etc. The largest fire brigade, the London Fire Brigade, has a staff of 2000 men. Its offices are at 94 Southwark Bridge Road, London, S.E.1.

Fireclay Variety of clay able to withstand high temperatures owing to the absence of fusible constituents. It resists corrosion and is unaffected by sudden changes of temperature. Fireclay is worked at Stourbridge and many places in the coalfields and is used for making crucibles, stove-backs, furnace and oven linings.

Fire Damp Term applied by miners to methane or marsh gas. It tends to accumulate in coal mines, escaping especially when there is a sudden drop in atmospheric pressure. Marsh gas when mixed with air explodes with great violence in contact with a naked flame, hence the necessity for the use of safety lamps.

Fire Engine Mechanical device used for extinguishing fires by means of water. The earliest type was a brass hand squirt or pump, but in 1672 the first manual engine with flexible leather hose was invented. Steam fire engines came into use in London in 1860, but the modern type is petrol driven with pumps capable of throwing heavy streams of water to a considerable height.

Chemical fire engines are now used in some cases, utilising materials which evolve carbon dioxide as a gas or as foam.

Fire Escape Device for facilitating the escape of persons from a burning building. It may be merely a knotted rope fastened to a window frame, or a more elaborate device for lowering a person to the ground. Another form of escape is provided by external iron staircases to high buildings. The modern portable wheeled fire escape possessed by the fire brigade has telescopic ladders usually in three or four sections mounted upon a two-wheeled base and capable of reaching a height of over 80 ft.

Firefly Name given to certain types of beetles which possess luminous organs. The firefly of tropical America belongs to the group of click beetles and is remarkable for the brilliance of the light it emits. Its European representative, the glowworm, possesses luminous organs along the edges of the last abdominal segments.

Fireproofing Method of treating fabrics, wood or paper with chemical solutions to render them more or less noninflammable. Sodium silicate, sodium tungstate and potassium tungstate are used extensively for this purpose. Among other chemicals the following have been suggested, borax, ammonium chloride, phosphate and sulphate, alum, salt, sodium sulphate and zinc sulphate. Slag wool is used as a fireproof covering for steam pipes and flooring, and special fireproof paints, or the application of limewash are useful for preventing wood from catching fire.

Fire Ship Device used in ancient and mediaeval warfare. A vessel filled with tar and other inflammable material was set alight and allowed to drift among enemy ships in order to ignite them and create a panic. A number of fireships were used against the vessels of the Great Armada when they were anchored in the Calais Roads on the night of July 27, 1588, causing a panic and the scattering of the Spanish vessels.

Fireworks Devices or preparations of an explosive or inflammable nature used chiefly for purposes of display. Pyrotechny, or the art of the making of fireworks, has been known in the East from remote times, and was introduced into Europe about the 13th century. In the 17th century, pyrotechny was well advanced, but the greatest progress in the art took place in the 19th century with the introduction of chlorate of potash, magnesium and aluminium giving colour effects and greater brilliancy.

Pyrotechnic compositions consist of substances such as charcoal and sulphur, which ignite or explode in contact with an oxygen yielding substance, such as nitre or chlorate of potash. Some mixtures containing nitre, sulphur, charcoal and powdered metals, produce force and sparks; others with a chlorate base give flame, colours being produced by metallic salts. Their manufacture is strictly supervised by the Home Office, and is carried on under conditions laid down by the authorities.

Firework displays are given at fêtes and celebrations of any kind. Those at the Crystal Palace, London, are famous.

Firkin Measure once used for liquids. It equalled 9 gallons, or a quarter of a barrel, and was chiefly used for beer. A firkin of butter weighs 56 lb.

First Aid Term used for the assistance given at once in case of accident or sudden illness. A knowledge of a few simple rules about stopping bleeding, etc., is often the means of saving life. Lessons in first aid methods are given to both men and women by the S. John Ambulance Association, the British Red Cross Society, the S. Andrew's Ambulance Society (a Scottish organisation) and other societies all over the country.

Firstborn Term denoting, in Jewish life, "that which openeth the womb." It is employed even when no second child follows. To commemorate the

deliverance from Egyptian bondage all first-born human males were consecrated, but after one month were redeemable; as a substitute for this national obligation, the tribe of Levi was chosen for service, thus inaugurating the hereditary priesthood. The redemption of the first-born 30 days after birth is still solemnised. Firstling animals if clean were sacrificed, if unclean were redeemed.

First Empire Term used by historians for the period in France between 1804 and 1814. In May, 1804, Napoleon was made emperor and his empire existed until his abdication in April, 1814. The second empire was the period, 1852-70, when his nephew, Napoleon III., was emperor.

First Fruits Earliest gatherings of a season's crop. The Jews made an offering to God of a portion of the first fruits, a sixtieth or a fortieth. Voluntarily observed in the early Christian church, the fruits were later claimed by the clergy as part of their stipend. First fruits were sometimes payable under feudal law; and in the 12th century the papacy claimed this feudal right over all benefices in Christendom. These were paid often under protest in England until the Reformation, when they were made part of the royal income. Elizabeth reserved such annates for the crown; Anne restored them to the church as Queen Anne's Bounty.

First Offender Term used in English law for a criminal who has committed only one offence. In 1887 a law was passed ordering magistrates to bind over such persons to be of good behaviour instead of sending them to prison. The offence with which the first offender is guilty must, of course, be a minor one. To-day first offenders are often put in charge of a probation officer who looks after them for a stated period, as provided for by an Act of 1907, which replaced that of 1887.

First Republic Term used by historians for the period from 1792 to 1804 when France was a republic. The monarchy was abolished in 1792 and in 1804 Napoleon was declared emperor. The second republic began with the fall of Louis Philippe in 1848 and ended in 1852 when Louis Napoleon made himself emperor. The third republic began on the fall of Napoleon III. in 1870 and is still in existence.

Firth Name common in Scotland for an arm of the sea such as the Solway and Pentland Firths, and named after the rivers where these enter such as the Clyde, Forth and Tay. In England a firth is called an estuary and fiord is the Norwegian equivalent.

Fish Word popularly designating a swimming animal. Loosely applied to such marine mammals as whales and dugongs, such amphibians as newts, and such invertebrates as cuttle-fish, shell-fish and star-fish, it properly denotes a class of cold-blooded vertebrates living in water and breathing through gills. The body is usually covered with scales and the limbs, when present, are represented by paired fins. Reproduction is mainly by eggs fertilised after being spawned. the study of fish is called ichthyology. *See* FISHERIES.

The preserving of fish for food purposes is a large industry. At Yarmouth and elsewhere in Great Britain the curing of herrings is carried out on a large scale. Salmon, lobster and other fish are canned, an important industry in British Columbia and California. Cod is cured in Newfoundland and Norway. Sardines and anchovies are prepared and packed in oil in France, Italy and Spain.

To conserve the supply of fish, hatcheries, as they are called, have been established. In England these exist for trout; in North America they are used on a large scale for the breeding of salmon and other river fish.

Fisher **Andrew.** Australian statesman. Born near Kilmarnock, Aug. 29, 1862, he worked for some time as a coalminer, and in 1885 went to Queensland, where he was elected to the state legislature in 1893. In 1900 he became a member of the Commonwealth parliament. He was minister of trade and customs in 1904, leader of the Labour party in 1907, and prime minister 1908-09 and 1910-13. He was High Commissioner in England, 1915-21. He died Oct. 22, 1928.

Fisher **Herbert Albert Laurens.** English historian and politician. Born in London, Mar. 21, 1865, he was educated at Winchester and New College, Oxford, remaining there as lecturer and tutor in history until 1912, when he was appointed vice-chancellor of Sheffield University. He entered parliament in 1916 and was president of the board of education from 1916 to 1922, being responsible for the Education Act of 1918. He resigned his seat in 1926. A year earlier he had been appointed warden of New College, Oxford. He has written many books on historical subjects, including *Studies in Napoleonic Statesmanship*, 1903, also a study of Christian Science, 1929. In 1928 he was made president of the British Academy.

Fisher **John.** English prelate. Born at Beverley about 1459, he was educated at Cambridge, and in 1504 was consecrated Bishop of Rochester. In 1527 he was the only bishop who refused his assent to the declaration that the marriage of Henry VIII. to Catherine of Aragon was unlawful, and in 1534 again stood alone in refusing to swear to the Act of Succession. He was sent to the Tower, and while in prison was given by the pope a cardinal's hat. He was beheaded on Tower Hill, June 22, 1535, for refusing to recognise Henry as head of the church. In 1886 Fisher was beatified.

Fisher **1st of Baron Kilverstone.** British admiral. John Arbuthnot Fisher was born in Ceylon, Jan. 25, 1841, and entered the navy in 1854, on board the *Victory* at Portsmouth. From 1855-1882, he saw much service during the Crimean War and in Chinese and Egyptian waters, being captain of the *Inflexible* at the bombardment of Alexandria. He became first sea lord in 1904, resigning in 1910, but was recalled in Oct., 1914, finally resigning on May 15, 1915. He was knighted in 1894 and when a barony was conferred in 1909 he took the title of Lord Fisher of Kilverstone, Norfolk. He died July 10, 1920.

Fisheries Industry that provides a vast quantity of food for mankind. The most valuable fishing grounds in the world are the northern waters of the Atlantic Ocean, and Great Britain and the United States are the chief participators in the industry. France, Norway and Canada are other nations with valuable fisheries.

British fishermen take part in the cod fisheries off Newfoundland, and in fisheries in other parts of the world, but their chief sphere

of operations is the North Sea, which is very rich in fish valuable for food. Accordingly, Yarmouth, Grimsby, Aberdeen and other places on the east coast are the chief British fishing ports. The herring is the chief fish caught, but haddock, mackerel, sole and turbot are also brought in. Pilchards are caught off the coast of Cornwall.

The fisheries of the United States include a vast quantity of shell fish and salmon, the latter being caught chiefly in the rivers of the Pacific coast. Somewhat similar are the Canadian fisheries. Norway concentrates chiefly on the cod and the herring. France has valuable fisheries in the Mediterranean, where the anchovy, sardine and tunny are found. Japan and Russia have also extensive fisheries, Russia producing sturgeon in great quantities.

REGULATION AND CONTROL.—International law recognises the seas are open to all nations equally for the purpose of fishing therein, except for a belt round the coast which is the exclusive property of a particular nation. In certain areas, *e.g.*, Newfoundland, fishing rights are regulated by treaty.

To look after the fisheries each nation has a department of state. These collect statistics, issue regulations and from time to time take part in international and other conferences. In England this is the **Ministry of Agriculture and Fisheries**: in Scotland, it is the **Fishery Board.**

MODERN DEVELOPMENTS.—Of late years great improvements have been introduced into fishing methods, which, until the 19th century, had been much the same for, perhaps, 2000 years. Steam trawlers took the place of fishing smacks and more important still was the introduction of refrigerating methods, which enables the fish to be kept fresh and the fishing fleet to remain longer at sea. Sounding and other apparatus have been introduced to locate the whereabouts of the shoals. Scientists have also been employed to investigate the habits of fish and to suggest methods for conserving the supply.

In 1934 the fish of British taking (excluding river salmon and shellfish) landed in Scotland, England and Wales amounted to 931,421 tons, valued at £15,503,895. Nearly 14,000 boats were employed and the number of men and boys engaged in fishing was estimated at 56,835 at the beginning of the year. Nearly half the catch consisted of herrings. Cod and haddock were the next in importance. Whale and seal fisheries are not counted in the totals of national fisheries.

Fishguard Seaport, urban district and market town of Pembrokeshire. It stands on the little River Gwaen, 12 m. from Haverford-west and 261 from London. There is a good harbour and the G.W. Rly. runs a service of steamers from here to Cork, Waterford and Rosslare, Ireland. There is a little fishing. In 1797 a small French force landed here, but it was soon made to surrender. Pop. (1931) 2963.

Fishing Occupation or sport of catching fish. It is one of the oldest of human pursuits and was at first carried on solely to provide food. To-day it has become a sport, as well as an industy of enormous proportions. As a sport fishing is usually called angling and is pursued chiefly in rivers, although a certain amount is done in the sea. The rod and line are invariably used, and the methods and the bait adopted differ according to the fish sought. Fishing for salmon, for example, is quite different from fishing for trout.

When carried on as a business, as it is in almost every country with a seacoast, fishing is chiefly done at sea, although there are extensive salmon fisheries in some of the rivers of North America and in the Great Lakes. The fish are usually caught with a net which may be let down into a shoal and swept through the waters by trawlers. In fishing for shell fish which is quite another branch, traps are usually employed. *See* ANGLING.

Fishmonger Dealer in fish. The **Fishmongers' Company** is one of the great livery companies of London. It existed in the 14th century or earlier and for long had the monopoly of the fish trade in London. It has an income of nearly £50,000 a year and its hall is near London Bridge.

Fitton Name of a noted Cheshire family, also spelled Fytton. They owned land at Gawsworth where they lived for some centuries and where there are memorials to them in the church. **Sir Edward Fitton,** or Fytton, was lord president of Connaught in the time of Elizabeth. **Sir Alexander Fitton** was lord chancellor of Ireland. He followed James II. to France and was the last Fytton to hold the Gawsworth estate. The most famous member of the family was **Mary Fitton,** mistress of William Herbert, 3rd Earl of Pembroke, and presumably the "dark lady" of Shakespeare's sonnets.

Fitzgerald **Edward.** English poet. Born at Woodbridge, Suffolk, Mar. 31, 1809, he was the son of John Purcell, who took his wife's name of Fitzgerald in 1818. Educated at Bury St. Edmunds and Trinity College, Cambridge, his life was very uneventful. His fame, however, was chiefly due to his translation from the Persian of *The Rubáiyát of Omar Khayyám*, first published in 1859. Other works from his pen are *Six Dramas of Calderon*, 1853, *Salámán and Absal*, 1856, and *Readings in Crabbe*, 1882. He died June 14, 1883.

Fitzgerald **Family.** A historic Irish house, descended from Walter, son of Other, who is mentioned in Domesday Book as castellan of Windsor. His youngest son, Gerald, captain and constable of Pembroke Castle, married Nesta, sister of a Welsh prince, and became ancestor of the Fitzgeralds. The house was granted the Earldom of Kildare in 1316, and the 20th earl received the dukedom of Leinster in 1766. The heir to the dukedom carries the title of Marquess of Kildare.

Fitzherbert **Maria Anne.** Wife of George IV. The youngest daughter of Walter Smythe of Brambridge, Hampshire, she was born in 1756 and married in 1775 Edward Weld of Lulworth Castle, Dorset. In 1778 she became the wife of Thomas Fitzherbert of Swinnerton, Staffs., who died in 1781. Four years later she met the Prince of Wales, to whom she was privately married, Dec. 21, 1785. Being a Roman Catholic, the union, according to law, was illegal, but not necessarily invalid. However, in 1795 George IV. married Caroline of Brunswick. He later lived with Mrs. Fitzherbert again until 1803 when the connection was severed. She was granted an allowance of £6000 a year and died Mar. 29, 1837.

Fitzroy River of Queensland. It is a union of the Dawson and the Mackenzie and flows through a very fertile country. It falls into the sea at Keppel Bay. Rockhampton stands on it and it is navigable by small steamers to that place.

Another **Fitzroy** is a river in W. Australia, in the extreme north of the state. It flows for 300 m. in a westerly direction and falls into King Sound on the Indian Ocean. Fitzroy is also the name of a north-east suburb of Melbourne.

Fitzroy is the family name of the Duke of Grafton, a descendant of Charles II. and the Duchess of Cleveland. A member of the family, **Robert Fitzroy** (1805-65) commanded the *Beagle* in 1831, when Charles Darwin was on board as naturalist. From 1843-45 he was Governor of New Zealand and afterwards meteorologist to the Board of Trade, his discoveries being of considerable value.

Fitzroy **Edward Augustus.** English politician. A member of the Duke of Grafton's family, he was born July 24, 1869. Having passed through Eton and Sandhurst, he joined the 1st Life Guards. In 1900 he entered the House of Commons as M.P. for S. Northamptonshire and retained his seat until 1906, being again M.P. 1910-18. In 1918 he was elected for the Daventry division, as he was at all later elections to 1929. From 1922-28 Captain Fitzroy was Chairman of Committees in the House of Commons; he was elected Speaker in 1928, and re-elected in 1929, 1931 and 1935.

Fitzsimmons **Robert.** English pugilist. Born at Helston, Cornwall, June 4, 1862, at the age of nine he emigrated to New Zealand, and was trained as a blacksmith. He won a heavyweight competition for novices promoted by Jem Mace, and soon after entered the professional ranks, securing heavy and middle-weight championships of the world. He fought his last match in 1912 and died Oct. 23, 1917.

Fitzwilliam **Earl.** Title held by the family of Fitzwilliam since 1716. **Sir William Fitzwilliam** became prominent during the reign of Elizabeth, being Lord Deputy of Ireland 1571-75 and 1588-94. His grandson became an Irish baron in 1620. **William,** the 3rd baron, became an earl in 1716. The 3rd earl, also a **William,** received an English barony in 1742 and an English earldom in 1746.

His eldest son, **William Wentworth Fitzwilliam,** succeeded to the titles in 1756. A Whig in politics, he became, in 1794, President of the Council under Pitt, and in Dec. of the same year Lord Lieutenant of Ireland. In 1798 he became Lord Lieutenant of the West Riding, Yorkshire, but was dismissed in 1819 for censuring the Peterloo Massacre. In 1782 he inherited the great estates of the Wentworths on the death of his uncle, the Marquess of Rockingham. He died Feb. 8, 1833, and the present earl is his direct descendant. The family seat is Wentworth Woodhouse, Yorkshire, and the eldest son is known as Viscount Milton.

Another **William Fitzwilliam,** who died in 1542, was Lord High Admiral of England under Henry VIII. and was created Earl of Southampton in 1537.

Fitzwilliam Museum Museum belonging to the University of Cambridge. Richard Fitzwilliam, an Irish viscount, who died in 1816, left to the university his valuable collection of books, manuscripts, pictures, engravings, etc., also a sum of money. When a sufficient sum had accumulated a building was erected in Trumpington Street, and from time to time further donations were received. In 1931 extensive additions were made to the building by the generosity of the Courtauld family.

Fiume Seaport and city of Italy. It stands on the River Recina at the north-eastern end of the Adriatic Sea, and is connected by railway with Budapest. There is an arch here dating from Roman times. Fiume has some manufactures, but the chief industry is shipping, for which there is an excellent harbour. Since 1929 it has been a free port.

The city has had an eventful history. Until 1914 it was part of Austria-Hungary, although its population was mainly Italian, except in the suburbs of Sushak where Croats predominated. When the World War ended Fiume was claimed both by Italy and Yugoslavia, the latter on behalf of the Croats. In Sept., 1919, Gabriele d'Annunzio (*q.v.*) led a band of volunteers to the city, which he seized for Italy. In 1920 by the Treaty of Rapallo, it was made an independent state. This was distasteful to the Italians, causing disorder which lasted until Jan., 1924, when a treaty was made between Italy and Yugoslavia. By this Fiume and a small surrounding district was given to Italy, Yugoslavia receiving compensation. Pop. (1931) 52,928.

Five Nations Name given to the Iroquois, a group of American Indians. It is due to the fact that it consisted of five tribes—Mohawks, Cayugas, Senecas, Oneidas and Onondagas. Later they were joined by the Tuscaroras and became the Six Nations.

Flag Popular name of various flowering herbs. They usually possess sword-shaped leaves, and mostly grow in moist situations. Several species of iris are known as flags, *e.g.*, the yellow flag, common throughout Britain, and the blue and white flags, equally common in central and S. Europe, from which handsome garden varieties are derived. The **sweet flag,** *acorus calamus*, rare in England, and naturalised in Scotland and Ireland, perhaps came from the Himalayas. The **corn flag** is a gladiolus, the **oat-tail flag** is the reed mace.

Flag Piece of material usually oblong, with a distinctive design, flown as a symbol or sign, at the top of a flagstaff. Each country has its national flag and some have several others. The Union Jack is the national flag of Great Britain and the Tricolour of France. These are flown on public buildings, etc., indicating that they are national property. It is customary to fly them at half-mast on the death of an important person. National flags are also flown over embassies and consulates. A sovereign has his standard or flag which is flown over the house in which he is at the time residing.

Flags play an important part in shipping. Every ship, merchantman or warship, shows her nationality by her flag, and they are also used for signalling. An admiral has a flag which is flown on the ship carrying him, the flagship. Commanding officers of lower rank fly a pennant, a long narrow flag. The flag of the British Navy is the white ensign; the mercantile marine flies the red ensign. Yachting clubs have flags, as have shipping lines, these being called house flags. In the army the flags are known as colours. *See* ENSIGN.

Flag Day Day on which small flags are sold in the streets for the benefit of a charity such as the National Lifeboat Association. The idea was started during the war period (1914-18), and much money is raised in this way. The idea was soon abused and it was decided that in the metropolitan area no flag day may be held without the consent of the police.

Flagellants Religious ascetics who practise scourging or mutual whipping, for bodily discipline or penance. Arising out of the punitive flagellation of offending priests and monks, voluntary scourging developed, after the 11th century, into a practice which Cardinal Damiani and others advocated. S. Dominic and S. Anthony of Padua were rigorous self-scourgers. Fraternities established in 13th-century Italy conducted public processions. The Black Death in 1348 witnessed revivals of this fanaticism, which was condemned by Clement VI., and stamped out by the Inquisition.

Flageolet Musical instrument. It was a survivor of the old ripple flute or flute-à-bec and had a flute-like high tone. Mozart wrote a part for the flagcolet in G in his *Entführung aus dem Serail*, but as the instrument is obsolete in the orchestra this part is now played on the piccolo.

The ordinary six-holed tin whistle is a popular extant form of flagcolet and gives a good idea of the tone and appearance of its orchestral prototype

Flagship Name given to a warship which has an admiral on board. The admiral is in command of a squadron of ships or holds some other command, and has a distinctive flag to denote the ship from which his orders are issued. The *Victory* was Nelson's flagship at Trafalgar, and the *Iron Duke* was Jellicoe's at Jutland. A flagship, like any other vessel, is under a captain who is responsible for her affairs, with which the admiral has nothing to do. A commanding admiral is sometimes called a flag officer; his personal attendant is a flag lieutenant.

Flagstone Hard, fine-grained sandstone capable of being split into thin slices. Having a close texture, great durability and a non-slipping surface, it is used for paving stones, steps, hearths and landings. York stones, a trade name for the Yorkshire flagstones, comprise stones varying in colour from whitish to blue, brown and mottled. The Craigleith flagstone from Scotland is a whitish grey, now largely replaced by artificial slabs.

Flail Wooden agricultural instrument. It consists of two strong sticks bound together by thongs, one forming the handle and the other the striking portion or souple. It was formerly in general use for threshing corn in European countries.

Flamborough Village of Yorkshire (E.R.). It is 4 m. from Bridlington and here is **Flamborough Head**, a promontory 450 ft. high, with a lighthouse and numerous caves.

Flamboyant Style of architecture that prevailed in France in the 15th century. It is a late and debased form of Gothic, and took its name from the flame-like tracery which characterised it. It was little used in England.

Flame Burning gaseous matter. Normally due to its union with oxygen in the air, when the temperature is raised sufficiently. A solid substance gives rise to flame during combustion when it, or some constituent, is volatilised during the process. The heat of flame varies; in the oxy-acetylene flame it is as high as 2500° C.

During the Great War the German troops who were trained to use liquid fire were called flame-throwers, because they carried blow-lamps which ejected burning liquids to a considerable distance.

Flame Flower Perennial flowering herb. Also called the red-hot poker, it is a native of S. Africa, but flourishes in Great Britain. The leaves, long and narrow, bear bright-red flowers at the end of long stems each thus resembling a poker.

Flamen Class of priests in Rome. Their chief was the flamen Dialis, or priest of Jupiter, whose characteristic vestments included an olive-crown, a white cap and a woollen toga, with a sacrificial knife. His wife, *Flaminica Dialis*, shared with him the daily sacrifices.

Flamingo Order of tall wading birds related to ducks. They are widely distributed in the warmer regions except Australia, and are long-necked and long-legged. Their beaks, abruptly bent down in the middle, serve as scoops when the head is twisted upside down. They are found in great flocks, particularly near the great lakes in Central Africa. The European *Phœnicopterus roseus*, ranging from Cape Verde eastward to Lake Baikal, breeds in the Mediterranean region, making conical mud nests; it is occasionally seen in Britain. The plumage is rosy white, with black marks on the wings.

Flaminius **Gaius.** Roman statesman. He lived in the 3rd century B.C. In 220 B.C. he was censor and built a circus and a road named after him. The latter, the Via Flaminia, led from Rome and was the first Roman road to cross the country. He was killed in the battle of Lake Trasimene, 217 B.C.

Flammarion **Nicolas Camille.** French astronomer. Born Feb. 25, 1842, his greatest contribution to astronomy was his efforts to popularise it, by writing and lecturing. His *Popular Astronomy*, translated in 1894, was widely read in England. In 1887 he founded the French Société Astronomique. He died June 4, 1925.

Flamsteed **John.** English clergyman and astronomer. He was born at Denby, Derbyshire, Aug. 19, 1646, and educated at Cambridge. On the establishment of the Royal Observatory at Greenwich in 1675 Flamsteed was appointed Astronomer Royal by Charles II. at a salary of £100 a year. In 1684 he was presented with the living of Burstow, Surrey. Flamsteed revised the star tables then in use, and published his catalogue of the fixed stars. He died Dec. 31, 1719.

Flanders Name given to a district chiefly in Belgium, but partly in France. Its inhabitants are called Flemings. Belgian Flanders, which is divided into two provinces, E. Flanders and W. Flanders, is the part of Belgium which lies between the French frontier and the estuary of the Schelde. Bruges, Ypres and Ghent are in Flanders, as are the Rivers Lys and Yser.

At one time Flanders, under its own counts, was practically an independent country. From 1385 to 1477, it was part of Burgundy and then a possession of Spain, when it became perhaps the most prosperous part of Europe. In the 17th century parts of it were taken by France, whilst the rest helped to form the district known

as the Spanish, and after 1714 as the Austrian, Netherlands. In 1794 Austria lost it. At the settlement of 1815 it became part of the kingdom of the Netherlands, and in 1830 of the new kingdom of Belgium. In 1914-18, there was a great deal of fighting in Flanders, especially around Ypres.

Flannel Loosely woven woollen stuff. It is used for clothing, its softness and warmth rendering it especially suitable for sporting wear. Some makes have both sides alike, others a long nap on one side only. Flannel was made in Wales, but the chief British centres are now in Lancashire, especially Rochdale and Yorkshire. Much flannel contains a proportion, sometimes high, of cotton. Blankets are a special branch of the flannel manufacture.

Flannelette is a cotton material made to resemble flannel. It, too, is much used for clothing, but is rather inflammable.

Flash Ornament consisting of three short pieces of black velvet ribbon sewn under the collar and hanging down the back. It is part of the regimental dress of the Royal Welch Fusiliers. Its use dates from the time when queues of hair were worn, and the flash was introduced to prevent these from greasing the coat or tunic.

Flash Point Temperature at which a liquid gives off vapour which will ignite with a flash upon the application of a flame. It is especially used in connection with the products of petroleum. To minimise the danger arising from the use of lamp oils, the legal flash point of paraffin oil is placed at 73° F., to determine which several forms of apparatus have been devised in which oil is slowly warmed and its vapour tested from time to time by a small gas flame a certain distance above the surface of the oil.

Flashlight photographs are taken by means of an instantaneous brilliant light caused by burning magnesium powder. An electric bulb has now been perfected to serve the same purpose. It possesses the advantage of smokelessness.

Flat In music one of the commonest signs. It means that the note which is marked by it is lowered a semitone.

Flat Self-contained dwelling, usually on one floor and part of a large building. In England since the Great War the use of flats has increased enormously. Many large houses have been converted into flats and new blocks of flats have been built, especially in London; many of them being large and luxurious buildings, as those in Park Lane and Baker St. Some of them are service flats, meals being obtained from a special restaurant or kitchen. The rent of flats usually includes rates and the proprietor generally undertakes to look after the common entrance hall and other common ground. Some flats are let furnished. The law about flats is the same as for other dwellings. *See* RATES; RENT.

Flat-fish Family of fishes without air bladders. The 500 species, almost all marine, and inhabiting all seas except the polar, have compressed and flattened bodies, the eyes and nostrils being twisted round to the upper side, and the mouth being awry. The fish swims on one side, and the under side, that rests on the sea floor, is colourless; the other, darkly pigmented, changes colour protectively. The transparent and perfectly symmetrical young swim vertically. Important edible species include the halibut, turbot, plaice, sole and flounder.

Flat Foot Deformity of the foot in which its arch subsides until the sole rests upon the ground. It usually occurs in young persons of poor physique who have been exposed to much standing or to the carrying of heavy weights. There is pain and fatigue, with a tendency to turn the toes outward. A change of occupation, with rest, tip-toe exercises and massage may suffice to cure it, or relief may be obtained from artificial supports such as instep pads. Bad cases may need surgical treatment.

Flatford Village of Suffolk. It is near E. Bergholt, on the River Stour. The mill here was painted by Constable, who also immortalised other scenes in the neighbourhood. In 1928 the mill was presented to the nation, together with the house called Willy Lot's Cottage. The latter is now a guest house for artists.

Flatulence Gas in the stomach or bowels. In the stomach this arises from air gulped down nervously by dyspeptic persons, or from digestive disturbance, and is expelled from time to time noisily into the mouth. In the bowel it usually arises from bacterial fermentation. Marsh gas and hydrogen are formed from vegetables; and sulphuretted hydrogen and carbon disulphide from eggs and peas. There may be unpleasant rumbling, and violent expulsion.

Treatment.—The treatment of flatulence, or wind, which is a symptom of indigestion, should be mainly preventive—avoidance of habits of eating foods known to cause the condition. Meals should be regular, three a day. Nothing should be drunk with food, but plenty of water between meals. Bicarbonate of soda in water, essence of peppermint, soda-mint tablets, all serve to relieve an attack, and charcoal biscuits eaten at the end of a meal are beneficial.

Flaubert **Gustave.** French novelist. Born at Rouen, Dec. 12, 1821, he studied law, but, after travelling for a number of years, took up literature. In 1857 he published *Madame Bovary* for which he and his publisher were prosecuted on a charge of immorality, but the action was dismissed and the book was a great success. In 1862 he published *Salammbô*, a picture of life in Carthage; *L'Education Sentimentale* appeared in 1867 and *La Tentation de St. Antoine* in 1874. Other novels and two plays followed. He died May 9, 1880.

Flavine Basic dye also known as acriflavine. It is derived from a coal tar product, acridine, and consists of a brownish red crystalline powder soluble in water and alcohol. It forms a pure yellow dye for cotton and leather, and is used extensively as a powerful antiseptic in the treatment of sleeping sickness, and in clinical surgery.

Flax Fibre used for linen thread and the plant which produces it. The annual herb, *linum usitatissimum*, has narrow lance-shaped leaves and purplish-blue flowers. It yields handsome garden varieties.

Flax grows in Europe, notably in Russia, also in Ulster, Yorkshire and elsewhere. When ready, the tissues of the stems are separated by a process called retting, and the tough fibres obtained are dried, and when woven form linen. The seed yields linseed oil, used as a painter's oil, the residual cake being a useful cattle food.

New Zealand flax, *phormium tenax*, is a plant of the lily family, of which the leaf fibres are convertible into twine and rope. *See* LINEN.

Flaxman **John.** English sculptor. He was born at York, July 6, 1755, a delicate, somewhat deformed boy, and spent his early years mainly in his father's plaster-cast shop. In 1770 he entered the Royal Academy schools in London, and from 1775-87 was employed by the Wedgwoods to design classical friezes and figures for their china ware. Then he turned his attention to executing monumental sculptures and examples of his work are in many cathedrals and churches, especially S. Paul's Cathedral and Westminster Abbey. Made A.R.A. in 1797, Flaxman was elected R.A. in 1800. In 1810 he was chosen Professor of sculpture at the Royal Academy. He died Dec. 7, 1826.

Flea Order of small wingless insects, mostly parasitic on mammals and birds. The mouth parts are adapted for piercing and sucking and the adult insect lives on blood, its bite being troublesome. Owing to the length of its hind legs, the flea is enabled to leap, in some species, 200 times its own length.

The human flea, *pulex irritans*, breeds in neglected, dirty houses. Rat fleas convey plague to man, and chicken fleas sometimes attack man, but do not remain with him.

Fleabane Several herbs of the order *compositæ*. Their soap-like odour is reputedly obnoxious to fleas. Two British species of *pulicaria* extend to India; one was formerly used as a medicine for diarrhœa and dysentery. There are two British species of *erigeron*, and the Canadian species, *E. canadense*, is naturalised in Britain. Another fleabane, *inula squarrosa*, is called ploughman's spikenard.

Flecker **James Elroy.** English poet and dramatist. He was born at Lewisham, Nov. 5, 1884, and was out East in the consular service from 1910-13. He died of consumption at Davos Platz on Jan. 3, 1915. A poet of great individuality and high quality, his brilliant play, *Hassan*, was published posthumously and produced in 1923.

Fleece Coat of the living sheep removed at one shearing. The interlocking of adjacent hairs renders the shorn clip fairly coherent. Fleece wools are distinguished from dead wools, which are not derived from the living animal. The fleece, after the shearing with hand or power implements, is roughly trimmed and bundled together ready for baling. After reaching the market or factory it is opened, examined and classified, cased fleeces being those of approximately similar quality. *See* GOLDEN FLEECE.

Fleet River of London, now merely an underground stream. It rose at Hampstead and fell into the Thames at Blackfriars. Its northern part was called the Holbourne and the rest the Fleet Ditch. In the 18th century it was covered in and became a sewer. Its lower course was roughly along Farringdon Rd., Farringdon St., and New Bridge St.

The Fleet gives its name to **Fleet St.,** noted as the centre of the newspaper life of the country. This runs parallel with the River Thames, from the Strand to Ludgate Circus.

The Fleet Prison stood on the east side of what is now Farringdon St. Long one of the most famous of London's prisons, it was destroyed by rioters in 1780, but was soon rebuilt. Before 1850 it ceased to be used as a prison and was pulled down.

Fleet Urban district of Hampshire. It is 36 m. from London, on the S. Rly. Fleet Pond, covering nearly 100 acres, is one of the largest sheets of water in the S. of England. At Church Crookham, 2 m. away, tobacco is grown. Pop. (1931) 4528.

Fleetwood Seaport, watering place and urban district of Lancashire. It stands at the mouth of the River Wyre, 9 m. from Blackpool, and is served by the L.M.S. Rly. There is a good harbour and large docks, the property of the L.M.S. Rly. Co., from which steamers ply to the Isle of Man and elsewhere. It is also a fishing centre and there is a fine promenade. Pop. (1931) 22,983.

Fleming **Marjorie.** Scottish child immortalised by Sir Walter Scott. She only lived for eight years, 1803 to 1811, but during that time she showed remarkable precocity. She read a good deal and wrote poems, and diaries. Sir Walter Scott saw her at the house of his aunt, Mrs. Keith of Ravelston, and took a great interest in her. Dr. John Brown in *Horae Subsecivae* wrote about her, and her life was written by H. B. Farnie. It is called *Pet Marjorie*.

Fleming **Sir Sandford.** Canadian engineer. He was born at Kirkcaldy, Fifeshire, on Jan. 7, 1827, and went to Canada as a youth. He took an important part in the preliminary survey for a Canadian transcontinental railway, and later, in the establishment of a cable between Canada and Australia. He was largely responsible for the introduction of unified time reckoning, or standard time (*q.v.*), throughout the world. Died July 22, 1915.

Flemings Name used for the inhabitants of Flanders (*q.v.*). Many of them settled in England at various times, especially in the eastern counties. They brought with them the weaving industry, and there are evidences of their activities at Dedham and elsewhere in Essex, and the adjacent counties. In the 12th century Henry I. settled some of them in Pembrokeshire and that neighbourhood, but they were disliked and often attacked by the Welsh.

To-day Belgium is inhabited by Flemings, who speak Dutch and inhabit Flanders and other parts in the north-west of the country, and Walloons who speak French and live in the south-east.

Flensburg Seaport of Germany. It stands on Flensburg Fiord in Slesvig, 23 m. from the town of that name. Founded in the 12th century, it has several buildings of historic interest. It is a flourishing port with a good harbour and its industries are chiefly connected with shipping.

Flensburg was Danish until 1864, when it was taken by Prussia who kept it after a plebiscite in 1919. Pop. 70,000.

Fletcher Word meaning a maker of arrows. One of the London livery companies is called the Fletchers. This was united with that of the bowyers or makers of bows. The offices are at 4 Broad Street Place, London, E.C. 2.

Fletcher **Giles and Phineas.** English poets. Phineas, the elder brother, was born in 1582 and his most important work is *The Purple Island* (1633) a Spenserian allegory. The poetry of Giles is religious in character. His epic *Christ's Victorie and Triumph* (1610) influenced Milton. Giles died in 1623 and Phineas in 1650.

Fletcher **John.** English poet and dramatist. Son of Rev. Richard

Fletcher. Bishop of London, he was born at Rye, in 1579, and was probably educated at Cambridge. Being left without means he, in collaboration with Francis Beaumont, took to writing for the stage. *The Maid's Tragedy*, *Philaster*, *King and No King*, and many others were produced under their joint authorship, whilst the pastoral drama, *The Faithful Shepherdess*, was the production of Fletcher alone. He collaborated also with Massinger, Rowley and other dramatists, and died of the plague in the summer of 1625. He is buried in the cathedral at Southwark.

Fletton District of Northamptonshire and Huntingdonshire. Some part of it is within the city of Peterborough, but another forms the urban district of Old Fletton. Pop. (1931) 7480. The district is famed for its enormous brickfields from which the popular Fletton brick is obtained.

Fleur-de-lis French royal symbol. Presumedly representing a lily or white iris, it was called by Shakespeare the flower-de-luce. It is traceable in Egyptian, Etruscan, Roman and Indian ornament, and was adopted by Louis as the royal ensign of France about 1147, being represented in gold on azure, scattered over the shield. The number of lilies was reduced to three about 1376. It appeared on the arms of England in royal coats of arms from Edward I. onwards, disappearing therefrom in 1801.

Fleury **André Hercule de.** French statesman. Born at Lodève, June 22, 1653, he was appointed chaplain to Louis XIV. and became Bishop of Fréjus in 1698. He was appointed tutor to the boy who afterwards became Louis XV. in 1715, and in 1726, at the age of 73, Fleury succeeded the Duke de Bourbon as Prime Minister, and soon after was appointed cardinal. He died Jan. 29, 1743.

Flight Navigation of the air. Human flight, the study of which is termed aeronautics, is a development of modern times. The solution of the many problems of flight are dependent upon meteorology for knowledge of atmospheric conditions, engineering experience, the study of physics, and the effect of air upon fuel combustion. With Langley's early studies of the flight of flat surfaces and Lilienthal's experiments with curved surfaces, gliders came into being, and the development of the internal combustion engine made possible the aeroplane and airship. *See* AERONAUTICS; GLIDER.

Flight Lieutenant Officer of the Royal Air Force. He ranks above a flying officer or observer and below a squadron leader. The equivalent rank in the navy is lieutenant, and in the army captain.

Flinders **Matthew.** English sailor. Born March 16, 1774, in Lincolnshire, the son of a surgeon, he joined the navy in 1790. From 1795-99, he was in Australasian waters, where he carried out numerous explorations, made surveys, and circumnavigated Tasmania. Sent in 1801 in *The Investigator* to explore the Australian coast, he was wrecked on his voyage home, and falling into the hands of the French, was imprisoned by them for six years in Mauritius. In 1810 he was released. He died July 19, 1814, after publishing an account of his voyages.

A river in Queensland, 220 m. long, is named after Flinders. It falls into the Gulf of Carpentaria.

Flint Crystalline mineral mainly of silica. More opaque and less lustrous than chalcedony, it is dark grey or dark brown in colour, breaks with a shell-like fracture, and occurs in nodules, tabular masses and veins, in the chalk formations of Britain and W. Europe. Flint was employed for walls and buildings in mediaeval times and there is much flint in the old churches of the eastern counties of England. Because of its readiness to pulverise, it is utilised in pottery and flint glass manufacture. Fire making by striking flint with iron pyrites, an important neolithic discovery, was long used. The artificial flaking of flints by sharp blows of hammer stones, which may have originated in Africa, led to the invention of flint implements, which during the Stone Age laid the foundations of human progress.

Flint Borough and market town of Flintshire. It stands on the estuary of the Dee, 12 m. from Chester, on the L.M.S. Rly. Before the estuary was closed by sand it was an important seaport. There are chemical works and other industries, and near are coal mines. Here is the castle which was built by Edward I. and is now public property. Flint was at one time the county town. Pop. (1931) 7635.

Flint Lock Kind of firearm also known as firelock. It was in use in the 17th century and was fired by means of a mechanism in which a piece of flint was struck upon a steel face, producing a number of sparks. A lighter form of flint lock was termed a fusil, hence the name fusilier applied to soldiers armed with this weapon. The use of flint locks continued until the middle of the 19th century, when they were superseded by the adoption of the percussion cap.

Flintshire County of Wales. In the north of the country the main part lies between the estuary of the Dee and Denbighshire. A small detached portion lies between Denbighshire and England. There are hills in the county which only covers 255 sq. m. Coal and lead are mined. The rivers Dee and Clwyd flow through it and it is served by the L.M.S. Rly. Mold is the county town; other places are Rhyl, Flint, Holywell, Buckley and Connah's Quay. Pop. (1931) 112,849.

Floating Debt Name given to that part of the national debt which is not funded or converted into consols, war loan, etc. It consists of exchequer bonds, treasury bonds, savings certificates, etc.

Flock Stuffing used for chairs, beds, and other articles. It is usually material which is thrown off in the process of manufacturing woollen cloth, or is made by pulling woollen cloth to pieces. By a law passed in 1911 flock must reach a certain standard of cleanliness or its manufacturers can be prosecuted.

Also used for a herd of sheep, goats, geese or other animals and birds. A flock book is a book which records the pedigrees of pure bred sheep. They are kept by the societies which exist to assist the breeding of the different kinds of sheep and fulfil a similar purpose to the stud books of the stables.

Flodden One of the Cheviot Hills. It is 3 m. from Coldstream and near the Till. A battle was fought here between the English and the Scots Sept. 9, 1513. After a fierce fight the English under the Earl of Surrey gained a great victory, James IV. and his bodyguard of nobles being among the slain. Flodden was long regarded as one of

the most disastrous days in the history of Scotland. It was the theme of much poetry, and Scott describes it in *Marmion*.

Flood Inundation of low lying land. Generally caused by an overflow of water from a river, it is due to excessive rainfall or the melting of snow and ice on the mountains. In the case of great rivers, such as the Mississippi, Hoang-ho and Nile, floods have played an important part in modifying the surface features of the surrounding areas. As a result deltas and fertile flood-plains have been formed, and in some cases the river has made new channels and mouths. **The great flood** which is recorded in the Bible is usually called the deluge (*q.v.*).

Flood Lighting Lighting of the exterior of a building, generally by powerful, concealed electric lights. It was first introduced in New York, where many large buildings were illuminated at night in this way. In 1931 experiments in flood lighting were tried in England, notably on the Houses of Parliament and other buildings in London and the castle at Rochester. In Sept., 1931, there was a great display of flood lighting on London buildings in connection with the meeting of the International Illumination Congress.

Floquet **Charles Thomas.** French statesman. Born Oct. 2, 1828. He was deputy for the Seine in the National Assembly of 1871, and in the same year was imprisoned for his Communistic sympathies. In 1876, as a radical republican, he entered the Chamber of Deputies and was President of the Chamber from 1885 to 1888. In 1888-89 he was Premier, during which time he fought a duel with Boulanger. In 1892, being involved in the Panama scandal, he resigned. He died Jan. 18, 1896.

Flora In Roman mythology a flower goddess. A temple was erected for her worship near the Circus Maximus in Rome, and an annual festival called Floralia, lasting from 28th April to 1st May, was held in her honour.

Flora Term used collectively for all the plant life of a given geographical region or geological period, or its enumeration. It corresponds to fauna as designating the animal life.

Florence City of Italy. It stands about the centre of the country, on both banks of the Arno, 45 m. from the coast, and is connected by railway with the other cities of Italy. The Italians call it Firenze and it ranks as one of the most interesting cities of their land and indeed of the world, being full of wonderful buildings and adorned, as few other cities are, with priceless works of art. It is intimately associated with Dante, Boccaccio and Machiavelli, as it is with Michelangelo and others of the world's greatest painters and sculptors, and owes much to the generosity of the Medici family.

BUILDINGS AND INSTITUTIONS. The buildings include the great Duomo or cathedral, with its towering dome, in which Savonarola preached, and adjacent to it are the campanile by Giotto and the Baptistry with its wonderful bronze gates. In the church of San Lorenzo are Michelangelo's statues of Day and Night. This church was the burial place of the Medicis. Many sons of Florence lie in Santa Croce, the city's mausoleum. Other churches include the Annunciation, San Spirito, Santa Maria Novella, Santa Maria del Carmine, San Michele and San Miniato. Of the many palaces that of the Medici is used for public purposes. In the Pitti and the Uffizi palaces are two of the greatest collections of pictures in the world.

Another collection is in the Academy. The Strozzi and the Corsini palaces may also be mentioned. Florence contains four great libraries, each rich in books and manuscripts of immense value. One is the national library and another, the Laurentian, was once the library of the Medici.

Other buildings that may be mentioned are the Palazzo Vecchio and the Bargello. The hall of Dei Lanzi contains Benvenuto Celleni's Perseus. In the monastery of S. Mark, associated with Savonarola, are frescoes by Fra Angelica. The Ponte Vecchio, immortalised by Dante, still crosses the river and there are several modern bridges. There are remains of the old Roman city in the shape of an amphitheatre and baths. The university was founded in 1924.

The walls of Florence have been pulled down and modern suburbs erected beyond the old city. There are some industries, including shipping along the river, but the city is chiefly a centre of culture. Art students study here and it is a centre for tourists.

HISTORY. Florence was a Roman city and later a town in the district called Tuscany. As the citizens became rich by trading, they began to rule over the people around them, and after 1250 Florence was an independent and powerful city. It was disturbed by the struggle between the Guelphs and Ghibellines, but after a time the former gained the upper hand. Great prosperity followed and soon Florence was ruling over most of Tuscany, whilst, by conquering Pisa in 1406, her traders were in possession of that seaport.

During these years the citizens of the republic had provided themselves with a constitution, under which the city was governed, which lasted until the 15th century, when the rich family of the Medici (*q.v.*) became masters of Florence. Their wealth and influence helped them to maintain this position, although there were continual risings against them and for some years they were in exile. The republic was restored in 1494, but in 1512 the Medicis returned and with Spanish help overthrew it. In 1569 Cosimo de' Medici made himself Grand Duke of Tuscany, and Florence remained the capital of the grand duchy until 1860, when it was included in the Kingdom of Italy. In 1737 the Medici family had become extinct and from then until 1860 Tuscany, with Florence, except for a short period during the Napoleonic Wars, was a possession of Austria. From 1865-71, Florence was made the capital of Italy. It has a broadcasting station (500.8 M.; 20 kW.). Pop. (1931) 316,286.

Florentium Another name for the rare element more usually called illinium (*q.v.*).

Flores Name of two islands. One is in the Azores, being the most westerly of the group. Santa Cruz is the capital. Near here Sir Richard Grenville, in the *Revenge* in 1591, fought his famous action with some Spanish ships. Pop. 8200.

The other **Flores** is in the Dutch East Indies. Situated south of Celebes, midway between Java and Timor, of which it is a dependency, it occupies 8870 sq. m. The surface of this island is hilly and there are volcanic peaks as high as 9000 ft. Cotton, rubber and ponies are raised by the Malays on

the coast and jungle produce by the inland Papuans. The capital is Larantuka. Pop. 250,000.

Floret In botany, the small flowers forming the inflorescence of composite plants. The florets are arranged upon a flattened or convex disc surrounded by an involucre of bracts, and may be all alike, as in the dandelion, or different in form and colour, as in the daisy.

Florida State of the United States. In the extreme S.E. of the country, it consists mainly of a peninsula, between the Atlantic Ocean and the Gulf of Mexico. It covers 58,666 sq. m. and Tallahassee is the capital, although Jacksonville and Tampa are much larger. Agriculture is the chief industry, and rice, cotton, tobacco and tropical fruits are grown. Much of the state is forest land and the timber reserves are valuable. There are also fisheries and along the extensive coastline are many watering places including Miami, the largest city in the state. In the south is the swampy region called the Everglades and the great lake Okechobee.

Florida was discovered on May 27, 1513, by a Spanish seaman. In 1763 it was handed over to Britain, but in 1781 was returned to Spain. In 1819 it was bought by the United States, becoming a state in 1845. It is governed by a legislature of two houses and sends five representatives to the House of Representatives at Washington. Pop. (1930) 1,468,211, about a third of whom are negroes.

Florida Strait separates Florida from Cuba and the Bahamas; it is 300 m. long. Part of the Gulf of Mexico is called **Florida Bay. Florida Keys** are reefs off the south coast.

Florin Name of a silver coin. It originated in Florence, where a gold florin was struck in 1252. Other states coined florins, and in 1343 one was coined in England, this being a gold florin for 6s. It was soon withdrawn. In England the silver florin worth 2s. was introduced in 1849 and has since been in general use. A double florin is occasionally seen. In the Netherlands the silver florin has become the gulden.

Flotilla Name, meaning little fleet, given to a group of destroyers or submarines under a single command. Other small warships are also organised in flotillas. Destroyers in the British Navy are now grouped in flotillas of eight and the one which carries the captain, or commander, is called the flotilla leader.

Flounder Small flatfish (*pleuronectes flesus*) allied to the plaice. It is also called the fluke. It inhabits N. European coasts from the British Channel to Iceland, dwelling in river waters and descending to the sea to breed. It rarely exceeds 12 in. in length and 1¼ lb. in weight. In America, various larger flatfish are called flounders.

Flour Term denoting especially the ground contents of the wheat seed. Similar meals from other grasses and from non-cereal plants usually bear qualifying or variant names, *e.g.*, cornflour, oatmeal and arrowroot. The wheat kernel, which is nine-tenths of the seed, the remainder being skin and germ, consists of starchy matters (73.5 per cent.), gluten and other proteins (11 per cent.), fats and minerals (3.5 per cent) and water (12 per cent.). Besides its use in breadmaking, flour is used in several industries, calico printing, etc.

Wheat was formerly ground by hand and later in a mill between great stones, operated by wind or water, hence the name flour miller. Steam power was first employed in 1784, and in 1837 iron rollers were introduced in the place of mill stones and it is now prepared in great roller mills. A bag of flour consists of 140 lb. *See* WHEAT.

Flower Part of a plant containing the reproductive organs. It is composed, in its most complete form, of four distinct whorls of modified leaves. (1) The outer whorl or calyx, which forms the unopened bud, consists of sepals, usually green. (2) The corolla consists of petals, often coloured and sometimes forming a tube, their length, form and odour being adapted to assist insect fertilisation; sometimes, as in the crocus, sepals and petals are alike, and together form a perianth. (3) The stamens, which bear pollen grains, or male cells, in anthers, mounted on filaments. (4) The pistils, in which ovules, or female cells, in ovaries are surmounted by stigmas mounted on styles. Sepals, petals or both are absent in some flowers, but stamens and pistils are essential to reproduction, although in some cases, *e.g.*, the willow, each plant bears flowers of one sex only.

What is known as the **language of flowers** is the attribution of certain sentiments to certain flowers according to a pre-arranged code. In the 19th century booklets expounding these were popular in England.

Fluke Order of sucker-bearing parasitic worms, whose cysts resemble flukes or flounders. The common or liver fluke, *fasciola hepatica*, passes its adult life in the livers of sheep, producing an incurable rot. The eggs, passing out in the dung, hatch into embryos which penetrate a freshwater snail, *limnaea truncatula*. After further development, they leave the snail and attach themselves to grass, forming cysts which, when swallowed by sheep repeat the life history. Another fluke causes the human disease bilharziosis.

Fluorine Gaseous element. It occurs in the minerals fluotspar and cryolite, also in bone and the enamel of teeth. It is greenish in colour, and has a powerful action on all metals and most other substances. Its principal compound is hydrofluoric acid. It was first isolated in 1886. Its atomic weight is 19, atomic number 9 and symbol F.

Fluorspar Mineral consisting of fluorine and calcium. It occurs in veins or lodes and is often associated with lead ore. It is either colourless, or yellow, blue, green or violet in colour and is used as a flux, an etching agent, or for making cheap jewellery. In Derbyshire it is known as Blue-John and is used for ornaments.

Flushing Seaport and watering place of the Netherlands. It stands at the mouth of the Schelde, on the Island of Walcheren. Its chief importance is as a port for cross-channel services. There are shipbuilding yards and in former days it was a station of the Dutch Navy. Pop. (1932) 21,755.

Flute Musical wind instrument consisting of a cylindrical tube of metal or wood. Into this the player blows through a hole near the top. Other holes, stopped by the fingers, or keys worked by the fingers, vary the air pressure and so make music.

Fluting In architecture the parallel channels or grooves on a column. They are separated from each other by fillets. In Greek architecture definite laws governed

the number and depths of the fluting. On the Doric columns there were 20 shallow elliptical flutes and on the Ionic the flutes were semi-circular and 24 in number.

Flux Metallurgical term for a substance which assists in the reduction of an ore to the metallic state. The flux is added to the charge of ore for the purpose of combining with the earthy matter present and forming a fusible compound, or slag. The principal fluxes are carbonate of soda, which forms a slag with silica; borax which combines with lime and iron oxides; oxidising agents such as nitre and litharge and reducing agents such as charcoal.

Fly Name widely used, with or without prefix, for the winged state of many insects of various orders. Apart from butterflies, dragon flies, may flies and caddis flies, they pertain mostly to the two-winged order, *Diptera*, and include crane flies, house flies, bot flies, mosquitos, tsetse flies, etc. The mouth parts form a proboscis for piercing and sucking. Some flies are blood-suckers; many others owe their troublesome character to their destructive maggot stage; in some the larvae are parasitic, in some aquatic. Of widespread importance are the Hessian fly, forest fly, horse fly and window fly. The cosmopolitan house fly, *musca domestica*, is a disease carrier, and because of its rapid breeding under insanitary conditions, a dangerous pest. *See* DIPTERA.

Flycatcher Large family of small insectivorous perching birds. They pursue their prey on the wing, and abound in the tropical regions of the world. The spotted fly-catcher, *Muscicapa grisolo*, is a summer visitant to Britain. The pied, *M. atricapilla*, which arrives in spring is found in woods. The paradise fly-catchers of E. Asia have brilliant plumage.

Fly Fishing Form of fishing in which flies, usually artificial, are used as bait. These are made to look as much like a real fly as possible. They may be used in two ways. In dry fly fishing the fly floats on the surface of the water; in wet fly fishing it is immersed. The casting or throwing of the fly is important. Trout are usually fished with the fly. **The Fly Fishers' Club** is at 36 Piccadilly, London, W.1.

Flying Boat Large seaplane having a boat-shaped body which gives it buoyancy on the water and affords space for the pilot, passengers and cargo. As in the ordinary seaplane its engine and air-screw are placed high up on the boat. Flying boats are specially adapted for coast work and for long distances over seas. The German Dornier "X" has 12 engines and carries 150 passengers, as well as a light cargo, and the American Glenn-Martin clipper ship, built to provide the utmost comfort can attain a speed of 180 m.p.h. and cover 3000 miles without refuelling.

In Great Britain the air ministry has several squadrons of flying boats, examples being the Southampton and the Iris. The 1935-36 air programme maintains a strength of 8 squadrons of flying boats.

Flying Buttress Form of external buttress, characteristic of Gothic architecture. In form a half arch, it was used to join the outer buttress with the wall of the nave, thus resisting the thrust of the central part of the roof, and was usually built in stages and finished with pinnacles.

Flying Corps Royal. British organisation for air fighting which existed from 1912 to 1918. It was formed, when air warfare became a possibility, as a branch of the army. In 1914 its strength was about 2000 men, but it expanded enormously during the World War, when it took part in the fighting in all areas of military operations and, in co-operation with the navy, was responsible for the defence of Britain from air attacks. In April, 1918, it became part of the Royal Air Force.

Flying Dutchman Name given to a phantom ship. It was said to haunt the southern coasts of Africa and sailors believed that seeing it meant impending disaster. It was said to be a doomed ship moving continuously over the seas as a punishment for acts of cruelty committed by the captain, Vanderdecken, and the crew. Wagner wrote an opera on the subject, and Douglas Jerrold a play.

Flying Fish Name denoting two genera of tropical and subtropical marine fishes. The two genera include the flying herrings, *Exocoetus*, and flying gurnards, *Dactyloplerus*. Their long pectoral fins, acting when distended as parachutes rather than as wings, sustain them in the air against the wind, sometimes for 500 ft. They fly to escape the attacks of coryphenes and other predatory fishes.

Flying Fox Popular name of a genus of night-flying fruit-bats (*Pteropus*). Occupying the tropics of the old world, the largest is the Javanese kalong, *P. edulis*, which possesses a wing-spread of 4 or 5 ft.; others, in India and Queensland, inflict enormous damage to gardens. They slumber head downward, clinging by thousands to a single tree.

Flying Lemur *See* LEMUR.

Flying Squid Widespread genus of cuttle fishes (*ommastrephes*). They are especially common in the warmer seas of the world. Long and tapering, they leap, by means of their large lateral fins, high out of the water, sometimes falling on the decks of ships. The sea arrow (*O. sagittatus*), frequent in Scottish firths, is a common cod bait off Newfoundland, and an important food of sperm whales. The fish may be as much as 4 ft. in length.

Flying Squirrel *See* SQUIRREL.

Flywheel Large, heavy wheel mounted on a shaft. Its function is to equalise the motion of machinery. In a single cylinder engine a fly wheel is mounted on the crank shaft so that its momentum assists the crank over the dead centres when the piston is at either end of its stroke; it also tends to give a more uniform motion. Some fly wheels are of great size, up to 24 ft. in diameter and 120 tons in weight.

For use on motor vehicles a "fluid" flywheel has been invented. It consists of two main parts made of aluminium, one of which forms the driving member and the other the driven member. With it a driver can start his car from rest and drive on the level, with or without traffic checks, without using the clutch pedal or the gear lever to bring the car to rest with the engine still running.

Foch Ferdinand. French soldier. Born at Tarbes, Oct. 2, 1851, he was the son of a civil servant. On the outbreak of war in

1870 he joined the army. In 1878 he was made a captain of artillery and was soon engaged on staff work. In 1894 he was appointed Professor of Military History at the Staff College, and there he made a reputation by his lectures, which have been translated into English as *The Conduct of War* and *The Principles of War*. In 1901 he was given command of a regiment and in 1905 became chief of the staff of an army corps. From 1907-11 he was head of the staff college (Ecole de Guerre); in 1911 he was selected to command a division and in 1912 an army corps.

When the Great War began Foch was in command of the 20th corps at Nancy and helped to defend that city until he was put at the head of the 9th army, which, under him, had a great share in the victory of the Marne (Sept., 1914). He then exercised general control over a group of armies and was prominent in directing the operations on the Somme in July, 1916. A little later, in Sept., being 65 years of age, he retired, but in May, 1917, returned as chief of the staff to the new generalissimo Pétain. In the following March, after the British disaster of that month, he was appointed generalissimo of all the armies on the western front, French, British, American and Belgian. In that capacity he controlled the movements of the final advance and received the German envoys when an armistice was requested. In 1918 he was made a marshal and later in the year was declared to have "deserved well of his country."

Foch was a prominent figure in the negotiations for peace, but gradually he retired from public life. He wrote a book on the war, published just before his death, March 20, 1929. He was buried in the Invalides and there are memorials to him in several places.

Fochabers Village of Morayshire. It stands on the Spey, 8 m. from Elgin, and is visited for the fishing and scenery around. Near is Gordon Castle, the seat of the Duke of Richmond.

Fog Atmospheric condition of low lying cloud or thick mist. It is due to the presence of dust particles around which is deposited a film of water when the temperature falls suddenly below dew point. These drops, in the absence of wind, may remain in suspension for a long time and thus form the white fogs of the countryside and the dense black fogs of large towns where sooty particles predominate. Over the sea a current of warm air passing over a cooler layer, or over icy waters, causes condensation to occur resulting in thick fogs, as off Newfoundland.

Foggia City of Italy. It is a railway junction, 78 m. from Naples, and a commercial and agricultural town. The chief building is the cathedral. Pop. (1931) 57,232.

Foghorn Apparatus for producing a loud noise as a warning at sea during a fog or as a signal on shore. Many types are in use, from the simple mouth foghorn to those worked by hand or the powerful sirens worked by compressed air. Coast fog signals vary much in character from reedhorns to large sirens installed on dangerous parts of the coast. Sailing vessels and those in tow are required to sound their foghorns at intervals of one minute during a fog.

Föhn Dry warm wind experienced in the eastern Alps. It blows down the mountain valleys, its warmth being due to the increasing pressure and consequent rise in temperature as it descends from a high altitude. As the snow rapidly melts when the Föhn is blowing, it is of great value to agriculture in these regions.

Foil Thin sheet metal. It is obtained by rolling certain malleable metals, especially tin, aluminium, copper and silver. Tinfoil may vary in thickness up to 1/100th of an inch and is used extensively as a wrapping material for tobacco, chocolates and foodstuffs, or as box linings and for electrical apparatus. Aluminium foil is also used for wrapping, and tinsel, a tin or copper alloy, is employed by jewellers. Copper foil in varying thicknesses is used in repoussé and other metal work.

The word is also the name given to a light sword used in fencing. This has a guard on the hilt and a flexible four-sided steel blade, the point of which is protected by a button.

Fokker **Antoine Herman Gerard.** Dutch engineer. Born at Kediri, Dutch East Indies, April 6, 1890, he was educated at Haarlem, Holland, and at the age of 20 went to Germany, where he started his aeronautical career, becoming known as a pioneer of aviation. He put up factories and built aeroplanes that were used by the German army in the Great War, after which he erected the Fokker Aircraft works in Holland and other factories in Madrid and New Jersey.

Foleshill District of Warwickshire. It is 3 m. from Coventry, of which it is practically a suburb. It is the centre of a rural district with a population of over 33,000.

Folio Book of the largest size, comprising sheets of paper folded once. If folded again the sheets would become quarto, and so on. The term designates also the numbered page of a book or manuscript. Shakespeare's works were printed in folio volumes; hence the phrase, **first folio.** In law writing a folio comprises 72 words, in parliamentary and chancery documents 90, in the U.S.A. 100.

Folkestone Borough, seaport and watering place of Kent. It stands on the English Channel, 71 m. from London, with stations on the S. Rly. There is a large harbour for cross channel traffic and near it is the fish market.

The new town has been built on the cliffs. In front are the Leas, a fine promenade about 2 m. long, along which are hotels and houses. Radnor Park is an open space and near the town is the Warren, a large expanse of open land. Races are held here regularly and an annual cricket festival is held in September. A road of remembrance leading to the harbour forms the town's war memorial. Much of the land belongs to the Earl of Radnor, whose eldest son is called Viscount Folkestone. Pop. (1931) 35,890.

Folk-dancing Dancing uninfluenced by urban or professional tendencies. The term has loosely become synonymous with country-dancing. It may be classed under two heads, (1) social, when it is danced purely as a pastime by all; (2) ceremonial, when performed by selected performers to mark a definite occasion.

Folkland In early England land held from the king according to the custom of the folk or people. Sometimes the king made grants of land in a book or charter and this was called bocland. At one time it was believed that folkland was common land, but scholars no longer hold this view.

Folklore Traditional learning of backward people. The term was invented in 1846 by W. J. Thoms to designate popular antiquities and in 1878 the **Folklore Society** was established in London. Folklore deals with the beliefs and customs, stories and songs, art and ritual, of early and uncultured people, and much work has been done in tracing their origins, resemblances and distribution. The most elaborate work of this kind is *The Golden Bough* of Sir James Frazer.

Folk-Song Vocal and instrumental music originating among the uncultured classes. It is usually based on local legends or incidents of common life, and may comprise a simple melody in one or other of the diatonic modes. **The English Folk-Song Society**, founded in 1898, has recorded several thousand authentic folk-songs.

Folly In a particular sense a building erected for no definite purpose. There are several examples in England, such as Allen's Folly, also called Sham Castle, near Bath, built in 1760 by Ralph Allen.

The Follies was the name taken by a group of burlesque actors, under H. G. Pelissier, who were very successful when they appeared in London between 1907 and 1912.

Fomentation Application of warmth to the body's surface. It may be employed to soothe pain or to hasten the formation of pus in localised inflammations. For hot fomentations, flannel, lint, and similar materials are wrung out in hot water and applied under protective waterproof coverings; medicaments, *e.g.*, turpentine and laudanum, may assist. Dry fomentations comprise warmed flannels or bags of warmed salt or bran.

Font Basin used in a church for the ceremony of baptism. It is constructed usually of stone or marble and is sometimes placed in a special part of the building. In the early Christian churches it was in a separate baptistry, octagonal or circular in form, adjoining the basilica, the font taking the form of a tank for immersion. The earliest of these is the Baptistry of Constantine in Rome. There are fine Norman fonts in some of the old churches of England.

Fontainebleau Town and forest of France. The town is 37 m. from Paris and quite near the Seine. There are some industries, but the interest of the place centres in the magnificent palace, which was built by Francis I. and improved and beautified by later kings. In it Napoleon abdicated in 1814. Externally it is a wonderful piece of architecture, whilst internally are some magnificent apartments and priceless paintings, tapestries and other works of art. The gardens also are beautiful.

The Forest of Fontainebleau, a popular pleasure resort, covers over 40,000 acres, and is a region of great natural loveliness.

Fontenoy Village of Belgium. It is about 5 m. from Tournai and is famous for the battle fought here on May 11, 1745. The French under Marshal Saxe were attacked by a British force under the Duke of Cumberland, who had also Hanoverian and Dutch soldiers in his army. After a stubborn fight the British and their allies were forced to retreat, their square having been broken. A brigade of Irish contributed much to the French success.

Fontevrault Town of France. It is 10 m. from Saumur and being part of Anjou, was long an English possession. A great Benedictine abbey existed from 1100 to about 1800. In its church are the tombs of Henry II., Richard I. and Matilda, the wife of the one and the mother of the other. These were only discovered when the edifice was being restored in 1910. Pop. 2300.

Fonthill Village of Wiltshire. It is near Hindon and is known for its association with William Beckford. Here, on the site of an abbey, he built a magnificent house. It was pulled down, but in the 19th century the 2nd Marquess of Westminster built another, which has now passed out of his family.

Foochow Port of China. It stands on the River Min, about 36 m. from its mouth, and is a treaty port. On the Island of Nan-tai is the European quarter, which is reached by a bridge, remarkable for its age and construction. The industries are chiefly connected with shipping, for which there are extensive docks and there is a dockyard for the Chinese navy. The older part of the city is still surrounded by walls. Foochow is the capital of the province of Fukien. Pop. (1931) 322,725.

Food That which nourishes the body of man and other members of the animal world. Each animal, using the word to include all forms of animal life, *e.g.*, birds, fish and insects, has its own kind of food, much of it consisting of the bodies of animals weaker than itself.

Man's food may be divided into two classes: the flesh of animals and the produce of the soil. Certain animals are eaten, whilst certain others are not, the reason for the distinction being not always clear, although generally man does not eat meat-eating animals or birds.

To-day, except for certain fruits, nearly all the food eaten by man is cooked or prepared in some way. Artificial foods, as they are called, have grown greatly in favour and some think modern society owes some of its ailments to this fact.

The nature of man's food differs to a considerable extent according to the climate. In general, those who live in cold latitudes require more food, especially that containing fat, than do those in warmer regions.

The invention of refrigerators has enabled meat to be kept for long periods. Improved methods of treating the soil, especially with artificial fertilizers, and new strains of plants have increased output. Wheat, a staple food in the west, can now be grown in regions hitherto regarded as too cold for it and in other ways great additions have been made to the food resources, actual and potential, of the world, and have thus lessened the danger of famine.

So far has this gone that, in 1931, an international conference was held with a view to reducing the acreage under wheat, and it is much the same with other primary foods.

DIET. The essentials of a proper diet are that it should provide for growth and the replacement of waste, that it should furnish the heat and energy required by the body, and also a measure of stimulation to metabolism and to the functions of the alimentary tract. Analysis shows that foods are made up of certain constituents, namely, proteins or nitrogenous substances, carbohydrates, fats, salts, vitamins and water.

The proteins, of which white of egg and lean meat are examples, together with mineral matter and water, make good the loss of tissue due to the wear and tear of living; they also go to the making of the secretions of the body. The daily amount of tissue waste in an adult person is not very great, and hard work makes no appreciable difference, because energy is derived from other kinds of foodstuffs. A growing person, on the other hand, requires a liberal allowance of proteins. These substances are contained in flesh, fish and fowl and also in wheat and other vegetable foods, but those of animal origin have, in addition, a certain dynamic quality which explains the craving for animal food in cold climates and the lessened inclination for it among dwellers in temperate climes during the hotter weather. Another advantage of flesh foods is that they present their proteins in a concentrated and easily digested form.

Proteins also furnish a certain amount of heat and energy, but the proper sources of most of our requirements of these are carbohydrates and fats. If more protein is taken than is required for growth and repair, more energy will certainly be provided, but the body will be taxed to dispose of much that is not otherwise utilised; there will be an excess of ash, as it were, for the fuel consumed, whereas fats and carbohydrates produce no ash.

The amount of heat, and incidentally of energy, since heat and energy are convertible into one another, furnished to the body by fixed amounts of protein, fat and carbohydrate, can be estimated by chemical processes. The amount of heat is calculated according to a unit known as a calorie or, as is usual when dealing with foodstuffs, a large, or kilo-calorie (=1000 calories).

The mineral matter in foodstuffs include salts of iron, calcium, magnesium, sodium and potassium, which are necessary in tissue building or, in various ways, in the chemical processes which go on in the body. Iron is a necessary constituent of the red blood corpuscles, for example, while sodium chloride is a constituent of blood, etc., and the source of hydrochloric acid in the gastric juice.

REGULATIONS AND CONTROL. In Great Britain and other civilised countries steps are taken to see that the food sold in the shops is pure. Laws were passed forbidding the sale of diseased and unsound food, but with the great increase in the sale of manufactured foods, something more was necessary. Other laws, therefore, lay down that such foods as cream and margarine must be of a certain standard of purity; in other words, food must not be mixed beyond certain prescribed percentages, with something of inferior quality. A system of marking has been ordered so that people know what they are buying. These laws are actively enforced in each county, city or other district by inspectors who have power to visit shops and to take samples, which are analysed and, if found to be adulterated, their vendors are prosecuted. In Great Britain the system of marking foods has been used since the Great War for quite another purpose, that of encouraging the sale of Empire produce.

The World War brought about a great shortage of food and in the belligerent countries steps were taken to ration it. In Germany and Austria the shortage was very acute and rationing was introduced early in the struggle. In 1917 a system of food control was set up in Great Britain. The amount of certain essential foodstuffs, such as meat, sugar and butter was limited, each person being provided with a card, without which these could not be bought. The system was under a food controller who had representatives in every town. The office became the Ministry of Food and lasted until March, 1921. The shortage was most acute in the early part of 1918 and was partly due to the action of German submarines.

In a modified way the control over food was soon renewed. Complaints of high prices charged for food were so prevalent and the disparity between the price obtained by the producer and that charged to the consumer was so marked, that a food council was set up to investigate the reasons for what appeared to be abnormal rises in prices for foodstuffs.

Fool In olden days a jester, but now a person without sense. Kings and noblemen had fools at their courts who were expected to amuse them and their guests by their tricks and sayings. The fool wore a special dress and carried a stick with a bladder at the end of it. There are many references to fools of this kind in literature, instances being Touchstone in Shakespeare's *As You Like It* and the fool in *Ivanhoe*. The keeping of fools died out in the 17th century. In the Middle Ages one of the recognised feasts was called the **Feast of Fools.**

Foolscap Conical cap, or hood, curved like a cockscomb and decorated with bells, formerly worn by fools or jesters. The name is also used for folio paper, 13 by 17 in., sometimes slightly smaller, for which the old paper makers used a watermark of a fool's cap and bells.

Foot That portion of the lower limb below the ankle joint. It contains 26 bones, 7 forming the tarsus, corresponding to the wrist, 5 the metatarsus, or sole of the foot, corresponding to the palm, and 14 are phalanges. The tarsus includes the calcaneum or heel bone and the astragalus, supporting the leg bone. The foot is arched between heel and metatarsus. Club foot is a deformity which prevents heel and toe from simultaneous contact with the ground. *See* FLAT FOOT.

FEET, SORE The causes are corns, bunions, blisters, in-growing nails, falling arch, etc., all of which can be relieved by proper care and attention.

Corns—horny growths occurring on the toes or soles of the feet—should be removed by the application of a plaster, or by soaking in hot water with bath salts or common washing soda, and then paring with a sharp instrument.

Bunions (inflamed swelling of the bursa over the large joint of the big toe) may be relieved by applying hot fomentations. Bunions are caused by wearing tight, pointed shoes; the inner side of the shoe should be straight, allowing the big toe to lie in its natural position.

Blisters should be punctured near the edge with a sharp, sterilised instrument such as a needle, and when the fluid has run out boracic ointment or lint should be applied and the part covered with a dressing. Feet which blister easily may be hardened by adding methylated spirits to the water in which they are bathed.

In-growing Toe-nails should be treated by a chiropodist if they are bad, but slight tendency may be corrected by cutting the nails straight across, and then cutting a small v from the centre.

Falling Arch, engendered by too much standing—a doctor must be consulted and a support worn inside the shoe.

All foot soreness and tiredness is relieved by frequent bathing in hot water with bath salts, resting with the feet up, fresh stockings daily, the wearing of sensible shoes which fit the foot, are not too heavy and have a good sole and moderate heel. Boracic powder shaken inside the sock or stocking is found to be beneficial where much walking is necessary. *See also* FLAT FOOT.

Foot-and-Mouth Disease

Virulent infectious malady affecting domesticated animals. Its usual victims are cattle, sheep, goats and pigs, but it is communicable to man. Fever is accompanied by rapid spread of eruptions in mouth and feet, thick discharge from the lips, disturbance in abdominal organs and milk supply and a greater or lesser degree of lameness. It is introduced into Britain at intervals by imported animals, The Ministry of Agriculture has extensive powers in cases of this kind, and as soon as an outbreak occurs all movement of animals in the affected area is forbidden. Sometimes they are slaughtered, in which case compensation is paid.

Football

Popular ball game. This old game was at first played by two teams of men, without any definite rules regulating the numbers engaged, the size of the ground or other matters. Each side tried by sheer force to get the ball past its adversaries. This is the game still played once a year at Ashbourne and elsewhere. The public schools each played it according to their own rules, survivals being the wall and field games at Eton and the games at Winchester and Harrow.

In the 19th century the game was organised and rules drawn up. Clubs came into existence and soon football was played in practically every boy's school in the land. Of its two popular forms the first is the Association game. This is played with a round ball by eleven players on each side. These are goalkeeper, two backs, three half-backs and five forwards. Except by the goalkeeper the hands must not be used, the ball being only propelled by the feet or head. Each match is decided by the number of goals scored, these being obtained by kicking the ball between the goal posts. A game usually lasts for 90 minutes.

Association Football, or soccer, owes its name to the fact that in 1863 a Football Association was formed to draw up a set of rules. A challenge cup was presented for competition between the clubs in 1871 and since then the matches for the Association Cup have been amongst the most popular sporting events in the land. There are also Scottish, Irish and Welsh Associations, each of which offers a cup, as do many other local associations. The Football Association at 22 Lancaster Gate, London, W., is the controlling authority in England and acts in unison with the other associations in revising the rules.

The first players were all amateurs, mainly old boys from the public schools, but the popularity of the game spread to all classes and soon professionalism was introduced, this being legalised in 1885. Then came the introduction of the league system, now the mainstay of the game. In 1888 a league was formed, and each club in it must play two matches in the season with every other club therein. Points were awarded and the championship of the league became almost as great an honour as the holding of the Association Cup. The great professional clubs such as Aston Villa, Blackburn Rovers and Preston North End, were members of the original league and their matches every Saturday attracted vast crowds.

The league system spread rapidly. The first, or original, league was divided into divisions with a system by which a club could rise from one to another. Leagues were founded all over the country and there are now scores of them in England, Scotland, Ireland and Wales. The game is still played by amateurs and at one or two of the public schools, while the universities of Oxford and Cambridge meet in an annual encounter. The Football Association offers a cup for amateur clubs and the best amateur players form the Corinthians.

International matches are played between the four home countries, the players are usually professionals, but amateurs are not barred. There are also international matches between amateurs and between the national leagues. The game is played in France, Germany, Belgium and other countries, and is an event at the Olympic Games.

The second form of the game, **Rugby Football,** is a development of the original game as it was played at Rugby School. In 1823 William Webb Ellis picked up the ball and ran with it, and in 1841 this was recognised in the rules. Soon clubs were formed to play the game according to the Rugby rules. The oldest of these is the Blackheath Club, formed in 1860. The English Rugby Union then came into existence and similar unions were formed in the other countries.

Rugby is the chief winter game at most of the public schools. It is also very popular in most parts of England, as well as in South Wales and has been taken up in Scotland and Ireland. It has also spread to France and in New Zealand and South Africa is played with great keenness. It is strictly an amateur game.

Rugby is played with 15 players a side. Eight of these form the scrimmage, a survival of the original group of men striving to push the ball along as best they could. The other seven are two half-backs, four three-quarter backs and one full back. The ball is oval in shape and must be kicked above the bar, not under it in order to score a goal, which counts five points. Three points are given for a try, which is gained by grounding the ball on the opponent's back line and entitles the side gaining it to kick at the goal without interference.

International matches are played between the four home countries and, until 1930, with France. From time to time teams from South Africa and New Zealand come to Britain and British teams go overseas. A match is played each year between Oxford and Cambridge. The rules are revised periodically by an international board representing the four Rugby Unions. The English Union has its headquarters and ground at Twickenham; the Scottish Union has a ground at Murrayfield, Edinburgh.

A third form of football is the **Northern Union** game. This came into existence in 1895 when the Rugby Union refused to allow professionalism. Some Rugby clubs in Lancashire and Yorkshire then broke away, formed the Northern Union and began to play a slightly different kind of game. The number of players was reduced from 15 to 13 and other changes made for a more open and spectacular game. The Northern Union has adopted the league system. This game is much played in Australia.

A fourth kind of game is played in Ireland.

In this there are 13 players a side and a round ball is used. This, however, can be handled, but must not be carried. A score is made if the ball is sent either over or under the bar of the goal posts.

Foote **Samuel.** English actor and dramatist. Born at Truro in 1720, he was educated at Oxford and studied law, but soon abandoned this profession for the stage, making his debut at the Haymarket Theatre, London, in 1744. In 1747 he gave, at the same theatre, a series of entertainments which were very popular, in which he caricatured people of the day. In all the many comedies that he wrote and in which he performed, caricature of some living person was an outstanding feature. In 1766 he lost a leg and the Duke of Westminster, as compensation, permitted him to rebuild the Haymarket theatre. He continued to act there until he sold the theatre ten months before his death on Oct. 21, 1777.

Footpath Narrow way for pedestrians only. Right of way over a footpath may be established by grant of the freeholder, or by user. In the latter case, if the public have had uninterrupted use of the path for 20 years, a right of way is established, the law presuming an ancient grant to have been in existence before that time. The owner of land who permits the public to use a path over it, but does not wish it to become a permanent right of way, can avoid it by closing the path once a year. **The Commons and Footpaths Preservation Society** in London closely watches reported encroachments on public rights of way. There is also a Peak District and Northern Counties Footpaths Preservation Society.

Forbes Town of New South Wales. It is 200 m. to the west of Sydney, and is the centre of a district wherein sheep are reared. Pop. (1931) 5120.

Forbes **Archibald.** Scottish war correspondent. Born April 17, 1838, he was educated at Aberdeen University and served in the Royal Dragoons. During the Franco-Prussian War he acted as correspondent of *The Morning Advertiser* and then of *The Daily News*. He also saw service as a war correspondent in Spain during the Carlist wars, in the Russo-Turkish war, in Afghanistan and in S. Africa. He wrote on his campaigns and also a volume, *Memories and Studies of War and Peace*. He died March 30, 1900.

Forbes **George William.** New Zealand politician. Born at Lyttelton in 1868, he became a farmer. In 1908 he was elected to the House of Representatives and in 1928 was made Minister of Lands and Agriculture under Sir Joseph Ward. He acted as premier during Sir Joseph's illness and succeeded him in that office in May, 1930, becoming also Minister of Finance, and in 1931 Minister for External Affairs and Minister of Railways. In 1930 he attended the Imperial Conference in London.

Forbes **Joan Rosita.** English traveller and writer. Born Jan. 16, 1893, she travelled extensively in Africa and other countries. In 1920 she was with the expedition to the Kufra Oasis in Libya. In 1922-23 she visited Asir and went with a cinema expedition through Abyssinia in 1924-25. Her novels and books of travel and adventure, include *The Jewel in the Lotus*, 1922; *From Red Sea to Blue Nile*, 1925; *Adventure*, 1928; and *Conflict*, 1931. She married firstly, Col. Ronald Forbes and, secondly, Col. A. T. McGrath.

Forbes **Stanhope Alexander.** British artist. Born in Dublin, Nov. 18, 1857, he was educated at Dulwich and studied art. He won a reputation by his paintings of English rural life. "The Health of the Bride" is in the Tate Gallery, London. The "Fish Sale" and "Forging the Anchor" are two of many popular works. In 1892 he was elected A.R.A. and in 1910 R.A.

Forbes-Robertson **Sir Johnston.** English actor. Born in London, Jan. 16, 1853, he was educated at the Charterhouse and Rouen and studied art at the Royal Academy Schools. He made his first stage appearance in 1874 at the Princess's Theatre, London, where he appeared as Castelard in *Mary, Queen of Scots*, but he first achieved success in 1876 in *Dan'l Druce*. In 1895 he played in *Romeo and Juliet* and increased his reputation by appearing in *The Passing of the Third Floor Back* and *The Light that Failed*. In 1913 he was knighted. Forbes-Robertson married the actress Gertrude Elliott and wrote *A Player under Three Reigns*, 1925.

Force Term in physics expressing that which produces or tends to produce motion, or a change of motion, in a body. Force is measured by the rate of change of momentum it produces, the unit of force being known as the dyne (*q.v.*). Work is the product of force.

Forcing Horticultural term for the art of accelerating the growth of plants. By this means many plants may be made to flower or fruit or produce stems and foliage out of their proper season. Forcing is dependent upon warmth and moisture. Warmth may be obtained by embedding potted plants in pits filled with fermenting material or by keeping them in a forcing house. In warm climates such as that of the Channel Islands, vegetables, fruit and flowers are forced under glass for the English market.

Ford **Edward Onslow.** English sculptor. Born at Islington, July 27, 1852, he studied at Antwerp and Munich and at an early age attracted attention with his busts and statues. His group statuary is represented by the Gordon Memorial in London and the Shelley Memorial at Oxford; other works of his are the Gladstone statue in London, the Huxley statue in the National History Museum, London, and a number of portrait busts of well-known people, all showing great skill in modelling. He was elected A.R.A. in 1888 and R.A. in 1895. He died in London, Dec. 23, 1901.

Ford **Henry.** American manufacturer. Born at Greenfield, Michigan, July 30, 1863, he early became interested in mechanics and gained experience in engineering works at Detroit and elsewhere, experimenting meanwhile in motor car manufacture. In 1903 he started the business that grew into the Ford Motor Co., and thus became the largest maker of motor cars in the world. In 1914 he instituted a scheme of profit sharing. The Ford works are excellently organised, and to eliminate waste of every kind, Ford owns his own iron and coal mines, timber forests, railways, etc. Factories have been opened at Manchester and Cork, and extensive works begun at Dagenham. Ford is the author of *My Life and Work*, 1922, *To-day and To-morrow*, 1926, *My Philosophy of Industry*, 1929.

Ford **John.** English dramatist. Born in Devon, April 17, 1586, he studied at Oxford. For many years he was occupied in writing for the stage. In 1626 appeared *'Tis Pity she's a Whore*, a powerful tragedy, which was followed by *The Broken Heart* and *Love's Sacrifice*. In 1634 he published *Perkin Warbeck*, a historical drama. He also wrote many plays in collaboration with Dekker and others. His last play was *The Lady's Trial*, 1639. The date of his death is not known.

Fordingbridge Town of Hampshire. It stands on the River Avon, 14 m. from Salisbury and 96 m. from London by the S. Rly. It has an agricultural trade and was once a market town. Pop. 3400.

Fordwich Village of Kent. It is on the Stour, 2 m. from Canterbury and in the Middle Ages was an important port, being a member of the Cinque Port of Sandwich. It decayed owing to the closing of the channel of the Stour and for other reasons. It was a corporate town until 1884. Pop. 250.

Forecastle Front part of a ship, usually occupied by the crew. It owes its name to the fact that the fighting ships of the Middle Ages had an erection in front like a castle.

Foreclosure Act of taking possession of mortgaged property when principal or interest is unpaid. By English law a mortgagee can foreclose, *i.e.*, take over the house or land, if the interest is in arrears longer than a stated time. He can also foreclose if, the required notice having been given, the principal is not repaid. The right of foreclosure, however, is limited to some extent by the Rent Restriction Acts.

Foreign Legion Corps of the French army. It is recruited largely from foreigners, men who wish for some reason to hide their identity or to seek adventure. No questions are asked about their antecedents. The headquarters are at Sidi Bel-Abbes, in Oran, and the Legion, which is officered by Frenchmen, is quartered in various parts of Algeria. Trained very rigorously and cut off from European life, the men have won a great reputation as fighters, and did good service in the Great War when battalions were brought to France.

Foreign Office Department of the British Government. Its head is a secretary of state and a member of the cabinet, and it is responsible for all business with foreign countries; ambassadors and other representatives being under its control. The office in its present form dates from 1782. The secretary is assisted by two under-secretaries and a large staff. One of the under-secretaries is a politician, the other a civil servant. The department of overseas trade is a department of the Foreign Office, which has its headquarters in Downing Street, London.

Foreland Alternative name for a cape or headland. Two capes known by this name are in Kent. The **North Foreland** is about 3 m. from Margate and the **South Foreland** about the same distance from Dover. Both are formations of chalk and on each is a lighthouse. **Foreland Point**, also with a lighthouse, is near Lynton, on the north coast of Devon.

Foreshore Part of the seashore between high water and low water marks at ordinary tides. Its extent varies with the amount of slope and the tidal height. Except when vested individually by grant, charter or prescription, the foreshore belongs to the crown, with public right of use for navigation or fishing. A right of passage to the foreshore does not necessarily lie over adjacent land.

Forest Word used originally for a tract of woodland wherein wild beasts lived. In Europe many of these were used by the kings for hunting, and forest laws were passed to prevent any interference with this sport. The history of England and France is full of references to the habit of the kings and nobles of hunting in the forests. Gradually the area under forest became less and less, until to-day, England has very few forests, the largest being the New Forest. France, Germany and other countries have more, while Scotland has extensive treeless areas called deer forests. There are also vast forest areas in Canada, India and other countries, used for the growth of timber and mostly the property of the state. The men who look after the forests are called foresters, rangers or verderers. *See* AFFORESTATION.

The Ancient Order of Foresters is the name of one of the largest of the friendly societies. Its headquarters are 17 Russell Square, London, W.C.1.

Forestalling Former equivalent of the modern profiteering (*q.v.*) It is the act of buying any merchandise or provisions on the way to market or before market hours, or dissuading persons from bringing them to that market, or of doing anything to enhance the price. This interference with public trade for personal profit was, until 1844, a statutory offence.

Forest Gate District of London. To the east of the city, it is in the boroughs of East Ham and West Ham. It is an industrial centre on the L.N.E. Rly., 6 m. from the city.

Forest Hill District of London. To the S.E. of the city, it is in the borough of Lewisham, 6 m. from London Bridge, on the S. Rly. Here is the Horniman Museum.

Forest Row Village of Sussex. It is 3 m. from East Grinstead, on the S. Rly. It is near Ashdown Forest, hence its name. Pop. 3300.

Forestry Art and practice of looking after the trees in forest areas. It must be distinguished from afforestation, which is the work of planting trees on unforested land. With the enormous and increasing demands upon the world's timber supplies, the conservation of forests has become a matter of first importance, and many countries have set up departments to deal with it.

In Great Britain there is a **forestry commission**, set up in 1919, but its duties are mainly concerned with afforestation. It controls the crown woods, and its headquarters are at 22 Grosvenor Gardens, London, S.W. Since 1920 it has been responsible for planting 185,000 acres of new forest. The Government also maintains a board for research into forest products which has a laboratory at Princes Risborough. Forestry is a subject of study at the **Imperial Forestry Institute, Oxford**, under a professor, the students being trained for the forest services in India and other parts of the Empire. India has an important forestry

department, controlling some 250,000 sq. m. of forest, so also have Canada and many other countries.

During the Great War a forestry corps, recruited mainly from Canada, did good work in providing timber for military operations. The Women's Forestry Service was also established for the same purpose.

Forestry Commission

Department of the British Government. Its duties are primarily to manage existing state-owned forest lands, to promote reafforestation and to supervise the timber production and supply in Great Britain. In 1932 the Commission had acquired over 724,000 acres of land, including former crown woods, and had planted over 185,000 acres. The commissioners are appointed every five years.

Forfar Burgh and county town of Angus, formerly called Forfarshire. It is 14 m. from Dundee, on the L.M.S. Rly., and is a railway junction. There are some manufactures. On a nearby hill the early kings of Scotland had a castle. Pop. (1931) 9660.

Forfarshire Former name of the Scottish county of Angus (*q.v.*).

Forfeiture Loss of lands or other property as a result of an offence against the law. In Great Britain, until 1890, it was the law that any person convicted of treason or felony forfeited his property to the crown. The history of the country until after the Jacobite rising of 1745 is full of instances of nobles and others who forfeited their lands.

To-day persons convicted of bringing goods into the country without paying duty on them are sometimes sentenced, in addition to the fine, to the loss or forfeiture of the goods. Leases can be forfeited if the tenant fails to carry out his undertakings, but courts of law do not allow this on trivial grounds.

Forgery In English law a serious crime. It is defined as making a false document, or material alteration therein, without authority; also counterfeiting a seal or die. The forging of documents, such as wills, deeds or bank notes is a felony and can be punished by penal servitude for life. The forgery of documents of less importance does not come within the category of a felony, but is a misdemeanour for which the maximum penalty is imprisonment for two years.

Forget-Me-Not Various annual or perennial herbs, (*myosotis*). Native to temperate regions, the best known, the common *M. scorpioides*, has rather stout, flexible stems, and sky-blue flowers. The wood forget-me-not, *M. sylvatica*, has bright blue flowers; the Alpine sub-species is a dwarf. Ornamental garden varieties and exotic species from the Azores and elsewhere are very popular.

Forging Art of shaping metal. It is an ancient industry now principally practised on iron and steel which is heated until plastic, when it can be joined (welded), severed, bent or shaped by hammering with hand or power hammers, with or without shaped moulds.

Formaldehyde Simplest of the aldehydes, which are oxidation products of alcohols. The gas formic aldehyde (H.COH) is produced by passing methyl alcohol vapour over heated platinum. A 40 per cent. solution in water (formalin) is a disinfectant, an antiseptic, and renders gelatine insoluble in water. In recent years formaldehyde has become of great importance in the manufacture of synthetic resins and plastic substances.

Formalin Trade name for a 40 per cent. solution in water of the organic gaseous compound known as formaldehyde. This is prepared by passing a mixture of methyl alcohol and air over heated platinum as a catalyst. It has a peculiar pungent odour and is used as a disinfectant and deodoriser, also as a hardening agent for photographic films.

Formby Urban district, market town and seaside resort of Lancashire. It is 7 m. from Southport, on the L.M.S. Rly. Pop. (1931) 7957.

Formic Acid Simplest of the fatty acids. It has the chemical formula H.COOH. First obtained from ants by distillation with water, it is now obtained by the distillation of sodium formate with a mineral acid. It has a pungent odour and a blistering effect upon the skin. It is used in dyeing and other technical processes.

Formosa, or Taiwan Island in the Pacific Ocean. It lies off the coast of China, from which it is separated by the Strait of Formosa. For long Formosa, the beautiful island, as the early European seamen called it, was a Chinese possession; it was ceded to Japan in 1895. It is 240 m. long and covers 13,890 sq. m. The eastern part is mountainous and very little cultivated; the western part is a plain where rice, sugar, tea and other products are grown in abundance. The fisheries also are valuable. The island possesses vast supplies of timber; gold, silver, copper and other minerals are mined and camphor is produced as a State monopoly. Taihoku is the capital: Keelung is the chief seaport and other towns are Tainan, Taichu and Kurun. Roads, railway, telephones, etc., are being developed by the Japanese on modern lines, and a university was opened in 1928.

Savage tribes of Malay origin live in the east of the island; Chinese and Japanese have settled in the west. Pop. (1930) 4,592,537.

Forres Burgh and market town of Morayshire. It stands on the Findhorn, 12 m. from Elgin and 5 from the Moray Firth. There are a few manufactures and near are the Cluny Hills and some very beautiful scenery. Pop. (1931) 4169.

Forster **Baron.** English politician. Henry William Forster was born Jan. 31, 1866, and educated at Eton and New College, Oxford. He played cricket for his university and in 1892 entered Parliament as Unionist M.P. for the Sevenoaks division. He was a Lord of the Treasury, 1902-05, and Financial Secretary to the Treasury in 1917. In 1919 he was made a peer and from 1920-25 was Governor-General of Australia. Lord Forster is one of the largest landowners in the London area.

Forster **William Edward.** English politician. Born at Bradpole, Dorset, July 11, 1818, of a Quaker family, he was educated at Tottenham and married, in 1850, a daughter of Thomas Arnold of Rugby. He became a successful wool manufacturer in Bradford and was elected M.P. for that city in 1861, being successively elected until his death. In 1868 he was made Vice-President of the Council in Gladstone's first Cabinet, and he introduced the Education Act of 1870. He was

Chief Secretary for Ireland in 1880, but resigned in 1882. He died April 6, 1886, having declared his opposition to Gladstone's scheme for home rule for Ireland.

Fortaleza Seaport of Brazil. It stands near the mouth of the River Ceara, 350 m. from Pernambuco. There is a harbour, but it is small and cargoes are landed by means of surf boats from vessels that lie in the roadstead. The trade is chiefly in rubber and other products of the country. Pop. 98,848.

Fort Augustus Village of Inverness-shire. It stands on Loch Ness, on the Caledonian Canal, 34 m. from Inverness, on the L.N.E. Rly. It is a tourist centre. The fort was built in 1716 and was named after Augustus, Duke of Cumberland, who retook it from the Jacobites. Pop. 1030.

Fort de France Capital and seaport of Martinique. It is on the west of the island and has a large harbour. There is a considerable trade in the produce of the island. Its old name was Fort Royal. Pop. 43,300.

Fort Duquesne American fort, on the site of Pittsburg. It stood where the Monongahela River falls into the Allegheny, and was begun by the English in 1754. The French took it and finished it, calling it after one of their leaders. The English settlers, aided by troops from home, tried to retake it, but failed on two occasions. In 1758, however, the French destroyed and abandoned it, whereupon the English built a new one on the same spot. This was named Fort Pitt and grew into the city of Pittsburg (*q.v.*).

Fortescue **Earl.** English title borne by the family of Fortesque. It has long possessed land in Devon and in 1721 Sir Hugh Fortescue was made Earl of Clinton. The title became extinct in 1751 and in 1789 his nephew and heir was made Earl Fortesque. The earl's estates are in Devonshire, and his eldest son is called Viscount Ebrington.

Sir John William Fortescue, a younger son of the 3rd earl, is the author of the monumental *History of the British Army* and other books on military history. In 1933 he published an autobiography, *Author and Curator*. For a time he was librarian at Windsor Castle. He died in 1933.

Fort Garry Early name of the city of Winnipeg. In 1835 the Hudson Bay Co. built a fort on the Red River and around this a settlement grew. In 1873 the name was changed to Winnipeg. A gate at the end of Broadway is the sole relic of the fort.

Fort George Village of Inverness-shire. It is on the Moray Firth, 12 m. from Inverness. It was built during the Jacobite rising in 1745, and the barracks are now used by the Seaforth Highlanders. A ferry crosses the Moray Firth from here.

Forth River and estuary of Scotland. The river rises in Perthshire and flows for about 53 m. to Alloa, where the firth or estuary is said to begin. Stirling stands on its banks and its tributaries include the Teith, Devon and Allan Water. It is navigable by small vessels to Stirling, near which are the windings which are called the Links of Forth.

The estuary from Alloa to the North Sea at Fife Ness is about 50 m. long. On its banks are Leith, Granton, Grangemouth, Burntisland and Methel, and in it are Inchkeith, Inchcolm and other islands, one being the Bass Rock. It is connected with the Clyde by the Forth and Clyde Canal. The waterway is controlled by a conservancy.

The **Forth Bridge** carries the L.N.E. Rly. line from South Queensferry in East Lothian to North Queensferry in Fife, and thus saves a long detour. One of the finest bridges in the world, it is nearly 1½ m. long and is built on the cantilever principle with four spans. It is 150 ft. above the water. The bridge was opened for traffic in 1890 and cost about £3,000,000. A new road bridge across the Forth at Kincardine was aided by a government grant and started in 1934.

Fortification Art and practice of protecting a town or position against an enemy. Earthworks and palisades were among the earliest forms. Later stone was used, and walls and citadels were built as fortifications. A notable instance is the Roman wall between the Tyne and the Solway. The main fortifications of the Middle Ages were the walls which surrounded every town of importance, but the invention of gunpowder destroyed the utility of these.

The next stage in the history of fortification was the erection of earthworks and other defences around a fortress. These were defended by men and guns, and usually formed a formidable obstacle to the enemy. Such were the works of Torres Vedras erected in Portugal by Wellington. In the 19th century fortifications took the form of protecting vulnerable cities by a ring of detached and hidden forts, Antwerp being a notable example. The experience of the Great War, however, showed that these were almost useless against modern artillery.

Fortification still has its uses, although immobile fortresses are of very little value in modern warfare. Positions protected by barbed wire, machine gun pits and other devices, such as those adopted during the Great War along the Western Front, proved very difficult indeed to overcome, even with the aid of all the resources of modern artillery. Coast defences are still powerful fortifications and, as was shown in the Dardanelles and on the Belgian coast, they are still able to keep the battleship and its attendant craft at bay.

Fortress Place occupied by soldiers and protected by walls or defences of other kinds. From very early times fortresses have been a feature in warfare, although at first perhaps, their protections were little more than a fence of wood, or a mound of earth. Stone fortresses soon came into existence and the Greeks appear to have had such in the time of Homer, as Troy was evidently a very strong fortress. The Roman fortresses took the form of protected camps, such as were on the Roman wall in England.

The mediaeval castle with its keep and other features was the fortress of the Middle Ages, although the word was also used for walled towns. These castles were gradually built in important positions, so that their occupants could watch a river, a mountain pass, or a harbour entrance. The value of the walled town as a fortress ended with the increasing power of artillery and fortresses of a new type came into being. These were towns protected by earthworks and the like, such as stood between France and the Netherlands in the 18th century and such as figure in the history of the Peninsular War.

Finally, in the 19th century, came the modern fortress, protected by detached forts

and hidden guns. Such were Metz and Antwerp, but in the Franco-German War and still more in the Great War, these failed to fulfil the expectations of their builders. The experiences of the struggle showed that the value of the fortress in modern warfare is very slight indeed.

Fortrose Burgh and seaport of Ross and Cromarty. It stands on the Moray Firth, 8 m. from Inverness, on the L.M.S. Rly. It has a good harbour and attractions for visitors. At one time it had a cathedral, of which there are some slight remains. Pop. (1931) 875.

Fort St. David Name of an old fort in Madras. It stood on the Coromandel Coast, a little south of Pondicherry, and remains of it may still be seen. The land was bought by the English in 1690, and here the East India Co. had a fort until it was taken by the French in 1758. The French destroyed it, but the territory was given back to Britain in 1785.

Fort Sumter Fort in the American state of S. Carolina. It is on an island that protects the harbour of Charleston and is famous because its bombardment by the Southerners on April 12, 1861, opened the American Civil War. It fell on the following day.

Fortuna In Roman mythology, the goddess of good luck or chance. She was especially worshipped at Prænestе and Antium and there were several temples erected in her honour in Rome.

Fortunatus Character found in the folk lore of many countries. Fortunatus of Famagusta in Cyprus received from the goddess of fortune an inexhaustible purse and later stole a magic hat which transformed him at will. The earliest German text appeared at Augsburg in 1509. Hans Sachs dramatised it in 1553 and Dekker published a version in England in 1600.

Fortune Telling Professed disclosure by non-rational methods of future events in the life of another. As one of the aims of divination, it is traceable in ancient Mesopotamian records, and was brought from Asia into mediaeval Europe by gipsies, who practised it under society patronage in England in the 17th century. The Witchcraft Act, 1753, punished it with a year's imprisonment and the pillory; the Vagrancy Act, 1824, directs the imprisonment as rogues and vagabonds of persons pretending to tell fortunes. It is still practised by gipsies and others, often for charitable purposes, but is none the less illegal.

Fort William Burgh, market town and pleasure resort of Inverness-shire. It is 65 m. from Inverness, on the L.N.E. Rly., and stands on the banks of Loch Eil. It owes its importance to its position at the foot of Ben Nevis. It was built in 1655, and was held against the Jacobites in 1715 and 1716. Near are the works of the British Aluminium Co. Pop. (1931) 2527.

Fort William City and lake port of Ontario, Canada. It stands on Lake Superior, just where the Kaministiquia River falls into it, its position making it a prosperous place. It is 420 m. from Winnipeg, on the C.P.R. and C.N.R. A railway goes to Port Arthur, 4 m. away. The chief industry is the handling of the grain which is shipped here to be conveyed to Europe. For this there are docks, large elevators and other accommodation.

Fort William was founded in 1801 by the Hudson Bay Co. as a trading post. Pop. 26,277.

Forum In Roman times any open place devoted to public business. It was the official centre of a city's public and corporate life, and was usually surrounded by its chief public buildings, and often ornamented with statues and other works of art. Justice was administered in it or in buildings opening thereon; it was the people's normal place of assembly. Rome had several of these, the most notable being the Forum Romanum and the Forum of Trajan.

The Forum is the name of an influential review published in New York.

Fosdick **Henry Emerson.** American preacher and writer. He was born on May 24, 1878, and became the pastor of Park Avenue Baptist Church, New York. His *Manhood of the Master* (1913) is said to have had the largest sale of any modern religious book.

Fosse Way Name of one of the great highways of England in Anglo-Saxon times. It was at first a Roman road and went from Axminster to Lincoln, passing by Bath, Cirencester, Leicester and Newark. It is 180 m, long and much of it is still used.

Fossil Traces of plants or animals in the earth's crust, where they have been embedded by geological agencies. The study of them is known as palæontology. The dating of strata by fossils found therein is fundamental in geological research. The effect of time may be to alter the form or chemical constitution of buried organisms by processes called petrifaction. Thus, molluscan shells may be preserved unchanged, may be converted into silica, or may disappear, leaving only an external or internal cast. Rocks may perpetuate traces of footprints and even rain drops. **Fossil flour** is infusorial earth. **Fossil ivory** comprises tusks of extinct mammoths extracted from frozen Siberian steppes.

Foster **Sir George Eulas.** Canadian statesman. Born in New Brunswick, Sept. 3, 1847, he was educated there and at Edinburgh and Heidelberg. He became a professor in New Brunswick, and in 1882 was elected to the Dominion House of Commons. In 1885 he was appointed Minister of Marine and Fisheries; from 1888 to 1896 he was Minister of Finance, and from 1911 to 1921 Minister of Trade and Commerce. In 1914 he was knighted, and in 1919 represented Canada at the Peace Conference in Paris. Later he represented his country at the meetings of the League of Nations. He died Jan. 4, 1931.

Foster **Myles Birkett.** English artist. He was born at North Shields, Feb. 4, 1825, and was one of the last of the topographical artists of the early Victorian period. His earlier work was in black and white, being illustrations for books, but later he executed many water colour paintings of continental and English landscapes which gained him great popularity. He died at Wadebridge, March 27, 1899.

Fosterage Nursing and upbringing of children by other than their own parents. It flourished in Scotland and Ireland where the clan and tribal chieftains gave out their children to nurse, and many stories are told of the affection that arose between foster relatives.

Fotheringhay Village of Northamptonshire. It is on the Nene, 4 m. from Oundle. It is famous because in the castle here Mary, Queen of Scots, was tried and executed. The building, once a royal residence, has disappeared.

Foucault Jean Bernard Léon. French scientist. Born Sept. 18, 1819, he joined the staff of the observatory in Paris. He devoted much time to the study of physical phenomena and invented several instruments, including a polariser. His famous pendulum, 200 ft. long, was hung from the Pantheon in Paris, where it was used to prove the rotation of the earth. He died in Paris, Feb. 11, 1868.

Fouché Joseph. French statesman and Duke of Otranto. He was born at Nantes on May 21, 1763, and became minister of the police under Napoleon. Distinguished for his tact, foresight, leadership and shrewdness, he served his country well at a difficult time. He died in exile at Trieste on Dec. 25, 1820.

Foundation Primarily the basis of a building. The best foundation is on rock, as in New York, where the rock will stand any conceivable weight. Many bridges rest on rock well below the water. In this case caissons filled with masonry or cement are sunk on to the rock. Gravel is a good foundation. In other cases an excellent foundation can be made by driving piles into the soft ground. Adelaide House, London Bridge, stands on piles in this manner.

Foundation is also used for a college, school or other society, which has been founded for educational, religious or charitable purposes. The colleges at Oxford and Cambridge, and the public schools are foundations of this kind. Cathedrals and almshouses are also foundations. In all the conditions of the foundation are laid down by charter, or will, or some other document. For instance, a college may consist of a master, ten fellows and 30 scholars. These are on the foundation, but other members of the college are not. The person responsible for the foundation is known as the founder, an example being William of Wykeham at Winchester College.

Sometimes when a limited liability company is formed, certain shares are reserved for the founders. These are called founders' shares, and usually only share in the profits after something has been paid to the other classes of shareholders.

Founding Art of making metal castings. A pattern, which allows for the shrinkage accompanying the cooling of the metal, is supplied to the founder who prepares from it the "mould" in special mixtures of sand and clay, inserting "cores" where required to produce holes in the casting. Molten metal is then run in, forming the casting when cold. Modern developments include centrifugal casting for metal pipes.

Foundling Name used for a deserted or abandoned child, usually an illegitimate one. In Greece and Rome foundlings were cared for by the State, but in more uncivilised countries no heed was taken of them. The Christian Church soon turned its attention to them, and about 800 a foundling hospital was opened at Milan. Many others were set up in the European cities and the Order of the Holy Ghost was established to care for foundlings.

The Foundling Hospital in London was founded by Thomas Coram in 1739. In 1754 a building was erected in Guilford Street, and here for many years 600 or 700 foundlings lived. In 1926 the hospital was removed to Reigate, pending the erection of a permanent home for the foundlings on an estate near Berkhampstead. A fund was raised to preserve the site in Guilford Street as a public recreation ground, and in 1932 the required sum was obtained, largely through the generosity of Viscount Rothermere.

Foundry Building where the casting or founding of metals is carried on. The art of casting reached a high stage of development among many of the ancient nations. The furnaces in use range from small gas furnaces to large blast and electric furnaces, and different forms of moulds are used for solid and hollow castings.

Fountain Construction for the supply of water. The use of artificial fountains in conjunction with aqueducts for the water supply of towns and cities was fully understood by the Romans. The ornamental type of fountain dates from the Renaissance period and fine examples exist in many cities such as Rome, Paris and Versailles. At the present time public drinking fountains are in use in most towns.

Fountains Abbey Ruined abbey in Yorkshire. It is 3 m. from Ripon near the River Skell in the grounds of Studley Royal. The ruins, perhaps the most beautiful in England, include parts of the church, chapter house and cloisters, as well as remains of other apartments. The abbey was a Cistercian house founded about 1130. Near is Fountains Hall, a fine house built early in the 17th century.

Fouquet Nicolas. French politician. Born in Paris in 1615, he entered the public service at an early age, and in 1650 was made Procurator-General. In 1653 he was made Superintendent of the National Finances, and in that position amassed great wealth which he spent in regal style. This lasted until 1661 when he was arrested and tried. The sentence was imprisonment for life, and he was still a captive at Pignerol when he died March 23, 1680.

Fourier François Marie Charles. French socialist. Born at Besançon, April 7, 1772, he lost his money in business and served for about two years in the army. Afterwards most of his time was passed in putting forward the new social system on which his fame rests. In 1808 he published *The Theory of Four Movements*; in 1822, *The Association of Domestic Agriculture*, and in 1829, *The New Industrial World*, this being a rough translation of the French titles. He found a few followers, but their attempt to found a colony according to his ideas was a complete failure. One or two, however, were established on similar lines in the United States. He died Oct. 8, 1837.

Fourier taught that an entirely new social order was necessary. Men and women must be allowed to live as they like, free from the trammels imposed by civilisation. One of them, marriage, should be abolished. He proposed life in communities or phlanges of 1500 or 1800 persons each, housed in a communal building surrounded by a large tract of land. Each man would work as far as possible at what he liked, with constant change of occupation and be assured of a minimum wage, the rest of the communal income being divided in fixed portions to labour, capital and talent.

Fourteen Points The. Statement of Allied war aims

presented by President Wilson (*q.v.*) to Congress on Jan. 8, 1918. The points were (1) open covenants of peace without secret diplomacy; (2) freedom of navigation outside territorial waters; (3) removal of economic barriers; (4) reduction of armaments; (5) impartial adjustment of all colonial claims; (6)-(13) dealt respectively with Russia, Belgium, Alsace-Lorraine, Italy, Austria-Hungary, Balkan States, the Ottoman Empire and Poland; (14) a general association of nations (the League of Nations) to be formed under specific covenants.

Fourth Dimension Term denoting a hypothetical extension over and above the three-dimensional world of length, breadth and thickness in our normal experience. Just as the geometrical forms of lines, planes and solids are expressible algebraically by a, a^2 and a^3 respectively, so a four-dimensional world is expressible by a^4. Although fourth-dimensional relations are mathematically soluble, the notion of a super-solid state is outside our comprehension. Einstein's theory of relativity studies three-dimensional space in relation to time as a fourth dimension.

Fourth Estate Term used for the Press. Constitutionally there are in Great Britain three estates of the realm, Lords Spiritual, Lords Temporal and Commons. The phrase, Fourth Estate, is believed to have originated with Burke, and is, of course, a reference to the power of the Press in the State.

Fowey Market town and watering place of Cornwall. It stands on the estuary of the Fowey River, 10 m. from Bodmin and 265 from London, on the G.W. Rly. There is a good harbour, a little shipping and some fishing. China clay is the chief export. The town is the Troy Town of Sir A. Quiller-Couch's novels. Place House is a 15th century mansion and there are ruins of a castle. Pop. (1931) 2382.

Fox Animal of the canine family of the genus vulpes. The common *V. alopex* averages 4 ft. in length, including the tail, is 14 in. high, weighs from 15 to 22 lb. and is reddish-brown in colour with white-tipped hairs. Foxes differ from dogs in some of the skull bones and in having oval pupils to their eyes. The female is known as a vixen and the young as cubs.

The **North American silver** or **black fox** yields a silver-tipped, black fur and is sometimes raised on fox farms. The **Arctic fox**, *V. lagopus*, brownish with whitish under parts in summer, is entirely white in winter or may be slaty-blue throughout the year, with a thicker winter coat. These furs also are esteemed. The fennec is an African species.

Fox Strait off the north coast of N. America. It divides Baffin Island from Melville Peninsula, and is connected by other arms of the sea with both the Atlantic and the Arctic Oceans. To the south is Fox basin which connects it with Hudson Strait and between the two is the projection of Baffin Island called Fox Land. The strait is named after a sailor, Luke Fox, who explored these regions early in the 17th century.

Two rivers in Wisconsin, U.S.A., are named the Fox, and Fox Islands is another name for the Aleutian Islands.

Fox **Charles James.** English statesman. The younger son of Henry Fox, Baron Holland, he was born in London, Jan. 4, 1749, and was educated at Eton and Oxford.

In 1769, after a brilliant scholastic career and much travel, he was chosen M.P. for Midhurst, which he represented until 1780, when he was elected for Westminster. After filling minor positions, in the ministry of Lord North, he joined the Whigs, and became the most powerful advocate of all liberal causes. He wanted parliamentary reform, liberty for Roman Catholics, freedom for the American colonies and the removal of Ireland's disabilities. In 1789 he went beyond most of his associates when he greeted the fall of the Bastille with welcoming and memorable words, and, in spite of its excesses, he remained a firm supporter of the Revolution. This led, in 1791, to the rupture of his long friendship with Burke, but irrespective of this he retained his regard for the great Irishman to the end.

Fox's political life was mainly spent in opposition to the government, but in 1782 he was Secretary of State for a few months and in 1783-84 he helped Lord North to form a coalition. On this occasion, again being Secretary of State, he prepared a bill for the reform of the government of India, but this was rejected. In 1792, his followers being very few, he ceased to attend the sittings of parliament: he returned, however, in 1802, and again took up the task of opposing Pitt and the French war. When Pitt died he became a Secretary of State, but a few months later, on Sept. 13, 1806, he died at Chiswick. He was buried in Westminster Abbey.

Fox **George.** Founder of the Society of Friends. He was born in July, 1624, at Fenny Drayton, Leicestershire, the son of a weaver. He became a shoemaker, but gave his time to preaching. He was something of a mystic and believed in the guidance of what he called the inner light. With rare courage and perseverance, he travelled over the country and soon had followers in many places. These met regularly for worship on the lines laid down by Fox and were called by him the Society of Friends and by others **Quakers**. He denounced war, formality in worship and the taking of oaths, and it is not surprising that he was often put into prison for his opposition to authority. He travelled through Wales and Scotland and then visited the West Indies, North America and Germany. He died in London, Jan. 13, 1691. Fox's *Journals* is one of the world's great books.

Fox **Richard.** English statesman and prelate. Born at Ropesley, Lincs, he was educated at Oxford and Cambridge. In 1485, whilst in Paris, he entered the service of Henry VII., becoming his trusted adviser. He was appointed Secretary of State and Lord Privy Seal, becoming Bishop of Exeter in 1487. He was transferred successively to the sees of Bath and Wells, Durham and Winchester. On the accession of Henry VIII., in 1509, he lost his power and resigned the privy seal in 1516. He was the founder of Corpus Christi College, Oxford, and died Oct. 5, 1528.

Foxe **John.** English martyrologist. Born at Boston, Lincs, in 1516, he was educated at Oxford, becoming a fellow of Magdalen College in 1539. On his conversion to the tenets of the Reformation, however, he resigned his fellowship. For a time he was tutor to the sons of Henry Howard, Earl of Surrey, but soon after the accession of Mary he went to Frankfort, where he met Knox, and then to Basle, where he obtained work as reader to a printer. He returned to England

when Elizabeth came to the throne, and in 1560 was ordained by the Bishop of London. In 1562-3 he published his great work, *Acts and Monuments*, popularly known as *The Book of Martyrs*. He died April 18, 1587.

Foxglove Genus of hardy biennial or perennial herbs (*digitalis*). They are natives of Europe, W. Asia and N. Africa. The only British foxglove, D. *purpurea*, is the stateliest, bearing spikes of drooping, thimble-shaped pink flowers, spotted inside. Gardeners have produced cream, white, rosy-purple and spotted blooms, propagated by seeds or offsets. One gloxinia-like variety has erect flowers. The large wrinkled leaves yield digitalin and other active principles used medicinally as heart tonics and sedatives. *See* DIGITALIS.

Foxhound Breed of hound maintained for fox-hunting. Smaller than the staghound, it averages 20 or 22 in. in height and may be descended from a blend of bloodhound and greyhound with a bulldog strain. It is notable for fleetness, strength, fine scent, endurance and subordination and is deep-chested and straight-limbed, with a smooth parti-coloured coat. The hounds are bred for hunting purposes and great care is taken to maintain and improve the breed.

Foxhunting Popular English sport. Practised in England for at least 700 years, at first it had for its object the killing of the fox on account of the damage done by that animal. Later it developed into a sport, which was at its zenith in the 18th and 19th centuries. Foxes are preserved and landowners and farmers co-operate to maintain a supply.

The chief counties for fox-hunting are the shires of Leicester, Northampton, Warwick and thereabouts, but it is also carried on in many of the other counties. The country is divided into a number of hunts, each consisting of a master, a pack of hounds and paid servants to look after them. The expenses are usually met by subscription, although one or two packs are private property, as in the 18th century. The most famous hunts are the Quorn, Pytchley, Cottesmore, Belvoir and others in the Midlands. Fox-hunting is carried on in Ireland and in Scotland, but not to any great extent elsewhere. There are about 200 packs of hounds in Great Britain and nearly 100 in Ireland.

The fox-hunting season lasts from November to April. It is preceded by a period of cub-hunting, really a trial for the hounds and young foxes.

Fox Terrier Breed of dog. It is an intelligent and companionable house dog. The smooth type has a wiry coat, usually black, white and tan, less desirably with liver-coloured markings, and is capable of prolonged exertion, although it is not a rapid runner. The rough-coated terrier is better equipped with the hunting instinct, although both are employed in following burrowing mammals such as weasels into their earths. They kill rats with rapid snaps, despatching them more expeditiously than do cats.

Fox Trot Dance of American origin. It consisted at first of alternate slow and rapid movement, not unlike that of the fox, and was at first part of a stage performance. It then became a dance for two, and, as such, was very popular in the 20th century. There are several variations.

Foyle Lough of the north coast of Ireland. also the name of a river that flows into it. Londonderry stands on the river, which is 16 m. long. The lough lies between the counties of Londonderry and Donegal—hence one side is in Northern Ireland, the other in the Free State.

Fraction In mathematics any part of a unit. In common or vulgar fractions the number above the bar is termed the numerator and the number beneath the bar the denominator. Thus in the fraction $\frac{3}{8}$, three is the numerator and eight the denominator. In decimal fractions, the denominator is ten or some power of ten, a dot or decimal point being placed before the number. Thus ·1 represents one-tenth, ·325 equals three-tenths plus two-hundredths plus five thousandths. *See* DECIMAL.

Fracture Breach in any hard body. In a bone, it may result from direct or indirect violence, or muscular action. It is called a simple **fracture** when no wound from it penetrates the skin externally, otherwise it is called **compound,** except where another serious injury is produced, as dislocation or rupture, then it is called **complicated.** If the bone is broken into several pieces it is a **comminuted fracture,** if merely cracked, it is fissured, if one part is driven into another it is **impacted** and if partly broken or partly bent, as with children's soft limb bones, it is called **greenstick.**

Fragonard **Jean Honoré.** French artist. Born at Grasse, April 5, 1732, he studied painting and soon made a reputation. He painted pictures of contemporary life and also landscapes. Of his works the five called "The Lover's Progress" belong to Mr. Pierpont Morgan: others are in the Louvre and the Wallace Collection, London. Fragonard died Aug. 2, 1806.

Fram Vessel famous in polar exploration. A three-masted schooner with auxiliary steam engines, she measured 117 ft. and weighted 402 tons. Nansen used her for a northward drift, followed by travel with sledges to 86° 13½′ N., in 1893-7. Sverdrup used her for exploring Jones Sound in 1899. Amundsen used her for reaching King Edward VII. Land, whence he marched to the South Pole, in 1910-12. In 1931 a fund was raised for preserving the Fram.

Framlingham Market town of Suffolk. It is 22 m. from Ipswich and 90 from London, with a station on the L.N.E. Rly. In S. Michael's Church members of the Howard family are buried. There are considerable remains of one of their castles. Framlingham College, founded in 1876 as a school for boys, occupies a fine block of buildings. The town has an agricultural trade. Pop. 2200.

Frampton **Sir George James.** English sculptor. Born in 1860, he studied under W. P. Frith and at the Royal Academy Schools, London, gaining the Gold Medal and travelling scholarship in 1887. He was elected a Royal Academician in 1902 and knighted in 1908. His work, which is of a high order, is represented by his statue of Queen Victoria in Calcutta, Peter Pan in Kensington Gardens, London, and the Edith Cavell Memorial in London. He died May 21, 1928.

Franc Standard coin of France, Switzerland and Belgium. It was originally a gold coin issued in 1360, silver francs

being first coined in 1575. In its present form, as a unit of the decimal system, it dates from 1795. It is divided into 100 centimes, and for many years it was valued at 25 to the £ sterling, being worth, therefore, just under 10d. in English money.

In France during the Great War the franc fell enormously in value and violent fluctuations took place. This lasted until June, 1928, when in France it was stabilised at 124.21 to the £, or rather less than 2d. in English money. Some British investors who had lent money to France when the franc was high lost heavily owing to its changed value.

In Belgium the franc has been stabilised at 175 to the £ sterling: in Switzerland it retains its original value.

France Republic of Europe. It covers 212,660 sq. m. and stretches from the English Channel to the Pyrenees and the Mediterranean, and from the Atlantic Ocean, of which the Bay of Biscay is part, to a land frontier dividing it from Belgium, Germany, Switzerland and Italy. There are mountains, including the Vosges and some Alpine peaks, in the east and a great plateau in the centre. In the south the Pyrenees enter the country, and in the north-east are the Ardennes, but most of the land is flat. The chief rivers are the Loire, Seine, Garonne, Somme and Rhône and there are many others. Paris is the capital and the largest city. Next in size are Marseilles, the great seaport, Lyons, Bordeaux, Lille, S. Etienne, Nantes, Nice, Toulouse, Strasbourg and Havre, each with over 150,000 inhabitants. In 1931 the population, as shown by the census, was 41,834,923, an increase of 1,091,026 in five years. A large part of the increase (395,281) is in the foreign population, which numbers 2,890,923.

TERRITORIAL DIVISIONS. Before the Revolution, France was divided into provinces and some of these retain something of their old independent life. In this respect Brittany is perhaps the most notable, but Normandy, Gascony, Picardy, Provence and Languedoc are only a little less so. To-day the country is divided into 90 departments, one being the territory of Belfort, mostly named after the rivers therein. Three of them form the district of Alsace-Lorraine, which was in German hands from 1871 to 1918. Each department has a prefect and a council, and is divided into arrondissements and communes.

GOVERNMENT, ETC. The head of the government is the president, who is elected for seven years by the two houses of the legislature together. These two houses are the Chamber of Deputies and the Senate. The deputies are elected, by all male citizens, for four years. The members of the Senate are elected for nine years by colleges of electors in the various departments. As in Great Britain, the work of the Government is in the hands of a ministry: the head of this, the Prime Minister, is selected by the President, but he must have the confidence of the legislature to enable him to carry on his work. The other ministers are chosen by him, but appointed by the President. Both senators and deputies are paid. As it is very unusual for one political party to secure a majority in the Chamber, the ministries are usually coalitions, or, as the French call them, *blocs*.

There is no state religion in France, but the prevailing faith is the Roman Catholic, which church has about 51,000 clergy in its dioceses. Monastic orders are subject to very severe regulations. There are about 1,000,000 Protestants in France. Education, secondary and university, as well as primary, is controlled by the state, and there is an efficient system of universities, colleges and schools. Justice is administered in local courts, with courts of appeal above them, the highest being the court of cassation.

France maintains a large army, including an air force, recruited by compulsory service. It is organised in 35 divisions, or about 500,000 men, with large reserves. In addition there is a colonial army. France has also a large navy based at Toulon, Lorient, Brest, Cherbourg and Rochefort.

ECONOMICS. With a soil generally fertile, France is a great agricultural country. Wheat and other cereals are grown, and cattle, sheep and horses reared. A great quantity of wine is produced and exported. There are many manufactures, the chief industrial centres being Paris, Lyons and the district in the N.E. where is a valuable field of coal and iron ore. Besides providing for home consumption large quantities of silk and cotton goods, iron, steel and chemicals are exported. The manufacture of silk is peculiarly a French industry, as are several others that call for artistic skill. The fisheries are valuable.

The country has an excellent railway system, which is steadily being electrified. The unit of currency is the franc, which is divided into 100 centimes. The metric system is in general use. The Bank of France is the state bank.

COLONIES. France has numerous colonial possessions. These cover 4,265,188 sq. m., and have a population of 63,374,600. The largest area in Africa, where a vast area in the equatorial region is French. Algeria, Tunis and Madagascar are also French, as is part of Somaliland. Part of Cameroons and Togoland are administered under mandate. Much of Morocco is a French protectorate. In Asia, France has Indo-China consisting of Annam, Cambodia, Tonking, and Cochin China, and Pondicherri in India, whilst she administers Syria under mandate. The remaining possessions include French Guiana and a few W. Indian islands, and New Caledonia and some other islands in the Pacific Ocean.

HISTORY. As part of the Roman Empire, France was one of the most civilised regions of Europe, and there Roman influence was very powerful and lasting. Later it was invaded and conquered by the Franks and became part of the empire founded by Charlemagne. Early in the 11th century it had its own kings, but their authority was for some time very circumscribed, as much of the land was under powerful dukes and counts, especially Normandy, Burgundy and Aquitaine.

In the later Middle Ages the history of France is largely one of wars with England for the possession of the crown. This period ended in the 15th century and then France, under the Valois and later the Bourbon kings, became the most centralised monarchy in Europe. When Brittany was included, it took very much the shape it has to-day, except that its N.E. and E. boundaries were frequently altered owing to the vicissitudes of war.

The kingdom of France reached the height of its glory under Louis XIV. (1643-1715), when it led the social life of Europe and gained a dominance not yet wholly lost. It was at that time a great military nation, and enjoyed a great flowering of intellectual life.

To this picture there was a dark side, one of extravagance and corruption, and even worse, a vast amount of injustice towards the poor. For this a heavy price was paid when the French Revolution destroyed the monarchy and set up a republic. Then came the empire of Napoleon which ended in 1815, after which the Bourbon monarchy was restored. This lasted until 1830, when Louis Philippe became king of the French. In 1848 he was overthrown, and a second republic established. From this Louis Napoleon emerged as the Emperor Napoleon III., and reigned until 1870.

The third republic was created after the Franco-Prussian War in 1871, and exists to-day. It carried through the Great War, and when this was over turned to the task of bringing back prosperity to France and securing her from the danger of future attacks. This policy, both military and economic, was not always acceptable to the other nations of Europe, but her statesmen kept on their chosen course. A member of the League of Nations, France took a leading part in various European conferences, including the important one in London in July, 1931, and that at Lausanne in July, 1932, which settled the question of reparations. In Jan., 1934, the Stavisky affair caused serious rioting in Paris and two governments fell in quick succession. M. Doumergue was the premier who proposed reforms in the constitution and dealt with the Marseilles assassination situation. In May, 1935, a mutual assistance pact with the Soviet was signed in Paris. Two governments again fell over the serious financial position and M. Laval at last won support for national economies. After war started between Italy and Abyssinia France agreed to honour her League obligations and M. Laval took the initiative in the peace plan which brought about Sir Samuel Hoare's resignation from the British Cabinet (Dec., 1935).

France **Anatole.** French author whose real name was Jacques Anatole Thibault. The son of a bookseller, he was born in Paris, April 16, 1844, and was educated at the College Stanislas there. He soon began to write, and in 1868 produced a book on Alfred de Vigny. This was followed by some poems, and then came some stories. About 1880 he began to write novels, and in the course of the next few years he had a reputation, to which his further work added. In 1896 he was elected to the Academy, and before the end was regarded as the greatest man of letters in France and one of the greatest in the world. A Socialist and a free-thinker, he defended Dreyfus and used his pen to vindicate the cause of France during the Great War. He died Oct. 13, 1924.

A supreme master of style and satire, France's best work is in his satirical novels notably *L'Ile des Pengouins*, *La Révolte des Anges* and *Les Dieux ont Soif*. Hardly less noticeable, however, were his critical studies in history and literature, such as the book on Joan of Arc and the essays in *La Vie Littéraire*. *Thais*, an Egyptian story, and *M. Bergeret à Paris*, dealing with the Dreyfus affair, are also notable. Of his early books the best is *Le Crime de Sylvestre Bonnard*.

Franchise In its earlier sense a privilege or liberty, especially one granted by the crown. Thus early franchises included the right to hold a market. Later the word came to be used for the right to vote at elections of Parliament, and in this sense it is chiefly used to-day. In the United Kingdom, by a series of Acts of Parliament, the franchise has been extended, and, since 1928, practically all adult men and women enjoy the right to vote. A similar process has taken place in many other countries, although in some, France for example, the franchise is still confined to men. *See* ELECTION, VOTE.

Francia **Francesco.** Italian painter. A native of Bologna, he was born about 1450. Before becoming a painter he worked as a goldsmith, doing some excellent work in metal and acting as head of the mint in his native city. About 1490 he turned to painting and produced a number of pictures before his death at Bologna, Jan. 6, 1517.

Francia is represented in the National Gallery, London, by a "Madonna and Saints."

Francis Italian saint known as Francis of Assisi. He was born at Assisi, the son of a merchant, about 1182, and was baptised as Giovanni. Later he was called Francesco, or the little Frenchman, and by this name he is known. He lived the usual life of a wealthy young man, broken by a spell of military service, during which he was taken prisoner. After his release he had a serious illness, and from this time dates his career as a saint. He gave this time to prayer, and the service of the poor, and in 1207, having mortally offended his father, left his native city as a pauper.

For two years Francis wandered about preaching in public places and paying special attention to the lepers. He soon attracted a few followers, and in 1210 went to Rome and obtained permission to found an order devoted to poverty, work and service. Thus the Franciscan order came into being. For the rest of his life Francis was occupied in preaching, his journeys extending through France and Spain and as far as Egypt, in addition to many in Italy. In his last days he passed much time in devotion and in Sept., 1224, he is said to have received on his body the five wounds of Christ. He died Oct. 3, 1226, and two years later was canonised.

A sincere devotion to poverty and a real sense of the brotherhood of man, shown by his care for lepers and other outcasts, coupled with a great piety and much mysticism, made Francis the model of mediaeval sainthood and a character of unusual charm. His love of birds and flowers is an attractive trait in his character and another was his friendship with S. Clare. He wrote many sermons, hymns and other pieces, both prose and verse.

Francis I. German king and Roman emperor. He was born Dec. 8, 1708, the son of Leopold, Duke of Lorraine; he succeeded his father in 1729. In 1737 he became Grand Duke of Tuscany. He had married the preceding year, Maria Theresa, daughter of the emperor Charles VI., who, on her father's death, became sovereign of Austria-Hungary and Bohemia. Largely through her activities, he was elected emperor in 1745, and all his life he was dominated by her. He died Aug. 18, 1765.

Francis II. Emperor of Austria and the Holy Roman Empire. Born Feb. 12, 1768, the son of Leopold, Grand Duke of Tuscany, who became emperor in 1790, he succeeded to the throne in 1792, and in 1804 took the additional title of Emperor of Austria. He was the brother of Marie Antoinette, and from 1797-1809 was

often at war with France, being, after each campaign, compelled to submit to humiliating terms of peace. His daughter, Marie Louise, became Napoleon's wife, but, nevertheless, in 1813 he joined the allies and greatly assisted in the final defeat of the great emperor. Francis was the last emperor of the Holy Roman Empire which was dissolved in 1806, and the first Emperor of Austria. He died March 2, 1835.

Francis I. King of France. Born Sept. 12, 1494, a son of the Count of Angoulême, he belonged to a younger branch of the royal family, and like his sister Marguerite, who wrote the *Heptameron*, he was well educated; he was also adept at all manly exercises. In 1514 he married Claude, daughter of his cousin Louis XII. and in 1515 he succeeded Louis as king. His reign was chiefly occupied with his wars against the emperor, Charles V., who took him prisoner at Pavia in 1525. In 1526 he was released, and he reigned until his death at Rambouillet, March 31, 1547.

He was a patron of art and literature, which included the foundation of the College de France in 1530; this showed him as a true child of the Renaissance. He was succeeded by his son, Henry II.

Francis II. King of France. Born Jan. 19, 1544, he was the eldest son of Henry II. and Catherine de Medici. In 1558 he was married to Mary, Queen of Scots, and in 1559 he succeeded his father as king. On Dec. 5, 1560, he died in Paris and was succeeded by his brother, Charles IX.

Francis **Sir Philip.** English writer. Born in Dublin, Oct. 22, 1740, he was educated at S. Paul's School, London, and in 1758 entered the public service. He was soon occupying a responsible position, and in 1773 went to India as a member of the Council of Bengal. He remained there until 1781, having fought a duel with Warren Hastings and made a small fortune at cards. In 1784 he was elected an M.P., and was a member of the group by whom Hastings was impeached. His other activities included the founding of the Society of Friends of the People, and a friendship with the Prince Regent. In 1806 he was knighted, and he died Dec. 22, 1818. He was supposed to have written *The Letters of Junius*, which, however, he never admitted, and the authorship cannot for certain be attributed to him.

Franciscan Order of mendicant friars founded by S. Francis of Assisi in 1210. Formally approved by the pope in 1223 they laid special stress on preaching and ministering to the body and some Asiatic, N. African and American missions still survive. In England, where they arrived in 1224, founding houses at Canterbury, London and Oxford, they were known as Grey Friars. At the dissolution of the monasteries in 1537, 66 of their friaries existed.

Other Franciscan orders comprise nuns called Poor Ladies or Poor Clares, 1212, and Tertiaries, 1221. From the stricter section called Observants, the Conventuals, who practised a mitigated rule, separated in 1517, whilst the Capuchins, established in 1525, separated in 1619. After 1897 those members of the order who were neither Conventuals nor Capuchins, became known as Friars Minor. Franciscans wear a grey or dark-brown cowl, girdle and sandals.

Francis Ferdinand **Austrian archduke.** Born at Graz, Dec. 18, 1863, the son of Archduke Charles Louis, he was nephew to the emperor Francis Joseph, and on the death of the Crown Prince, in 1889, became heir-apparent to the throne. In 1900 he contracted a morganatic marriage with the Countess Sophia Chotek, who was created Princess of Hohenberg, renouncing for his wife and her children the right of succession. Whilst on a visit to Bosnia, he and his wife were assassinated at Sarajevo, June 28, 1914.

Francis Joseph Emperor of Austria-Hungary. The eldest son of the Archduke Francis, a grandson of the Emperor Francis II. and a member of the house of Hapsburg, he was born in Vienna, Aug. 18, 1830. In 1848 his uncle, Ferdinand, abdicated and Francis Joseph succeeded him. His reign, which lasted for 68 years, was one of misfortune, both nationally and personally. There was much discontent in the various parts of his empire, and in 1859 he lost some of the Austrian possessions in Italy, the rest going a few years later. More humiliating still was the rapid defeat of Austria by Prussia in 1866, and the end of Austria's long dominance in German affairs. However with an innate stubborness the emperor held on, and towards the end took the fatal step of attacking Serbia, after the murder of his nephew and heir, Francis Ferdinand.

Francis Joseph married Elizabeth, a Bavarian princess. His only son, Rudolph, met with a tragic death in 1889. He himself died in the midst of the war, Nov. 21, 1916, and was succeeded by his nephew Charles.

Franck **César Auguste.** French composer. He was born at Liége, Dec. 10, 1822, and after studying music there and in Paris, became a teacher of music. He also became organist of a church in Paris, and in 1878 Professor of the Organ at the Conservatoire there. He composed a great deal, including some orchestral works. He died Nov. 8, 1890.

Franconia District of Germany. It was at one time one of the great duchies and some of its rulers became German kings. Named after the Franks, it lay in the W. of the country with Frankfort as its capital. In 1024 the duchy was divided between several princes, but the name remained in general use, and until 1802 the bishops of Würzburg called themselves dukes of Franconia.

Most of Franconia is now included in Bavaria, and three districts of the republic are middle, lower and upper Franconia.

Franco-Prussian War

Struggle in 1870-71 between France and Prussia, the latter aided by Bavaria and other German states. There was some tension because Napoleon III., then ruling France, objected to the selection of a German prince as king of Spain. Thinking the time favourable, Bismarck precipitated the struggle by altering and publishing a telegram from Ems which made it appear that the King of Prussia had insulted the French Ambassador.

War was declared by France on July 19, and on Aug. 6 the main armies came into contact. At Woerth and Spicheren the Germans, who invaded France in three armies, were victorious, and soon the French had

abandoned Alsace-Lorraine, except the fortress of Metz. German victories at Vionville, Mars-la-Tour, and, on Aug. 18, Gravelotte, forced a large French Army to take refuge in Metz. Then on Aug. 31 and Sept. 1, came the decisive Battle of Sedan. This ended in the surrender of Napoleon and his army and, a little later, the forces in Metz followed this example.

The Germans then marched unopposed to Paris, which was besieged from Sept. 20 until its surrender in Jan., 1871. During these months the French raised new armies, and there was a good deal of fighting around Orleans and elsewhere, but nothing could save their cause. The armistice was followed by the peace of Frankfort. France agreed to surrender Alsace-Lorraine, except one small district, and to pay an indemnity of £200,000,000.

Frankfort City and river port of Germany, usually called Frankfort-on-Main. Situated 22 m. from the junction of the Main with the Rhine, in the Prussian province of Hesse-Nassau, it is, owing largely to its position, one of the most important German cities. The old town is on the north side of the river; on the south side is Sachsenhausen and all around, stretching far beyond the lines of the old fortifications, are modern suburbs.

Among the many famous buildings in the old town are the Kaisersaal and the cathedral. The old home of the Rothschilds is now a museum, as is the house in which Goethe, Frankfort's most famous son, lived. The university dates from 1914.

The palace garden and the zoological garden are famous, and there are some noble memorials. An old bridge and several modern ones cross the river.

Frankfort is a noted banking city, and in its population is a large Jewish element. It is an important railway centre and has a considerable trade along the river. Other industries include numerous manufactures and printing works.

HISTORY. Frankfort, the city of the Franks, was an early residence of the Frankish kings, and quickly became a free city. It was the place chosen for the election and later the coronation of the German kings, and in the later Middle Ages, its wealth and importance grew rapidly. It was an early home of printing and had important fairs. From 1810-14 it was the capital of a grand duchy, and from 1816 to 1866 the meeting place of the diet of the German Confederation. In 1848-49 the great National Parliament, elected to conclude a union of the German states, met here. In 1866 the free city took the side of Austria against Prussia and consequently lost its exceptional status. Since then it has been part of Prussia. Pop. 467,500.

Frankfort -on-the-Oder. City of Prussia. It stands on both sides of the Oder, 50 m. from Berlin, and is a shipping and manufacturing centre and a railway junction. There are docks along the river, which is connected with other German rivers by canals. Frankfort proper is on the left bank of the Oder; on the right bank are suburbs. Frankfort belonged to the Hanseatic League in the Middle Ages. Pop. 75,000.

Frankincense Aromatic gum resin. It is yielded by various trees, pre-eminently of the genus *Boswellia*, which grow mainly on the Somaliland and Arabian coasts, whence it reaches Bombay. It appears in commerce as hardened yellow tear drops called gum olibanum. It entered into the incense of the Jewish sanctuary (Ex. xxx.). Long employed medicinally it is nowadays rarely used.

Franking Use of the postal service gratuitously. Members of Parliament, both peers and commoners, long enjoyed the privilege of sending their letters, and those of their friends through the post without fee. In 1764 the number for each member was restricted to 10 a day, and in 1840 the privilege was abolished. Official letters are still franked when sent on public business, by marking the envelope O.H.M.S.

Franklin Name sometimes used in mediæval England for a small independent landowner. He was below the nobles, but above the villeins. Chaucer has a franklin in *The Canterbury Tales*, and the word is used by Scott in *Ivanhoe*.

Franklin Benjamin. American politician and scientist. Born in Boston, Jan. 17, 1706, the son of a tallow chandler from England, he was apprenticed when a boy to his brother, a printer. In 1723 he settled in Philadelphia, but soon went on a vain errand to London, where also he worked as a printer. Returning to Philadelphia he became owner of *The Pennsylvania Gazette*, and in 1732 started the popular *Poor Richard's Almanac*. Prominent in public life, he was postmaster of the city in 1735; in 1736 he was made Clerk to the General Assembly of the state of Pennsylvania, and in 1751, on giving up that post, he became a member, remaining such for 13 years.

In 1757, as agent for his state, Franklin went to London, and remained there until 1762; he filled the same position from 1764 to 1775 and to these two periods is due his acquaintance with English men and manners. In 1776 he helped to draw up the Declaration of Independence, and went to Paris on behalf of the revolting colonies where he arranged for the help of France in the struggle with Britain and remained until peace was signed in 1783. He was President of the State from that time until he retired in 1788, and helped to draw up the constitution of the United States. Franklin died in Philadelphia, April 17, 1790.

Franklin spent much of his time in scientific research, particularly on electricity. A practical result was his invention of the lightning conductor.

Franklin Sir John. English explorer. Born at Spilsby, Lincs, April 16, 1786, he entered the navy in 1801, and was present at the Battles of Copenhagen and Trafalgar. In 1818 he made his first Polar expedition to the Arctic, under the direction of Capt. Buchan. In 1819 he explored and charted the little-known northern coasts of America, writing on his return a *Narrative of the Journey*. In 1829 he was knighted, and was Governor of Van Diemen's Land, 1836-43. In 1843 Franklin set out in search of the N.W. Passage, and for many years nothing was heard of him. Several expeditions were sent in search of his party, and in 1859 a paper was found giving some record of the ill-fated voyage and of Franklin's death, June 11, 1847. It proved also that he had actually discovered the N.W. Passage.

Franks Name given to some European tribes. They are first heard of in the 3rd century and lived along the lower courses of the Rhine. Each tribe was under a chief, but these united together, and in the 4th century were collected into only two groups, the Ripuarian Franks and the Salian Franks. Under the leadership of Clovis the Salian Franks moved into what is now known as France, and in 481 he was made their king. Thus began the Kingdom of France, which took their name. Clovis conquered much of the land, and the Ripuarian Franks came under his rule. Later, however, in the 9th century, when their land had extended in all directions, the Franks again broke into two divisions. The west Franks remained in France, whilst the east Franks founded what later became Germany.

Franz Joseph Land Archipelago in the Arctic Ocean, to the east of Spitzbergen. It consists of about sixty volcanic islands, mostly glacier-covered. It was discovered by Julius Payer in 1873.

Frascati City of Italy. It is 15 m. from Rome, and owes its fame to its beautiful position on the Alban Hills. On this account it became a popular resort in the hot weather and many Roman families had villas there. There is a modern cathedral in which Charles Edward, the Young Pretender, was buried in 1788; and around are vineyards, the place being noted for its wine. Near are the ruins of an amphitheatre. Pop. 11,000.

Fraser River of British Columbia. It is a union of the N. and the S. Fork, two rivers that rise in the Rocky Mountains. They join at Fort George and flow, as the Fraser for 750 m. to the sea in the Strait of Georgia. The river is famous for its salmon and also for the scenery along its course. It is navigable for about 100 m.

Fraserburgh Burgh and seaport of Aberdeenshire. It is 47 m. from Aberdeen and 155 from Edinburgh, on the L.N.E. Rly. There is an excellent harbour, and the place is one of the Scottish centres of the herring fishing. Pop. (1931) 9720.

Fraserville Town and riverside resort of Quebec, Canada, also known as Rivière du Loup. Standing where that river falls into the River St. Lawrence, 110 m. from Quebec, it is a port, a pleasure resort and has some manufactures. Pop. 7700.

Fraud Deceit or imposture. In English law it is an offence to commit a fraud, *i.e.*, to gain an advantage by a deliberate act of deceit. Some frauds, for instance, a conspiracy to defraud, are criminal offences. The statute of frauds is an important measure dating from 1676. By it no one can bring an action for fraud unless he has written evidence to support it.

Fraunhofer **Joseph von.** German scientist. Born in Bavaria in 1787 he became a glass polisher, a career which led him to study mathematics. In 1806 he secured a position as optician in an institute at Munich, and in 1809 he helped to found a similar institute which he controlled. He died June 7, 1826.

Fraunhofer did a great work in making lenses for telescopes and microscopes, but his greatest achievement was to discover the lines in the solar spectrum named after him. He counted and mapped out 600 of these and gave the distinctive letters A to H to the most important of them. Much work has since been done in the same direction, and over 10,000 lines have now been counted, but the inception of this branch of astronomy is due to Fraunhofer.

Frazer **Sir James George.** British scholar. Born in Glasgow in 1854, he was educated privately. His life was spent in studying comparative religion and its associations with folklore and mythology and this led to publication in 1890 of *The Golden Bough*, the greatest work of its kind. Several editions have appeared, each with additional information. In 1915 it was again published in 12 volumes, and in 1922 in an abridged edition. In 1907, Fraser was made Professor of Social Anthropology at the University of Liverpool, and in 1920 an F.R.S. In 1914 he was knighted, and in 1925 was given the O.M. His other writings include *Totemism and Exogamy*, *Balder the Beautiful* and *Folklore in the Old Testament*.

Freckles Brownish yellow spots appearing in the skin. They are found particularly on the face, neck and hands of fair and red-haired persons during hot and windy weather, and comprise pigmented areas in the deeper layers of the cuticle. They are stimulated by exposure and are best left alone.

Treatment.—Lergyel's Birch Balsam is a good lotion to apply to freckles with a brush or soft piece of rag once daily. It should be washed off with soft water in about half an hour and the skin carefully dried.

Frederick I. Emperor of the Holy Roman Empire, known as Barbarossa. Born about 1124 he belonged to the Hohenstaufen family, and in 1147 succeeded his father as Duke of Swabia. In 1152 he was chosen German king in succession to his uncle, Conrad III., and in 1155 he was crowned Emperor in Rome. Frederick's long reign fell into two spheres of activity. To Germany he was a strong and resolute ruler, crushing the powerful dukes who opposed his authority. In Italy, Frederick was much less successful. Having quarrelled with the pope, he set up popes of his own, but his attempts to maintain them met with only partial success. Other enemies rose up against him, and in 1176 his armies were beaten at Legnano, and in 1177 he signed a humiliating peace at Venice with Pope Alexander III. In 1189 he set out on a crusade, and he was drowned in Asia Minor on June 10, 1190.

Frederick II. Emperor of the Holy Roman Empire. Born in Italy, Dec. 26, 1194, he was a son of the Emperor Henry VI. In 1196 he was chosen German king, and in 1197 became King of Sicily. His extraordinary abilities won for him the title of *stupar mundi*, the wonder of the world.

In 1212 Frederick went to Germany and was crowned king, but he had a hard fight to establish his position there, which was never very secure. In 1220 the pope crowned him Emperor in Rome, and in 1228, after some years in Sicily, he went as a crusader to Palestine and was crowned King of Jerusalem. On his return he quarrelled with the pope, and the latter was beaten and humiliated. Frederick's sons, Henry and Conrad, in turn rose in rebellion against him, and by 1239 he was faced with a very formidable circle of enemies, both in Germany and Italy.

With these the pope made an alliance, and the war that broke out continued during the rest of his reign. Time and again Frederick's cause seemed hopeless, but with remarkable perseverance he kept up the fight to the end.

On Dec. 13, 1250, the emperor died. He was buried in Palermo, the seat of his magnificent court.

Frederick German emperor. He was born at Potsdam, Oct. 18, 1831. Son of the Emperor William I. He commanded an army in the war against Austria in 1866, and another in the struggle with France, 1870-71, and was Crown Prince of Germany from that time until he became Emperor in 1888. He only reigned a few weeks, as on June 15, 1888, he died of cancer of the throat. Frederick married Victoria, eldest daughter of Queen Victoria of England. They had two sons and four daughters. The sons were William II. and Prince Henry of Prussia.

Frederick King of Bohemia. Born Aug. 26, 1596, he was a son of Frederick IV., elector palatine of the Rhine, and became elector as Frederick V. in 1610. In 1613 he married Elizabeth, daughter of James I., and in 1619, being a Protestant, he was elected King of Bohemia. His enemies, however, were too strong for him. He was called derisively "the winter king," and driven from the land. His enemies also took from him his electorate, and although James sent help he could not recover it. From 1623 until his death, Nov. 29, 1632, Frederick was an exile. One of his children was Sophia, electress of Hanover; he was thus an ancestor of King Edward VIII. Prince Rupert was one of his sons.

Frederick Name of eight kings of Denmark. The most important are Frederick VII. and Frederick VIII. The former, who reigned from 1848 to 1863, was the last king of the Oldenburg family. He died Nov. 15, 1863.

Frederick VIII. was a son of Christian IX. and a brother of Queen Alexandra. He became king in 1906, and died in Hamburg, May 14, 1912. His wife was a daughter of Charles XV., king of Sweden, and he was succeeded by his eldest son, Christian X.

Frederick II. King of Prussia, called the Great. Born in Berlin, Jan. 24, 1712, the son of Frederick William I., he soon showed that he possessed exceptional intellectual powers. For various reasons his father made his life a burden to him and in 1730 he tried to escape from court. This was prevented, and for some years he was little better than a prisoner. Then, the restraint becoming less pronounced, he married a princess of Brunswick, corresponded with Voltaire, read much French literature and wrote in that language *Anti-Machiavel*, an expression of his belief that a king must be the first servant of his people.

On May 31, 1740, Frederick became king, and almost at once made war on Austria. His aim was to obtain Silesia which was given to Prussia by treaty in 1742. The war was soon renewed, but when it was ended in 1745 the Prussian king was known as a very capable soldier, if a cynical politician. For the next eleven years he was able to put his ideas of paternal government into practice, but he also kept his army efficient for he foresaw a recurrence of war.

In 1756 the Seven Years' War began. The odds against Prussia, aided only by Britain, were immense, but her king performed miracles both as general and administrator. In this period he earned the title of great, and a place among the masters of the art of war. His people, however, suffered terribly, and his country was utterly exhausted when peace was made in 1763. For the rest of his reign, ruling as an absolute monarch, he did a good deal to restore its prosperity, whilst, by sharing in the partition of Poland in 1772, he added more territory to Prussia. In 1778 he again made war on Austria and again enlarged his realm.

Frederick died, without sons, at Potsdam, Aug. 17, 1786, and his nephew, Frederick William II., followed him on the throne. The king wrote a great deal, always in French, and his writings have been published in 33 volumes, while further volumes are filled with his political correspondence. There are many *Lives* of the king, notably the massive one by Carlyle to whom, in spite of his flagrant breaches of faith Frederick was a hero.

Frederick Prince of Wales. The eldest son of George II., he was born Jan. 6, 1707, before his grandfather became King of Great Britain. In 1714 he was made Duke of Gloucester, and in 1729, Prince of Wales. He married Augusta, a daughter of the Prince of Saxe-Coburg, and was the father of George III. He is chiefly known because of his quarrels with his father which led him to make his house a kind of court for all who disliked George II. and Sir Robert Walpole. He died March 20, 1751.

Frederick Charles Prussian prince and soldier, called the Red Prince. Born Mar. 20, 1828, he was a grandson of King Frederick William III. and a nephew of William I. He entered the army, and in 1864 commanded the Prussians in the war against Denmark, and led an army in the campaign against Austria in 1866, winning fame at Sadowa. He commanded one of the three armies that invaded France in 1870, when he was again successful in the field, especially at Metz. In the intervals of peace he held several high commands. The prince died June 15, 1885. One of his daughters became the wife of the Duke of Connaught. His name of the Red Prince was due to the fact that he frequently wore the red uniform of one of the Hussar regiments.

Fredericksburg City of Virginia, U.S.A. It stands on the Rappahannock river, 60 m. from Richmond, is well served by railways and has some industries. Pop., 6000.

A great battle in the American Civil War took place near Fredericksburg in Dec., 1862. The Confederates, or Southerners, under Lee, were defending the road to Richmond, when the Northerners, or Federals, under Burnside, appeared on the N. bank of the Rappahannock. For about a month there was desultory fighting across the river. On Dec. 12, the Northerners made a crossing and seized Fredericksburg. A three days' battle ended in a complete victory for the Southerners. On Dec. 15, Burnside took his men back across the river, having lost over 12,500 men. The Southerners lost about 4000.

Frederick William Name of an elector of Brandenburg and four kings of Prussia.

The elector, Frederick William, called the Great Elector, began to reign in 1640, and ruled until his death, May 9, 1688. He was responsible for making Brandenburg much larger and stronger so that it became a power in Europe, and his son, Frederick, was able to obtain the title of king of Prussia.

Frederick William I. the second king of Prussia, reigned from 1713 to 1740. He is famous as the king who collected giants for his army, and was the father of Frederick the Great. **Frederick William II.** succeeded his uncle, Frederick the Great, in 1786, and reigned until 1797. His son, **Frederick William III.**, was king from 1797 to 1840. He led his people when they rose against Napoleon and was ruler during the European settlement that followed the peace of 1815. **Frederick William IV.** succeeded in 1840, but lost his reason in 1857. He lived until June, 1861, his brother William, afterwards emperor, acting as regent.

Fredericton Capital of New Brunswick, Canada. It stands on the river St. John, 80 m. from its mouth and 68 from St. John, its seaport. It is served by two branches of the C.N. Rlys. The University of New Brunswick is situated here. The industries include lumbering and some manufactures, and there is some shipping along the river. At first named St. Ann's, Fredericton was made the capital in 1788. Pop. (1931) 8648.

Frederiksborg Palace of Denmark. It stands on some islands in a lake in Zeeland, about 21 m. from Copenhagen. The early kings had a castle here, but the present building, which stands in a large park, was erected by Christian IV. about 1620. In 1859 it was largely rebuilt and is now a national museum.

Fredericksborg must be distinguished from **Frederiksberg.** The latter is a western suburb of Copenhagen where there is also a palace, now used for public purposes. It stands in extensive grounds, part of which are used as a zoological garden.

Freeboard In a vessel the distance between the upper or main deck and the load-water line. It should provide an amount of reserve buoyancy that will keep a ship afloat if two of its compartments have been holed.

Free Church Protestant evangelical communion that is not an established church. Based on individual freedom in matters of doctrine, church government and ministerial appointment, the free churches include the Congregational, Baptist and Methodist churches, the Presbyterian Church of England, the Free Episcopal churches, the Society of Friends and cognate communions abroad. The **National Council of the Evangelical Free Churches** holds an annual conference. Its headquarters are at the Memorial Hall, Farringdon Street, London, E.C.

FREE CHURCH OF ENGLAND. Religious body called also the Reformed Episcopal Church. It was founded in 1844 in Devonshire by some members of the Church of England who objected to High Church teaching. It is governed by bishops and has a small membership, chiefly in the W. of England.

FREE CHURCH OF SCOTLAND. Presbyterian communion. It was formed by members of the Established Church of Scotland who, claiming for parishioners the right of choosing their own ministers, seceded from the established church in 1843, the Rev. Thos. Chalmers being their leader. They formed a new church which was joined in 1876 by the Reformed Presbyterian Church, and was second only to the established church in numbers and influence. In 1900 the Free Church and the United Presbyterian Church were united as the **United Free Church of Scotland,** and in 1930 there was a union of this body and the established church. Just before the union the Free Church had a membership of over 500,000. *See* SCOTLAND, Church of.

Free City City that is independent. A modern instance is Danzig, a free city since 1919. In the Middle Ages there were many free cities in Italy and Germany. These were part of the Holy Roman Empire, and owed allegiance to the emperor, but to no one else. In Italy they threw off, after a time, even this authority, but in Germany they remained imperial free cities until the dissolution of the empire in 1806. At one time there were nearly 100 of them, including such famous places as Nuremberg, Frankfort and Augsburg. Gradually their number was reduced, as they were taken by one or other of the German rulers, until, after the Napoleonic wars, there were only four. Of these Frankfort lost its freedom in 1866. Hamburg, Bremen and Lubeck continued free cities of the German Empire, and are now free cities of the German republic.

Freehold In England and other countries a form of holding land. It is the most complete form of ownership known to the law, and a freehold estate is one with the fewest possible burdens on it. Since the changes made in 1925 all land in England has been either freehold or leasehold.

Freeman One who is not a slave. In early society there was a sharp distinction between freemen and slaves, this being the case in Greece and Rome, as well as among the Anglo-Saxon and other Teutonic tribes, the freemen forming the fighting and governing class. Gradually, as slaves became free, the distinction disappeared. In England a serf or villein could, among other ways of winning it, obtain his freedom by residing for a year and a day in a chartered town. By the end of the 15th century serfdom had entirely disappeared in Britain, and the word freedom had lost its special meaning. In other European countries the same process took place, but at a slower rate.

The word freeman was then used in England for a man who had the right to take part in the government of the city or borough in which he lived. These privileges were greatly abused, and in 1835 they were swept away, the municipal corporations being reformed. London, however, was an exception, and there freemen still remain and take part to a slight extent in the city's government. This freedom is usually obtained by heredity, or by apprenticeship, although the latter is only nominal, and all freemen are members of one or the other of the city companies.

A third kind of freeman came into existence in the 19th century. These are men of distinction, such as a Prime Minister or a leading soldier, who are given the honorary freedom of a city or borough, now a popular way of recognising distinguished services to the state.

Freeman **Edward Augustus.** English historian. Born at Harborne, Staffs., Aug. 2, 1823, he entered **Trinity**

College, Oxford, in 1841, being elected a fellow in 1845. His first published book was a *History of Architecture*, 1849, and he was a constant contributor to *The Saturday Review*. He made his reputation as an historian by his *History of Federal Government*, which he did not finish, and his *History of the Norman Conquest*. In 1884 he was made Professor of Modern History at Oxford, and he died March 16, 1892.

Freemason Member of a great international organisation. The earliest records of British freemasonry are in Scotland, but a much longer history is claimed for it, one going back to the days of the Greeks and their mysteries. There were societies, or lodges, in Scotland in the 16th century, the oldest being in Edinburgh. A little later there was a lodge in Newcastle-on-Tyne, and soon one or more in London. In 1717 four London lodges united to form the Grand Lodge of England. The Grand Lodge of Ireland dates from 1729, and the Grand Lodge of Scotland from 1736. From these lodges members have carried the ideas of freemasonry into all parts of the world inhabited by white men. The movement grew rapidly during the 19th century, and there are now nearly 4500 lodges on the register of the United Grand Lodge of England and a total membership in excess of 4,000,000.

The organisation consists of a number of lodges, each with its own officials elected by the members. Members are admitted very much as to a club, and many lodges are confined to men with similar interests or occupations. Each lodge has its master, treasurer, warden and secretary. Regular meetings and dinners are held, and at these a good deal of ceremonial is observed. Special robes and jewels are worn by the masters. The lodges are united under provincial Grand Masters, and abroad under district Grand Masters. Over all is the united grand lodge with the Duke of Connaught as grand master.

Apart from masons proper, who are called craft masons, there are other societies of masons, associated more or less closely with the parent body. Such include the Royal Arch masons, the Mark Masons and several others. The offices of the United Grand Lodge are in Freemasons' Hall, Great Queen St., London, where a fine building has been erected as a war memorial. The Scottish Grand Lodge has its headquarters at Freemasons' Hall, Edinburgh, and the Irish one in Molesworth St., Dublin. In Great Queen St., London, also, is the hall of the Grand Lodge of Mark Master Masons.

Freemasons are noted for their charities. There is a **Masonic Benevolent Institution** for assisting impoverished masons and their dependents. For orphans they maintain schools—at Bushey for boys and at Clapham Junction and Weybridge for girls. Similar schools are also supported by the Irish masons. In addition there are many other benevolent funds and associations maintained by the lodges in Great Britain and abroad.

Free Port Port at which no duties are charged on goods entering it. In the Middle Ages and later there were a number of such ports, but with the increasing use of tariffs they have disappeared. Some seaports, however, have a free port, to which goods are brought in order to be shipped and sent to another country. There is one at Hamburg and other European seaports have them. Fiume is a free port.

Freestone Building stone, either a sandstone or limestone, which can be easily dressed by the hammer and chisel. Beer freestone from the middle chalk of Beer near Seaton, Devon, was much used in the old churches of Devonshire and in the restoration of Exeter Cathedral.

Freethought Term associated with disbelief in the doctrines of the Christian or any other religion. It came into use about 1700, and was a popular term in the days when Charles Bradlaugh was attacking Christianity, when, in the minds of most people, it was synonymous with atheism. Its adherents, however, assert that it does not imply necessarily hostility to any form of religious belief, but is simply the right to examine their beliefs in a scientific spirit, testing them by the accepted rules of evidence and declining to accept any document or tradition simply because it is classed as sacred. Freethought to-day is more generally known as rationalism (*q.v.*).

Freetown Seaport and capital of Sierra Leone, British W. Africa. It stands on the estuary of the Rokel river, is a second-class imperial coaling station, and has an excellent harbour. The port is connected by railway with the interior. Freetown, as the name suggests, was founded as a home for freed slaves. Pop. 14,000.

Free Trade Primarily the absence of restrictions on trade, especially between nations. The doctrine is due mainly to the teaching of Adam Smith's *Wealth of Nations*, which was popularised by Richard Cobden. Under it most goods are admitted into the country free of duty, but, if for revenue purposes, a duty is put upon any class of imports a corresponding tax must be put upon the same goods produced within the country. Great Britain was on the whole a free trade country from the days of Sir Robert Peel until the introduction of a tariff in 1931-32, but other countries, with a few exceptions, refused to follow her example. *See* IMPERIAL PREFERENCE.

Free Will Idea that man can control his own actions, that they are not controlled by an external force or power. It is both a philosophical and a religious idea, and in both spheres there are two schools of thought. The philosophers who deny the existence of free will in man, who believe that every action is determined by some previous action and therefore ultimately by the forces that control the universe, are called determinists. In religion the great opponent of free will was John Calvin, whilst Arminius took the other side, and for long, religious bodies, especially Protestants, were sharply divided into Arminians and Calvinists. To-day the religious difference is much less prominent.

Freezing Point Temperature at which a liquid changes to the solid state. In the case of water it is 0°C. (32°F.). The freezing point is affected by pressure and, as in the case of water, expansion takes place on freezing, the increased pressure lowers the freezing point. The presence of a salt in the liquid also lowers the freezing point, which, together with the heat absorbed during the solution of the salt, explains the use of **freezing mixtures** of salt and ice.

Freiburg im-Breisgau City and Archi

episcopal see of Germany. Situated in Baden, on the Dreisam, 40 m. N. of Basle, it has a university founded in 1457, and a fine Gothic cathedral of the 12th century. The manufactures include surgical and musical instruments. It has a broadcasting station (570 M.; 0.25 kW. Pop. (1925) 90,475.

Freight Term applied to the cargo of a ship, also to the charges for transport of goods by sea. Goods are grouped into four classes for transport purposes, the first class having the highest rate. In addition a special class includes all goods of a special or dangerous character, such as jewellery, cement or gunpowder. In the United States the word is much used in connection with goods carried by railway.

Fremantle Town and seaport of W. Australia. It stands at the mouth of the Swan river, 12 m. from Perth, and has a fine harbour. There are some manufactures, but shipping is the chief industry. A pleasure resort, Fremantle has several beaches for bathing, while a little farther away is the popular Point Walter. Electric tramways serve the town and district. Pop. 35,143.

French Africa **French Equatorial Africa.** Name given by decree in 1906 to the French Congo, Gabun, Ubangi-Shari and Chad colonies. The area is approximately 912,049 sq. m., and the population 3,192,282 (1931), with 3,300 Europeans. It exports ivory, rubber, timber, palm oil, coffee and cocoa. The annual rainfall in parts reaches 120 in. Much of the country is still undeveloped.

French West Africa. French colonial possession. It comprises the Ivory Coast, French Guinea, Dahomé, Niger, French Sudan, Senegal, Haute-Volta and Mauretania. The capital is Dakar, area 1,799,039 sq. m., and the population 14,575,973 (1931). The chief products are vegetable oils, timber, rubber and cattle. Cotton and cocoa are increasing in importance.

French Guinea *See* GUINEA.

French Polish Preparation used in producing a high polish on furniture woods. Shellac is dissolved in methylated spirit, colour being given either by using different grades of the gum resin or by adding pigments. The polish is rubbed on the wood, linseed oil being used to ensure smoothness of action.

French Revolution Movement that began in France in 1789 and exercised an enormous influence in Europe. The condition of the French people, especially in the rural districts, was very bad, the system of government being thoroughly corrupt. Power was concentrated in the hands of the king and the nobles, and on it there were no effective checks. The upper classes paid no taxation, which consequently fell with great severity upon the poor. The country's finances had got into a condition of hopeless confusion.

Side by side with this state of affairs, Voltaire, Rousseau and others were teaching the people new ideas, which, especially in the towns, found ready acceptance. Voltaire cast contempt upon the religious and other conventions which, hitherto, had helped many to acquiesce in their wretched lot. Rousseau preached the natural rights of man, and the idea of a state in which the general will was supreme. People began to see that there was no warrant, either in divine or human law, for the hideous inequalities which prevailed on every side.

The actual movement began in 1789 when the States General, the nearest approach to a representative body existing in France, was called together, for the first time since 1614. When it met the commons, or third estate, took the lead, and a National Assembly was called.

On July 14, 1789, the mob destroyed the Bastille, and there were risings all over the country. The tricolour was adopted as the flag of the revolution and talk of a republic began.

The National Assembly decided that all privileges should be abolished, and turned itself into an assembly for the preparation of a constitution. Many of the nobles fled to England and elsewhere, but the king still had many supporters, although he was little better than a prisoner.

In June, 1791, the king, Louis XVI., escaped from Paris, but was stopped at Varennes and brought back. The assembly then decided to make France a constitutional monarchy but for several reasons this was not consummated. Several foreign rulers and large numbers of their subjects were now thoroughly alarmed at the course of events in France, and the exiled French nobles were urging them to interfere. Prominent here was the Emperor of Austria, a brother of Marie Antoinette, the wife of Louis XVI. With the King of Prussia, he had issued a declaration, demanding that France should restore Louis XVI.

The republican party, chiefly Jacobins and another group called Girondins were, however, gaining strength, and the efforts to bring about foreign interference only added to their influence. The outcome was that, in March, 1792, France declared war on Austria. Prussia hastened to the side of Austria, but in spite of riots and disorders, the French troops defeated the Prussians at Valmy.

A National Convention now took over the control of affairs, and the most terrible part of the revolution began. The extremists were now absolutely supreme, their leaders being Danton, Robespierre and Marat. A republic was established and on Jan. 21, 1793, after a trial, Louis was executed. Treaties with foreign countries were repudiated, and it was declared that France would help all Europe to overthrow their hereditary rulers. Thousands were put into prison. Meanwhile the republican armies were winning success after success.

In 1793 a Committee of Public Safety was established, Robespierre being its dominating spirit, and the Reign of Terror began. Hundreds of aristocrats and politicians were sent to the guillotine. On Oct, 16, 1793, Marie Antoinette was executed and then the autocrats turned on one another. Robespierre brought about the execution of Danton on April 5, 1794, and he himself suffered the same fate on July 28. The Reign of Terror came quickly to an end, but it was not until Oct., 1795, that the Directory was established, and the period described as that of the French Revolution was over.

The number of books written on the period is legion, but Carlyle's *History of the French Revolution* still stands out.

French Revolutionary Wars Wars caused by and contemporary with the French Revolution (*q.v.*). On April 20, 1792, Louis XVI. was compelled by his Girondist

ministers to declare war on Prussia and Austria. Early in 1793 Britain, Holland and Spain joined them in a coalition. Fighting against tremendous odds, the French armies overran Holland in the winter of 1794-95, compelled Prussia and Spain to withdraw (1795), under the command of Napoleon Bonaparte brought Sardinia (1796) and Austria (1797) to submission. The French attempt at an invasion of England was foiled by the British victories at St. Vincent and Camperdown (1797), while Napoleon's eastern campaign was frustrated by Nelson's victory in Aboukir Bay (1798) and Smith's defence of Acre (1799). The formation by Pitt of a second coalition (with Austria and Russia) was followed by the return of Napoleon to Europe, the withdrawal of Russia (1800) and Austria (1801), and the Peace of Amiens (March, 1802).

Frensham Village of Surrey. It is nearly 4 m. to the S. of Farnham. The common is used by the military, being convenient for Aldershot. On it are three mounds called the Devil's Jumps. Frensham is noted for its ponds, used for boating, bathing and fishing. There are two, the larger covering 90 acres.

Frere **Sir Henry Bartle Edward.** English administrator. Born at Clydach, Brecknockshire, May 29, 1815, he entered the Bombay Civil Service in 1834. In 1859 he was created K.C.B., for services rendered during the Indian Mutiny. Governor of Bombay, 1862-67, he was made a baronet in 1876. In 1877 he was appointed Governor of Cape Colony and as High Commissioner of British S. Africa, he was deputed to arrange the confederation of the S. African Colonies, but before attaining his purpose he was recalled in 1880, owing to a change of Government. Frere died May 29, 1884.

Fresco Method of painting upon a freshly prepared ground of stucco or plaster. Mineral pigments are used, with size, yolk or white of egg as a medium. Since the pigments quickly combine with the freshly made plaster, rapidity of work and considerable skill is necessary, as retouching is impossible. This method was the usual form of mural painting before the use of oil pigments, but if exposed to damp the colours were liable to fade. Among notable frescoes are those in the monastery of S. Mark, Florence, painted by Fra Angelico.

Freshfield **Douglas William.** English traveller. He was born April 27, 1845, educated at Eton and Oxford and in 1870 called to the bar. He was the first man to make the ascent, in 1868, of Mt. Kasbek in the Caucasus. During the next 30 years Freshfield visited many parts of the world and made himself one of the foremost travellers of his age. From 1893-95 he was President of the Alpine Club and from 1914-16 of the Royal Geographical Society. His many writings include *Round Kangchenjunga*, 1903, and *Below the Snow Line*, 1923. A promonotory on the coast of King George V. Land, discovered in 1911, has been named after him.

Freshwater Watering place in the west of the Isle of Wight, on the Yar, 1½ m. from Yarmouth. Some distance from the village is Freshwater Bay. Pop. 3400.

Near Freshwater is Farringford, long the residence of Lord Tennyson. A landmark is High Down, 485 ft. high, on which there is a memorial cross to the poet. Part of this is the property of the National Trust and has been renamed Tennyson Down.

Fresnel **Augustin Jean.** French scientist. Born, May 10, 1788, he became an engineer, later studying the subject of light. His work has been of great value in the development of lighthouses. He introduced the lenses named after him and was responsible for the first practicable revolving lights. He died July 14, 1827.

Fretwork In architecture, decorative carved work for ceilings, consisting of geometrical designs in relief. In wood working, the term is used for the art of sawing out designs in thin, fine-grained wood, such as satinwood, walnut, sycamore, lime or three-ply wood. The essential tools are the saw, drill and bradawl. The **fretsaw** consists of a light steel frame holding thin saw blades of varying grades of fineness.

Freud **Sigmund.** Austrian scientist. Born at Freidberg, Moravia, May 6, 1856, he was educated in Vienna and Paris. His investigations into neurotic diseases, early studies on hysteria and dreams, led to his becoming Professor of the Therapeutics of Neurotic Diseases and of Neurology in Vienna in 1902. He explained such phenomena as being influenced by repressions in the unconscious mind subconsciously seeking an outlet. His method of approach, called psychoanalysis, is propounded in many works, for example, *Delusion and Dream*, *Three Contributions to the Theory of Sex*, *Totem and Taboo* and in *The International Journal of Psycho-analysis*, edited by him.

Frey Norse god, also called Freyr. He was the god of sunshine and fertility and possessed a famous sword. In order to win the love of Gerda he gave away this weapon and so was conquered in his last fight.

Freyja In Norse mythology, especially in Sweden, the goddess of love and pleasure. Sister of Frey and wife of Odin she traversed the heavens in a chariot drawn by two white cats, and received at her Asgard home the souls of half those slain in battle. She is distinct from Odin's wife, Frigga.

Friar Member of a Roman Catholic mendicant religious order. Friars are not monks, although they take vows. The four great orders are Franciscans or Grey Friars, Dominicans or Black Friars, Carmelites or White Friars, and Austin Friars or Hermits. Trinity or Red Friars, 1198, and Crutched or Crossed Friars, 1169, were actually canons regular.

Friar's Crag Beauty spot on the banks of Derwentwater. It is on the east side of the lake, about a mile from Keswick. Since 1921 it has been the property of the National Trust. Here is a Ruskin memorial.

Fribourg Town of Switzerland. It stands on the River Saône, 20 m. from Berne, and is the chief town of the canton of Fribourg. It has a university founded in 1889. Pop. (1930), 21,557.

Fricton Resistance to motion when two bodies in contact are moved over one another. Friction may be sliding or rolling, the former being seen in the action of slide valves of engines, and the latter in wheels, ball or roller bearings. **Static friction** is the frictional resistance of a body at rest and is greater than the friction of motion, or **kinetic**

friction, when the body has been set in motion. The use of lubricants tends to reduce friction.

Frideswide English saint. Daughter of Didan, ealdorman of Oxford under Ethelbald, she fled from a Mercian noble's importunities to Binsey and built an oratory. She died about 735. Her well is still visited. Becoming abbess of an Oxford nunnery, which was appropriated by Austin canons in 1004, she has been Oxford's patron saint since 1180 and was canonised in 1481. Her day, Oct. 19, which was removed from the calendar at the Reformation, is still commemorated locally. On the site of her chapel in Oxford, Wolsey erected Christ Church cathedral.

Friedland Town of Germany. It stands on the Alle, 26 m. from Konigsberg, and is famous for the victory gained here by Napoleon over the Russians and Prussians, June 14, 1807. The battle was stubbornly contested, but in the end the French drove their enemies in flight across the river. Napoleon was present in person and Ney had a good deal to do with the French success. The Allies lost 20,000 men out of 55,000 on the field. The French lost fewer out of 70,000. The battle was followed by the Treaty of Tilsit.

Friedrichshafen Town and lake port of Wurttemberg, Germany. It stands on the Lake of Constance. It is a pleasure resort, but is chiefly famous as the headquarters of the Zeppelins, which were built here and made their trial flights over the lake. There is a harbour and steamers ply between the various places on the lake. Pop. 11,700.

Friendly Islands Group of islands in the Pacific Ocean, now called the Tonga Islands. They lie to the south-east of the Fiji Islands and cover 385 sq. m. They are about 150 in number, divided into three groups. Nukualofa is the capital; copra is the chief product. The islands form a British protectorate, having their own ruler, a king or queen, assisted by a parliament or legislative council and a privy council and advised by the high commissioner. British coins and weights and measures are used. Tasman discovered the islands in 1643, but they were named by Captain Cook, when he visited them in 1773. They remained independent, until 1900, when they came under British protection. Pop. (1931) 28,839.

Friendly Society Voluntary organisation for the relief of members in time of old age, illness, unemployment or other contingencies. The root principle is that members contribute a certain sum, usually weekly, and in case of need receive certain benefits.

In Great Britain friendly societies were started about 1790 and an Act authorising these was passed in 1793. Other Acts followed, the last being in 1923, and now their activities are closely controlled by the state. Each society must be registered with the Chief Registrar of Friendly Societies, who examines its accounts. His offices are at 17 N. Audley Street, London, W.1, and in Scotland at 19 Heriot Row, Edinburgh.

The societies can issue insurance policies not in excess of £300, on the lives of their members, who can also insure the lives of their children and other dependents, but in the case of children the amount is limited to £15. They can also insure for burial expenses, sickness and other matters. Members can dispose of sums not exceeding £100 by written nomination instead of by will. The societies can hold property and they enjoy freedom from income tax. Since 1911 they have had a good deal to do with the working of the National Health Insurance scheme. They do this work through approved societies formed by them.

The term friendly societies is used sometimes only for the Friendly Societies proper, such as the Independent Order of Oddfellows, but sometimes for all societies that come under the eye of the registrar, such as those associated with trade unions, the very strong group known as industrial insurance societies. Those, known also as collecting societies, employ paid collectors to visit the members and collect the premiums, usually weekly. The total invested funds of the friendly societies amount to over £100,000,000.

In Great Britain the largest societies are:

- Independent Order of Oddfellows (Manchester Unity), 97 Grosvenor St., Chorlton-on-Medlock, Manchester.
- Ancient Order of Foresters, 17 Russell Square, London, W.C.
- Royal Liver Friendly Society, Pier Head, Liverpool.
- Hearts of Oak Benefit Society, Euston Road, London, N.W.
- National Deposit Friendly Society, 37 Queen St., London, W.C.
- Independent Order of Rechabites, 1 North Parade, Deansgate, Manchester.
- United Ancient Order of Druids.
- Loyal Order of Ancient Shepherds, 132 High St., Chorlton-on-Medlock, Manchester.
- Grand United Order of Oddfellows, 24 Devonshire St., Manchester.

Friends, Society of *See* SOCIETY OF FRIENDS.

Friesland District of northwest Europe. Most of it is in the Netherlands, where it forms the province of Friesland, a low-lying district bounded by the North Sea and the Zuider Zee on the north and west and covering 1250 sq. m. Leeuwarden is the capital, and the province includes Terschelling and other islands. Many of the people speak the Frisian dialect. East Friesland is in Hanover where that country touches the Netherlands. Aurich is the chief town and it has an area of 1200 sq. m.

Frieze In architecture the portion of the entablature lying between the architrave and the cornice. It forms a continuous band, often sculptured in low relief. In the Doric Order the frieze is adorned with alternate projections (triglyphs) and recesses (metopes), the latter usually finely sculptured as seen in the famous Parthenon frieze. In the Ionic and Corinthian entablatures the frieze is devoid of triglyphs, but is enriched by figures in relief. Other types of friezes were developed in later architecture.

The use of the word has spread to a strip of ornamentation placed round the walls of a room, usually to harmonise with the paper.

Frigate Originally a small, swift, undecked Mediterranean vessel, using oars or sails. Adopted by Portugal in the 16th and 17th centuries for naval purposes in the Indies, it became a fast three-masted, full-rigged scouting and cruising craft, carrying from 24 to 50 guns on the main deck, or on a raised quarter-deck and forecastle. The cruiser is the modern equivalent of the frigate.

Frigate Bird Genus of tropical sea fowl, *fregata*, allied to the gannets. The common *F. aquila* has a small, slender, short-necked body, a straight bill with a hooked tip and a dilatable throat pouch. Its swallow-like tail and great wing spread make it very swift in flight. It eats fish caught at the surface or snatched from other birds.

Frimley Village of Surrey. It is 33 m. from London, on the S. Rly. It is in near proximity to Aldershot and three miles from Bagshot and is mainly residential. Bret Harte is buried in the churchyard. A colony for tuberculous ex-soldiers and sailors was inaugurated here after the Great War. Pop. 16,472.

Frinton Watering place and urban district of Essex. It is 2 m. from Walton-on-the-Naze and 69 from London, on the L.N.E. Rly. Of late it has become a fashionable seaside resort. Pop. (1931) 2196.

Frisian Islands Chain of islands off the west coast of Europe from Denmark to Holland. Long subjected to marine erosion, their diminution, observed since Roman geographers first described them, has been retarded in part by sand dunes, earthen embankments and dykes. There are north, east and west groups, respectively Danish, German and Dutch. The N. Frisians, mostly off N. Schleswig, include Fanö, Sylt, Föhr, Amrum, Pellworn and Nordstrand. The E. Frisians include Norderney, Borkum, Wangeroog, Spiekeroog and others, all favourite summer resorts and bathing stations. The W. Frisians include Rottum, Schiermonnikoog, Ameland, Terschelling, Vlieland and Texel, screening the Zuider Zee.

They derived their name from the **Frisians**, a Teutonic people inhabiting the neighbouring territory of Friesland early in the Christian era.

Frit Imperfectly fused mixture of minerals from which glass is made. Calcined until the silica begins to act on the bases, it awaits complete fusion. Similar vitrifiable mixtures occur in the manufacture of artificial or soft-paste porcelain.

The name is also given to a small, black two-winged fly destructive to cereal crops, especially European barley (*Chlorops frit*).

Frith **William Powell.** English painter. Born at Aldfield, Yorkshire, Jan. 9, 1819, he studied at the Royal Academy Schools and first exhibited in the R.A. in 1840. He was elected A.R.A. in 1844 and R.A. in 1852. His works represent historical and anecdotal painting, executed with extraordinary charm and attention to detail, yet preserving a broad effect. His *Derby Day* in the National Gallery, London, was his masterpiece, and many of his pictures achieved great popularity. He died Nov. 2, 1909.

Fritillary Word meaning a dice box. It is used for a genus of flowering plants and a species of butterfly. *See* BUTTERFLY.

Frobisher **Sir Martin.** English sailor. Born in Yorkshire about 1535, he made his first voyage to Guinea, before he was 20 years of age. In 1576 he set out on the first of his three unsuccessful voyages in search of a northwest passage to China. In 1586 he sailed as vice-admiral in Drake's expedition to the West Indies and in 1588 was in command of a ship that helped to defeat the Armada and so distinguished himself that he was knighted on board his own ship. He took part in other expeditions and fights and died Jan. 14, 1595, as the result of a wound received during the attack on Brest.

Frodsham Market town of Cheshire. It is 10 m. from Chester, on the L.M.S. Rly. Chemicals and cotton are manufactured. Near the town the Weaver falls into the Mersey and the district around is known as Frodsham Marshes. Pop. 3000.

Froebel **Friedrich.** German educational reformer. Born at Oberweissbach, April 21, 1782, he studied at Jena and Gottingen and in 1816 opened a school. His influential book translated as *The Education of Man*, appeared in 1826, and from 1833-37 he spent his time training teachers at Burgdorf in Switzerland. In 1837 he started a school for young children in which his theories were put into practice. He died June 21, 1852.

Froebel held that children should grow up naturally, in happy surroundings, that play was of the utmost important and that a child's natural creativeness should be encouraged. His ideas were largely adopted in England and a *Froebel Society* was founded to forward them. Its headquarters are at 4 Bloomsbury Square, London, W.C.1. There is also a **National Froebel Union** at 18 Adam St., London, W.C.2.

Frog Genus of amphibians, (*Rana*). Of the tailless order, it also includes toads and is widely distributed in temperate and tropical regions. The eggs, usually laid in fresh water, adhere together in jelly-like masses. They develop into tailed, legless tadpoles which breathe aquatic air through gills. There is then a gradual growth into the four-legged tailless adult form with lungs for breathing atmospheric air. Through soft skins, which are periodically shed entire, moisture is imbibed. The tongue, rooted in the front of the mouth, is sticky and used for seizing the slugs and insects upon which it feeds.

Besides the common *R. temporaria*, the edible *R. esculenta* and the N. American bull frog, are the large guppy frog, 8½ in. long, of the Solomon Islands and the goliath frog, 11 in. of the Cameroons. Other genera include horned, flying, peeping, pouched and tree frogs.

Frog In engineering, two short pieces of rail. They are joined together to form an angle between the railway lines at a railway crossing or at a point where the rails lead to a siding, serving to guide the wheels of a train from one set of lines to another. When used at a crossing the contrivance is termed a cross frog.

Frogbit Small, floating aquatic herb (*hydrocharis morsus-ranae*). Native to Europe and N. Asia, it has roundish, kidney-shaped leaves, reddish beneath, which support the male and female flowers on separate plants. The bulbs sink to the pond floor in the autumn, rising to the surface again to throw out leaves in the spring.

Frog Hopper Family of homopterous insects (*Cercopidae*). The greyish or greenish adults have four stiff opaque wings and hind legs strengthened for vigorous leaping. They constantly prick the young leaves for sucking. The pricks enlarge and wither the leaves. The larvæ surround themselves with white froth. *See* CUCKOO-SPIT.

Frogmore Residence near Windsor. It is in Windsor Park, about a mile from the castle and became a royal residence in the time of George III. The

mausoleum here was built by Queen Victoria over the tomb of Prince Albert and here the queen herself was buried in 1901. The building is open to the public at stated times.

Froissart **Jean.** French historian. Born at Valenciennes about 1338, he went to England at the age of 18 and entered the household of Edward III.'s queen, Philippa. After a leave of absence that lasted five years, he returned to her in 1361, bearing with him a rhymed chronicle of the wars of the time, and was made her secretary. He travelled considerably through England, France, Flanders and Italy, gathering material for his great history. After Philippa's death he became curé of Lestines in Flanders, and later Canon of Chimay. Again in 1386 he travelled, visiting Gaston Phoebus, Count of Foix, and then England once more. He died about 1405 at Chimay.

Froissart lives to-day in his *Chronicles*, a history in four books of the main events of Western Europe from 1325 to 1400. It is one of the greatest historical works of that period, being an invaluable and vivid description of the life of his time. It was translated into English by Lord Berners in 1525 and there are several later translations.

Frome Market town and urban district of Somerset. It is on the River Frome, 24 m. from Bristol, on the G.W. Rly. The industries include printing and brewing; woollen cloth is manufactured, but this is less prosperous than formerly; there is also an agricultural trade. Pop. (1931) 10,738.

Fronde French word meaning a small sling and used for the civil war that took place in France between 1648-1653. The first Fronde was due to a quarrel between Mazarin and the Parliament of Paris about taxation. Some of the leaders of the parliament having been put into prison, street fighting broke out. Helped by troops under the great Condé, Mazarin put down the rising and peace was made in March, 1649.

The second Fronde was a rising in 1652-53. Condé and Mazarin had quarrelled and the former, with other princes, raised a revolt. He was soon victorious and for a short time master of Paris. The fighting, however, was chiefly in the south-west of the country and in the end Mazarin put down the insurgents and attained his object.

Frontenac **Comte de.** French statesman. Louis de Buade was born in 1620, of a family holding land in Bearn. He became a soldier and in 1672 went to Canada as governor. He remained there until 1682 and was again governor from 1689 to 1698. Frontenac died in Quebec, Nov. 28, 1698. His harsh methods of rule made him unpopular, but he ranks as one of the makers of Canada.

Frost Term used for the deposition of small ice crystals on exposed objects on or near the ground. Sometimes known as hoar frost it is due to the freezing of water which condenses out of the atmosphere on objects which have a temperature below that of freezing point. When prolonged severe frosts may have a harmful effect upon vegetation, and even a short frost, coming in late spring or early autumn, may injure crops. Frost plays an important part in the disintegration of rocks and the formation of soils.

Frostbite is the name given to a localised inflammation and gangrene of the tissues, caused by extreme cold.

Froth **or Foam.** The collection of small bubbles caused by fermentation or by boiling or agitating a liquid.

The Ancient Order of Froth Blowers was a charitable organisation formed in 1923. Its song was "The more we are together, the happier we shall be."

Froude **James Anthony.** English historian. Born at Dartington, Devon, April 23, 1818, he was educated at Westminster School and Oriel College, Oxford, becoming a Fellow of Exeter College in 1842. His first work, *Shadows of the Clouds*, appeared in 1847, under the pseudonym Zeta; then came, in 1849, *The Nemesis of Faith*, which was widely read, but, like most of his books, raised controversy. His greatest work is his *History of England from the Fall of Wolsey to the Spanish Armada*, 1856-70, a fine piece of writing but distinctly unreliable. He also wrote *Lectures on the Council of Trent* and other books dealing with events of the 16th century. Other works include *The English in Ireland, Oceana, or England and her Colonies*, the most popular of all, *Short Studies on Great Subjects* and *The Life and Letters of Erasmus*. Froude was very intimate with Carlyle, but much controversy followed his books on Carlyle and his wife. In 1892 Froude was chosen Professor of Modern History at Oxford, but he died shortly afterwards, on Oct. 20, 1894.

Fruit Part of a flowering plant that contains the seed, especially such as is used for human food.

It may be divided into tree fruit, such as apples, and bush fruit or small fruit, such as strawberries. It may also be classified as pip fruit, *e.g.*, oranges, apples, pears, melons and medlars; stone fruit, *e.g.*, plums, cherries, apricots, peaches and dates; berries *e.g.*, currants, strawberries and raspberries; or shell fruit, *e.g.*, walnuts. Grapes belong to the berry class; bananas and pineapples are allied to it. It may further be divided into fresh fruit which will only keep for a few days and preserved fruit, which may be either tinned, bottled or dried, such as figs and raisins.

Fruit is a popular and important article of food, especially in hot weather and hot climates. It contains much water, but also acids which are good for health. Sugar is an important content and many fruits, the orange for instance, contain vitamins. Fruit is essential for good health, and it plays a great part in keeping the body in good condition.

The grape is cultivated on an enormous scale in the warmer part of the world. Oranges are largely grown in the Mediterranean region for export. California, South Africa, British Columbia and Australia are great fruit-growing countries, much of it being tinned for export. Figs, raisins and other fruits are dried and exported from Greece and neighbouring lands; also from Australia Great Britain imports much tinned and dried fruit, but of the hardier fruit a good deal is produced at home, especially in the counties of Kent, Worcester and Hampshire. In all, some 94,000 acres are under small fruit. In addition there are many apple and cherry orchards and in Somerset, Devon and Hereford a special kind of apple and pear is grown for making cider and perry. The blackberry still grows wild on a considerable scale.

To encourage the growing of fruit at home various measures have been adopted by the Ministry of Agriculture, such as the establishment of stations for grading and packing of

fruit. Much of it is bottled, so that it can be kept for winter use and a great deal is made into jam. There are factories for canning fruit at Wisbech and Paddock Wood in Kent. Certain fruits, among them apples and pears, must bear the national mark to show that they have been grown at home. Dried fruits imported from the Empire are given a preference as regards import duties.

A station for research into fruit storage problems has been opened at East Malling, Kent, and experiments have shown that it is possible by the use of carbon dioxide to keep fruit fresh for a long period.

The chief English market for fresh fruit is Covent Garden. Thence it passes into the shops of the fruiterers or greengrocers. The Fruiterers' Company is one of the London livery companies.

Fry **Charles Burgess.** English athlete. Born at Croydon, April 25, 1872, he was educated at Repton, Oxford, where he excelled as an athlete. He represented his university at cricket, athletics and Association football and held the world's record for the long jump. Afterwards he played cricket for Sussex and for years was one of the leading batsmen in the country. In 1900 he scored 3147 runs and he played for England on several occasions. Fry devoted his energies to training boys for the sea and conducted an establishment at Hamble. He has written books on cricket and on the League of Nations, and has come forward as a Liberal politician.

Fry **Elizabeth.** English prison reformer. Born in Norfolk, May 21, 1780, the daughter of John Gurney, the Quaker banker, in 1800 she married Joseph Fry and settled in London. In 1813 she visited Newgate Prison, and, horrified by the terrible conditions, at once set to work to reform them. An association was started and under her guidance a great deal of good was accomplished. Mrs. Fry, who brought up a large family, died Oct. 12, 1845, at Ramsgate.

The family to which Joseph Fry belonged is known for its association with the cocoa business in Bristol. This was founded in the 18th century by an earlier **Joseph Fry,** who died in 1787.

Fryatt **Charles.** English sailor. He was born at Harwich, Dec. 2, 1872, and entered the mercantile marine. When the Great War broke out he was captain of the G.E.R. steamer *Brussels,* plying between England and Holland. On March 28, 1915, he succeeded in ramming a German submarine, and the following year was captured by a German destroyer, tried by court martial at Bruges and shot, July 27, 1916. Later his body was brought to England and buried at Dovercourt.

Fuad King of Egypt. A son of Ismail, the Khedive, he was born in Cairo, March 26, 1868. In Oct. 1917 he became Sultan of Egypt in succession to his brother, Hussein, and in 1922 he was made the first king of the country.

Fuchsia Genus of flowering shrubs and small trees, named after the 16th century botanist, Leonhard Fuchs. There are some 50 species, mostly natives of Mexico and the Andes region. Since Kew gardens first received *F. coccinea* in 1788, many other species have reached Britain, yielding hardy and half-hardy varieties, including dwarfs, with crimson, violet, coral, cream and white blooms.

Fuchsine Coal tar derivative also known as magenta or roscine. It consists of rosaniline hydrochloride and is an important direct dyestuff for wool, silk and leather, and, with a mordant, for cotton. It occurs as brilliant iridescent crystals which form a deep red solution in water and are also very soluble in alcohol.

Fuegians S. American Indian tribes inhabiting Tierra del Fuego. The Yahgans of the centre are a stunted primitive race who use wind shelters, and bone and shell implements. The tall Onas of the East are descendants from Patagonian immigrants; the western Alakalufs come from Chilean Araucarians.

Fuel Any combustible materials used as a source of heat. All fuels consist largely of some form of carbon or of hydrocarbon. Coal is the most important solid fuel, but other carbonaceous material such as peat, wood, straw and vegetable waste are largely used. Petroleum, the chief liquid fuel, is the source of many fuel derivatives, and in addition oils distilled from coal, shale and other substances are used in oil engines of the Diesel type.

Gaseous fuels include natural gas, coal gas, water gas, producer and blast furnace gases. Of recent years much has been done to use fuel resources, particularly coal in this country, more advantageously. Pulverised fuel is largely replacing ordinary coal, and extensive plants have been erected for the carbonisation, under careful control, of that material whereby the maximum quantity of certain desired products can be obtained. Attempts have been made to commercialise the production of refined oil-fuel (petrol) from coal, and recently a mixture of oil and finely powdered coal has been used with success. The government has a **Board of Fuel Research** and maintains at Greenwich a Fuel Research Station, which has laboratories at Stoke, Glasgow, Nottingham, Newcastle-on-Tyne and elsewhere. In 1931 a world fuel conference met in London.

Fuenterrabia City of Spain. It stands on the Bidassoa, near its mouth, 10 m. from San Sebastian, on the railway line from Paris to Madrid. The old town, still surrounded by its walls, has a castle and other buildings dating from the Middle Ages. Near it is a new town, a fishing centre and a watering place. Pop. 5000.

Fuentes d'Onoro Village of Spain, 15 m. from Ciudad Rodrigo and near the frontier of Portugal. Here, on May 3-5, 1811, a battle was fought between the British and the French. Wellington was trying to take Ciudad Rodrigo and a French army came to relieve it. The result was indecisive, but the French had somewhat the better of the encounter.

Fugger Famous German family of traders. They lived at Augsburg, where Johann Fugger became a banker and merchant about 1390. The business was carried on by his sons, grandsons and other descendants and its members became enormously wealthy. They had interests all over Europe and later in America, and lent money to the Emperor Charles V. and other rulers. There are memorials of the Fuggers in Augsburg (*q.v.*).

Fugue Form of musical composition. Its essential condition is the development of a melody, from four to eight bars in length, announcing the subject. This is done

by each voice, or part, in turn, being immediately taken up by another, which is called the answer. To this the first part supplies an accompaniment. J. S. Bach was a master of the fugue. Handel and Mozart also made good use of it.

Fugue is also used as a psychological term, signifying a "wandering attack," due to the activity of the unconscious mind.

Fujiyama Loftiest mountain of Japan. Situated on the main island, 60 m. south-west of Tokyo, overlooking Suruga Bay, it is 12,395 ft. high. An extinct or quiescent volcano, it has a crater 2000 ft. across and 500 or 600 ft. deep, which is now filled with water. The last eruption occurred in 1707. It is a sacred mountain and many Buddhist pilgrims ascend each August to pray at rock-built shrines. It is also known as Fujisan.

Fulda City and river of Germany. The city stands on the Fulda, being in the Prussian province of Hesse-Nassau, 69 m. from Frankfort. There are some industries and an agricultural trade. The city had a university from 1734 to 1804. Fulda is famous for its abbey, founded in 744 by Boniface and once one of the richest in Europe. Pop. 17,500.

Fulgurite Name given to a vitreous tube in sand due to the action of lightning in fusing the loose sand grains together. These tubes are sometimes more than two inches in diameter and in the blown sand of Cumberland extend to a depth of 40 feet and near Macclesfield to 22 feet.

Fulham One of the 28 boroughs of the County of London. It lies along the Thames on the north side with a very long frontage to the river and includes the district of Parson's Green. The chief building is Fulham Palace, the residence of the bishops of London. The courtyard dates from the 15th century; the main building from the 18th. Part of the grounds, Bishop's Park, is open to the public. There is a large power station here. In the borough are the football grounds of the Chelsea and Fulham clubs.

Fulham Ware is a fine stoneware which was first made at Fulham by John Dwight. It is remarkable for the brilliancy of its colour. Pop. (1931) 150,940.

Fuller Name given to one engaged in fulling or milling woollen cloth. The process of fulling is carried out on heavy materials for overcoats and suitings to cause the yarns to shrink and felt together. The material, after being soaked in soap and water, is twisted into a rope and passed through vertical rollers, and whilst still in a wet state, it is stored to complete the shrinkage along both the warp and the weft.

Fuller **Thomas.** English divine and author. Born at Aldwinkle, Northants, in 1608, he was educated at Cambridge. He was chaplain to the king's forces during the Civil War and held in succession several livings, including that of Cranford in Middlesex, where he is buried, but he is chiefly known by his books. He wrote *The Church History of Britain*; but his wit is seen to better advantage in *The Worthies of England*. He died in London in Aug., 1661.

Fuller's Earth Soft, dull, greenish-brown or grey variety of clay. It consists of impure hydrous silicate of alumina. Unlike ordinary clays, it falls to a powder in water, lacking plasticity. It is still used as an absorbent for grease, although not so much to-day as formerly, also in oil filtration. It is used medicinally for irritated skins. It is worked at Nutfield, in Surrey, also near Bath and at Woburn.

Fuliminate Word meaning to explode and used in that sense by scientists. Fulminate of mercury is a powerful explosive used in percussion caps and detonators. Fulminic acid is found with mercury and other metals, but never alone.

Fulton **Robert.** American engineer, born in 1765, in Pennsylvania. He worked on canal improvements and then conceived the idea of using steam engines for driving ships. He worked on this in Paris and eventually in 1803 built a small steamship on the Seine. He then returned to America and built another which he called the *Clermont*. This and its successor, the *Fulton*, made successful voyages on the Hudson, and their invention marks a stage in the history of the steamship. Fulton died Feb. 24, 1815.

Fulwood Urban district of Lancashire. It is just outside the borough of Preston and its industries are those of that town. Pop. (1931) 7387.

Fumigation Method of disinfection by the use of fumes or gases. In cases of contagious diseases, fumigation is carried out for disinfecting the sick room and the clothes, etc., of patients, and may be done by means of burning sulphur, often in the form of a sulphur candle which gives off sulphur dioxide. Paraform, a solid form of formaldehyde, is a powerful fumigant for rooms.

Fumigation is also resorted to by gardeners for destroying insect pests upon plants. For this smoke, sometimes tobacco smoke, is used.

The extremely poisonous gas, hydrocyanic acid, is used for fumigating ships' holds and also for fruit trees, especially in America, and the vapour of carbon disulphide is used to fumigate maize, grain elevators, etc.

Fumitory Small annual plant (*Fumaria officinalis*). It is common in fields and waste places. The rose-coloured flowers are borne in loose, erect spikes upon slender brittle stems bearing much divided leaves. The plant has a somewhat bitter saline taste and was used formerly as a medicinal herb in eye and skin diseases.

Funchal Capital of the Madeira Islands. Situated on the south coast of Madeira Is. It is a salubrious winter resort. Steamships anchor in the roadstead, which is protected from all but south winds. There is a substantial trade in coal and wines. It has a broadcasting station (24 M.; 0.05 kW.). Pop. 19,000.

Fundamentalism Religious movement in the U.S.A. It arose about 1910 when a number of Christians in Tennessee and other states decided to require from those professing their faith the acceptance of the fundamental doctrines of Christianity, not only the virgin birth, the atonement and the resurrection, but the verbal inspiration of the Bible.

Fundy **Bay of.** Opening of the Atlantic Ocean, off the coast of Canada. It penetrates about 100 m. into the land and divides Nova Scotia from New Brunswick. It receives the St. John and other rivers. The bay is divided into two parts called Chigneto Channel and Minas Channel. Grand Manan Island stands at the entrance of the bay, which is noted for its high tides.

Fünen Island of Denmark, also called Fyen. It is in the Baltic Sea between Jutland and Zealand, with the Little Belt on one side and the Great Belt on the other. 1130 sq. m. in area, its soil is fertile and agriculture flourishes. The chief river is the Odense, and Odense is the name of the chief town.

Fungus Large group of the lowest division of cellular plants, the thallophyta. They are distinguished by an absence of chlorophyll and starch and the special characters in their structure and life history. The plant body, or mycelium, consists of a much branded mass of filaments, or hyphal, sometimes forming false tissues, the cell walls being composed of fungus cellulose.

In their nutrition, unlike green plants, fungi obtain their food materials from dead or living organic matter, and consequently some are parasites, such as rust and mildews, others are saprophytes, living on decaying matter, as represented by toadstools and mushrooms. Fungi have no flowers, but reproduce by asexual spores or, in some, by a sexual process. Some are edible, especially the mushroom; others are highly poisonous.

Fur Undercoat of short, fine, soft hair intermingled with longer overhair, found on the skin of certain animals. It is used for clothing in very cold countries and largely used elsewhere in cold weather, especially by women. The animals chiefly valued for their fur are the musquash, chinchilla, ermine, skunk, mink, wolverine, sable, beaver, seal and bear. The skins of the mole, fox, rabbit and squirrel are also used.

Most of these animals are caught in the wild state in Canada and Siberia and to a lesser extent in Australia, but foxes are now bred for the purpose on special farms. After being taken the skins need careful preparation. The chief fur market is London. The Hudson's Bay Co. has for over 200 years been engaged in the fur trade in Canada, which was long a source of livelihood to the Indians.

Furies **The.** (Latin, *Furiae*). Goddesses of ancient Greece and Rome. They are represented as snake-haired and it was believed that they were sent from Tartarus to punish the crimes of perjury, murder, etc. They are also known by the Greek names Erinyes and Eumenides.

Furlough Leave of absence. The term denotes specifically the absence from military duty of the rank and file by permission of the commanding officer for periods exceeding six days on full pay; passes may be endorsed with permission to wear civilian clothes.

Furnace Structure for the production of heat. It is employed in chemical and metallurgical processes and in steam boilers. Many kinds of furnaces are in use, from the simple hearth to the electrical furnace. Usually the inner part of the structure is lined with some refractory material, while the outer part is strengthened to give stability.

Combustion depends upon a supply of air; in the hearth type this is usually a natural draught, whilst in others some form of forced draught is necessary, *i.e.*, in the shaft furnace of the blast and cupola types. In the reverberatory furnace for roasting ores the draught is carried over the heated material. The crucible, muffle and retort furnaces are of the closed vessel type and are used in many metallurgical and allied processes. In some, solid fuel is used, in others gas is employed while furnaces using the electric arc are necessary for very high temperatures.

Furness District of Lancashire. In the north-west of the county, it is divided from the main part by Morecambe Bay. The district contains great quantities of iron ore and this has led to the growth of Barrow-in-Furness. The Furness Rly. is now part of the L.M.S. system. Furness covers about 250 sq. m.

Furness **Baron.** English shipowner Born April 23, 1852, Christopher Furness entered business life and in 1877 established at West Hartlepool his own line of steamers. This became the great firm of Furness, Withy & Co., and later he was associated with others of the large industrial undertakings of Durham. In 1895 he was knighted and in 1910 was made a peer. He had been Liberal M.P. for Hartlepool, 1891-95 and 1900-10. He died Nov. 10, 1912. His son, Marmaduke, who succeeded to his title, was made a viscount in 1918.

Furness Abbey Ruined abbey in Furness, Lancashire. Near Dalton-in-Furness on the L.M.S. Rly., it was founded in 1127 and was, until the Reformation, a great and wealthy Cistercian abbey. The parts remaining are considerable and preservation work has been done since they became national property in 1920. The remains include part of the chapter house, the cloisters and the chapel.

Furniss **Harry.** British caricaturist and writer. He was born at Wexford in 1854 and came to London at the age of 19. In 1880 he joined the staff of *Punch*, to which paper and *The Illustrated London News* he contributed illustrations for many years. As a humorous lecturer he toured America and Australia, and in 1894 founded a weekly paper, *Lika Joko*. He also illustrated the works of Dickens and Thackeray and wrote a number of books, including *Confessions of a Caricaturist*, 1901. He died Jan 16, 1925.

Furniture General term denoting equipment. It designates specifically the movables and fittings disposed for use or ornament in a dwelling or other building.

From its prehistoric beginnings the development of furniture has involved incessant change in material, form and use. The convenience of raised surfaces for the various demands of work and repose, and of enclosed receptacles for holding things, was recognised at the outset. Hence the history of style gathers round that of the table, stool, bedstead and chest. Ornament was utilised from the first, as in the carved or moulded animal feet of Babylonia and Egypt. A 20th century development is the much greater use of glass and the introduction of steel tubes in place of wood.

Of furnishings in Anglo-Saxon, Norman and Mediaeval England, including wall hangings and floor coverings, little remains. The furniture styles of the modern world date from the Renaissance. The revived interest in period furniture concerns chiefly the sequence characterised as Tudor, Jacobean, Stuart, Queen Anne, Georgian and Victorian, with their continental contemporaries, notably Louis XIV., XV., and XVI., Directory and Empire. Some produced outstanding craftsmen, *e.g.*, Chippendale, Sheraton, Adam and Boulle have given their names to distinctive styles of furniture.

The furniture-making industry is a large one, its chief English centre being London. Much of it is turned out by mass production, but the better pieces are made by hand, often being copies of old models.

There are fine collections of old, or period, furniture in the Victoria and Albert Museums, as well as in the Wallace Collection. The selling of antique furniture is a large business, many shops existing for this purpose, though not all the pieces offered are geniune.

Furnivall **Baron.** English title. Created in 1295 for Thomas de Furnivall, it has since been held by several families. **Thomas Neville** and **John Talbot** gained the title through marriage. Later, John Talbot became Earl of Shrewsbury, which title was held by his successors until 1616. After a period of abeyance, it descended to the daughter of the 7th earl in 1651, who, marrying the Earl of Arundel, caused it to be linked with the Howard family. Again in 1777 it became extinct, until, in 1913, it was revived for **Mary Frances Katherine Petre,** daughter of the 14th Baron Petre, and a descendant of the Howard family.

Furtwaengler **Wilhelm.** German musician. Born in Berlin, Jan. 25, 1886, the son of Adolf Furtwaengler (1853-1907) the archaeologist, he early gained a musical reputation and while yet a young man conducted operas and concerts at Breslau, Zurich, Munich, Strasbourg, Lubeck, Mannheim, Berlin, Frankfort and Vienna. In 1922 he became Director of the Berlin Philharmonic Concerts, and from 1922 to 28 directed Gewanhaus concerts at Leipzig. He conducted the Philharmonic Orchestra in New York, 1925-27, and Philharmonic concerts in Vienna, 1927-30. He has also conducted in London.

Furze Genus of spiny, leguminous plants (*Ulex*). They are native to central and western Europe and north-western Africa. The common species (*U. europaeus*) also called gorse or whin, grows from 2 to 6 ft. in height, has terminal spines besides branched spines on the stems and bears sweet-scented, two-lipped yellow flowers. The young shoots serve as fodder, the old stems as fuel.

Fusan Town and seaport of Korea. It stands at the south-eastern end of the peninsula and is connected by railway with Seoul. It has a good harbour with ample accommodation for modern shipping and under Japanese rule its trade has developed greatly. Pop. (1930) 113,000.

Fuse Device for igniting an explosive charge, such as a hollow tube filled with combustible material, one form being the quickmatch used for instantaneous firing. In heavy blasting operations, the charges are now usually fired by electricity.

The term is also used for an electrical safety device for breaking a circuit automatically when the current becomes too heavy.

Fusilier Name first given to a soldier who carried a fusil, which was a light musket fitted with a flint lock. The name first appeared about 1640 and in the 17th century the French and other armies organised companies of fusiliers to protect the artillery. Later the practice was abandoned and with the change in the nature of firearms the fusiliers became ordinary infantrymen. The name is retained in the British and other armies, and certain regiments are still called fusiliers. In the British Army these are distinguished by a bearskin cap. The oldest of them is the **Royal Fusiliers** (City of London Regiment). Others are the **Royal Scots Fusiliers,** the **Royal Inniskilling Fusiliers** and the **Royal Welch Fusiliers.** The **Royal Munster** and **Royal Irish Fusiliers** were disbanded after the World War.

Fusion Process of melting a solid such as metal by the application of heat. The melting is accompanied by an absorption of heat, which is converted into kinetic energy, and by a change in volume. The degree of fusibility of metals varies greatly, from the melting point of solid mercury (−39° C.) to that of tungsten (3267° C.).

Fust **Johann.** German printer. A goldsmith of Mainz, he entered into partnership with Gutenberg in 1450, to found a printing press, which he financed. In 1455 they separated, and Fust set up another works with Peter Schöffer. The chief production of the first press was the *Mazarin Bible,* and of the second, a *Latin Psalter.* Fust died of the plague in Paris in 1466.

Fustian Stout cotton fabric, used chiefly for men's wear. It may be a plain, twilled jean or a short-napped, velvet-like cloth, also called corduroy, moleskin or velveteen. Similar cut fabrics were made of wool under Edward III., and early forms had cotton wefts and linen warps. It is produced also in Spain and Italy, the fustian of Naples being renowned. It apparently originated at Fustat, near Cairo.

Future In business a word meaning goods not yet on the market. There is a good deal of buying and selling of futures, especially in N. America, principally in cotton and wheat, though Liverpool is the largest centre for "futures" in the former commodity. They are, of course, highly speculative transactions.

Futurism Form of art which arose in Italy about 1910. It was due to the influence of the poet F. T. Marinetti, upon a group of Italian artists, amongst whom were Balla, Boccioni, Carra, Rossolo and Severina. Marinetti and his disciples repudiated the older ideas of art, and claimed that the new movement introduced into painting a dynamic state, whereby a picture not only depicted a scene, but also indicated the emotions and ideas of the artist together with the thoughts and mental state of the person portrayed. An exhibition of futurist paintings was held in Paris in 1911 and in London in 1912.

Fylde District of Lancashire. Situated between the estuaries of the rivers Ribble and Wyre, it is mainly an agricultural area.

Fyne Inlet of Argyllshire. It extends S.W. and S. for 44 m. from the loch head, 6 m. above Inveraray, to the Kyles of Bute. Vessels using the Crinan Canal traverse it to Lochgilphead. Its branches form Loch Tarbet, Loch Gilp, Loch Shira and Loch Gair. **Loch Fyne herrings** fetch high prices in the fish markets.

Fyvie Village of Aberdeenshire. It has a station on the L.N.E. Rly. 38 m. from Aberdeen, and was once a burgh. Here is Fyvie Castle, one of the finest houses in Scotland, restored on a grand scale by Lord Leith of Fyvie. It occupies the site of a castle built in the 12th century or earlier.

GABA TEPE Hill in Gallipoli. On April 25, 1915, whilst the main British force was being landed on the beaches of Gallipoli, the Australian and New Zealand corps landed near Gaba Tepe in order to create a diversion. After fierce fighting the hill was captured from the Turks. *See* GALLIPOLI.

Gabelle French word for a tax on any commodity. It was gradually limited to the tax on salt. Imposed in 1286, and made permanent by Charles V. (1364-80), its unequal incidence made it unpopular, and the grievance rankled until its abolition during the Revolution in 1790. In some Eastern countries the word is still used for a tax on salt.

Gabes City and port of Tunis. It stands on the Gulf of Gabes, an opening of the Mediterranean Sea, and is about 200 m. from the city of Tunis. Nearby are enormous salt lakes. Its ancient name was Tacape. Pop. 20,000.

Gable Pointed or triangular part of the outer wall of a building, at the end of the steeply pitched roof of the Gothic style. It corresponds to the pediment of classical architecture. In many examples of secular Gothic buildings, in Belgium for example, the gable end of the roof is adorned with numerous pinnacles, and ornamented barge-boards are added to the decorative design. Fine examples of ornamented gables are seen also in Tudor buildings.

Gaboriau Émile. French novelist. Born at Saujon, Nov. 9, 1833, he was the originator of a certain type of sensational crime fiction. His first book of this kind, *L'Affaire Lerouge*, 1866, was instantly successful and was dramatised in 1872. Other works are *Le Dossier No.* 113, 1867, and *Monsieur Lecoq*, 1869. He died, Sept. 28, 1873. His imaginary detective, Lecoq, was the first detective of fiction.

Gabun River of Africa; also a French colony there. The river falls into the Atlantic Ocean by an estuary 40 m. long and 10 m. wide. Near its mouth is Libreville, the capital of the colony, which is one of the four divisions of French Equatorial Africa. Its area is 104,320 sq. m. Pop. (1931), 387,283.

Gad Name of several Biblical characters:—(1) Jacob's seventh son by Zilpah, Leah's handmaid. He founded an Israelitish tribe, localised chiefly in Gilead; David's eleven men of Gad were traditionally famous (1. Chron. xxi.). (2) Prophet who was David's early companion and counsellor (2. Sam. xxiv.).

Gadara Ancient town of Palestine. Situated 6 m. S.E. of the Sea of Galilee, in the Syrian Decapolis, it was a Greek city. Captured by Antiochus III. in 218 B.C., it was rebuilt by Pompey, 64-63 B.C. Its ruins adjoin the modern village of Umm Kais.

Gad Fly Two-winged insect, *tabanus bovinus*, belonging to the order *diptera*. It is about 1 in. in length, is of a blackish colour above and reddish beneath and on the sides of the abdomen. Its larvae live in damp soil. The female gad fly is a blood sucker, and is particularly troublesome to horses and cattle in hot weather.

Gad's Hill District in Kent. It is 2½ m. from Rochester, on the Gravesend road, and was the scene of Falstaff's encounter with "rogues in buckram" in Shakespeare's play, I. *King Henry IV.*, in which a character called Gadshill appears. Charles Dickens lived in Gad's Hill Place, near the Sir John Falstaff inn.

Gaekwar Hereditary title borne by the rulers of Baroda, India. It comes from a native word meaning cow, and is the family name of the dynasty that has ruled since about 1720.

Gael Member of the Gaelic branch of the Celtic speaking peoples. The Gaels, who arrived in Scotland and Ireland from the continent of Europe, used an older form of speech characterised by the Q sound, which survives in Erse, or Irish Gaelic, Scottish Gaelic, and Manx. A younger form, using P, appears in Welsh, Cornish, and Breton, which are not Gaelic tongues.

The term **Gaelic** is used for the national speech, literature, customs, etc., that are peculiar to the Gaelic peoples in Ireland and the Scottish Highlands. In both countries efforts are being made to keep alive the language and to maintain, or revive, an interest in Gaelic things, and societies exist for this purpose. Some of the universities have professorships and lectureships in Gaelic. In Ireland the government of the Irish Free State has done a good deal to make Erse, or Irish Gaelic, a compulsory language. In Scotland 7,069 people speak Gaelic only.

Gaff Light form of fishing spear or landing hook. It consists of a stout rod ending in a fork or hook, and is employed in salmon fishing, although its use is prohibited at certain seasons on the Tweed and other rivers.

The term **gaff** is also applied to a kind of boom or spar used for extending the upper end of a sail, and to the topsails above the mainsail.

Gainsborough Market town, urban district and river port of Lincolnshire. It stands on the Trent, 18 m. from Lincoln and 146 from London, on the L.N.E. Rly. Machinery is manufactured and there is a good deal of trade in agricultural produce by canal or along the river. A fair is held twice a year. An aegre or bore comes up the Trent here twice a day. Gainsborough is described as S. Oggs in George Eliot's *Mill on the Floss*. Pop. (1931) 18,684.

Gainsborough **Thomas.** English painter. Born at Sudbury, Suffolk, in 1727, he was self-educated until at the age of 14 he came to London. In 1745 he married and settled at Ipswich. He moved to Bath in 1759, and there successfully practised portrait painting, but in 1774 returned to London and took a house in Pall Mall. In 1768 he was elected an original member of the Royal Academy. He died Aug. 2, 1788.

Gainsborough's paintings show a remarkable lightness of touch and luminosity of colour. He is remarkable both for his portraits and his landscapes. Of the former may be mentioned,

The Market Cart and *The Harvest Waggon*, and of the latter, *Mrs. Siddons* and *The Blue Boy* (which latter in 1921 was sold by the Duke of Westminster for £150,000).

Gairdner Lake of Australia. It is in the south of the state of South Australia, and is a salt water lake. It is about 100 m. long, and its extreme breadth about 40 m.

Gairloch Opening of the Atlantic on the west coast of Scotland. It runs for about 6 m. into the county of Ross and Cromarty. At its head is the village of Gairloch, a tourist resort.

Galahad Knight of King Arthur's Round Table. Son of Lancelot and Elaine, he was reared by nuns, and knighted on his arrival at Camelot on the eve of Pentecost. He set forth on the quest of the Holy Grail, and to him alone, as the knight of purity, was vouchsafed the vision of the mystic cup from which Christ drank at the Last Supper. Malory and Tennyson tell the story, and G. F. Watts has painted him.

Galapagos Group of volcanic islands in the Pacific. They belong to Ecuador, and were officially renamed the Colon Archipelago in 1892. Situated on the equator, about 500 m. west of Ecuador, the 13 islands bear the names of English buccaneers, including the largest, Albemarle, 1650 sq. m. and Charles, the oldest settlement. The fauna and flora contain many peculiar species. Giant tortoises formerly abounded, Galapagos being the Spanish for tortoise. Cattle and fruits introduced by early colonists are now naturalised. Guano, sulphur, sugar products, and archil are exported. The area is 2868 sq. m. Pop. (1931) 2000.

Galashiels Burgh and market town of Selkirkshire. It stands on Gala Water, 33 m. from Edinburgh, on the L.N.E. Rly. It is a centre of the woollen industry, its tweed being famous. Pop. (1931) 13,102.

Galatea In Greek legend a sea nymph, a daughter of Nereus and Doris. She loved a beautiful Sicilian youth Acis, son of Faunus, who was slain by his unsuccessful rival, the Cyclops Polyphemus.

Galatea was the name given to an ivory statue fashioned by Pygmalion, the sculptor king of Cyprus, who successfully besought Aphrodite to endow it with life.

Galatia Old name of a district in Asia Minor. It was named from the Galatae, a Gaulish people who settled therein about 300 B.C. They came soon under Greek influence, and later some of them became Christians. At the time of Augustus, Galatia became part of the Roman Empire.

Galatians **Epistle to the.** Ninth book of the New Testament. In it the apostle Paul vigorously deplores the wholesale defections from Gospel freedom among his Galatian readers in favour of Jewish formalism.

Galatz Town and river port of Rumania. It stands on the north side of the Danube, about 80 m. from Bucharest. It has large docks. Pop. (1930) 101,148.

Gala Water River of Scotland. It rises in Midlothian, and flows S. from the Moorfoot hills, for 21 m. through Roxburghshire and Selkirkshire. It joins the Tweed just below Galashiels.

Galba Roman emperor. Servius Sulpicius Galba was born in 3 B.C., and became a soldier. He held many important positions, being praetor in the year 20 and consul in 33; he was governor of Gaul, later governor of Africa, and later still governor of Spain, showing ability both as soldier and administrator. In 68, on the murder of Nero, his troops declared him emperor, and he marched to Rome. He was murdered in 69.

Galen Greek physician. He was born about A.D. 130 at Pergamum, and studied medicine in Greece and Egypt. About 163 he went to Rome, where he was made physician to the emperors Marcus Aurelius and Commodus, and to many eminent Romans. He died in 200, either in Sicily or his native Pergamum. Galen wrote a great deal on medicine; and though most of his writings have been lost, those that remain were studied by medical men for centuries, and proved him to have been, after Hippocrates, the greatest of Greek physicians.

Galena Chief ore of lead. It is a sulphide of the metal and occurs, in veins and pockets, in rocks of many formations, associated with quartz, fluor, and ores of copper, zinc and silver. Its cubical, lead-grey crystals with a metallic lustre, contain 86 per cent. of lead and usually some silver.

Galicia District of Europe. It is to the north of the Carpathians, and since 1919 has been a part of Poland. It is rich in oil and salt. Lemberg is the chief town, and the Bug, Dniester, Pruth, and other rivers pass through it. Its area is about 30,000 sq. m.

Galicia Former kingdom of Spain. Situated north of Portugal, the kingdom comprises the modern provinces of Corunna, Lugo, Orense, and Pontevedra, occupying an area of 11,000 sq. m. The name is retained by the district which is traversed by the Minho and other streams, and the indented coastline includes the harbours of Ferrol, Corunna, and Vigo. The Gallegos are a hardy people devoted to agriculture and fishing. Their dialect forms, with Portuguese, a branch of Romance speech distinct from Castilian Spanish.

Galilee Roman province of Palestine in New Testament times. It lies north of Samaria and west of the Jordan, its capital being Tiberias. It was Christ's home in boyhood, and witnessed much of his active ministry. A Neanderthal skull was unearthed there in 1925, proving it to have been occupied in prehistoric times. It now forms part of the district of Palestine mandated to Britain.

A cathedral porch of unusual size is called a Galilee porch.

Galilee Sea of Lake of Palestine (alternately named after Tiberias, Chinnereth, and Gennesaret). An expansion of the Jordan, 13 m. long by 8 m. broad, it has an area of 64 sq. m., and lies 680 ft. below the Mediterranean level, having a maximum depth of 150 ft. Like the Dead Sea, it is a rift depression with tropical vegetation. Eastward the hills of Bashan, 2000 ft. high, cause sudden and violent storms (Matthew viii., xiv.). Tiberias and Capernaum, on its shores, then densely populated, were the scene of much of Christ's ministry.

Galilei **Galileo.** Italian astronomer. Born at Pisa, Feb. 18, 1564, he entered the university there, became a professor, and made some valuable discoveries in physical science, but was soon compelled to resign. In

1592 he became Professor of Mathematics at Padua, where he remained until 1610, when he moved to Florence. He died in Florence, Jan. 8, 1642, and is there buried.

Galileo erected a telescope, and so was able to discover the satellites of Jupiter, and some spots on the sun. After further observations on the heavens, he declared that the Copernican system of the planets moving round the sun was true; as this gave offence to the Church, however, he withdrew it—but only for a time. In 1632 he stated it again in his great Latin work on the solar system, and was in consequence put in prison. The Pope released him, and he continued his astronomical work almost until his death, although for 5 years he was blind. Galileo's discoveries place him in the front rank of the world's scientists.

Gall Nut-like outgrowth on the gall oak, *quercus tinctoria*. It is often known as an oak apple. Galls, the result of the attacks of the gall fly, contain about 40 per cent. of tannic acid and 5 per cent. of gallic acid; these acids form, with iron salts, dark blue or black compounds, hence the use of galls in ink manufacture.

The word **gall** is also a name given to the bile secreted by the liver; and for a sore on a horse's back, the result of chafing.

Galle Seaport of Ceylon. It stands on the south-west coast of the island and at one time was its chief port. Its full name is Punta Galle. Pop. (1931) 38,424.

Galleon Large Spanish vessel of the 15th-17th centuries. With a lofty stem and stern, and often with three or four gun decks, it served both for warfare, as in the Spanish Armada, and for transporting treasure from the Indies.

Gallery In architecture a passage constructed in the upper part of a building, and giving a view of the lower part of the interior. Later the term was extended to any large room of greater length than breadth. In the Norman castle the great hall often had a gallery surrounding it, and in later times the gallery accommodated the family paintings and works of art. Another form of gallery is the minstrels' gallery. Galleries are present in many mediaeval churches, and wooden ones became common after the Reformation.

The word is now used for a building to hold a collection of pictures, as the **National Galleries** and **National Portrait Galleries** in London, Edinburgh, and elsewhere.

Galley Long, narrow boat propelled by oars. Such vessels were largely employed in the Mediterranean until the 16th century. They had, as a rule, about 50 oars, each worked by six men, usually captives or convicts. A galley is now the six-oared boat on a warship, devoted to the captain's use. The word is also used for the place on a vessel where the cooking is done.

The term is used in printing for the wooden or metal frames used for receiving the type after it has been set. Proofs taken from this are called **galley proofs**.

Galliard An old dance for two persons. In triple time, it was very popular in the 16th and 17th centuries. The minuet is said to have sprung from it.

Gallican Church Branch of the Roman Catholic Church in France. Of 3rd century origin, it persistedly rejected ultramontanism, refusing to submit the temporal state and its head to papal control. Its liberties were defined by the pragmatic sanctions of Louis IX., 1269, and Charles VII., 1438, and by the declaration of the clergy drawn up by Bossuet in 1682, which Napoleon I. embodied in a statute in 1802. The Concordat, established in 1801, terminated in 1905, and the Gallican Church is no longer a state establishment.

Galli-Curci **Amelita.** Italian singer. Born in Milan, Nov. 18, 1890, her pure soprano voice was largely self-trained. She made her debut as Gilda in *Rigoletto* in Rome, 1909, and has appeared at the Chicago Opera House and the Metropolitan Opera House, New York. In 1924-25 she toured Great Britain, where she had previously attained a great reputation on the strength of her gramophone records. She toured Australia in 1932.

Gallieni **Joseph Simon.** French soldier. Born at St. Béat, April 24, 1849, he saw service in the Franco-Prussian War and also in Senegambia, the Sudan, and Indo-China. As Governor of Madagascar, 1896-1905, he proved himself a great administrator. Appointed Military Governor of Paris in 1914, his plans substantially assisted towards the victory of the Marne. He died May 27, 1916, and was posthumously made a Marshal of France, 1921.

Gallipoli Peninsula of south-east Europe. It is part of the Turkish Republic, but is in the zone that is ruled by a commission under the League of Nations. The peninsula lies between two openings of the Aegean Sea, the Gulf of Saros and the Dardanelles, and its importance is due to its position on the way to Istanbul. The most important places are Gallipoli, a small seaport, and Kilid Bahr.

GALLIPOLI CAMPAIGN. In 1915, soon after Turkey had entered the World War as an ally of Germany, the Allies decided to force a way to Constantinople. A fleet entered the Dardanelles, but was unable to make much progress, and suffered severe losses. It was then resolved to proceed by land through Gallipoli. A British army, called the Mediterranean Expeditionary Force, was assembled in Egypt and the islands of the Aegean under Sir Ian Hamilton. It included Australian and New Zealand troops, and numbered about 120,000 men. A French force was also assembled, but the British were entrusted with the main attack, the French making feints on the other side of the peninsula.

On April 25, 1915, the troops landed at several places on the peninsula. The losses were fairly heavy, as the Turkish resistance was stubborn, and progress was difficult. The Turks had positions, strongly fortified, on the hills, and from these hard fighting could not dislodge them. The struggle centred chiefly around Krithia under Achi Baba at the Aegean end, and at Gaba Tepe (*q.v.*), called Anzac, where the Australians and New Zealanders were assembled. A little assistance was given by the French on the Dardanelles side of the peninsula, but after three months the campaign had failed to achieve its object.

In August fresh forces were collected, and another landing was made. These new troops got ashore at Suvla Bay and attacks were made elsewhere, but there was no considerable success. The British forces could do nothing but hold on under climatic and other conditions which tested their moral and physical stamina to the very utmost. Towards the end of the year it was decided to evacuate Gallipoli, and

on Jan. 6-8, 1916, this was done, almost without loss—a remarkable feat of arms. The British lost over 33,000 men, and some 7000 were reported missing.

Gallium Hard, white, sectile and malleable metal. It was discovered in 1875 by Lecoq de Boisbaudran in zinc-blende from Pierrefitte in the Pyrenees. Its symbol is Ga, atomic weight 69.9, and melting point 86° F. It softens by pressure of the fingers, and once melted remains in liquid form at low temperatures.

Galloway District in the south-west of Scotland, consisting of the counties of Kirkcudbright and Wigtown. The **Mull of Galloway** is the most southernly point of Scotland and on it is a lighthouse and some ancient remains. Galloway is famed for its breed of horses and its hornless cattle, and is associated with the story of the Covenanters.

The title of **Earl of Galloway** has been borne by the family of Stuart since 1623. The earl's eldest son is called Lord Garlies.

Gallows Wooden frame used for executing sentence of death by hanging. It is formed of two upright posts and a cross-beam, from which depends the execution rope; or, of a single upright with a projecting beam. The latter form served more particularly for the gibbet, upon which bodies of criminals, after execution, were suspended.

Until 1868, gallows were erected in public places, as at Newgate and Tyburn. *See* EXECUTION.

Gall Stones Hard concretions formed in the gall bladder. Also called biliary calculi, they may comprise the crystalline substance called cholesterin, or bile-pigment encrusted with cholesterin or lime salts. Colour varies from golden-brown to white. There may be several hundreds gravel-sized, or a single stone sometimes as big as a goose's egg. Usually arising from catarrh of the bile passages, bile-sand is deposited and gradually massed and encrusted. Sedentary occupations and over-eating are predisposing causes. *See* BILE.

Gallus Roman emperor. Trebonianus Gallus first became prominent as the leader of a Roman army in the region of the Danube. After Decius had been killed in battle in that area, in A.D. 251, Gallus was proclaimed Emperor. He made peace with the Goths and marched to Rome. In 253 he was killed by his own soldiers.

Galston Burgh and market town of Ayrshire. It is on the River Irvine, 5 m. from Kilmarnock, on the L.M.S. Rly. There are some industries, and in the neighbourhood are coal mines. Pop. (1931) 4601.

Galsworthy **John.** English author. Born at Coombe, Surrey, in 1867, he was educated at Harrow and New College, Oxford. He became a barrister in 1890, but gave his time to literary work, and as John Sinjohn published some tales and a novel called *Jocelyn*, 1898. During the next 30 years he made his way steadily into the front rank, winning distinction both as a dramatist and novelist and to a lesser degree as poet and essayist. His honours included an honorary fellowship at his old college and the Order of Merit. In 1931 he was Romanes Lecturer at Oxford. He died in 1933.

Galsworthy's plays deal largely with social problems, and include *The Silver Box, Strife, Loyalties, The Skin Game, The Pigeon, Escape*, and many others. As a novelist his great work is the stories written about the family of Forsyte, a series of books which depicts the history of several generations of an imaginary London family. Beginning in Victorian days, they trace the family history up to the disturbed period of the war and after. These books and tales appeared at first separately, but they have been collected into three large volumes entitled *The Forsyte Saga, A Modern Comedy*, and *On Forsyte Change*. Other novels are *The Island Pharisees, The Freelands, The Dark Flowers, The Country House, Maid in Waiting*, and *Flowering Wilderness. Over the River* appeared in 1933, after the author's death.

Galt City of Ontario, Canada. It is 24 m. from Hamilton, and is situated on the Grand River, in an agricultural district. It is an industrial centre, having flour and woollen mills, and iron works, for which electric power is supplied by Niagara Falls, and is served by the C.N. and C.P. Rlys. The city is named after John Galt. Pop. 13,200.

Galt **John.** Scottish novelist. Born in Ayrshire, May 2, 1779, he went to London in 1803. In 1809 his business took him to the Continent, and on his return he took to writing for a livelihood, but met with no great success until *The Ayrshire Legatees* came out in 1820; it was followed by *The Annals of the Parish, Sir Andrew Wylie*, and others. In Canada, 1826-29, he founded the town of Guelph, and wrote *Laurie Todd*, a *Life of Byron*, and an *Autobiography*. He died at Greenock, April 11, 1839.

His son, **Sir Alexander Tilloch Galt** (1817-93), was a prominent politician between 1849 and his death.

Galton **Sir Francis.** English scientist. Born at Birmingham, Feb. 16, 1822, a cousin of Charles Darwin, he was educated at Birmingham and Trinity College, Cambridge. He graduated in medicine, but did not practise. After travelling in unexplored parts of S. Africa, he wrote a *Narrative of an Explorer in Tropical S. Africa*, 1853, and *The Art of Travel*, 1855. In 1863 he produced *Meteorographica*, notes on meteorology, but his fame rests on his studies in heredity. He wrote *Hereditary Genius* and the more popular *Inquiries into Human Faculty*, and made possible the use of finger-prints for detecting criminals. In 1904 he endowed a professorship for the study of eugenics at the University of London, and he also established a laboratory for the same purpose. In 1909 he was knighted, and he died on Jan. 17, 1911.

Galtymore Mountain of Ireland. In the county of Tipperary, it is the highest summit of the Galtee range, having an altitude of 3015 ft.

Galvani **Luigi.** Italian physiologist. Born at Bologna, Sept. 9, 1737, he became a professor at the university there, and investigated, chiefly by experiments on frogs, his theory of animal electricity, on which he wrote a treatise *On the Force of Electricity in Muscular Movement*, 1791, thus becoming one of the pioneers of the science of electricity. He died Dec. 4, 1798. The galvanometer perpetuates his name.

Galvanising Process of coating iron or steel with a thin film of zinc. This is done by dipping the iron into a bath of molten zinc, ammonium chloride (sal ammoniac), being used as a flux to promote the union of the two metals. The process was

invented in 1742 by the French chemist, Jean P. Malouin. **Galvanised iron** or steel withstands the action of air and moisture better than tinplate; hence its use for wire, tanks, and roofing.

Galvanometer Instrument for the strength of electric currents or the potential difference in a circuit. In its simplest form, as in the linesman's detector, a magnet, fitted with a pointer, is supported in the centre of a coil of one or more rounds of wire. The magnetic needle is deflected in proportion to the strength of the current.

Galveston City and port of the United States. In the state of Texas, it stands on an island at the entrance to Galveston Bay, and is connected with the mainland by a causeway over 2 m. long. Galveston's main industry is shipping, a vast quantity of cotton being exported. Pop. (1930) 52,938.

Galway Seaport, market town, and urban district of the Irish Free State; also the county town of Co. Galway. It stands on Galway Bay, and is 130 m. from Dublin, on the G.S. Rlys. Shipping and fishing are among the industries, which also include flour milling, marble polishing, and distilling. Pop. (1926) 14,300.

The Irish title of **Viscount Galway** has been borne since 1727 by the family of Monckton-Arundell. In 1930, Serlby Hall, near Bawtry, long the family seat, was sold.

Galway County of the Irish Free State. In the province of Connaught, it covers 2370 sq. m., and is the second largest in the country. With a coastline of about 400 m. on the Atlantic, it is famed for its wild and mountainous scenery of extraordinary beauty, and the Aran Islands, Connemara, and Joyce's Country. There are many lakes, the largest being Lough Corrib.

Galway is an agricultural county, cattle being reared and potatoes and oats grown, but many of the inhabitants are fishermen. Limestone and marble are quarried. Galway is the county town, while others are Tuam, Ballinasloe, Loughrea, Clifden, Athenry, Gort, and Clonfert. Pop. (1926) 169,400.

Galway Bay, between the counties of Clare and Galway, is 30 m. long and 22 m. broad. The Aran Islands protect it from the sea.

Gama **Vasco da.** Portuguese navigator. Born at Sines about 1460, he became a sailor, and in 1497 attempted the difficult voyage round the Cape. He succeeded, and crossed the Indian Ocean to Calicut, where he established a settlement, returning to Portugal in 1499. An attempt was made to establish a colony at Calicut, but the natives rebelled and Gama was sent to quell them, returning to Portugal in 1503. In 1524 there were more native atrocities at Calicut, and Gama again voyaged there and re-established Portuguese prestige, but died at Cochin on his return journey, Dec. 24, 1524.

Gamaliel Jewish rabbi who taught the Apostle Paul (Acts xxii.). He was noted for his tolerant spirit towards our Lord's disciples. Although his conversion to Christianity is only a legend, he appears in the saints' calendar on Aug. 3.

Gambetta **Léon.** French statesman. Born at Cahors, April 2, 1838, he studied law in Paris, but turning to politics was elected to the Chamber of Deputies in 1869. An ardent republican he became, after the emperor's surrender at Sedan in 1870, Minister of the Interior and of War in the Government of National Defence. He escaped in a balloon from Paris, and at Tours did a great deal to rouse France to action against the invading Germans. In 1871 he founded the newspaper *La République Française*, and his efforts to strengthen the new republic have made him regarded, rightly, as one of its founders. He was elected President of the Chamber in 1879, and from 1881-82 was Premier. He died Dec. 31, 1882, as the result of a pistol accident.

Gambia River of West Africa, which gives its name to a British colony. It rises in French Guinea, and flows into the Atlantic Ocean near Bathurst. It is 500 m. long and much of its course is navigable.

The British **Protectorate of Gambia** is a district with an area of 4130 sq. m., and includes the colony of Gambia (crown colony, 1888), consisting only of St. Mary's Island, 4 sq. m. in extent. Ground nuts, palm kernels and hides and skins are the chief exports.

Gambier **Baron.** English sailor. Born at New Providence, Bahamas, Oct. 13, 1756, James Gambier joined the navy at the age of 11, and received rapid promotion. He distinguished himself in command of the *Defence* on June 1, 1794, and next year became one of the Lords of the Admiralty. He commanded the fleet which bombarded Copenhagen in 1807, and for that was raised to the peerage. In command of the Channel fleet in 1809, he refused to support Lord Cochrane in his attempt to destroy the French fleet in the Basque Roads by fireships. For this he was court-martialled, but was acquitted. He died April 19, 1833.

Gambling Staking money on a sporting or other event, the issue of which is undecided and uncertain. It is done chiefly in connection with horse, dog, and other forms of racing, but also on games of chance, especially with cards. Players staking money on a game in which skill plays a part (billiards, bridge or golf, for example) are not, however, gambling—the definition should be confined to pure chance.

REGULATIONS AND CONTROL. In every country and in every age gambling has been prevalent. In Great Britain the law on the subject is conflicting and obscure; persons cannot recover in a law court any debt incurred by gambling; agreements dealing with it cannot be enforced; persons who keep gambling houses, or persons who take bets in the street, are liable to fine and imprisonment, but on the other hand the licensing of bookmakers and the establishment of totalisators on racecourses have given a certain amount of legality to the practice. The position with regard to lotteries and sweepstakes is equally obscure, and the law is publicly flouted every day. *See* SWEEPSTAKE.

Gamboge Yellow gum resin, obtained by incision from the bark of a tree, *garcinia cambogia*, and other species growing in Ceylon and Siam. Gamboge forms a bright yellow, but fugitive pigment. It is used as a watercolour, and is employed in medicine as a purgative.

Game Name used for certain wild animals which are hunted or shot, and to their flesh when used as food. These include in Great Britain hares, pheasants, partridges, red grouse, black game, and bustards. For some purposes the law makes rabbits, snipe,

and woodcock game. Tigers, lions, and other wild beasts, hunted in India and Africa and elsewhere, are called **Big Game.** **Game fowls** are fowls of a special kind, bred for their fighting qualities.

GAME LAWS. In Great Britain many laws have been passed to protect game, and under these very severe punishments were at one time meted out. This severity has now been mitigated to some extent, but it is still an offence to take or shoot game without the consent of the owner of the land. It is also an offence for anyone to shoot or hunt game on Sundays, Christmas Day, or during the close season (a period, fixed by law, during which the species must be left unmolested in order to breed). *See* CLOSE TIME.

Gamete Biological term for the cell which takes part in reproduction. Typically gametes consist of the ovum, a comparatively large cell containing food material, and the spermatozoon, smaller and frequently active. The individual bearing the former is the female, the latter, the male.

Gamma Rays One of the emanations from certain radio-active substances. They include electro-magnetic waves more penetrating than X-rays and of smaller wave length. They are given out by some forms of radium, thorium and actinium.

Gandak Name of two rivers of India. The **Great Gandak** (also called the Salagrami), rises in the Himalayas and flows for about 400 m. in a south-easterly direction until it falls into the Ganges near Patna. The **Little Gandak** also rises in the Himalayas, and takes a very similar course until it joins the Gogra.

Gandhi **Mohandas Karamchand.** Indian Nationalist. Born in India, Oct. 2, 1869, he studied law in London, and then returned to practise as a barrister in Bombay. In 1893 he was in S. Africa, where he led his fellow countrymen in their opposition to the legislation directed against them. His methods were successful, and he became known as a leader of the nationalist movement, which gained a good deal of strength after the World War.

In 1919 Gandhi acted as the spokesman of those who objected to British rule in India, and was soon recognised as their leader. He organised a boycott of British goods, and started the movement known as non-co-operation. In 1922 he was arrested for sedition and sentenced to a term of imprisonment; but in 1924, having still four years to serve, he was released. After a period of quiet he renewed his agitation in 1930, his violent speeches, in which he urged the expulsion of the British from India, leading again to his arrest. He was, however, soon released, and at Delhi he made an agreement with the Viceroy, promising, in return for a large measure of self-government for India, to call off the boycott. In spite of this, he continued to make demands for India which to Englishmen seemed impossible. In 1931 he came to London to attend the Round Table Conference, but was arrested and imprisoned shortly after his return to India. In Sept., 1932, Gandhi by a prolonged fast endeavoured to force the hand of the Government. In 1933 he again fasted, on this occasion as a protest against the religious tabu of "untouchability." To his followers Gandhi is the mahatma, or master.

Ganges **River of India.** It rises in the Himalayas, having its source in a cave in the state of Garhwal, 14,000 ft. above sea level. It is first called the **Bhagirathi,** taking the name of Ganges only after the Alaknanda joins it, 133 m. from its source, near where it enters British India. It passes Cawnpore, and flows to Allahabad, where it receives the Jumna and becomes a great river, having now traversed 670 m. It turns eastward and passes Benares, Patna and other towns, receiving the Gumti, Gogra, Gandak and other streams. Farther on the Brahmaputra joins it, and the vast delta begins. It enters the sea by several mouths, one being the Hoogli on which Calcutta stands.

The Ganges is 1557 m. long and drains an area of about 390,000 sq. m. It is navigable for about 700 m., and barges can reach Cawnpore. It is subject to floods which in the wet season cover an immense area. The Ganges' canals irrigate an enormous area between the main river and the Jumna, and help to make the valley one of the most fertile in the world.

To the Hindus the Ganges is a sacred river, *Mother Gunga,* and at Benares and elsewhere they come in thousands to bathe in her waters. In 1931 its sources were explored by an expedition composed of British scientists.

Ganglion In anatomy, a swelling upon the course of a nerve, composed of nerve cells. The sympathetic system of man and other vertebrates comprises essentially chains of ganglia. Others occur on the posterior roots of the spinal nerves, and one, called Gasserian, on the fifth cranial nerve's sensory root. In pathology, a ganglion is an encysted tumour, containing fluid, on a tendon sheath, particularly in the sinews before and behind the wrists. It arises from disorder of the synovial membrane.

Gangrene Mortification or death of part of the body large enough to be seen—thus distinct from ulceration, which is slow successive death of microscopic parts, and from necrosis, death of internal parts, particularly bones. **Dry gangrene,** a process of mummification, may attack the aged. **Moist gangrene** is accompanied by putrefaction, the part becoming swollen with fluid, and when dead forming a slough. Gangrene may arise from burning, crushing, frost-bite, ergot-poisoning, or bacterial infection. **Hospital gangrene** succumbed to Lister's antiseptic treatment.

Gannet Widespread genus of web-footed sea-fowl (*Sula*). The northern solan goose, *S. bassana,* which is 34 in. long, with a 6 ft. wing-spread, haunts the Atlantic coasts of Europe and N. Africa and feeds on fish. It is white-plumaged, with a yellow-tinged neck, and black wing feathers. Its breeding grounds include the Hebrides, Ailsa Craig, Lundy Island, and Bass Rock. One egg only is laid. Smaller species inhabit the Cape of Good Hope and Australia. *See* BOOBY.

Ganymede Character in Greek legend. A beautiful youth, he attracted the notice of Zeus, who sent an eagle to carry him to Olympus, where he became his cup-bearer. He was supposed to be a son of Tros, King of Troy.

Gapes Disease of poultry. It is caused by the presence in the windpipe of a parasitic threadworm, *syngamus trachealis.* The eggs, picked up from infected ground, develop into mature worms, which cling to the mucous membrane of the windpipe, causing

great irritation and weakness. The annual mortality from suffocation is large.

Garbo Greta. Swedish film actress. Greta Gustafsson was born Sept. 18, 1906, in Stockholm, and at the age of fourteen began work in a department store. In 1922 she began to work in films, and later joined a Dramatic School. She played in *Gosta Berling's Saga* under the direction of Mauritz Stiller, and changed her name to Garbo. After a picture in Germany she went to Hollywood, with Stiller, and made her first picture, *The Talent*. There followed *The Temptress, The Flesh and the Devil, Love, The Divine Woman, Anna Christie, Romance, Inspiration, Mata Hari* and *Grand Hotel*.

Garda Lake of Italy. In the north of the country, it is one of the "Italian Lakes," famous for their beauty. It is about 35 m. long and covers 180 sq. m., being the largest lake in Italy. Gardone Riviera is one of the resorts on the lake which has been immortalised in the poetry of Virgil and Dante.

Gardelegen Town of Germany. It stands on the Mulde, and on the railway line from Hanover to Berlin. Here, during the Great War, the Germans set up a camp for prisoners of war. In 1915 about 11,000 men were interned, and great distress was caused by epidemics of typhus and other diseases. The German treatment of the prisoners in this camp was the subject of a special report drawn up by the British Government in 1916.

Gardening (AS A CAREER). The possibilities of employment after a horticultural training include nursery gardening, landscape gardening, positions with fruit, flower and vegetable growers, occasional openings in connection with public parks and botanical gardens, and sub-inspectorships under the Ministry of Agriculture. To begin market gardening in a small way, capital amounting to about £1000 to £1500 is required.

The highest qualifications to be obtained are the London B.Sc. in Horticulture, and the National Diploma in Horticulture held by the Royal Horticultural Society with the approval of the Board of Agriculture. Other examinations held by the Royal Horticultural Society are :

The General Examination (Juniors and Seniors).

The Teachers' Examination in School and Cottage Gardening (Preliminary and Advanced).

Training for the horticultural examinations is best taken at a college, such as the Royal Horticultural Society's School at Wisley, Surrey, for men (two years' course). Practical experience with a horticulturist is extremely helpful, a premium usually being required. Both sexes are admitted to University College, Reading, and the Royal Botanic Society's School of Gardening in London.

A list of Horticultural Colleges for both men and women, and a syllabus of examinations, may be obtained from The Secretary, Royal Horticultural Society, Vincent Square, Westminster, S.W. 1.

Garden City Residential district in which the houses are built with plenty of space for gardens and open spaces. The first garden city in England was planned at Letchworth in 1904. On 6 sq. m. of land a town to house 35,000 people was planned. Other garden cities followed, one being at Welwyn and another the Hampstead Garden Suburb. Bournville and Earswick, built for industrial workers, are also garden suburbs. The movement has spread to the British Dominions, and there are also garden cities in France, Germany, the United States, and other countries. To promote the movement, the Garden City and Town Planning Association was founded in 1899, with offices at 3 Gray's Inn Place, London, W.C. 1.

Garden City, on Long Island (U.S.A.), is 20 m. from New York.

Gardenia Genus of evergreen trees and shrubs, named by Linnæus after the botanist Alexander Garden, F.R.S. Native to S. Africa and tropical Asia, several species are cultivated, especially the Chinese, *G. florida*, popularly called Cape jasmine, and the Japanese, *G. radicans*. The handsome white or yellowish flowers are often delicately perfumed.

Gardiner **Samuel Rawson.** English historian. Born at Ropley, Hampshire, Mar. 4, 1829, his most important work is the *History of England from the Accession of James I. to the Outbreak of the Great Civil War*, 1863-82, and he also wrote *The Great Civil War*, 1886-91, *The Commonwealth and Protectorate*, 1894-1903, and many other historical works all marked by painstaking accuracy, including *A Student's History of England*. He died Feb. 14, 1902.

Gardiner **Stephen.** English prelate and statesman. Born at Bury S. Edmunds, about 1493, he was elected Master of Trinity Hall, Cambridge, in 1525. In 1528 he was sent by Henry VIII. to Italy to secure the consent of the Pope to the divorce of Catherine of Aragon, and, though he failed in his mission, he was made Secretary of State the next year, and in 1531 Bishop of Winchester. When Edward VI. ascended the throne he was deprived of his see and imprisoned, but, on the accession of Mary in 1553, was released, reinstated to his bishopric and made Lord Chancellor. He died Nov. 12, 1555.

Gareloch Opening of the Firth of Clyde. It penetrates the land for about 7 m. from Helensburgh to Garelochhead, a pleasure resort. Another watering place on its banks is Roseneath.

Garfield **James Abram.** American statesman. Born at Orange, Ohio, Nov. 19, 1831, he distinguished himself as a soldier during the Civil War, and in 1863 was elected as a republican to the House of Representatives at Washington, being for the next 18 years a leader of his party. In 1880 he was chosen President, but in July, 1881, he was shot at Washington. He lived until Sept. 19, 1881.

Garforth Urban district of Yorkshire (W.R.). It is 7 m. from Leeds, on the L.N.E. Rly. The principal industry is coal mining. Pop. (1931) 3774.

Garibaldi **Giuseppe.** Italian patriot. Born at Nice, July 4, 1807, the son of a fisherman, he early came under the influence of Mazzini, then organising the Young Italy movement, and joined the insurrection of 1834. Forced to flee the country, he was from 1836-48 in S. America, fighting for the Montevideans against Rosas. On his return to Europe in 1848 he fought for the King of Sardinia, and, a member of the revolutionary government, defended Rome against the French. In 1859 he again fought for Sardinia against the Austrians.

After the peace of Villafranca, making a united Italy his aim, he led a small army of volunteers, his "red shirts," into Sicily, which he captured from the Bourbon King of Naples. He then captured the Neapolitan territory on the mainland and handed both to Victor Emmanuel, thus helping him to become the first King of united Italy. In 1862, and again in 1867, Garibaldi made unsuccessful attempts to take Rome, being forced after each to go into retirement at Caprera. In 1870 he gave his services to France against Germany. He died June 2, 1882.

Garlic Pungent perennial bulbous herb (*Allium sativum*) of the lily order. A native of Asia, and widespread anciently in the Mediterranean region. It has long been a favourite condiment in S. Europe and most Oriental countries, and was introduced into England in Tudor times. The bulb has membranous scales whose axils bear 10 or 12 smaller bulbs called cloves of garlic. Medicinally, it is a stimulant and stomachic. *A. ursinum* is bear's garlic or ramsons; other British species are crow, wild, and field garlic.

Garnet Group of gemstones of varying composition and colour, but possessing certain characteristics in common. The garnets crystallise in 12 or 24 sided forms, have a greasy lustre and imperfect cleavage. They are complex silicates of various oxides. Lime-alumina garnets are red, yellow, or green, a gemstone of this class being the cinnamon stone of Ceylon. Iron-alumina garnet, or almandine, is purplish red; the common red garnet is a magnesia-alumina variety.

Garonne River of France. It rises in Spain in the Pyrenees, but soon enters France. It passes Toulouse and Agen, and reaches Bordeaux, near which city it unites with the Dordogne to make the estuary called the Gironde. The tributaries include the Lot, Tarn, Save, Gers, Ariège, and Salat, and its length is about 350 m. The Canal du Midi links it with the Mediterranean.

Garrick **David.** English actor. The son of an officer, he was born in Hereford, Feb. 19, 1717, and educated at Lichfield. He there met Johnson, who took him as a pupil, and in 1737 the pair set out together for London. Engaged for a time, unsuccessfully, in the wine trade, Garrick first appeared on the stage in London in 1741, and won an instant success. He played at Drury Lane, in Dublin, and at Covent Garden, and in 1747 became joint manager of Drury Lane, where he remained until 1776. He died, Jan. 20, 1779.

Garrick ranks as one of the greatest, if not the greatest, of English actors. His name is perpetuated by the **Garrick Club**, founded in 1831. The house is at 15 Garrick Street, London, W.C.

Garrison Armed force stationed in a fort, castle, or fortified town to defend or guard it, or to control the inhabitants. Towns in which garrisons, for convenience or precaution, are habitually stationed, are called **garrison towns.** These usually include companies of the Royal Artillery.

Garrison **William Lloyd.** American abolitionist. Born at Newburyport, Mass., Dec. 10, 1805, in 1826 he became editor of a newspaper in his native town, and came out as an advocate of the abolition of slavery. In 1831 he started *The Liberator* at Boston, which he continued to edit in spite of grave danger and difficulties. As the foremost opponent of slavery, Garrison lectured in England, and was President of the Anti-Slavery Society. In 1865, on the abolition of slavery, he was presented with 30,000 dollars. He died in New York, May 24, 1879.

Garrotte Appliance used in Spain and Portugal for executing sentences of death. The seated criminal is secured to an upright post by a hinged metal collar, a screw or lever dislocating the spinal column. Originally the collar was a cord, strangulation being effected by twisting the cord with a cudgel.

Garry Lake of Canada. In the North-West Territories, it is only just outside the Arctic regions, and covers nearly 1000 sq. m. The Great Fish River flows through it to take its waters to the Arctic Ocean. **Garry Island** is an island at the mouth of the Mackenzie River in the Arctic Ocean. **Fort Garry** is the old name of Winnipeg.

Garter **Order of the.** Senior English order of knighthood. It dates from 1348, when it was founded by King Edward III. Its motto, *honi soit qui mal y pense*, is inscribed on the garter of dark blue velvet which knights wear just below the left knee. They also wear a mantle, surcoat, and hood, with a collar of Tudor roses, from which the George, a figure of S. George, and a star, are suspended.

The head of the order is the Sovereign, and there are 26 knights in addition to members of the royal family and foreign rulers and princes. Each knight has a stall in S. George's Chapel, Windsor. The **garter king of arms** is the herald of the order. For years membership was confined to peers, but in the 20th century the garter was given to Sir Edward Grey, later Viscount Grey, and Sir Austen Chamberlain. Knights are distinguished by the letters K.G., and rank above all other knights.

Gas State of matter in which the cohesion between the material particles is at its minimum, producing a condition of perfect fluidity. Consequently a gas has no definite size or shape except that given by a containing vessel. By the application of cold, gases pass into the liquid or solid state, and similarly heat will change a solid or liquid into a gas.

Gases readily diffuse into one another, are soluble in many liquids, and their properties of viscosity in flow and compressibility are well marked characters. They show characteristic absorption bands in the spectrum.

The commonest gases are the constituents of air and water, viz., oxygen, nitrogen, and hydrogen; coal gas, from the distillation of coal, is used as an illuminant and source of heat. Water gas, produced by passing steam through a mass of incandescent coke, is also employed as an illuminant.

Gas for lighting and heating houses, shops, factories and the like, is supplied by companies which obtain their powers from Acts of Parliament and are supervised by the Board of Trade.

POISON GAS. In modern warfare toxic and irritant gases are discharged against hostile troops by means of cylinders or special shells. They were first introduced during the Great War. The employment of shells containing an irritant gas (dianisidine chlorosulphonate) at Neuve Chapelle was followed by the use of a tear gas (xylil bromide), and later by cylinders of chlorine and a mixture of chlorine and phosgene. In 1917 other toxic and irritan

gases were introduced, such as mustard gas (dichlorethylsulphide). The use of gas in warfare necessitated the employment of various types of anti-gas respirators.

Gascoigne **Sir William.** English judge. Born about 1350, he was made Chief Justice of the King's Bench in 1400. In 1403 he was commissioned to levy forces against the rebellious Earl of Northumberland. He seems to have resigned his office soon after the accession of Henry V., and he died in 1419. Two instances, both probably untrue, are cited to illustrate his impartiality and fearlessness, *i.e.*, he refused to try Archbishop Scrope, since he had no jurisdiction over ecclesiastics, and he committed Prince Henry (later Henry V.) for contempt of court.

Gascony District of France. In the south-west of the country, in the angle formed by the Pyrenees and the Atlantic Ocean, it takes its name from a tribe called the Vascones. In the Middle Ages it was a dukedom; but about 1100, or earlier, it became part of Aquitaine, and as such was included in the dowry of Eleanor, wife of Henry II. of England; it remained an English possession until 1453. The men of Gascony—Gascons, as they were called—were proverbially braggarts and swaggerers, albeit not without courage. Their speech, a French dialect, is still heard in the district.

Gas Engine Type of internal combustion engine. The power is obtained from the combustion of an explosive mixture of gas and air in a cylinder. The first engine of this type was invented in 1860 by Lenoir, who used coal gas as fuel. It was improved upon by Otto introducing the four-stroke cycle, in which there is one explosion for every four strokes of the piston, the cycle of operations being completed in two revolutions of the crank. Most gas engines are of this type and single acting, but a two-stroke cycle is used for many large engines since it gives a greater output of power.

Gaskell **Elizabeth Cleghorn.** English novelist. Born in London, Sept. 29, 1810, she was brought up at Knutsford and Stratford-on-Avon. She married, in 1832, William Gaskell, a Unitarian minister in Manchester. Her first novel, *Mary Barton*, appeared in 1848; then came *Ruth*, and *Cranford*, her best known work, in 1853. She also wrote *North and South*, *Sylvia's Lovers*, *Wives and Daughters*, and a *Life of Charlotte Brontë*. She died Nov. 12, 1865.

Gas Mantle Device to give increased illumination. It was invented by Welsbach in 1885 for attachment to a burner of the Bunsen type. It consists of a tube of loosely woven fabric of ramie fibre, rayon, or cotton, impregnated with a solution of thorium and cerium nitrates obtained from the mineral monazite. The mantle when burned leaves an incandescent skeleton of the earthy oxides giving a brilliant light. The finished mantle is stiffened with collodion which is burned off on first lighting.

Gasometer Large gas holder used in the storage of coal gas. It consists of a cylinder, usually of telescopic construction, contained within a water tank, in which the holder rises and falls but is held in position by roller guides on the top and bottom edges. The outlet is regulated by a governor controlling the pressure of gas.

Gasometry Method of measuring the volume of gases and gaseous mixtures. This is done by means of the eudiometer (*q.v.*) and other apparatus. Hempel's apparatus, which is frequently used in industrial analysis, consists of a gas burette for measuring and an absorption apparatus of two or more bulbs in which the gas is brought into contact with reagents. The burette consists of two vertical glass tubes joined by flexible tubing, one tube being graduated in centimetres, the other open and not graduated.

Gaspé Peninsula of Canada. It lies to the south of the St. Lawrence in the extreme east of the Province of Quebec. Mainly a forest area, it has a cold climate and is thinly peopled. At its eastern end and in the Gulf of St. Lawrence are **Gaspé Bay** and **Cape Gaspé**.

Gastein Name of several villages of Austria. They stand in a beautiful valley near Salzburg and are visited by health and pleasure seekers. The River Asche flows through the valley. The most popular village for visitors is Wildbad-Gastein, where there are some mineral springs.

The **Convention of Gastein** was an agreement signed between Austria and Prussia on Aug. 14, 1865. The two countries had just taken Schleswig and Holstein from Denmark and by this Convention they agreed that Prussia should possess Schleswig, and Austria, Holstein. The arrangement fell through very soon, as war broke out between them in 1866.

Gastritis Inflammation of the stomach. It is usually due to the irritation of its lining of mucous membrane, and may be either acute or chronic in character. The former may arise from errors of diet or from an irritant poison, the symptoms being like those of bilious attacks. The chronic type especially attends persons addicted to alcoholic excess or to bolting food, and is often associated with heart disease or disordered liver. Pain, the sensation of fulness, flatulence, nausea and lassitude are experienced. *See* DYSPEPSIA.

Gastropoda Class of belly-footed molluscs. They crawl on a broad, muscular, disc-like foot beneath the body. A univalve shell, never a bivalve, is generally developed in the larval form, it is sometimes obsolete or absent in the adult. All gastropods possess rasping tongues, the mouth being situated in the foot. Over 16,000 species are known, and they are found on land, or in fresh or salt water. Many are gill-breathing *e.g.*, whelks, periwinkles, limpets and cowries. Others are air-breathing, such as slugs and snails or land shells.

Gastrostomy Operation of forming a permanent artificial opening into the stomach for introducing food. It becomes essential when food cannot traverse the gullet because of obstruction or stricture. Gastrotomy is the making of incisions through the abdominal walls. Gastrectomy is the operation for removing the stomach, in whole or part.

Gateshead Borough and seaport of Durham. It stands on the Tyne, just opposite Newcastle, on the L.N.E. Rly., 267 m. from London. The industries include engineering works, railway shops and the manufacture of chemicals. Shipping and shipbuilding also give employment. Pop. (1931) 122,379.

Gath One of five confederated Philistine cities. It was captured by Sargon of Assyria in 711 B.C. The birthplace of Goliath,

David conquered it; it was fortified by Rehoboam, annexed by Hazael of Damascus and destroyed by Uzziah.

Gatling **Richard Jordan.** American inventor. Born in North Carolina, Sept. 12, 1818, he was educated at Ohio Medical College. In 1862 he invented the Gatling machine gun, and among his other inventions were a steam plough, a new gun metal and a hemp-breaking machine. The **Gatling gun** was of the revolving type with six barrels, a crank, worked by hand, feeding, firing and ejecting the cartridges. He died Feb. 26, 1903.

Gatton Village of Surrey, once a borough. It is 2 m. from Reigate. Pop. 236. **Gatton House,** the residence of Sir Jeremiah Colman, was built in the 18th century. Recently burnt down, it has been rebuilt.

Gatun Town, lake and river of Central America. The town is in the Panama Canal Zone and belongs to the U.S.A. It is on the canal, where the rivers Gatun and Chagres meet, 7 m. by railway from Colon. Here are huge locks and a dam.

Gatwick English racecourse. It is near Horley, Surrey, about 26 m. from London, on the S. Rly. Several meetings are held here during the racing season. Gatwick is now an airport.

Gauchos Mounted herdsmen of the Uruguay and Argentine pampas. Although some are aboriginal Indians, those properly called Gauchos claim Spanish paternity. Their skilful horsemanship, innate courtesy and love of finery endow them with a notoriety not always untainted by brigandage.

Gaudeamus College students' merry-making, especially in Scotland. The word is derived from a German students' song in dog Latin, beginning *Gaudeamus igitur juvenes dum sumus, Then let us be merry while we are young.* A modified version of an adaptation dating from 1776 appears in *The Scottish Students' Song-book.*

Gauguin **Paul.** French painter. Born in Paris, June 7, 1848, he spent his childhood in Peru and Orleans, and entered a banking firm in 1871. Soon after, encouraged by Pissaro, he began painting, joining the Post-Impressionist group, and later started the Synthesist movement, which treated colour in a new way. After painting in Brittany and Southern France, he worked in Tahiti from 1891-93, painting the natives, as in "Devant la Case," "Jours Delicieux." After visiting Paris, he returned to Tahiti in 1895, and died in Dominiha May 9, 1903.

Gauge Term originally given to a measuring rod used in gauging the contents of casks; now used for many forms of measuring apparatus. In the measurement of wire and sheet metal, definite gauges of the diameter or thickness are adopted for purposes of standardisation, as in the **Birmingham Wire Gauge** (B.W.G.) for electrical wires, etc., or the **Standard Wire Gauge** (S.W.G.) for general purposes. **Rain gauges,** water and steam gauges are other forms of measuring instruments. A **railway gauge** is the width between the lines of the railroad. The standard gauge, which has been adopted over a great part of the civilised world, is 4 ft. 8½ in.

Gaul Old name for France. It is the modern form of the Roman name **Gallia,** which was given to the European region inhabited by Celtic-speaking peoples. This was at first divided into Cisalpine, South of the Alps, and Transalpine, beyond the Alps, and besides France embraced various adjacent regions.

Gault Name given to a soft bluish clay. It is found between the Greensands, upper and lower, in the south of England, and is used for making bricks and tiles.

Gauntlet In mediaeval armour, a protective glove, sometimes bearing metal knobs and spikes. It was introduced in the 13th century; later types were made of hammered steel, completely fingered and jointed. Nowadays the term denotes a long, stout glove, used mainly for riding or driving.

In **running the gauntlet** it is confused with an entirely distinct Swedish word, *gatlopp,* lane run.

Gautier **Théophile.** French author. Born at Tarbes, Aug. 31, 1811, he was educated in Paris, where he studied art and literature. An ardent, and in his youth, an extravagant Romantic, he early became a disciple of Victor Hugo. In 1830 he published *Albertus,* a metrical romance, and in 1835, *Mlle. de Maupin,* a brilliant but immoral novel. A journalist and critic, he was also the author of a great number of novels and poems of great merit and real beauty. They include, *Les Jeunes-France, Le Capitaine Fracasse,* and *Ménagerie Intime,* and in verse, *Emaux et Camées* and *La Comédie de la Mort.* Gautier died in Paris, Oct. 23, 1872.

Gavelkind Form of land tenure. By it land descended to all the sons equally if the father died intestate. It was thus the opposite of primogeniture. Gavelkind was long the custom in Kent, but in 1925 all these relics of ancient land customs in England were abolished.

Gavotte Lively and graceful dance. Of French peasant origin, it is derived from the Gavots, or people of the Pays du Gap, Hautes Alpes. A French court dance in the 16th century, late in the 18th century it passed to the stage.

Gay **John.** English poet and dramatist. Born in Devonshire in 1685, he was educated at Barnstaple and for a time was apprenticed to a silk mercer in London. Soon turning to literature he wrote poems, pamphlets and plays, scoring his first success in 1714 with a pastoral, *The Shepherd's Week,* suggested to him by Pope. This was followed by *Trivia,* a poem describing the London streets. In 1727 his *Fables* were published. His best work was *The Beggar's Opera,* produced the next year, the success of which was unprecedented. The production of a sequel, *Polly,* was prohibited, but in book form it was very successful. Gay died Dec. 4, 1732, and was buried in Westminster Abbey.

Gaza Town of Palestine, also called Guzzeh. It stands near the Mediterranean Sea. It was a Philistine city and owing to its position has always been a place of military importance. Pop. 17,500.

There was a good deal of fighting around Gaza during the World War. In 1917 the British forces invading Palestine twice attacked and failed to take Gaza, but succeeded on the third attack, under Allenby, in Nov. 1917.

In 1930 Sir Flinders Petrie unearthed the remains of an early and great city here. Many remarkable finds were reported.

Gazelle Genus of small antelopes. Native to N. Africa and Asia, they form large herds on the desert borders. They are

graceful, swift and slender-limbed, and are mostly under 30 ins. high at the shoulder. The male of the Dorcas gazelle, often tamed in Arabia and Persia, has lyre-shaped, ringed horns about 13 ins. long.

Gdynia Seaport of Poland. It stands on the Gulf of Danzig, 12 m. from the free city of that name. Much of the trade of Poland now passes through it. Pop. (1931) 30,210.

Gear Toothed wheels used in transmitting motion in machinery. There are many forms of gears, differing in the size of the wheels and the form of the teeth according to the speed and direction of the motion transmitted. In **spur gearing** the teeth are cycloidal or involute; **bevel gearing** is used where two shafts are set at an angle to one another and the rolling surfaces are portions of cones, while in **worm gearing** the wheel works upon a screw-like worm.

Geddes **Sir Auckland Campbell.** British politician. Born, June 21, 1879, he was educated at Edinburgh University. He became assistant professor of anatomy at Edinburgh and then professor of anatomy at McGill University, Montreal. He joined the army during the South African War, and again during the World War, being recalled from the front in 1916 to take up the post of director of recruiting. In 1917 he was knighted and successfully became minister for national service; president of the local government board (1918); minister of reconstruction (1919); and president of the board of trade (1919-20). He was for a short time head of McGill University, Montreal, a post he soon left to become ambassador at Washington (1920-24).

Geddes **Sir Eric Campbell.** Born in India, Sept. 26, 1875, he entered the railway service and gained experience in the United States and India. When the Great War began he held a high position in the North-Eastern Railway, which he left in 1915 to enter the ministry of munitions. He was next made director-general of military railways, where he made his mark, and passed on to become controller of the navy and then first lord of the admiralty. He was then chosen M.P. for Cambridge. In 1919, Geddes, who had been knighted in 1916 left the admiralty and was soon made minister of transport, in which capacity he carried out the regrouping of the railways. He left political life in 1921, and in 1922 was chairman of the committee that suggested reductions in national expenditure. In 1922 he was appointed chairman of the Dunlop Rubber Co. and of Imperial Airways.

Geddes **Jenny.** Scottish *kail wife*. She is known to fame as the woman who started a riot in S. Giles's, Edinburgh, July 23, 1637, by hurling her stool at the head of the dean who was reading Laud's liturgy for the first time. Bishop and dean were forced to flee and the liturgy was not read again. In the Antiquarian Museum, Edinburgh, the stool is to be seen.

Geelong City of Victoria, Australia. It is 45 m. from Melbourne and stands on Corio Bay, near the River Barwon. The industries include woollen mills, cement works and other manufactures. Shipping is an important industry. Greater Geelong covers 25 sq. m., and includes Newtown, Chilwell and Geelong West. Pop. (1931) 42,760.

Gehenna Greek form of the Hebrew name of the valley of Hinnom. It is situated S.W. of Jerusalem. Solomon built there an altar to Moloch, and when Josiah dismantled it, the valley became the city's ash-heap, with its insect life and perpetual fires. Becoming the symbol for hell, it was so employed by Christ (Mark ix.).

Geikie **Sir Archibald.** Scottish geologist. Born in Edinburgh, Dec. 28, 1835, and there educated, in 1855 he entered the geological survey. From 1867-81 he was director of the survey in Scotland. In 1871 he was appointed to the Murchison professorship of geology and mineralogy at Edinburgh University, and from 1881-1901 was director-general of the geological survey of the United Kingdom, and director of the Museum of Practical Geology, London. He was president of the Geological Society in 1909. An F.R.S. in 1865, he was knighted in 1891, and given the Order of Merit in 1914. He died Nov. 10, 1924. His many works include *Scenery of Scotland*, 1865; *Outlines of Field Geology*, 1882; *Ancient Volcanoes of Great Britain*, 1897; and *Text Book of Geology*. He also wrote *Scottish Reminiscences*.

Geisha Japanese girl educated from childhood to be a professional entertainer.

Gelatine Purified form of glue. It is prepared from the parings of hides and skins, bones and other animal products. The purest form, isinglass, is a fish glue. It is used for culinary purposes; in the preparation of photographic plates and films; also in bacteriology, dyeing, making a size for paper, and for various other purposes.

Gelderland Province of the Netherlands. It lies between the Zuider Zee and Prussia and covers 1941 sq. m. Arnhem is the capital; other towns are Zutphen and Apeldoorn. For long Gelderland, or Guelders, had its own rulers, who were first counts and then, from 1339, dukes. In 1553 it passed to the Emperor Charles V., and in 1678 became one of the United Provinces. It was added to Prussia in 1713, but in 1814 was included in the kingdom of the Netherlands. Pop. (1931) 843,233.

Gelignite High explosive. A modification of gelatine dynamite, it consists of a thin jelly containing about 65 per cent of nitro-glycerine with varying proportions of collodion cotton, nitrate of potash and wood meal. It is regarded as the standard explosive for blasting rocks and other industrial purposes.

Gelligaer Urban district and colliery centre of Glamorganshire, 14 m. from Cardiff, with stations at Bargoed, Hengoed and Pengarn on the G.W. Rly. There are some interesting remains of a Roman camp. Pop. (1931) 41,042.

Gelo Tyrant of Syracuse. In 491 B.C. he was ruler of Gela in Sicily. In 485 he became tyrant of Syracuse and the city increased in size and importance. He won great fame by defeating a large army of Carthaginians in 480 B.C. He died in 478.

Gem Term applied to precious stones after cutting and polishing. A number of semi-precious stones, such as the agate, onyx and garnet, as well as cameos are included. In gem cutting there are many styles; the brilliant, rose and table-cut being examples of plane surfaces, while opals and certain other gems are cut with curved faces, "en cabochon."

Gemsbok Species of antelope (*oryx gazella*). A native of S.W. Africa, it abounds in the Kalahari desert and Damaraland. It is a stout, heavy animal, about the size of a stag, with maned neck, tufted tail and coat of grey, black and white. Its nearly straight horns, sometimes exceeding 3 ft. in length, enable it to beat off lions.

Gendarme French term denoting at first a man-at-arms mounted and armed at all points. Afterwards the word was used for a mounted soldier employed in maintaining the royal authority. This system, dissolved in 1788, was replaced in 1791 by military police, organised, uniformed and drilled like soldiers, who act under the civil authority. Similar forces exist in other European countries, being called in Spain the *guardia civil* and in Italy *carabinieri*.

Gender Distinction between nouns corresponding directly or metaphorically to the natural distinction of sex. Names denoting male sex are of masculine, those denoting female of feminine gender. Latin and other Indo-European languages recognised also names of neither or neuter gender, although many inanimate objects bore masculine or feminine names. French and other Romance languages have dropped the neuter gender. English has discarded grammatical gender entirely, natural gender being often indicated by variants, *e.g.*, drake, duck.

Genealogy History of the descent of a person or family. It may form a pedigree or family tree. Genealogical records are investigated specially by the College of Arms in London. Lines of descent in the evolution of animals and plants constitute biological genealogies. There is a Society of Genealogists at 5 Bloomsbury Square, London, W.C.1.

General Name given to a military officer of high rank. It was first used in England for Cromwell, who was the lord general and who appointed major generals. In the British army the four kinds of general, all ranking between colonel and field-marshal, general, lieutenant-general, major-general and the temporary rank of brigadier-general.

In the Roman Catholic Church the Jesuits and some other orders call their head the general. He is elected by the provincials and lives in Rome, being subject only to the Pope.

General Assembly Name given to the governing body of the Church of Scotland and other Presbyterian churches in Ireland, Canada, Australia and elsewhere. The Scottish general assembly meets every year in Edinburgh in May, and consists of ministers and laymen sent as representatives by the presbyteries in the Church. The king is represented by a High Commissioner appointed each year. The assembly is presided over by a minister elected to the office, called the moderator. Until the union of the free churches with the established church, each had its own general assembly, which also met in Edinburgh in May.

General Strike. *See* STRIKE.

Generator In electricity a machine for the conversion of mechanical energy into electrical energy. This is done by the rotation of an armature, or other form of conductor, in a magnetic field. Generators are either of the direct current type, in which the current flows in one direction, or of the alternating current type.

Genesis First book of the Old Testament. Its Greek name, meaning "origin," is that of the Septuagint version. After an account of the creation of the world it surveys the early history of mankind (i.-xi.), and in fuller detail that of the patriarchs Abraham, Isaac and Jacob (xii.-l.). Traditionally ascribed to Moses, and forming, with four succeeding books, the Pentateuch, it is now recognised as including contributions from four principal sources, having been finally revised after the Jews returned from exile in the 6th century.

Genetics Study of the problems of heredity and variation in types of organisms related by descent. The term is also used for the various problems of development of the individual, and of organic evolution. It covers such subjects as the nature and structure of the germ plasm, the relation of heredity to sex and the behaviour in inheritance of variations. Genetics has a practical application in the breeding of plants and animals and in eugenics.

Geneva Lake of France and Switzerland. It is 45 m. long and covers 225 sq. m., larger than any of the other Swiss Lakes. The southern shore is French territory. On its banks are Geneva, Lausanne, Montreux, Vevey and other pleasure resorts. The Rhône flows into the lake and emerges from its southern end. Steamers traverse the lake, which is called by the French Lac Léman.

Geneva City and river port of Switzerland, and the headquarters of the League of Nations. The capital of a Swiss canton of the same name, it stands at the S.W. end of Lake Geneva, where the Arve joins the Rhône, and is 388 m. by railway from Paris. On both banks of the Rhône, the older part lies on the left bank, and there are several bridges between the two. John Calvin's house still stands. An educational centre, Geneva has a university and several technical schools. The chapel of the Maccabees and the tower of the bishop's palace are interesting old buildings; the Palace of the Nations, the headquarters of the League of Nations, is modern. The International Labour Office possesses a fine edifice, and a building for the secretariat and library of the League of Nations has been planned in Ariana Park.

Geneva has a harbour in the river and quays for the shipping. Other industries include the manufacture of clocks, watches, jewellery, chocolate and motor cars. It has a broadcasting station (760 M., 1.5 kW.).

Geneva owes much of its importance to John Calvin, who settled here in 1536, and was for some years the city's autocrat. Previously it had been under its bishops, who were princes of the Empire; it then became a republic and remained so until the time of the French Revolution. In 1815 it became part of Switzerland. In the 19th century it was made the headquarters of the Red Cross Organisation, and in the 20th the seat of the League of Nations. Pop. 126,700.

The **Geneva Convention** is an agreement signed by the chief nations of the world in 1906. It provides for better treatment of the wounded in war than was previously the case, and forbids any misuse of the Red Cross flag.

Geneviève Patron saint of Paris. A shepherd's daughter, born about 422, she encouraged the citizens when

threatened by Attila and the Huns, and brought them aid when Childeric attacked the city. She founded the church of S. Denis, and was buried in the church of S. Etienne-du-Mont. Her festival day is Jan. 3.

Genie In Oriental mythology, a class of subservient spirits, lower than the angels. Made of fire and capable of appearing in human or animal guise, they sometimes exercise over mankind a supernatural influence for good or evil, thus bearing a casual and confusing likeness to the ancient Roman genii. The word is a corruption of the Arabic *jinn*, plural *jinnee*.

Genista *See* BROOM.

Genius God of Roman mythology. He was the god of productivity and especially of marriage. Each man or woman had his or her own genius, who acted as a protector throughout life, influencing the one protected towards good. Evil deeds were later said to be caused by the influence of an evil genius. Localities, cities, families, etc., also had their tutelary genius, the *genius loci* of the Romans.

From this it came to mean a person's inborn faculties. Still later, it was used for faculties or abilities of an exceptional kind, and so to-day a genius is a person endowed with unusual talent of a certain kind, *e.g.*, a musical or literary genius.

Genoa City and seaport of Italy. The capital of a province of the same name, it stands on the Gulf of Genoa, an opening of the Ligurian Sea, 74 m. from Turin. It is well served by railways, and is the country's chief commercial seaport, and also a naval station. It consists of an old city, with narrow streets, and a modern part. Suburbs extend up the hills that overlook the sea. The little River Bisagno flows through the city.

BUILDINGS AND INSTITUTIONS.—The 10th century cathedral is small and has been much altered, but is full of interest. Among the churches mention may be made of S. Maria di Castello, S. Maria di Carignano, with its wonderful dome, S. Siro, originally a cathedral, S. Matteo, the church of the great Doria family, and S. Donato.

The palaces include the municipal palace, the palace of the doges, the Doria palace, the Palazzo Rosso and the Palazzo Bianco, the red and the white palaces. The Palazzo di S. Giorgio is used by the harbour authorities. The city is still surrounded by walls, these being 12 m. in circumference and having eight gates.

Genoa has a university founded in 1243, and many colleges and schools, technical and otherwise. The cemetery or Campo Santo is a feature of the city. The central square is the Piazzi di Ferrari but there are many others, as well as parks and public gardens. The Cosso d' Italia, a promenade along the sea front, is of recent date. A war memorial in the form of an arch was unveiled in 1931. The theatre Carlo Felice is noteworthy, as is the Verdi institute of music. There is an excellent service of electric tramways, and circular railways go up the hills at the back of the city. There are many memorials of Columbus, Genoa's greatest son.

Shipping is Genoa's chief industry and for this there are large harbours and docks equipped on the most modern lines. A vast trade passes through the port, and to deal with it the harbour accommodation was extended after the Great War. The manufactures include steel, motor cars and hats; the shipbuilding yards are important. There is a naval harbour, and Genoa is also an air port and a broadcasting station (312.8 M.; 10kW.).

HISTORY.—About the year 1000 Genoa became a flourishing seaport and grew rapidly in wealth. It was practically a little republic, ruling over a considerable area around the city, but its chief fame arose from the fact that, with Venice, it almost monopolised the sea trade between Asia and Europe. In 1339 the first doge was elected. In 1380 the Venetians defeated the Genoese in a sea fight, and until 1528 the city was under French protection. It then became again independent and so remained until the French Revolution, when it was the capital of the short-lived Ligurian Republic. In 1815 it was given to Sardinia and thus became part of Italy. Pop. 624,600.

In 1922, a European conference was held here, at which for the first time Soviet Russia was represented.

Genseric King of the Vandals. Sometimes called Gaiseric, he became king in A.D. 428. He conquered parts of Africa where he set up a Vandal kingdom with Carthage as its capital. He then took Sicily, Sardinia and Corsica, and ravaged the coasts of the Mediterranean. In 455 he led his men to Rome, which he took and sacked. He died Jan. 25, 477. In religion Genseric was an Arian Christian.

Gentian Genus of annual or perennial herbs (*gentiana*). The funnel-shaped corollas, usually blue, are adapted for various kinds of insect visitors; the small vernal gentian for butterflies, the marsh gentian for humble-bees, etc. The yellow *G. lutea* contains a bitter principle, utilised medicinally for promoting digestion. Native of temperate and alpine regions, of the 300 species, only five are British; several yield ornamental garden varieties, notably *G. asclepiadea*, the stemless gentianella and a white-throated form.

Gentiles In the English Bible term usually denoting persons not of Jewish race. In the Old Testament, gentile, the Hebrew word for nation, was sometimes used generally, but in other instances implied their inferiority as heathens. In the New Testament the word was used for Greeks and other non-Jewish nations. S. Paul was the apostle of the Gentiles (Ro. xi.).

Genus Grouping of a number of species of plants or animals having certain constant characters in common. Thus, among plants the raspberry and blackberry form distinct species, but yet, having certain common characteristics, together form the genus *rubus*. In their nomenclature the generic name precedes the specific one, thus the blackberry is *rubus fruticosus*.

Geodesy Science dealing with the measurement of the earth's surface on a large scale. Surveying for this purpose consists of triangulation, in which an area is divided into a series of triangles whose sides and angles are measured. A suitable base line of known length is taken, and from it by angular measurement other distant points are measured. In geodetic surveying special types of theodolites, levels and other instruments are used.

Geography Science dealing with the surface configuration of

the earth in relation to man. Geography is indebted to other branches of knowledge for facts which explain or help to elucidate the problems of the physical conditions of a country and its inhabitants. For example, the study of existing land forms is aided by geological evidence of former land masses, and meteorology helps in studying the effects of climatic conditions on a country. **Commercial geography** deals with economic products of the earth, their discovery, production and effects upon mankind. **Oceanography**, the study of the sea, has advanced greatly during recent years and gives us knowledge of currents, etc., which have their effect upon transport and commerce. **Historical geography** is concerned with the changes in the delimitation of countries at different times in history.

The Royal Geographical Society is devoted to the study of the science and, in addition to a valuable library and map room, issues a monthly *Journal*. It has fine premises at Lowther Lodge, Kensington Gore, London, S.W. There is a Royal Scottish Geographical Society in Edinburgh, which also publishes a *Journal*, and the United States has influential and rich societies of the same kind. *The National Geographic Magazine* is one of the most valuable of American publications.

Geology Science dealing with the constitution and history of the earth's crust. Having so wide a range of investigation, geology has many subdivisions, and of necessity is linked to the other natural sciences. Mineralogy, the study of the mineral constituents, and petrology, the study of rock structure, form important sections of the science. The study of the relations of rock masses and strata constitutes tectonic or structural geology, while dynamic or physical geology is concerned with the effects of volcanic action and the forces of denudation. Stratigraphical geology deals with the historical sequence of the rocks and strata, and palaeontology with the fossil contents of the beds. In the study of the nature of minerals and rocks, geology is linked on to chemistry and physics, while in palaeontology a knowledge of both zoology and botany is necessary. The microscope has become an important aid in interpreting the minute structure of rocks and minerals. The foundation of modern geology dates from the publication of James Hutton's *Theory of the Earth* in 1788, supplemented by the work in Britain in later years of William Smith, Sedgwick, Murchison, Geikie, Lyell and others.

Geology has its economic aspect in relation to various engineering operations, the study of building stones and the search for ores. To foster the interests of this science there is the **Geological Society** at Burlington House, London. There is also a **Geological Survey**, a public department, which exists to map out the strata in Great Britain. Connected with it is the **Museum of Practical Geology** in Jermyn Street, London, W. For India there is a Geological Survey with similar duties.

Geometry Science dealing with measurement and the properties of space. Plane or two-dimensional geometry is concerned with the properties of plane figures, while solid geometry deals with solid figures of three dimensions. Some knowledge of the science was known in ancient times, but it was on Greek soil and especially at Alexandria that geometry flourished. Thales, "the father of geometry," was followed by Pythagoras, Hippocrates, and later Euclid as early exponents of the science.

George Name of three lakes. One in Uganda, is connected by a narrow channel with Lake Edward and has an area of about 150 sq. m. It was formerly called Albert Edward Nyanza. Another Lake George is a salt lake in New South Wales. This is 55 m. long and is often dry.

A third lake of this name is in New York State, in the Adirondack Mts., and is 33 m. long. In it are many islands, and on its shores are several pleasure resorts. It is connected with Lake Champlain, and is sometimes called Horicon.

George Patron saint of England and Portugal. Little is known of him. He was probably a soldier in Cappadocia, who, as a Christian, was put to death at Nicomedia on April 23, 303, which is kept as his day. The popular legend about him is that he killed a dragon and then became a preacher of Christianity. In the Middle Ages he became associated with England and since the 13th century, or earlier, his festival has been kept. In 1349 he was recognised as the country's patron saint and the badge of the order of the garter, as it bore his figure, is called the George. Later his feat of killing the dragon was pictured on coins and medals. He is commemorated by S. George's chapel at Windsor and the order of S. Michael and S. George.

George Town of the Cape Province, S. Africa. it is 32 m. from Mossel Bay, the seat of an Anglican bishop and an important educational centre. Pop. (1931) 4,249.

George I. King of Great Britain and Ireland. Born in Hanover, March 28, 1660, he succeeded his father, Ernest Augustus, as elector of Hanover, 1698. His mother, Sophia, daughter of the elector palatine and granddaughter of James I., was made heir to the throne of Great Britain in 1701. She died, however, before Queen Anne, so when, in 1714, that sovereign's life ended, George became king. He took little part in the affairs of Britain, and in this way contributed much to the development of the modern idea of government by ministers with the king as figure head. He died at Osnabruck, June 11, 1727. George married a cousin, Sophia Dorothea, but in 1694 he divorced her and kept her in prison.

George II. King of Great Britain and Ireland. Born in Hanover, Nov. 10, 1683, and only son of the electoral Prince of Hanover who in 1714 became George I. of Great Britain; he spent most of his early life in Hanover. In 1706 he was made Earl of Cambridge, and in 1714 he settled in England, being created Prince of Wales. He was on bad terms with his father, who refused to have him at court, so he set up a court of his own, and those who disliked George I. and his ministers, gathered round the prince and his wife, Caroline, a princess of Brunswick, whom he had married in 1705.

In June, 1727, George became king, and he ruled for nearly 33 years. He did not interfere much with politics, especially when he had Sir Robert Walpole as prime minister, although he was by no means a cipher and from time to time exerted himself effectually. In 1743 he led an army in the field against the French at Dettingen. His reign was notable for the Jacobite rising in 1745 and for war with

France, and it ended in a blaze of glory, with victories (1759) in three continents. George died, Oct. 25, 1760. His family consisted of two sons, Frederick, Prince of Wales, and the Duke of Gloucester, and five daughters. Frederick died before his father, who was therefore succeeded by his grandson, George III.

George III. King of Great Britain and Ireland. Born June 4, 1738, he was the son of Frederick, Prince of Wales, and his wife, Augusta, a Princess of Saxe-Coburg. His father died in 1751, and he was educated under the care of his mother and the Earl of Bute.

In Oct. 1760, George succeeded his grandfather, George II. In 1762 he made Bute prime minister, but in 1763 the earl resigned an office which he had made thoroughly unpopular. After this failure George found it difficult to secure a prime minister who was sufficiently docile, but he persevered, and in 1770, having formed in Parliament a party known as the king's friends, he was able to put Lord North at the head of affairs. For twelve years George and North were responsible for the government, a period marked by the loss of the American colonies. In 1788, the king's mind gave way, and his son George was appointed regent. He soon recovered, but after several further attacks, he became permanently insane in 1811, and for the rest of the reign his place was taken by his son as regent. He died Jan. 29, 1820.

George married, in 1761, Charlotte, princess of Mecklenburg-Strelitz and had 15 children. Seven of the nine sons grew up to manhood. They were George IV., William IV., and the Dukes of York, Kent, Cumberland, Sussex and Cambridge.

George IV. King of Great Britain and Ireland. Born in London, Aug. 12, 1762, he was the eldest son of George III., his full name being George Augustus Frederick. He was made Prince of Wales in the same year. In 1795 he married Caroline of Brunswick and they had one child, Charlotte, who died in 1817. The prince soon quarrelled with his wife and for some years the relations between them were the subject of general discussion, whilst there was fresh trouble when George became king.

As Prince of Wales, George was notorious for his extravagance and his love of questionable pleasures generally. He was not on good terms with his father and became the central figure of the Whig opposition to the government, Fox and Sheridan being among his friends. He acted as regent during his father's insanity in 1788. In 1811 he was again regent, and this time he retained the office until he became king in Jan. 1820. He reigned for ten years, but exercised no great influence on public affairs. He died at Windsor, June 26, 1830. George created the popularity of Brighton, where he built the royal pavilion as a residence. Mrs. Fitzherbert was his morganatic wife from 1785 until her death in 1813.

George V. King of Great Britain, Ireland and the British Dominions beyond the Seas, and Emperor of India. Born in London, June 3, 1865, he was the second son of Edward VII., then Prince of Wales, and his wife Alexandra, and was baptised as George Frederick Ernest Albert. In 1877 he entered the navy and therein he served until 1892, when the death of his elder brother, the Duke of Clarence, made him heir to the throne. He was created Duke of York, and in 1893 married Mary, the only daughter of the Duke of Teck. He was Duke of Cornwall when his father succeeded to the throne in 1901, and at the end of that year was made Prince of Wales. In the meantime he went to Australia to open the first parliament of the new Commonwealth. He had previously travelled a good deal and between 1901 and 1910 he made other journeys through the Empire, notably to India and Canada.

On May 6, 1910, George became king, and on June 22, 1911, he was crowned in Westminster Abbey. In 1911 he was hailed as Emperor at the Durbar at Delhi. On his return he took up the heavy duties of his position, which for 26 years he discharged with remarkable skill and success, not the least of his services being those rendered during the Great War. A serious illness befell him in 1928-29. In May, 1935, the Silver Jubilee of his reign was marked by much rejoicing throughout Britain and the Empire. He died after a short illness on 20th Janv., 1936.

The King and Queen had six children, of whom five survive. Four are sons, viz., the King, Edward VIII, Albert, Duke of York, Henry, Duke of Gloucester, and George, Duke of Kent. The only daughter is Mary, Countess of Harewood, who in 1932 became Princess Royal.

George V. King of Hanover. Born in Berlin, May 27, 1819, he was the son of Ernest Augustus, Duke of Cumberland, fifth son of George III. In 1851 George succeeded his father as King of Hanover, and he reigned until 1866 when, having sided with Austria against Prussia, he was expelled from his country. He made his home in Austria, where he mainly lived until his death, June 12, 1878.

George Name of two kings of the Hellenes. **George I.** was born at Copenhagen, Dec. 24, 1845, being a son of King Christian IX., and a brother of Queen Alexandra. He was chosen King of Greece in 1862, and reigned over that country for 50 years. On March 18, 1913, he was murdered at Salonika.

George II. was a grandson of George I. He became king in Jan. 1922 on the death of his father, Constantine, but abdicated in 1923. In 1935 he was recalled by his people and the monarchy restored.

George British prince. The fourth and youngest son of King George V., he was born at Sandringham, Dec. 20, 1902, his full name being George Edward Alexander Edmund. Having passed through Osborne and Dartmouth, he entered the navy and served with it for some years. This was followed by a spell in the Foreign Office, but much of his time has been taken up with public functions. In 1931 he went with the Prince of Wales to South America. In 1934 he married Princess Marina, daughter of Prince Nicolas of Greece, and was made Duke of Kent. A son was born in 1935.

George **David Lloyd.** British statesman. Born at Chorlton-on-Medlock, Manchester, Jan. 17, 1863, he was the son of William George, a schoolmaster. Owing to his father's early death he was brought up by his uncle, Richard Lloyd, at Llanystumdwy, N. Wales. He was articled to a solicitor at Portmadoc, and in 1884 began to practise on his own account at Caernarvon. In 1890, having taken a leading part in local politics, he was elected M.P. for the Caernarvon Boroughs, and in the House of Commons soon showed himself a clever debator. His opposi-

tion to Joseph Chamberlain and the Boer War made him a national figure.

In 1905 Lloyd George entered the Liberal Cabinet as president of the board of trade. In 1908 he succeeded Asquith as chancellor of the exchequer. In 1909 he introduced a budget that aroused bitter controversy, especially by its proposals for taxing land, which provoked a quarrel with the House of Lords by whom the budget was rejected. The upshot was two general elections in one year (1910) and the passing of the Parliament Act. The chancellor was then responsible for a great scheme of national insurance.

THE WAR YEARS. In August, 1914, Lloyd George supported the policy of declaring war. Early in 1915 he left the exchequer to become minister of munitions and soon afterwards helped to form the first coalition ministry. In July, 1916, he became secretary for war, and in December, dissatisfied with the way the struggle was conducted, he resigned and so brought the coalition ministry to an end. After negotiations, he himself became prime minister, with the Unionists under Mr. Bonar Law as his chief colleagues. As premier, Lloyd George introduced certain innovations into the government. He handed over the leadership of the House of Commons to a deputy, filled some of the chief offices of state with business men and formed a small cabinet, inside the larger one, to conduct the war. In 1919 he was Britain's chief representative at the peace conference at Versailles. He was supported by the verdict of the country given at an election in which women voted for the first time, a policy for which he was responsible.

POST-WAR. His premiership ended in Oct., 1922, when the Unionists withdrew from the coalition. Now estranged from the main body of the Liberals, but possessing party funds of considerable size, Lloyd George with a few followers occupied a detached position until a reunion with the other Liberals was effected in 1923. In 1926 he was chosen as the party leader, but there were Liberals, both inside and outside parliament, who refused to accept him. The election of 1929 placed the balance of power in the hands of the Liberals, but it was found impossible to secure complete unity among them. He published his *War Memoirs* in 1933-35. Early in 1935 he launched his "New Deal" proposals, an extensive scheme for National reconstruction, and in July inaugurated a "National Council of Peace and Reconstruction."

In 1888 Lloyd George married Margaret Owen. A son, Gwilym, and a daughter, Megan, were elected to Parliament in 1929 and again in 1931 and 1935.

George Henry. American economist. Born at Philadelphia, Sept. 2, 1839, he started his career as a printer, but later took to journalism. He made a study of economical questions, and in 1871 published *Our Land Policy*. It was amplified in *Progress and Poverty*. 1879, in which he advocates land nationalisation to be effected by means of a single tax. He died Oct. 29, 1897.

Georgetown Seaport and capital of British Guiana. It is near the mouth of the Demerara River. There is a railway for some 78 miles along the coast. There is a good harbour and shipping is the main industry. Georgetown is sometimes called Demerara; its old name is Stabroek. Pop. (1931) 62,690.

George Town Capital and seaport of Penang, Straits Settlements. It stands on the Island of Penang, a British possession, and has an excellent harbour. Shipping forms the chief industry. Pop. 101,000.

Georgia Soviet republic, linked with the Soviet Union at Moscow. In the Caucasus area, it lies between the Black Sea, the Caucasus Mts. and Armenia, and covers 26,386 sq. m. Tiflis is the capital; other places are Batum and Poti. Agriculture is the chief industry, but the production of manganese and other minerals is important. Much land is covered with forests. There is a railway system of about 600 m. owned by the state.

In early days Georgia was conquered by Alexander the Great, but in 302 it became an independent country and a little later adopted Christianity. In spite of invasions, its people retained their independence until, in 1801 to save themselves from the Turks, they placed themselves under the protection of Russia. Their last king soon disappeared, and the country became a part of Russia.

In 1918 a republic was set up in Georgia, and in 1921 the Soviet form of government was adopted. In 1922 it united with Azerbaijan and Armenia to form the Trans-Caucasian Federation of Socialist Soviet Republics. It includes the little Soviet republics of Abkhasia and Adjaristan. Pop. (1931) 2,883,200.

Georgia Southern state of the United States, one of the 13 original members of the union, it has a coastline on the Atlantic Ocean, fringed by a number of islands. It covers 59,265 sq. m. Atlanta is the capital; other places are Savannah, the chief seaport, Augusta, Macon and Columbus. The state produces cotton and maize, tobacco and fruit. Much of the land is covered with forests, and there are important fisheries and mines. The chief rivers are the Savannah, Altamaha and Ogeechee.

Georgia was settled by George Oglethorpe who made it a home for debtors, the first band arriving in 1733. He named it after George II. It entered the union in 1788. In 1861 the state seceded, but it was admitted again in 1870. It is governed by a legislature of two houses, and sends two members to the Senate and 10 to the House of Representatives at Washington. Pop. (1930) 2,908,506.

Georgian Architectural style adopted in Great Britain during the Georgian period, 1714-1820. It was due largely to the influence of Sir Christopher Wren. While following the classical tradition as transmitted through the Renaissance, Georgian architecture developed its own special treatment seen in its simplicity of plan and elevation, and among other things the usual addition of a Greek portico to a building.

Georgian Bay North-eastern area of Lake Huron. Its waters are entirely Canadian and parts of the province of Ontario cut it off almost wholly from the main part of the lake. It is 120 m. long and 50 m. across and some of the rivers of Ontario flow into it. The Trent Valley canal connects it with Lake Ontario.

The **Georgian Bay Canal**, as yet incomplete, is intended to unite Georgian Bay with the S. Lawrence at Montreal, thus bringing the Great Lakes 800 m. nearer to that city and to Europe

Georgics Poem by Virgil. In Greek the word means husbandry, and the poem deals with pastoral life. It was written about 40 B.C., and is in four books.

Scholars regard it as a perfect example of style and thought.

Geranium Genus of herbs native to temperate regions. They have regular flowers generally rosy, purplish red or blue in colour, and divided leaves; eleven native British species are popularly called crane's bill. Many exotic forms are favourite garden varieties. Allied herbs, with irregular flowers, varying in colour from scarlet to white, form the distinct genus pelargonium. In popular and nurserymen's usage such discarded names as scarlet and ivy-leaved geranium are used for cultivated varieties of pelargoniums brought from S. Africa. *See* CRANE'S-BILL, PELARGONIUM.

Germ Rudimentary form of a living thing, whether plant or animal, the vital particle from which an organism may develop. It is also used for the origin or first principle of anything. Some germs, those from decaying matter, for instance, are injurious to health and preparations used to destroy these are called germicides.

German Catholics Religious community separated from the Roman Catholic Church in 1844. Led by two ex-priests, Johann Ronge and Johann Czerski, it repudiated clerical celibacy and aimed at breaking the papal power in Germany. Restrictions were placed upon the dissidents, internal dissensions arose, and a dwindling remnant joined the rationalistic body of Free Congregations in 1859.

Germanicus Caesar. Roman soldier. Born in 15 B.C., he was a nephew of the Emperor Tiberius and was early put in command of an army. He fought against the Gaulish and Germanic tribes, winning a great victory over Arminius in A.D. 16. Afterwards he was sent to Asia and he was at Daphne near Antioch when he died in A.D. 19, perhaps by poison. Germanicus was the father of Caligula and the grandfather of Nero.

German Measles Contagious disorder occurring mostly in children. Also called rubella, it is usually mild, and is characterised by a pink eruption. Although somewhat resembling both measles and scarlet fever, it bears no organic relation to them. Its cause, bacterial or otherwise, is undiscovered. There may be headache, shivering, a little catarrh and rise of temperature, not above 100°F., followed by a slight rash which disappears within a week, during which confinement to bed and thorough isolation are necessary.

German Silver Silver white alloy. Also known as nickel silver, it is composed of varying proportions of copper, nickel and zinc. When first prepared, it has a crystalline structure, but after careful annealing it becomes malleable and can be worked like brass. It is harder than silver and takes a high polish, but acquires a yellow tarnish after exposure to air. German silver is used largely as a basis for electroplated goods such as spoons, forks, etc.

German Volga Republic Soviet Republic. One of eleven autonomous republics in the Russian Socialist Federal Soviet Republics, it was created in 1924. It is enclosed by the Lower Volga Area, except in the south-east. The government is by Central Executive Committee and Council of Peoples' Commissaries, the capital being Pokrovsk, on the Volga, with a population of 34,352. There are railways running from Moscow to Astrakhan and Uralsk, with a junction at Urbakh. The chief crops are wheat, barley and rye, and there are agricultural and peasant industries.

Germany Federal republic of Europe. It occupies an area of 181,699 sq. m. in the central part of the continent, its boundaries being settled by the treaty of Versailles. Its coastline on the Baltic Sea and a shorter one on the North Sea, together amount to some 1200 m. Its land frontiers touch France, Belgium, the Netherlands, Denmark, Poland, Czechoslovakia, Austria and Switzerland. Much of the country is a great plain, but in the centre, south-east and west are ranges of mountains, the Harz, the Black Forest, the Erzgebirge and the Taunus. The highest peaks are in the south-west, where are some Alpine ranges; there a few exceed 9000 ft. in height. The chief rivers are the Rhine, Elbe, Weser, Oder and Maine, but there are many others, for the land is well watered. There are lakes, the largest being Bodensee. The land includes Rugen and other islands in the Baltic, and the Frisian Islands in the North Sea.

TERRITORIAL DIVISIONS. The German federation consists of 17 states. Much the largest is Prussia, which occupies more than half the total area. Next in order of size are Bavaria, Württemberg, Baden, Saxony, Mecklenburg, Thuringia, Hesse, Oldenburg and Brunswick. The others, which include three fine cities, Hamburg, Lübeck and Bremen, are all less than 1000 sq. m. in extent. Berlin is the federal capital but the supreme court sits at Leipzig.

The area includes the Saar district, which in 1935 by a plebiscite vote returned to Germany. Berlin is the most populous city and Hamburg the greatest seaport. There are no fewer than 51 other cities with over 100,000 inhabitants, and eight of these, Cologne, Munich, Leipzig, Essen, Dresden, Breslau, Frankfort-on-Main, and Dortmund, have each over 500,000. The total population is 66,044,161 or 363 to the square mile. Of these 40,000,000 are Protestants, mainly Lutherans, and 20,000,000 Roman Catholics. Since 1918 there has been no state church. The education is of a high standard. There are 23 universities and many technical and other colleges.

CONSTITUTION. The constitution provides for a president and two houses of parliament, the Bundesrat and the Reichstag. The former consists of 66 members representing the states, Prussia electing 26. The latter consists of a varying number of members elected by all adult males and females. A cabinet that carries on the work of government is responsible to the legislature. The president is elected by all voters and holds office for seven years. The republican flag is black, white and red.

ECONOMICS. Germany is an agricultural country and a large part of it is well farmed. Rye, oats, wheat, barley and potatoes are produced on a large scale, and great numbers of cattle are kept. Pigs are reared but sheep are less plentiful. The vine is grown in the warmer districts, as is tobacco. Large areas are left to forests, and forestry is conducted on scientific lines. The fisheries, especially in the North Sea, are important.

Certain parts of Germany are rich in coal and other minerals, and there the great manufacturing centres have sprung up. Westphalia

and Silesia contain the coal mines. Iron ore is produced in Silesia and in the Harz, where silver is also mined. Iron and steel are manufactured in the great towns of Westphalia and the lower Rhineland, part of Prussia and to a lesser extent, in Thuringia. Saxony is the chief centre for the production of cotton, woollen and other textiles. Berlin is famous for its production of electric appliances. The chemical industry is flourishing and the production of clothing and foodstuffs employs a large number of people.

Germany has an extensive and unified railway system, owned by the state but managed by a private company. Its canals have a length of 4,684 m. (1933). Shipping is another great industry; Hamburg is the largest port with Bremen, Stettin and Emden next in importance. Owing to the size of the rivers there are many flourishing river ports. Germany has a central bank, the Reichsbank, and four other banks have the right to issue notes. Since 1924 the currency has been on a gold basis, with the reichsmark as the unit. The metric system of weights and measures is used.

HISTORY. For centuries Germany was little more than a geographical expression. It was divided into some hundreds of states, each with its own ruler. They owned allegiance to the head of the Holy Roman Empire, who was also German king, but as the years went on he became less and less concerned with Germany. In the 17th century this area of Europe was ravaged by the Thirty Years' War. In 1815 a federation of the German states was established but this only lasted until 1866. Its place was then taken by the North German Confederation, in which Bavaria and the states of the south had no part.

In 1871 the German Empire was founded, the king of Prussia becoming emperor. This included all the German states except Austria. After a flourishing career, it fell to pieces as a result of the Great War, when Germany, by the Treaty of Versailles, surrendered Alsace-Lorraine to France, parts of Silesia, Prussia and Posen to Poland and Czechoslovakia, and small areas to Denmark and Belgium. Danzig was formed into a free state. Altogether Germany ceded 27,252 sq. m. and 6,500,000 people. She also surrendered her colonies in Africa and the South Seas.

The first president of the republic was Friedrich Ebert, under whom the country was in a deplorable condition, both politically and financially. The mark fell to nothing and the failure to pay reparations led to the occupation of the Ruhr district by the French.

An improvement began in 1923 when Gustav Stresemann became chancellor. Reform of the currency was followed by the signing of the Pact of Locarno and the entry of Germany into the League of Nations. In 1925 Hindenburg was elected president and the Dawes plan for the payment of reparations worked for a time. The death of Stresemann in Oct., 1929, marked the beginning of a change for the worse. Like other countries Germany was badly hit by the economic depression. She declared herself quite unable to make reparation payments and there was a good deal of political unrest. Under Adolf Hitler a party called the Nazis became very strong and there was talk of a restoration of the monarchy. The Nazis came into conflict with the authorities about the wearing of their uniform, etc., and Bavaria threatened to leave the federation. In 1932 Hindenburg was re-elected president but Brüning, who had proved a capable chancellor, was forced to resign. His successor, von Papen, represented the country at Lausanne in July, 1932, when the question of reparations was settled, Germany undertaking in return for their abandonment to make a payment of £150,000,000 to a fund for European reconstruction. In the presidential election of 1932 Hitler and his party won great successes at the elections in Bavaria and other parts of Germany. From that time the Nazis gradually gained ascendency until March, 1933, when Hitler (*q.v.*) became dictator. Germany resigned from the League of Nations and from the Disarmament Conference in 1933 owing to the refusal on the part of the other Powers to grant equality of status in armaments. In Feb., 1934, Germany was completely unified by a law remodelling the constitution, and vesting in the Reich the sovereign rights hitherto belonging to the Federal states. In Aug. of the same year Hindenburg died, and Hitler became President as well as Chancellor. In 1935 Germany's policy was censured by the League of Nations.

Germiston Town of the Transvaal, S. Africa. It is 36 m. from Pretoria and 9 from Johannesburg. On the Rand, it is an important mining centre, with gold refineries and manufactures of chemicals, cereal products, etc. Here is the station which supplies electric power to the mines. Pop. (1931) 23,953 whites.

Gerrard's Cross Village of Buckinghamshire. It is 4 m. from Beaconsfield and 18 from London. There is a fine common. Pop. 2200.

Gerrymander American expression, which has been adopted into the English language, and denotes the arrangement of election districts in such a way that an unfair advantage is given to the party in power. The word is derived from Elbridge Gerry, an American politician, and "mander" in "salamander," one of the districts in Massachusetts formed when Gerry was governor, having an alleged resemblance to a salamander.

Gesso Form of applied decoration. It is used to ornament small boxes, bowls and other household articles, but can also be used, as it was in the Queen Anne period, for mirrors and chairs. Gesso powder is a paste composed of plaster of Paris and glue.

Gethsemane Plantation at the foot of the Mount of Olives. Thither our Lord retired across the Kidron after the Last Supper with His disciples; it witnessed the agony and the betrayal. The traditional site is now in Franciscan hands, an ancient cave adjoining being the reputed Grotto of the Agony.

Gettysburg Town of Pennsylvania, U.S.A. It is on the railway 70 m. from Washington and was named after James Gettys, a general in the War of Independence. Near here, on July 1-3, 1863, one of the decisive battles of the American Civil War was fought, when the Southern general, Robert E. Lee, was defeated by the Northerners under Meade. The battle was fiercely contested for three days, and in the end Lee was forced to retreat, but his genius enabled him to get his army across the Potomac.

In Nov., 1863, part of the battlefield was dedicated as a national cemetery, and in this are several memorials. On this occasion Lincoln made the speech, which, although short, is one of the jewels of English prose.

Geum Genus of hardy rosaceous perennials. It is of dwarf growth, and contains many species. The variety *G. avens*, largely grown in gardens, has handsome showy flowers, Mrs. Bradshaw (scarlet) and Lady Stratheden (yellow), being popular varieties. Several species including *G. reptans* and *G. montanum* are useful in the rock garden. The wild herb bennet, or wood avens, *G. urbanum*, has small yellow flowers and its aromatic root possesses medicinal qualities.

Geyser Type of siliceous hot spring. It is characterised by violent and explosive eruptions of steam and boiling water alternating with quiet periods. Geysers occur in volcanic areas in New Zealand, in the Yellowstone Park, Wyoming, U.S.A., and in Iceland. They are due to the gradual heating of water in cavities and fissures in the rock, the hot water under high pressure dissolving out large quantities of silica. When a sufficiently high temperature is reached, violent ebullition of steam is produced.

Also a domestic apparatus for obtaining a quick supply of hot water. It consists of a cylinder containing a coil of copper or brass tubing connected with the water supply; and beneath the container is an arrangement of atmospheric gas jets by which the water stream through the coil is heated rapidly.

Ghats Mountain ranges of India, enclosing the Deccan tableland. The East Ghats average 1500 ft. in height and comprise granite and gneiss spurs and range along the Madras coast from Orissa to the Nilgiri hills. The West Ghats, averaging 3000 ft. in height, comprise the more precipitous Sahyadri, range of trap rocks, and stretch from the Tapti valley south for 800 m. to the Palghat gap.

A Hindu word meaning landing, stairs or passes, the term ghat is also applied in India to flights of steps along a river's bank. Such are frequently seen along the Ganges, notably at Benares, where are the burning ghats, the Hindu's cremation ground.

Ghazi Turkish title of honour. Derived from an Arabic word meaning "warrior," a ghazi is a Mohammedan who has vowed to exterminate unbelievers by the sword. The Turks use it, meaning "The Victorious," as a title of honour for military officers who have distinguished themselves against non-Mohammedan foes. It is especially applied to Mustapha Kemal (*q.v.*).

Ghazni City of Afghanistan. It stands in the mountains, about 80 m. from Kabul, and is on the caravan route between Persia and India through the Gomal Pass. The old city, which is now in ruins, was once the capital of a great empire. It was destroyed about 1220 by the Mongols and near it the new city was built. It has many shrines visited by pilgrims, two towers and other features of interest. During the Afghan Wars Ghazni was taken by the British in 1839 and in 1842.

The dynasty of the **Ghaznevids** was founded in 962 and ruled at Ghazni until 1184, when the Ghur dynasty took its place. The Ghaznevid Empire covered a great part of Asia; its most famous member was Mahmud, whose court was renowned for its culture and magnificence.

Gheel Town of Belgium, 28 m. from Antwerp. It is a centre to which insane persons have been sent since the 13th century. The mentally afflicted are quartered on the inhabitants, who make a living by caring for them. The whole business is under official direction, with medical men and other inspectors in attendance. Pop. (1932) 18,545.

Gheluvelt Village of Flanders, 4 m. from Ypres, on the road to Menin. Being in the Ypres salient there was almost constant fighting here from 1914 to 1918. This was especially desperate during the first battle of Ypres, towards the end of 1914, and in the spring of 1915. The village was taken and retaken also in 1917 and 1918. Here on Oct. 31, 1914, the 2nd battalion of the Worcestershire Regiment made its famous stand.

Ghent City and river port of Belgium, 32 m. from Brussels, at the junction of the Rivers Lys and Schelde. It is also a railway junction, and a ship canal connects it with the sea. Branches of the rivers and canals flow through the city, adding much to its picturesque appearance, and over these there are more than 200 bridges. The chief buildings are the cathedral, with its altar piece painted by the Van Eycks, the hotel de ville, the law courts, a modern building, and the belfry, an old one. There are several museums. Other historic buildings are the Château du Diable, a 13th century building, the Great Beguinage and the Little Beguinage. There is a castle, once the residence of the Counts of Flanders. The university, founded in 1816, is a centre of Flemish culture. The French call the city Gand.

Ghent has cotton, linen and other manufactures, and its industries include also engineering works and sugar refining. The market is famous and there is a large transit trade. In the neighbourhood many flowers are grown for export.

In the 13th century Ghent became a flourishing trading centre, and, for the next 300 years, was one of the richest in Europe, its citizens being among the most independent. Here the Emperor Charles V. was born. In the 16th century its prosperity was destroyed by the Spaniards, who entered it as conquerors in 1584, but it recovered in the 19th. In 1814 a treaty was signed here between Great Britain and the United States. The city was in the possession of the Germans from Oct., 1914, to Oct., 1918. Pop. (1931) 170,576.

Ghetto Part of a city or town inhabited by Jews. The English equivalent is Jewry.

Ghibelline Political party that flourished in Germany and Italy in the Middle Ages. It is a corruption of Waiblingen, the name of a castle owned by Conrad III., the German king and a member of the Hohenstaufen family. Conrad's followers, in a fight against Welf of Bavaria, used Waiblingen as a battle cry, in opposition to the enemy's cry of Welf. These names became corrupted by the Italians to Ghibelline and Guelph. The Ghibellines became the name of the party opposed to the Guelphs, on whose side the Pope was usually found. The feuds between the Guelphs and the Ghibellines lasted for over 200 years.

Ghiberti **Lorenzo.** Italian sculptor. Born at Florence in 1378, he became a goldsmith. He is famous, however, for the bronze gates, the finest of their kind in the world, which he designed for the baptistery at Florence. On these he worked for over 40 years. He died in 1455.

Ghirlandajo **Domenico.** Italian painter. Born at Florence

in 1449, Ghirlandajo, whose full name was Domenico Tommaso Corrado Bigordi, was apprenticed to a goldsmith and studied painting under Baldovinetti. He was for a time the master of Michelangelo. He painted many excellent frescoes and also works in mosaic. He died Jan. 11, 1494.

His best frescoes are in the Sassetti Chapel in S. Trinità and the choir of Sta. Maria Novella, Florence. Other works of his are in Rome and the Louvre, Paris.

Ghost Disembodied spirit said to appear to the living. The belief in ghosts is widespread and is found in all ages and amongst almost all peoples. Some are attached to a particular house, perhaps associated with a particular crime and appear at a particular hour. Certain families have their ghosts. Some of these appearances are apparently well authenticated, but the explanation must be sought in the mental condition of the person visited by the ghost.

Ghoul Malignant Oriental spirit supposed to frequent burial grounds for the purpose of feeding on corpses. The word, derived from the Arabic *ghul*, is used also to describe one who delights unnaturally in horrors.

Giant Human being of abnormally great stature. Greek mythology describes beings of monstrous size and strength, *e.g.*, Briareus and Polyphemus. Giants appear in the Old Testament, notable ones being Og and Goliath, and their exploits are a favourite subject in the folklore of most European countries, where giants are usually wicked and come to an ignoble end. Bunyan introduces giants into his immortal allegory.

Charles Byrne, an Irishman, who lived in the 18th century, was 7 ft. 9 in. in height. In 1905 a Russian named Machnov, was exhibited in London; he measured 9 ft. 3 in.

Giant's Causeway Columnar basalt formation on the north coast of Co. Antrim, Ireland. Situated 2½ m. N.E. of Bushmills, it is divided by whin dykes into the Little, Middle and Grand Causeway, and simulates a pier 700 ft. long, 350 ft. broad, and 30 ft. high, and composed of 40,000 perfectly-fitting, accurately-jointed polygonal pillars from 15 to 20 in. across. The so-called Giant's Organ adjoins. It is said to have been caused by cooling and cracking lava.

Giant's Kettle, or giant's cauldron, is the popular name for a glacial pot-hole. These cylindrical holes were caused in rocks by subglacial streams, laden with gravel, etc. There are examples in the Alps and Germany.

Gibbet Wooden upright with projecting beam for hanging malefactors in chains or irons after execution. Recognised by law in 1752, the practice ceased in 1834. Gibbet law entitled Halifax, in Yorkshire, to execute thieves on a primitive guillotine called the Halifax gibbet; this operated between 1541 and 1650. *See* GALLOWS.

Gibbon Genus of manlike or anthropoid apes (*hylobates*). Native to the Indo-Malay region and normally about 3 ft. high, they are slenderly built and tailless, with naked callosities on the buttocks, and arms reaching to the ankles. Though frequently walking upright on the ground, they are tree dwellers and are gregarious, noisy and extraordinarily agile. The largest is the Sumatra siamang; others are the Burmese white-handed gibbon, the Assamese hoolock, the Siamese crowned or tufted gibbon, and the Javanese silver wou-wou. Although readily tamed, they do not live long in Europe.

Gibbon **Edward.** English historian. He was born at Putney, April 27, 1737, and educated at a private school, then at Westminster, and in 1752 he went to Oxford for a short time. From 1753-58 he lived at Lausanne. Returning to England he lived in Hampshire, where he served in the militia, and in 1761 wrote in French his *Essay on the Study of Literature*.

In 1763 Gibbon visited Rome and there decided to write his immortal work, which he called *The Decline and Fall of the Roman Empire*. He did not actually begin it, however, until 1772, and the first volume was not published until 1776. For eleven further years, the last four in Switzerland, he worked at it and finished it on June 27, 1787, a passage in his *Autobiography* describing his emotion on that memorable night. The last three volumes were published in 1788. In 1793 he returned to England, and died in London, Jan. 16, 1794.

Gibbon's *Decline and Fall* is one of the world's great books. Its stately and sonorous style would, alone, make it worth reading, but it is equally notable for the brilliant epigrams in which the writer generalises, from time to time, on the events he is relating. As history, it is by no means obsolete, although on some points its facts have been corrected by more recent scholarship. It remains, however, a unique and memorable piece of work of a kind which will, in all probability, never again be attempted. The best edition is edited by J. B. Bury.

Gibbons **Grinling.** English wood carver. Born April 4, 1648, in Rotterdam, he early came to London. John Evelyn introduced him to Charles II., and his work soon became widely known. He worked for Wren, carving the choir stalls in S. Paul's Cathedral, and other work by him is in Canterbury Cathedral, Windsor Castle, Chatsworth and elsewhere. His carvings in many churches and large houses show great delicacy of work and truthfulness of imitation, his designs being chiefly of foliage, flowers, fruits and birds. He died in London, Aug. 3, 1721.

Gibbons **Orlando.** English composer. Born at Cambridge in 1583, he became a chorister at King's College there. In 1604 he was appointed organist of the Chapel Royal and in 1623 became organist of Westminster Abbey. He died June 5, 1625, at Canterbury, where he had gone, with some music composed by him for the occasion, to attend the reception of Henrietta Maria, the wife of Charles I. He wrote some beautiful chamber music and madrigals, but is best known for his church music, some compositions of which are still in general use.

Gibeon Ancient town in Palestine. Situated on a solitary hill, 5 m. N.W. of Jerusalem, it was an important Hivite stronghold, whose inhabitants tricked Joshua into granting a truce (Jos. ix.). Here David's and Ishbosheth's champions fought, here Joab murdered Amasa, and here Solomon offered sacrifices and obtained the gift of wisdom. The town is now known as El-Jib.

Gibraltar Town and fortress of Spain, belonging to Great Britain. It stands on the peninsula at the end of which is Europa Point, and is connected with the mainland by an isthmus. It covers just under

2 sq. m. The town is divided into the north town and the south town. The chief buildings are the Anglican Cathedral, several churches and the castle; there are also barracks, residences for the officials, and other buildings for the public service, as well as a racecourse and other sporting attractions. Gibraltar is strongly fortified and has a large and safe harbour, which is a station of the British fleet. The colony is under a governor, who is assisted by an executive council. Pop. (1931) 21,372.

Facing the sea is the **Rock of Gibraltar**, and on the African coast opposite is Mount Abyla, the two being known to the ancients as the pillars of Hercules. Between them are the Straits of Gibraltar which lead from the Atlantic Ocean into the Mediterranean Sea. At the narrowest point the Straits are only 9 m. across.

Owing to its position, Gibraltar has always been a coveted stronghold. For some centuries after 711 it belonged to the Moors. In 1462 it was taken by the Castilians, and was part of Spain until captured in 1704 by a British and Dutch fleet under Sir George Rooke. The French and Spaniards tried hard to regain it in 1704-05, but in vain, and in 1713 it was surrendered to Great Britain. In 1736 the Spaniards again besieged it, and made another and greater attempt in 1779, when they began a siege that lasted for over 3 years, ending in Feb. 1783.

Gibson **Charles Dana.** American artist. Born at Roxbury, Mass., Sept 14, 1867, he studied in New York and Paris, and began his artistic career by contributing illustrations to various periodicals. His drawings of a type of American girl, the Gibson girl, secured him great popularity. Later he turned to portrait painting in oils. In 1920 he purchased the controlling interest in *Life*.

Gibson **John.** British sculptor. Born in 1790 near Conway, his early years were passed in Liverpool where he began to carve. In 1816 he exhibited his first piece of sculpture in London, and then studied in Rome as a pupil of Canova. He spent most of his life in that city, and died there, Jan. 27, 1866. He was elected A.R.A. in 1833 and R.A. in 1836. Gibson left his money and some of his works to the Royal Academy, and they are now in the Gibson Gallery at Burlington House, London.

Gide **André Paul Guillaume.** French novelist and critic. Born in Paris, Nov. 21, 1869, his first book was *Les Cahiers d'André Walter* (1889), and was followed by *Paludes* (1895) and *Les Nourritures Terrestres* (1897). His first novel, *L'Immoraliste*, was a masterpiece, and *La Porte Étroite* (1909) and *Isabelle* (1911) were characterised by the same sureness of touch. *Caves du Vatican* (1914) was less successful, and *Les Faux Monnayeurs* (1927) and *Si le Grain ne Meurt* (1924) are unequal. *Le Retour du Tchad* appeared in 1928.

Gidea Park District of Essex, near Romford, 13 m. from London, on the L.N.E. Rly. It was long the park around a residence called Gidea Hall, which in 1910 was sold and laid out as a garden city. Raphael Park is an open space.

Gideon Hebrew warrior and judge. The son of Joash, he dwelt at Ophrah near Shechem. He routed the Midianites and overthrew the altars of Baal. Although declining the throne, he judged the people for 40 years. The textual inconsistencies concerning him may denote unskilful revision of the Old Testament, and a consequent confusion of two heroes, Gideon and Jerubbaal (Judges, vi.-viii.).

Giggleswick Village of Yorkshire (W.R.), 14 m. from Skipton, on the L.M.S. Rly. The Ribble flows by it. It is famous for its school founded in 1507, and now a large public school. It has a beautiful chapel designed by Sir T. G. Jackson.

Gilbert Group of islands in the Pacific Ocean. They belong to Great Britain which annexed them in 1915, and are part of the Gilbert and Ellice Islands Colony and lie on the equator. There are many islands, but only 18 are inhabited. They cover 166 sq. m. and produce copra, phosphates and fruit. The government is in the hands of a resident commissioner, who is responsible to the high commissioner of the Western Pacific. Pop. (1930) 24,800.

Gilbert **Sir Alfred.** English sculptor. Born in London, Aug. 12, 1854, he studied in London, Paris and Rome, first exhibiting at the Royal Academy in 1882. In 1892 he was elected a Royal Academician, and 1900-09 was Professor of Sculpture at the Royal Academy. Gilbert is considered one of the greatest of modern English sculptors. Among his many works are the Eros Fountain in Piccadilly, the Kiss of Victory, and the statues of Queen Victoria at Winchester, of John Bright at Westminster, and of Queen Alexandria at Marlborough House. Gilbert was knighted by the King in June, 1932. He died on 4th Nov., 1934.

Gilbert **Sir Humphrey.** English navigator. He was born about 1539 at Dartmouth, and was educated at Eton and Oxford. He fought against the French in 1563 and in Ireland in 1566, being given a command in Munster in 1569. In 1570 he was knighted; he was M.P. for Plymouth in 1571, and in 1572 led an unsuccessful expedition into the Netherlands. In 1578 he was granted a charter by the queen to discover and establish a colony. His first expedition was a failure, but in 1583 he took possession of Newfoundland, where he founded a settlement. The *Squirrel*, the smaller of his vessels, in which he was returning to England, foundered, Sept. 9, 1583, and all were lost.

Gilbert **John.** American film actor. Born at Logan, Utah, July 30, 1897, he worked as a writer, director and editor of motion pictures. He achieved fame as an exponent of passion in *Big Parade*, *The Merry Widow*, *Flesh and the Devil*, and other pictures. He died in 1936.

Gilbert **Sir John.** English painter and illustrator. Born at Blackheath, July 21, 1817, he entered a city office, but soon abandoned business to teach himself art. In 1871 he was knighted and 5 years later was elected R.A. Another honour was the presidency of the Royal Society of Painters in Watercolour. He died Oct. 5, 1897. Gilbert worked both in oils and watercolours, but his best work was done as an illustrator of periodicals and books, notably Shakespeare's plays and the works of Cervantes and Scott. Many of his pictures are in the Guildhall, London.

Gilbert **Sir William Schwenck.** English dramatist. Born in London, Nov. 18, 1836, he graduated at London University, was a clerk in the privy council office, 1857-62, and in 1864 was called to the bar. He contributed to *Fun*, for which he wrote his

Bab Ballads, and produced, in 1866, his first play, a burlesque, *Dulcamara*, which was followed by many others. These include the comedies *Pygmalion and Galatea* and *The Wicked World*; also several dramas of a more serious kind. In 1871 he began to work with Sir Arthur Sullivan (*q.v.*), the composer, and from 1875 to 1896 they produced a series of topical comic operas, which had an instant and sustained success. They include *Patience*, *Iolanthe*, *The Mikado*, *H.M.S. Pinafore*, *Trial by Jury*, *The Pirates of Penzance*, *The Yeomen of the Guard* and *The Gondoliers*. For these Gilbert wrote the words which contain many references to the law. Gilbert was knighted in 1907, and was drowned May 29, 1911.

A Gilbert and Sullivan Society has been founded to keep alive the interest of the plays.

Gilbertines English monastic order. Founded by S. Gilbert at Sempringham, Lincolnshire, in 1135, it comprised nuns following the Cistercian form of the Benedictine rule, and Augustinian canons regular. They lived in double monasteries, stringently segregated, and received papal approbation in 1148. Their habit was black with lamb's-wool lining and a white cloak. The superior was called the Master of Sempringham. At the founder's death in 1189 there were 13 monasteries, with 1700 members; at the Dissolution in 1537 there were 25.

Gilbey Sir Walter. British merchant. Born at Bishop's Stortford, May 2, 1831, he began his career in an estate agent's office at Tring. Later he and his brother entered business as wine merchants. In 1867 the firm acquired possession of the Pantheon in Oxford Street, London, and in 1875 purchased vineyards in the Médoc district of France and two whisky distilleries in Scotland. Gilbey, who became a baronet in 1893, was also interested in the breeding of shire and other horses, and was President of the Royal Agricultural Society in 1895. On his death, Nov. 12, 1914, the baronetcy passed to his son.

Gildersome Urban district of Yorkshire (W.R.). It is 5 m. from Leeds, on the L.N.E. Rly. Coal mining is the main industry. Pop. (1931) 3041.

Gilead Mountainous region east of the Jordan. Separated from Moab on the south by the Arnon, its usual northern boundary was the Yarmuk, but the Old Testament sometimes extends Gilead to Hermon.

Giles Patron saint of beggars, cripples and lepers. He is said to have been born towards the end of the 7th century and to have been of a noble Athenian family. Emigrating to France, he lived the life of a hermit, and founded an abbey near Nîmes. His day is celebrated on Sept. 1.

Gilgal Several places in Palestine mentioned in the Old Testament. One, 3 m. east of Jericho, was Israel's first camping place after entering Canaan. Another, 7 m. north of Bethel, was Elisha's abode.

Gilgamesh Hero of a Babylonian epic. This important and popular literary work comprises 12 cuneiform tablets. Each covers an adventure directly or indirectly associated with the hero and remarkably paralleling the labours of Hercules. One tablet narrates the Babylonian version of the Biblical flood. The epic is fragmentary.

Gill Organ of respiration in water-dwelling animals. Gills consist of simple or branched processes richly supplied with blood-vessels and covered by a delicate membrane, thus giving a larger surface for the absorption of the oxygen dissolved in the water. They are present in crustaceans, molluscs and fishes, and in the larval stage of the frog and its allies. In fishes the gill system is complex and is contained either in separate pouches or in one branchial chamber.

Gill English measure of capacity. It contains 7.219 cubic in., and 4 gills go to a pint. Formerly in Scotland and the north of England, a gill was half a pint.

Gill Sir David. Scottish astronomer. Born in Aberdeen, June 12, 1843, he studied at Aberdeen University, soon developing an interest in astronomy. After having had charge of a private observatory he was, in 1879, appointed Astronomer Royal at the Cape of Good Hope. He published a number of star catalogues and works on astronomical subjects, and his work in connection with various geodetic surveys, together with many important investigations, greatly enhanced his reputation. His organising ability was well shown in his expedition to Ascension Island to determine the solar parallax in 1877. In 1900 he was knighted, and died Aug. 27, 1914.

Gill Eric Rowland. English sculptor. Born at Brighton, Feb. 22, 1882, he was apprenticed to an architect, but preferred letter-carving, and in 1910 produced his first sculpture, "Madonna and Child." He became a Roman Catholic in 1913, and was commissioned to execute the Stations of the Cross for Westminster Cathedral. After the War he carved "Christ driving the Moneylenders from the Temple" for Leeds University War Memorial, and has done many other sculptures, including "S. Sebastian," "Torso," "Adam and Eve" (headless), and "Deposition." He published *Art Nonsense* (1929), and *Clothes* (1931).

Gillingham Borough of Kent. It stands on the Medway, adjoining Chatham, 36 m. from London, by the S. Rly. An industrial area, bricks and cement are made, the dockyard at Chatham providing other employment. Gillingham was a market town in the 14th century and was long a naval station. Pop. (1931) 60,983.

Gillingham Market town of Dorsetshire. An agricultural centre, it is situated on the Stour, 105½ m. from London, by the S. Rly. Pop. 3570.

Gillott Joseph. English pen maker. Born at Sheffield, Oct. 11, 1799, he commenced work as a cutler, moving to Birmingham in 1821. In 1830 he started experimenting in the making of steel pens, obtaining flexibility combined with hardness by cutting central and side slits and cross graining the point. After a time he established a factory, which brought him a fortune, much of which he spent on art. He died Jan. 5, 1873.

Gillow Robert. English craftsman. About 1730 he began to make furniture in Lancaster. Later he moved to London where he carried on business with his sons until his death in 1773. The sons, Robert, Thomas, and Richard, continued the business, which became Gillow & Barton, and were the leading furniture makers of the time. Hepplewhite and Sheraton furnished designs for pieces which were made by the Gillows.

Gillray James. British caricaturist. Born 1757, he was apprenticed to an

engraver and later studied at the R.A. schools in London and under Bartolozzi. In 1779 appeared his first signed caricature, and for over a quarter of a century his political satires continued to delight a wide public. He died insane on June 1, 1815.

Gillyflower Name applied by Chaucer, Spenser, Shakespeare and old writers generally to the clove pink or clove gillyflower (*dianthus caryophyllus*). It is an adaption of the French *giroflée*. Later writers and nurserymen apply it to the stock or stock gillyflower, *matthiola*, the wallflower or wall gillyflower, *cheiranthus*, the dame's violent, or night-scented gillyflower, *hesperis*, and others.

Gilmour Sir John. Scottish politician. Born May 27, 1876, the son of a baronet, he was educated at Trinity College, Glenalmond, and Trinity College, Cambridge. After serving in S. Africa, he entered politics and was elected Unionist member for East Renfrewshire. In 1918 he was elected for the Pollok division of Glasgow, and in 1919 became a Unionist whip. In 1921-22 he was a junior Lord of the Treasury, and from 1924-29 Secretary for Scotland. In 1931 he became Minister for Agriculture, and as such attended the Ottawa Conference. In Sept., 1932, he succeeded Sir Herbert Samuel as Home Secretary, giving place to Sir John Simon in June, 1935.

Gimcrack Name of a famous English racehorse. In its honour a racing club was founded in 1767 and a race, the Gimcrack Stakes, is run every August at York.

Gin Spirit distilled from malt and maize grain in a patent still, and flavoured with juniper berries. Other aromatic substances, such as orris root, cardamoms, cassia and coriander seeds, are also used to flavour it. The percentage of alcohol varies from 40 to 50, and what medicinal value gin has is due to the oil of juniper. Dutch gin, one variety being schnapps or hollands, is made chiefly at Schiedam, Holland.

Ginchy Village of France. It is 7 m. from Albert and was the scene of heavy fighting during the battle of the Somme in 1916. The British took it on Sept. 10, 1916, but it was recovered in March, 1918, by the Germans who held it until the final advance of the Allies. There is a memorial to the Guards who were in action here in Sept., 1916.

Ginger Rootstock of a perennial reed-like herb (*zingiber officinale*). Cultivated in antiquity as a spice, it is grown nowadays throughout the tropics, the best varieties coming from China and Jamaica. The irregular hand-like pieces, washed and dried, form coated or black ginger; washed, scraped and bleached they become uncoated or white ginger. The aromatic volatile oil and pungent resin are used medicinally. Young green rootstocks are preserved in syrup, or in crystallised sugar. In powdered form it is widely employed to flavour cakes (gingerbread), and it is also employed in the manufacture of ginger ale.

Ginning Process by which cotton fibres are separated from the seeds. It is performed by means of a machine known as a gin, of which there are several types, adapted for use with long or short-stapled cotton. The word is a corruption of engine.

Ginseng Root of a shrub of the ivy order (*aralia ginseng*). It is reputed by the Chinese to possess rejuvenating properties. Wild plants from Manchuria are preferred to those cultivated in Korea; Americans export the variety called *A. quinquefolia* to China as a substitute.

Giolitti Giovanni. Italian politician. Born Oct. 27, 1842, he was educated at Turin. In 1882 he was elected to the Chamber of Deputies, and in 1889 was made Minister of Finance. In 1892 he became Premier, but in 1894 he was obliged to resign. He later became Minister of the Interior, and in 1903 Premier for the second time. He resigned in 1906, but returned as Premier 1906-09 and 1911-14. During the Great War he advocated a policy of neutrality. Giolitti was again Premier in 1920-21. In 1922 he published an autobiography. He died July 17, 1928.

Giorgione Giorgio. Venetian painter. Born at Castelfranco in 1477, he was a pupil of Giovanni Bellini, and at 27 years of age painted the altar piece in the cathedral of his native place. This was followed by a number of other works of great beauty, but only a few of the many paintings attributed to him are authentic. Three are shown in the National Gallery, London. He died in Venice in 1510.

Giotto di Bordone Italian artist. Born near Florence about 1266, he was the son of a peasant landowner. Tradition says he was found drawing his father's sheep, by Cimabue, who, recognising his genius, made him his pupil. The whole life of Giotto is similarly obscured by legend and much of his work has been lost, but it is known that he executed for S. Peter's, Rome, in 1298, a mosaic and altar piece. A series of his frescoes are preserved in the Church of S. Francis at Assisi and at Padua. He also designed the beautiful campanile at Florence called Giotto's Tower. He died Jan. 8, 1336.

Gippsland District of S.E. Victoria, Australia. It covers about 14,000 sq. m. and on its fertile soil cattle are grazed, chiefly for their milk. The district is also rich in coal and other minerals. Sugar beet is cultivated. Sale is the chief town.

Gipsy Hill District of S.E. London. It is in the borough of Lambeth and the district of Norwood, and on the S. Rly. At one time the place was frequented by gipsies.

Giraffe Ruminant hoofed mammal (*giraffa camelopardalis*). It is a native of Africa, south of the Sahara. The tallest of all animals, it attains to a height of 18 or 19 ft. and is tawny coloured with brown blotches. It has a short body and long limbs and neck, which nevertheless has only the same seven neck bones as man; its ears are large and pointed, and it has skin-covered, horn-like appendages, and a tufted tail. It feeds on leaves plucked singly from branches by its long flexible tongue. Timid and swift moving, giraffes are rapidly disappearing, especially from S. Africa.

Girder In engineering, a beam of wrought iron, rolled steel or reinforced concrete supported at both ends. Designed to bear a heavy weight and resist transverse stresses, girders are used for floors and roofs of buildings, and in the construction of bridges. In the simple H girder, the longitudinal bars or flanges are united by a transverse plate or web, the flanges resisting the stresses put upon the girder. Steel girders are much used in modern business buildings, of which they form the framework.

Girgenti City of Sicily. It is 84 m. from Palermo and the capital of Girgenti province. It is chiefly famous for the remains of its temples, which are among the most notable of their kind. It occupies the site of the Greek city of Agrigentum. The city has a trade in sulphur, fruit, oil, etc., which is shipped from Porto Empedocle, 3 m. away. Pop. (1931) 30,032.

Girl Word used for a female who is not yet a woman. There is no legal age, but in Great Britain females remain girls until they are 18 or 19. Institutions for the welfare of girls include the Girls' Friendly Society at Townsend House, Greycoat Place, London, S.W., and the Girls' Life Brigade, 56 Old Bailey, London, E.C. 4. Both have branches all over the country. The hours of labour of girls are limited in Great Britain and other countries by law.

Girl Guides Organisation for training girls, the counterpart of the Boy Scouts. It was started by Lord Baden-Powell and his sister, Miss Agnes Baden-Powell, in 1910. Girls between 8 and 16 years of age may become members, those under 11 being known as Brownies. They are grouped in companies, each under a captain and lieutenant, and a company is divided into patrols. Entrants are at first tenderfoots. To become guides proper they must pass tests in a number of subjects and so obtain proficiency badges. Camps are held in the summer for the guides. The headquarters are in Buckingham Palace Road, London, S.W. 1, where a new building was opened in 1931. The world membership is over 1,000,000.

Gironde River estuary in France formed by the union of the rivers Dordogne and Garonne. It is about 50 m. long and is navigable. Bordeaux stands on the Garonne near the head of it. Gironde is also the name of a department famous for its wines, of which Bordeaux is the capital.

Girondins (Girondists). Name given to a political party in the French Revolution (*q.v.*), so called because some of its members came from the department of the Gironde. Its leader was Brissot, other leading members were Vergniaud and Condorcet. The Girondins were an offshoot of the Jacobins, but were more moderate. They were in control of affairs from March, 1792, to June, 1793, when they were overthrown by Robespierre. Many of them were arrested and executed.

Girtin **Thomas.** English painter. Born in London, Feb. 18, 1775. He produced a number of water colours which gave him a high place amongst artists in that medium, but he was only 27 when he died, Nov. 9, 1802. Turner, with whom he worked for a time, paid a great tribute to his powers. His work may be seen in the British Museum.

Girton College for women at Cambridge. It was founded at Hitchin in 1869, and was moved to Cambridge in 1873, the buildings being erected near the village of Girton.

Girvan Burgh, watering place and market town of Ayrshire. It is at the mouth of the River Girvan, 21 m. from Ayr and 63 m. from Glasgow. There is a harbour for the fishing industry. Pop. (1931) 5292.

The river Girvan is 35 m. long. It rises in a small lake and flows through the vale of Girvan.

Gisborne Town and port of New Zealand. It stands on Poverty Bay, on the west coast of North Island. The chief industry is the shipping of wool and mutton, for which there are good harbour facilities. The town has freezing works and associated industries. Pop. (1932) 16,400

Gish Name of two American actresses. Lillian was born at Springfield, Ohio, in 1896 and appeared on the stage at the age of five. In 1914, with her younger sister, Dorothy, she took up film work, appearing in *The Birth of a Nation*, *Broken Blossoms*, *Way Down East*, *The Scarlet Letter*, etc.

Dorothy was born at Dayton, Ohio, March 11, 1898, and first appeared on the stage in 1903. Her chief screen successes have been *Nell Gwynne* and *Madame Pompadour*. Together the sisters appeared in *Hearts of the World*, and *Orphans of the Storm*.

Gissing **George Robert.** English novelist. Born at Wakefield, Nov. 22, 1857, he was educated at Owens College, Manchester. For a time he worked as a teacher in America, Germany and London. His first novel, *Workers in the Dawn*, appeared in 1880. He died Dec. 28, 1903.

Among Gissing's novels are *The Unclassed*, 1884; *Demos*, 1886; *Thyrza*, 1887; *New Grub Street*, 1891; *Born in Exile*, 1892; and *The Old Woman*, 1893. *The Private Papers of Henry Ryecroft*, 1903, is largely autobiographical. He wrote also a monograph on Charles Dickens, 1898, and a travel book, *By the Ionian Sea*, 1901.

Givenchy Village of N. France. It lies between Béthune and La Bassee, and was the scene of fighting during the Great War, as the line held by the British ran through it.

Another Givenchy is Givency-en-Gobelle. This village, about 4 m. south of Lens, was also the scene of fighting during the Great War.

Gizeh Town of Egypt. It is on the left bank of the Nile, here crossed by a bridge, three miles from Cairo. To the west, connected by an electric railway, are the pyramids and the sphinx. In 1931 a fourth pyramid was discovered. The town has a palace built by one of the khedives. Pop. 26,921.

Glace Bay Town and seaport of Nova Scotia, Canada, situated on Cape Breton Island, 14 m. from Sydney, with which it is connected by railway. It stands on the Cape Breton coalfield and its industries include railway workshops. Fishing is carried on. Pop. (1931) 20,706.

Glacier Stream of ice. Glaciers slowly flow down mountain valleys from above the snowline, where the lower layers of the accumulated snow become, by pressure, converted into ice. The rate of movement in Alpine glaciers is about one foot per day, the centre moving faster than the sides, which are retarded by friction, but since, when the glacier reaches a certain level, the ice melts about as fast as it advances, the base, or snout, of these glaciers are usually nearly stationary. From the base a torrent emerges, opaque and milky looking. Much of now temperate Europe is marked by signs of retreating glaciers, evidence of the last Glacial or Ice Age (*q.v.*).

In Arctic and Antarctic regions great masses of ice break off the glaciers when they reach the sea, and thus form icebergs.

Gladiator In ancient Rome a professional swordsman fighting for public

entertainment. The practice, arising at Atruscan funerals, where perhaps, it replaced human sacrifices, reached Rome in 264 B.C., and became an official diversion in 105 B.C. Various types existed such as those who fought blindfolded; those using net and trident, or sword and buckler. There were also gladiators who fought in chariots, on horseback, or with wild beasts. Theodoric abolished gladiatorial spectacles in A.D. 500.

Gladiolus Genus of flowering plants of the iris order. They are native mostly to the Mediterranean region and S. Africa. The first species reached English gardens in the 16th century. The handsomest are hybridised varieties, largely S. African, which were introduced during the 19th century. They grow from seed or from bulbous offsets of old corms, and yield one-sided spikes of large carmine, salmon, yellow and purple blooms.

Gladstone **Viscount.** English politician. Born Jan. 7, 1854, Herbert John Gladstone was the youngest son of W. E. Gladstone. He was educated at Eton and Oxford, being in 1877 appointed history lecturer at Keble College. In 1880 he was elected M.P. for Leeds. He served in several minor offices before 1894 when he became Chief Commissioner of Works. From 1899-1905, he was chief whip of the Liberal Party, then in opposition, and was Home Secretary, 1905-09. In the latter year he was appointed Governor-General of S. Africa, holding that office for five years, and was made a viscount. On his death May 6, 1930, the viscountcy became extinct. In 1928 he published *After Thirty Years*, a book dealing with his father's life.

Gladstone **William Ewart.** English statesman. Born in Liverpool, Dec. 29, 1809, he was the youngest son of Sir John Gladstone, Bart., M.P. He was educated at Eton and Oxford. In 1832, as a Tory, he was elected M.P. for Newark, and during his long career in the House of Commons, interrupted for a few months in 1846-47, he sat for Oxford University, 1847-65; S. Lancashire, 1865-68; Greenwich, 1868-80; and Midlothian, 1880-95. His official career began in 1834 as a junior Lord of the Treasury; then as Under Secretary for the Colonies a year later. He left office with Sir Robert Peel, his leader, but in 1841 he returned to office, as Vice-President of the Board of Trade, and in 1843 he was made President with cabinet rank. In 1845 he resigned rather than agree to a grant of public money for Roman Catholic education, but he came back in less than a year as Secretary for War and the Colonies.

From 1852 to 1855, as one of the Peelites, Gladstone was Chancellor of the Exchequer. In 1859 he was again Chancellor, this time definitely as a Liberal. During the next six years, with Palmerston as Prime Minister, he was responsible for the great financial reforms on which his fame partly rests. On Palmerston's death, 1865, he became leader of the Liberal Party in the House of Commons, and in 1867 leader of the whole party.

In 1868 Gladstone was Prime Minister for the first time, and before he left office, in 1874, he had disestablished the Irish Church, reformed the education system and introduced other reforms. In 1875, having lost the General Election of 1874, he retired from public life, but returned in 1878 to denounce the misdeeds of the Sultan. In 1880, under his inspiration, the Liberals won the General Election and he again became Premier. His second term of office was less successful than the first, Ireland and Egypt presenting difficult problems which were not handled too well. Having passed a large measure of electoral reform he resigned office in 1885, and after the General Election declared Home Rule for Ireland. He took office for the third time as Premier, but the defection of Bright, Hartington, Chamberlain and others led to the defeat of his proposals for Home Rule, and failing in an appeal to the country, he went out of office. For six years he led the Liberals in opposition, but the election of 1892 saw him Prime Minister for the fourth time. Again his effort to give Home Rule to Ireland failed; the ministry was divided on important issues and in March, 1894, he resigned. He kept his seat, however, until 1895. He died on May 19, 1898, at Hawarden, and was buried in Westminster Abbey.

In 1839 Gladstone married Catherine Glynne, who inherited from her brother, Sir Stephen Glynne, Hawarden Castle and estates. They had four sons and four daughters. Mrs. Gladstone died in June, 1900. The Hawarden estate was inherited by his oldest grandson, W. C. G. Gladstone, M.P., who was killed in action in April, 1915. In 1932 Gladstone's only surviving son, Henry Neville Gladstone, was created a baron.

Gladstone was a great parliamentarian, and his record as an administrator will not easily be surpassed. He was a magnificent orator, and his career was helped, too, by his boundless energy, his ability to master detail and, to a lesser extent, by his imperious will. He was a profoundly religious man, devotedly attached to the Church of England. His *Life* has been written by John (Lord) Morley.

Glamis Village of Angus (Forfarshire), Scotland, 6 m. from Forfar. Near is Glamis Castle, the chief seat of the Earl of Strathmore. This is a 17th century building, but it contains fragments of a much older one. Many stories cling to it, one being that it was the residence of Macbeth. In the village there is an old sculptured cross, associated with the name of King Malcolm.

Glamorganshire County of Wales. The second largest and the most populous in the principality, with a long coast line on the Bristol Channel, its area is 900 sq. m. It is in parts mountainous, and the scenery is very beautiful. Cardiff is the county town. Other large towns are Swansea, Merthyr Tydfil, Rhondda, Port Talbot and Pontypridd, Neath, Bridgend and Cowbridge. Porthcawl, Penarth and Oystermouth are three of several watering places.

The east of the county is an important coal-mining area. In the centre is the vale of Glamorgan, a fertile area, and in the west is the district of Gower, at one time outside the county. The rivers include the Taff, Tawe, Rhymney, Rhondda and Ogwr. Glamorgan sends seven members to Parliament, and is in the Dioceses of Llandaff, and of Swansea and Brecon. Pop. (1931) 1,225,700.

Gland Cell or group of cells which secrete a substance of value in the metabolism of an animal or plant. The secretion collects in the cavity of the gland and usually passes to the exterior by means of a duct. Examples are the salivary glands and sweat glands.

Glands, Ductless *See* ENDOCRINOLOGY.

Glanders Infectious disease, caused by a specific bacillus, in certain

animals, especially horses, mules and donkeys. It is communicable by contagion to certain other animals and to man. It produces pustular discharges in the nasal mucous membrane, and in the horse the lungs are affected. When it is cutaneous, with inflamed and ulcerated lymphatic glands, it is called farcy (*q.v.*).

Glanvill Ranulf De. English lawyer. Born at Stratford, Suffolk. A judge in 1175, he was chief justiciar of England, 1180-89, being a valued counsellor of Henry II. Richard I., however, deprived him of office and imprisoned him. He died, while on crusade, at Acre, 1190. He wrote a valuable treatise on English law, and on this his reputation rests.

Glasgow City and seaport of Scotland, the largest in the country. It stands on the Clyde, chiefly on the north of the river, and in the county of Lanark, the suburbs extending into the county of Renfrew. It covers nearly 50 sq. m. and its population in 1931 was 1,088,417, an increase of 30,000 in ten years. It includes Partick and Govan, once distinct municipalities, great industrial areas such as St. Rollox, Camlachie, Tradeston and Springburn, and the residential districts of Kelvingrove and Hillhead. Glasgow is the seat of an Anglican bishop and a Roman Catholic archbishop.

The buildings are mainly modern, the cathedral, which is sacred to S. Mungo, the city's patron saint, being an exception, parts dating from the 12th century. The municipal buildings form a magnificent pile in George Square. Near are the county buildings. The Mitchell Library and the Art Gallery are notable. Other public buildings are the Law Courts, the Exchange, the Post Office, St. Andrew's Hall and the Merchants' House. The infirmaries and hospitals are fine buildings. There is an observatory and a modern cemetery, the Necropolis. The university occupies a fine range of buildings on Gilmorehill. It was founded in 1450 and is second to none in its scientific and other equipment. There are fine bridges over the river, the King's Bridge being opened in Oct., 1933. Crossing may also be accomplished by ferries and tunnels.

There are many public parks and a botanic garden, the former including Kelvingrove, Bellahouston, Cathkin Braes and Queen's. Glasgow Green has historic associations.

The industries, apart from shipping, include the manufacture of machinery, locomotives and other forms of iron and steel ware, chemicals, tobacco and textiles. Printing, distilling and dyeing are others. Shipbuilding is important. For the shipping there are extensive docks, wharves and warehouses, controlled by the Clyde Navigation Trust. The largest vessels can enter the harbour. Glasgow obtains a good supply of water from Lochs Katrine and Arklet. There are many golf courses, football grounds and other facilities for sport and recreation. Glasgow is famous as an art centre and a group of painters have made famous the Glasgow School.

Glasnevin District of Dublin. It is 2 m. from the city and is famous for its cemetery, in which many great Irishmen are buried. Here, too, are the botanical gardens of the Royal Irish Society.

Glass Non-crystalline, transparent or semi-transparent inorganic substance. Certain minerals occur in a glassy state, but the glass of commerce is obtained by the fusion of silica with alkalis. Glass was known to the ancients and certainly in Egypt from remote times.

Modern glass varies in composition according to the purpose for which it is intended. Bottle glass is made from sand, soda and lime with the addition of marl, baryta or basalt; sheet and plate glass are mixtures of sand, soda and lime, whilst flint glass is composed of potash, sand and lead oxide; for toughened glass boric acid and borates are added. Glass formed of two or three plates is used for the screens of motor cars. It is claimed that some forms of this glass will resist a rifle bullet.

The Glass Sellers' Company is a London city livery company with offices at 13 Queen Anne's Gate.

Glasswort Genus of leafless herbs (*Salicornia*) of the goose-foot order. It is a native of saline soils throughout the world. The succulent, jointed stems of the marsh samphire, *S. herbacea*, are eaten by cattle; when burnt they formerly produced barilla for soap and glass making. The allied saltwort, *Salsola kali*, or prickly glasswort, served similar ends.

Glastonbury Borough and market town of Somerset. It stands on the River Brue, 37 m. from Bath. The chief buildings are the churches of S. John and S. Benedict, a museum, the George Inn, once the abbot's guest house, and another building, once his court house. Near the town is a hill called Glastonbury Tor. A musical and dramatic festival is held in the town every year, by the Glastonbury Players. Pop. (1931) 4515.

Glastonbury's great claim to fame is its ruined abbey, once one of the largest and richest in England. The abbey is said to have been founded by Joseph of Arimathea, who planted here the thorn that bloomed on Christmas Day. Actually it was founded in 601 and was rebuilt in the 13th century, being then a Benedictine house. It was destroyed at the Reformation. The ruins belong to the Church of England and a good deal of excavation work has been done on them.

Glauber Johann Rudolf. German chemist. Born at Karlstadt, about 1604. His experimental work resulted in many valuable discoveries. He first prepared hydrochloric acid by treating salt with sulphuric acid and the sodium sulphate (Glauber's salt) produced during the operation he held to be a universal medicine. Nitric acid from nitre, the preparation of tartar emetic, and many metallic salts were among his discoveries. He died in 1668.

Glaucoma Disease of the eyeball. It is marked by increased tension or fluid pressure, causing the crystalline lens to assume a greenish-grey hue. The condition is partly mechanical, partly congestive, resulting from the iris's outer margin being pushed against the cornea. It occurs mostly after middle life, leading to ever-increasing loss of sight, unless remedied in time by an operation upon the iris or sclerotic. Acute attacks involve much pain.

Glebe Cultivable land belonging to a parish church or ecclesiastical benefice. Initially, no church could be consecrated until parsonage and glebe were provided. Parsons may farm their own glebes or let them on farming, building or mining leases under limiting conditions, but most glebelands are now managed by the Ecclesiastical Commissioners.

Glenalmond Valley in Perthshire, through which flows the River Almond. In the glen is Trinity College, a public school opened in 1841.

Glencairn Earl of. Scottish title borne by the family of Cunningham, 1488 to 1796. Alexander Cunningham, the 1st earl, was killed in battle in 1488, the year in which James III. granted him his earldom. Alexander, the 5th earl, was a friend of Knox, and alternately a supporter and antagonist of Mary, Queen of Scots. The 9th earl, William, was, after the Restoration, appointed High Chancellor of Scotland, having led a rising in favour of Charles II. in 1653. James, the 14th earl, was the patron and friend of Burns, who wrote a *Lament* on his death. At the death of his brother, John, the 15th earl, in 1796, the title became extinct.

Glencoe Pass in Argyllshire. It is 10 m. long, lies amid the mountains and runs to the sea at Loch Leven. The scenery is beautiful and wild. Here, in 1692, the Macdonalds of Glencoe were massacred by the Campbells. The order for the extirpation of the Macdonalds was signed by William III., but the extent of his responsibility for the foul deed is a matter of controversy. Glencoe, which means the glen of weeping, is associated with Ossian. Part of the glen was sold in 1935.

Glencoe Village of Natal, S. Africa. It is 130 m. from Durban, on the line to Johannesburg, and is a railway junction. Near are some coal mines. The place is known because there was fighting here between the British and the Boers in Oct., 1899.

Glendalough Valley and lake in Wicklow, Irish Free State. It is noted for its ruins, among the finest in Ireland.

Glendower Owen. Welsh rebel. Born about 1349, he claimed descent from the old Welsh princes. He studied law at Westminster and in 1385 fought for Richard II. against the Scots. After the accession of Henry IV. he proclaimed Welsh independence, with himself as Prince of Wales, and for the remainder of his life was in active warfare with England. He made an alliance with France against England, but after 1405 he suffered a series of defeats. He died 1415.

Gleneagles Pleasure resort of Perthshire. It is 9 m. from Crieff, with a station on the L.M.S. Rly. The company here built a fine hotel, near which are good golf links.

Glenfinnan Glen in Inverness-shire. In it is a spot called Glenfinnan, where on Aug. 19, 1745, Charles Edward set up his standard. It is 18 m. from Fort William, at the head of Loch Shiel. A memorial marks the spot.

Glengariff Village of Cork, Irish Free State. It stands on Glengariff Harbour, an opening off Bantry Bay, and is noted for its beauty.

Glengarry Glen of Inverness-shire. The valley of the River Garry, it lies between Lochs Oich and Garry. It gives its name to a bonnet worn by some of the Scottish regiments.

Glenlivet Glen of Banffshire, Scotland. It is in the south of the county, and the little River Livet flows through

Glenmore Valley of Inverness-shire. Known as the Great Glen of Scotland, it extends across Scotland for over 60 m., from the Moray Firth, S.W. of Inverness, to Loch Eil, near Fort William. The Caledonian Canal runs through it, uniting the three lochs, Ness, Lochy and Oich. There are several other valleys of this name in Scotland, including one in Perthshire.

Glenshiel Glen or pass in the county of Ross and Cromarty. It is 26 m. long and is formed by the little River Shiel. In June, 1719, a force of Jacobites, with about 300 Spanish soldiers, marched into the glen where they were attacked and defeated by some English and Dutch troops.

Glider Name given to a kind of air vessel. It is heavier than air and has no motor, being designed to descend gradually from a height to the ground. Experiments with gliders were of considerable help in developing the aeroplane. As a sport, gliding has been taken up a good deal in Germany since the Great War and to some extent in Great Britain. Gliding clubs have been established and there is a British Gliding Association at 44a, Dover Street, London, W.1. In 1931 an Austrian expert made a flight of over 70 miles in just over three hours, a record for England.

Globe Fish Various tropical and subtropical genera of fish. Allied to the sun fishes, they have the power of swallowing air, thereby making themselves more or less globular. Varying in length up to 2 ft. they include the small spined, brilliantly coloured and poisonous *tetrodon*, which is found in the Nile, in Brazilian and Indian rivers, and occasionally in British seas. In the large-spined sea hedgehogs, *diodon*, bristly spines stand out defensively.

Globe Flower Genus of perennial herbs (*trollius*) of the buttercup order. Native to temperate and arctic regions, the British, *T. europeus*, bears flowers formed of incurved, yellow, petal-like sepals with tiny linear petals. *T. asiaticus* is cultivated in gardens. The American spreading globe flower, *T. laxus*, is not globular.

Globe Theatre London playhouse, famous for its association with Shakespeare. It stood on Bankside, Southwark, and was built in 1599. It held 1200 spectators. This theatre was burned down in 1613, but another was built on or near the site and existed until 1644. In 1868 a third Globe Theatre was erected in Newcastle Street, Strand. This was pulled down in 1902.

Globularia Name of a genus of herbs and shrubs. They grow around the shores of the Mediterranean and in greenhouses in Britain. They bear small flowers gathered into flattish heads and are sometimes called ball flowers.

Globulin Group of primary proteins occurring in animals and plants. They are distinguished by insolubility in water and solubility in dilute saline solutions. They are precipitated from their solutions by excessive dilution with water or by saturation with magnesium sulphate, and are coagulated by heating.

Gloss Explanatory remark inserted between the lines or in the margin of a literary work. It refers especially to those

manuscripts abound in such annotations, which, when collected and classified, form glossaries. A glossographer writes explanatory comments on obscure texts.

Glossitis Inflammation of the tongue. It may arise from an insect bite or sting, or the entry of septic germs through a wound, and may occasion an abscess. Chronic inflammation may occur from syphilis, from the irritation caused by decayed teeth or badly fitted dentures, or from excessive smoking. It may lead to cancer.

Glossop Borough and market town of Derbyshire. It is 13 m. from Manchester and 24 m. from Sheffield, with a station on the L.N.E. Rly. The principal industries are the manufacture of cotton and paper and the associated ones of dyeing and bleaching. Glossop Hall was, until 1929, the seat of Lord Howard of Glossop, who owned much of the town. Pop. (1931) 19,510.

Gloucester City and market town of Gloucestershire, also the county town. It stands on the Severn, 114 m. from London, and is served by the G.W. and L.M.S. Rlys. It is also a river port, and a canal links it with Sharpness on the estuary of the Severn. The finest building in the city is the cathedral, which has many notable features, of which the cloisters and the stained glass may be mentioned. Other churches are S. Mary de Crypt, S. Mary de Lode and S. Michael's. Secular buildings include the guildhall and the New Inn, one of the oldest in England. The industries of Gloucester are carriage building works, engineering works, flour mills and manufactures of other kinds. Its cattle market is important. There is a large public park and the city has a famous Rugby football club.

Owing to its position on the Severn, Gloucester has been, from early times, an important place. Here William I. wore his crown, and here parliaments were held. It became a bishop's seat in 1541. Pop. (1931), 52,937.

Gloucester Duke of. English title borne by several members of the royal family. Robert, an illegitimate son of Henry I., was Earl of Gloucester and the Clare family held the earldom for about 100 years before 1314, when the last earl was killed at Bannockburn.

Thomas of Woodstock, a son of Edward III., was Duke of Gloucester from 1385 to 1397. He was a leading figure during the reign of his nephew, Richard II., who had him arrested and executed in 1397. Humphrey, a son of Henry IV., was made duke in 1414. He is remembered as a benefactor to the University of Oxford. He died in 1447. The next duke was the prince who became Richard III.

There was no other Duke of Gloucester until Stuart times. Henry, son of Charles I., and William, son of Anne, were both given the title, but neither attained manhood. In 1764, William Henry, a son of Frederick, Prince of Wales, and a brother of George III., was made duke. He died in 1805.

Henry, third son of King George V., became Duke of Gloucester in 1928. Born March 21, 1900, at Sandringham, he was educated at Broadstairs and then at Eton. In 1919 he entered the army, serving first with the King's Royal Rifles and later with a cavalry regiment. He is knight of the Garter and Privy Councillor. In 1935 he married Lady Alice Scott, daughter of the seventh Duke of Buccleuch.

Gloucestershire County of England. In the west of the country, it is of very irregular shape and has an area of 1243 sq. m. Notable features are the Forest of Dean, between the Wye and the Severn, and the Cotswold Hills, one of the most beautiful parts of England. The Severn, the Wye and the Avon are the chief rivers, and the Thames rises in the county. Gloucester is the county town, but Bristol is the largest city. Other towns of importance are Cheltenham, Tewkesbury, Cirencester and Stroud. It is chiefly an agricultural area and in the vale of Gloucester the soil is very fertile. Coal is mined in the Forest of Dean and sheep are pastured on the hills.

At one time Gloucestershire, as a centre of the woollen industry, was one of the richest parts of England, and there are evidences of this in its fine churches and its picturesque market towns, such as Minchinhampton and Chipping Campden. It is served by the G.W. and L.M.S. Rlys. It sends four members to Parliament and contains two bishoprics, Gloucester and Bristol. Berkeley Castle is perhaps the finest of its historic buildings. It is noted as a cricketing and hunting county. Pop. (1931), 785,700.

The **Gloucester Regiment** was formerly the 28th and 61st regiments of foot, battalions with records of service going back nearly 200 years. The depôt is at Bristol.

Glowworm Name given to beetles of the genus *Lampyris*. Two species are found in Britain. The body is soft, and while the male has the usual shape of a beetle, the female is wingless and resembles a larva. Both the adult insect and the larva of the female possess phosphorescent organs on the underside of the abdomen, hence the name.

Gloxinia (*Sinningia speciosa*). Popular variety of sinningia, a genus of the order *Gesneraceae*. A tuberous rooted plant with abundant leaves, it bears bell-like blossoms of pink, purple, crimson or white, some blooms being delicately spotted.

Glozel Hamlet, near Vichy, France. There, in 1924, a peasant, Fradin, professed to unearth some prehistoric finds. Further excavations were made by Dr. Morlet, a local amateur archæologist, and a good deal of material, said to be ancient, was produced. For a time controversy ran high, but official investigations, both national and international, disposed of the "finds" as spurious, the outcome of a palpable fraud.

Gluck **Christoph Willibald.** German composer. Born July 2, 1714, in Bavaria, he received his musical education at Prague and Milan. In Italy he produced many successful operas but, visiting London in 1745, he was not there successful, being overshadowed by Handel. Humiliated by his failure, he returned to Vienna, where he produced *Orfeo ed Euridice*, 1762, and *Alceste*, 1767, operas unlike any that had formerly been produced in the harmonious relation between words and music. Through the influence of Marie Antoinette, his former pupil, *Iphigénie en Aulide* was produced in Paris in 1774, and there Gluck lived for some years. It was followed by *Armide*, *Iphigénie en Tauride* and *Echo et Narcisse*. He died in Vienna, Nov. 15, 1787.

Glucose Form of sugar also known as grape sugar or dextrose. It is present in many ripe fruits and in honey, and is prepared commercially by boiling the starch

of potatoes, maize, etc., with dilute sulphuric acid, afterwards removing the acid with lime and evaporating the liquid. Glucose is used by confectioners, jam manufacturers and brewers.

Glucosides Vegetable substances which are combinations of glucose with other organic compounds, especially those belonging to the aromatic series. By the action of special enzymes (ferments) or by hydrolysing with weak acids, the glucosides yield glucose among other products of decomposition. Amygdalin occurring in almonds and the leaves of the cherry laurel is decomposed by the enzyme, emulsin, into glucose, prussic acid and benzaldehyde. Other glucosides are salicin from the willow, and digitalin from the foxglove.

Glue Impure form of gelatine (*q.v.*). Made from the skins and bones of animals, the finer qualities of brown glue are prepared from the hides of oxen, and lighter coloured grades from the skins of sheep. For the weaker glues bones are used, and the skins of codfish and other fishes yield a tenacious fish glue. A liquid glue is made by treating ordinary glue with nitric or acetic acid to prevent the formation of a jelly.

Gluten Mixture of proteins, forming a tough elastic substance. It is obtained by washing and kneading wheat flour in water to remove the starch. Gluten forms from 10 to 12 per cent. of wheat flour and from it two proteins, gliadin and glutelin, may be extracted. The hard wheats are especially rich in gluten and from them are made the French *pâtes alimentaires*, macaroni, spaghetti and vermicelli.

Glutton Largest carnivorous mammal (*Gulo luscus*), of the weasel family. Found in north Europe, north Asia and North America, where it is usually called the wolverine, it is extinct in Britain, where its fossil bones occur in cave earths. Like a bear in shape, with short bushy tail, it is strong and voracious. Its shaggy brown-black fur serves for rugs and carriage aprons.

Glycerin Trihydric alcohol having the formula $C_3H_5(HO)_3$. It forms a thick colourless liquid with a sweet taste. The decomposition product of oils and fats, it is manufactured on a large scale as a by-product of candle and soap works. It is used in the pure state in medicine, also in the manufacture of explosives and for many other industrial purposes.

Glyptodon Typical genus of an extinct family of giant, long-tailed armadillos. Fossil remains of them have been found in S. American pleistocene deposits. A specimen from the Buenos Aires Pampa formation, *G. clavipes*, is now at the Natural History Museum, S. Kensington. This has a rigid, dome-shaped, tortoise-like carapace, 7 ft. by 9 ft., its total length measured over the back being 11½ ft. The carapace was covered with bony rosettes, fully 1 in. thick, which were once skin covered, and the head had fluted teeth. The tail had overlapping, bony rings.

Gnat English name for various two-winged insects of a family collectively called mosquitoes (*Culicidae*). The female has a piercing and sucking proboscis. The several British species include the common house gnat, *Culex pipiens*, and the larger banded *C annulatus*. All have aquatic larvæ.

Gneiss Metamorphic rock having practically the same mineral composition as granite. Thus it contains quartz, felspar and mica as essential constituents; the minerals are arranged in alternate layers, although in some varieties the foliation is obscure. The varieties of gneiss are named after the corresponding igneous rocks, such as granite gneiss, diorite gneiss, etc.

Gnosticism Spiritual and metaphysical system, antecedent to Christianity. It sought to combine Oriental religious cults with Greek philosophy. Orthodox Christianity developed gnostic heresies and gnosticism assumed Christian forms. A mystery religion, it claimed, not intellectual knowledge, but esoteric "gnosis," attributing virtue to talismans and amulets. Characterised by theories of cosmic emanation and Zoroastrian dualism, its vigour in the 2nd century influenced much Christian literature, causing rivalries whence orthodox Catholicism emerged triumphant. By A.D. 600 gnosticism had lost its hold.

Gnu Hottentot name of the large, white-tailed antelope (*Connochaetes gnu*). It is called by the Boers the black wildebeest. It is 4 ft. high and heavy-headed, with a wide muzzle and a long mane, something like a grotesque buffalo with a pony's hind-quarters and tail. Both sexes have cylindrical horns, curving downward and then upward. Fierce and fast, it is now nearly extinct. The allied brindled gnu or blue wildebeest, *C. taurinus*, ranges E. Africa in herds from Lake Victoria to the Orange River.

Goa District of India. A Portuguese possession, it is on the west coast, about 250 m. south of Bombay. It has a coastline of about 40 m. and covers 1470 sq. m. It is a fertile region, bounded by the presidency of Bombay, and is connected by railway with British India. It has been Portuguese since 1510. Pop. (1931) 569,187.

On the coast is Panjim, also called New Goa, the capital of Portuguese India. Near are the ruins of Old Goa. At one time it had a population of 200,000 and was the chief town of the great Portuguese empire in the East.

Goat Genus of hollow-horned ruminants (*capra*). The bucks, which emit a peculiar odour called hircine, are usually chin bearded. They lack the face glands of the sheep and those between the hind hoofs; their strongly wrinkled horns are usually straighter, but otherwise they are difficult to differentiate from some wild sheep. Domesticated in neolithic times by lake dwellers, the ancestral form came from the Mediterranean region and Persia. Some wild species are the ibex and markhor. The so-called Rocky Mountain goat is a goat antelope; the goat proper is not found in the new world.

Goats are kept for their milk and also because their hair, wool and skin have commercial value. To foster their keeping there is a British Goat Society in London.

Goathland Village of Yorkshire (N.R.). It is 8 m. from Whitby, on the L.N.E. Rly. The place has a hydro and a colony for disabled officers was founded here after the Great War. Near is Goathland Moor on which are some waterfalls. Pop. 712.

Goat's Beard Biennial herb (*Tragopogon pratense*) of the composite order, it is common in England and Wales. Its erect stem bears solitary yellow

flower heads, which close at midday after pollination; hence the colloquial name John-go-to-bed-at-noon.

Goat's Rue Tall perennial leguminous herb (*Galega officinalis*). It is hardy, with feathery leaves and sprays of miniature pinkish-purple or white pea-like flowers. Cultivated for fodder, it is also a garden favourite and grows to a height of 5 ft. It was formerly used in medicine for promoting perspiration, and as a stimulant.

Goatsucker *See* NIGHTJAR.

Gob (and **Gob Fires**). Technical term for waste coal left in mines and the spontaneous fires arising in it. The latter were once a serious matter, but under modern methods little such coal is left in the mine and the fire danger is correspondingly reduced.

Gobelin **Jean.** French dyer. He was born probably in Rheims and became a dyer in Paris, where he is said to have invented a vivid scarlet dye. He died in 1476 and his business was for a time carried on by his descendants.

By mere chance Gobelin's name was given to famous tapestry. In 1603 Henry IV. bought some land from the Gobelins and thereon built workshops in which tapestry was made for him, and was called Gobelin, although Gobelin had nothing to do with it. The works remained royal property until the Revolution and are now a state establishment.

Gobi Desert of Asia, in E. and S. Mongolia. It forms a plateau nearly 4000 ft. high and covers some 300,000 sq. m. Sven Hedin, Sir Aurel Stein and others have explored it. Buried towns and the fossils of mighty prehistoric creatures prove it to have once been a more habitable area than it is to-day. The Chinese name is Shamo.

Goby Name for various genera of spiny-finned fishes. Their ventral fins form a sucker-like disk for clinging to rocks. Dwelling off tropical and temperate coasts, the largest British species, the black *gobius niger*, 10 in. long, is common in rock pools. The spotted *G. minutus*, a smaller fish, abounds in the Thames estuary, making shell-protected nests in sand.

God Divine being. Every religion has its gods and goddesses and many of them were associated with a particular branch of human activity. In Christianity, and also to the Jews and Mohammedans, God is the Supreme Being, the creator of the world, omnipotent and eternal.

The development in human thought of the idea of God is the fundamental study of comparative religion. It has two general tendencies. One is towards theism—passing through polytheism to monotheism—and believes in personal moral forces being distinct from, and ruling, the universe; the other is towards pantheism and holds that impersonal forces are immanent in, and identifiable with, the universe. The popular etymology deriving God from good is erroneous, but the Christian doctrine of God, as reaffirmed at the Lambeth Conference in 1930, emphasises His universal love.

Godalming Borough of Surrey. It stands on the Wey, 35 m. from London on the S. Rly. There are some small industries; at one time it was famed for its cloth. It is a good centre for tourists, as around is much beautiful scenery. The Hog's Back runs past the town and near it are the buildings of the Charterhouse School. Pop. (1931), 10,400.

Godetia Annual plant (*oenothera*) related to the evening primrose. Varying in height from one to two feet, it includes both double and single varieties. The flowers are white, pink, crimson, crimson and white or cream. The godetia blooms freely in sunshine and is a gay and ornamental plant for the border. It is a native of California and Chile.

Godfrey Count of Bouillon. Born about 1061, the son of the Count of Boulogne, he became famous as a soldier. In 1096 he set out on crusade, leading his men across Europe to the Holy Land, where he played a distinguished part in the siege and capture of Jerusalem. He was offered the title of king, but this he refused, although he was ruler of the city until his death in July, 1100.

Godiva **Lady.** Wife of Leofric, Earl of Mercia. She lived in the 11th century, and legend described her as having ridden naked through Coventry's streets, a condition imposed by her husband for securing to its citizens relief from his exactions. The legend first appeared in 1235; the peeping Tom episode, in which a tailor who disobeyed her request to the householders to refrain from looking forth was afflicted with blindness, was unknown before 1678, when a commemorative procession was instituted in Coventry. This was repeated annually at the fair until 1826. It was revived in 1848 and has been held fairly regularly since then.

Godley **Sir Alexander John.** English soldier. Born Feb. 4, 1867, and educated at Haileybury and Sandhurst, he entered the Royal Dublin Fusiliers and served in the South African War. In 1910, after experiences on the staff, he was sent to command the New Zealand defence force and was there until 1914. During the Great War he commanded a division of Australians and New Zealanders in Egypt and Gallipoli and was then in charge of an army corps on the Western Front. He was commander-in-chief of the British army on the Rhine, 1922-24. From 1924-28 he held the Southern command, and in 1929 he was made Governor of Gibraltar.

Godmanchester Borough and market town of Huntingdonshire. It stands on the Ouse, just outside Huntingdon, 59 m. from London, by the L.N.E. Rly. There is a trade in agricultural produce. Pop. (1931) 1991.

Godolphin **Earl.** English title borne by the family of Godolphin from 1706 to 1766. Sidney Godolphin, born in June, 1645, was a member of an old Cornish family. In 1678 he was made a peer, and in 1684 First Lord of the Treasury and he retained that position under James II. and William III. During the reign of Anne, Godolphin was Lord High Treasurer from 1702 to 1710, during which time he gave valuable support to Marlborough. He died Sept. 15, 1712.

On the death of his son, Francis, in 1766, the title became extinct. His estates passed to his daughter who married the 4th Duke of Leeds.

Godparent Sponsor for an infant at its baptism. Sponsors arose in Christendom in the 2nd century, as guarantors of character for pagan converts. The Roman Catholic and Anglican churches

require godparents or sponsors at the baptism of a child and, according to an old custom, a child is often given a name or names belonging to the godparents.

Godunov Boris Fedorovich. Tsar of Muscovy. Born about 1552, he was the most famous member of an ancient Tatar family. He became important at court, and on the death of Ivan the Terrible was appointed as guardian of his son and successor. Godunov put down all rebellion, and by 1586 was omnipotent. He had a strong and wise foreign policy, encouraged foreign trade and education, and re-colonised Siberia. On the death of Theodore, he was elected Tsar. He died on April 13, 1605.

Godwin English earl. He was one of the chief supporters of Canute, in whose reign he first came into prominence, becoming Earl of the West Saxons in 1020. He helped to secure the succession of Hardicanute in 1035, and of Edward the Confessor who had married his daughter, in 1042, and until 1051 was the most powerful man in England. In that year he quarrelled with Edward and was exiled with his sons. He returned in 1053, but died April 15 of the same year. Harold and Tostig were two of his sons.

Godwin Mary Wollstonecraft. English writer. Born April 27, 1759. In 1786 she published *Thoughts on the Education of Daughters*, which was followed by other original works and translations, including a reply to Burke's *Reflections on the French Revolution*, and a *Vindication of the Rights of Women*. In Paris, during the reign of terror, she met Gilbert Imlay, to whom she bore a daughter. On his desertion, she attempted suicide, but in 1797 married William Godwin. Their daughter, Mary, married Shelley. She died Sept. 10, 1797.

William Godwin, husband of the above, was first a minister, then a free thinker and writer. His chief books are *Enquiry Concerning Political Justice* and *The Adventures of Caleb Williams*. In 1801 he married Mrs. Clairmont and became the stepfather of Claire Clairmont, the mistress of Byron. He died in London, April 7, 1836.

Godwin-Austen Mountain in the western section of the Himalayas. Its height is 28,250 ft. It was named in 1888 after Lieut.-Col. H. H. Godwin-Austen (1834-1923), who surveyed the district.

Goeben German battle cruiser. She was built at Hamburg in 1911 and carried eight 14 in. guns besides lesser armament. On Aug. 6, 1914, the *Goeben*, with a light cruiser, the *Breslau*, steamed through the Mediterranean Sea into the Dardanelles and so to Constantinople. Their escape from the British ships off Messina was the subject of an inquiry. Probably their bold arrival helped to persuade Turkey to enter the war on the German side. Later the *Goeben* became active in Turkish waters and was still afloat, although much damaged, at the armistice, when she was taken over by the British fleet.

Goethals George Washington American soldier and engineer. Born at Brooklyn, June 29, 1858; in 1898 was chief engineer of the First Army Corps in the Spanish-American War. In 1907 he was put in charge of the construction of Panama Canal, and on its completion in 1914, became first governor of the canal zone. On the entry of the U.S.A. into the Great War, he held various posts. He died Jan. 21, 1928.

Goethe Johann Wolfgang von. German poet. Born at Frankfort, Aug. 28, 1749, the son of a lawyer, was educated at home and at the universities of Leipzig and Strasbourg. He began to practice law, but the greater interests of literature, art and science mastered him, and in 1775 he settled at Weimar, where he became the trusted adviser of the Duke of Saxe-Weimar. After a while he gave more time to literature and less to the public service, but he directed the court theatre and in 1792 went with the duke's army to fight the revolutionary army of France. The great love of Goethe's life was Charlotte von Stein, but there were others, among them Christiane Vulpius, whom he married in 1806, long after she had borne him a son, August. Another influence in his life was the friendship of Schiller. On March 22, 1832, he died at Weimar. His house there, like his birthplace in Frankfort, is a public memorial. Centenary celebrations were held all over the world in 1932, in his honour.

Goethe wrote much both in prose and verse, also some beautiful lyrics and ballads. His supreme work is *Faust*, which he began when quite young, but did not finish till 1832. Of his dramas *Götz von Berlichingen*, *Iphigenia* and *Egmont* may be mentioned. *Wilhelm Meister's Lehrjahre* is his greatest novel, followed after a time by *Wilhelm Meister's Wanderjahre*. Others are *Werther* and *Hermann und Dorothea*, and his autobiography, *Aus Meinem Leben: Dichtung und Wahrheit*. Goethe also did notable work in physics and biology.

Gog and Magog Two biblical names. Magog is mentioned in Gen. x., meaning, apparently, Gog-land, perhaps Armenia. Ezekiel (xxxviii-xxxix) regards "Gog of the land of Magog" as Israel's enemy. Rev. xx. describes Gog and Magog as co-ordinate worldly powers.

Mediaeval chronicles describe two giants acting as palace porters in London, of whom gigantic wickerwork images, Gog and Magog, figured in mayoral processions. These were lost in the Great Fire, but Saunders' images, 14½ ft. high, carved in 1708, still stand in the Guildhall, London.

The Gogmagog Hills lie to the S.W. of Cambridge. The highest point is only 222 ft. high, but the flatness of the surrounding country makes them noticeable.

Gogh Vincent Van. Dutch painter. Born in Holland in 1853, he early showed artistic genius. First influenced by Millet, then by the Impressionist School, he later became, with Cézanne and Gauguin, one of the leaders of the Post-Impressionists. A victim of sunstroke, he painted many of his best pictures in an asylum at Arles. In 1890 he died by his own hand.

Gogol Nikolai Vassilievitch. Russian novelist. Born March 31, 1809. In 1828 he went to St. Petersburg where, for a time lectured at the university and, in 1831, brought out *Evenings at a Farmhouse near Dikanka*, a popular series of tales of South Russia. A second series, *Mirgorod*, including his famous story *Taras Bulba*, followed in 1834. A comedy, *Revizor*, translated into English as *The Government Inspector*, was produced in 1836, and *Dead Souls* in 1842. Gogol died in Moscow, Feb. 21, 1852.

Goidel Old Irish name of the early branch of the continental peoples

who reached Britain before or with the culture of the bronze age. Their speech survives in Irish, Scottish, Gaelic and Manx. John Rhys introduced the name to replace Gadhel in 1882.

Goitre Swelling on the neck, due to enlarged thyroid glands. Simple goitre, or bronchocele, is endemic in certain mountain valleys throughout the world, *e.g.*, parts of Switzerland, Derbyshire (where it is called Derbyshire neck) and Himalayas; women are more susceptible to it than men. Iodides are often successfully administered while the tumour may be removed surgically. Exophthalmic goitre or Graves's disease, is quite distinct. *See also* CRETINISM.

Golborne Market town and urban district of Lancashire. It is 189 m. from London by the L.M.S. Rly. Here are cotton mills, and in the neighbourhood are collieries. Pop. (1931) 7322.

Golcar Urban district of Yorkshire, W.R. It is 200 m. from London by the L.M.S. Rly., and 3 m. from Huddersfield. The manufacture of woollen goods is carried on. Pop. (1931) 9812.

Golconda Ancient city of India. It is about 7 m. from Hyderabad, and now a ruin. Near by were rich diamond fields, hence the proverbial references to the vast wealth of Golconda.

Gold One of the elementary metals. Its chemical symbol is Au, from the Latin *aurum*; its atomic weight is 197.2; its specific gravity 19.32, and its melting point 1061°C. One of the precious metals.

The increase in the use of gold was made easier by the discoveries of rich supplies first in Australia and then in South Africa. Before the Great War much gold was coined, but during the war paper money took its place and gold coins have almost ceased to circulate. This paper coinage, however, is based upon gold; consequently a large amount of gold is held by the state and other banks as security or cover for the paper money in circulation.

Gold is found nearly all over the world, but usually in such small quantities that it does not pay to work it. The main supply comes from quartz; others from dredging certain rivers, where the gold is found in sand and gravel. The amount of gold in a ton of gold bearing quartz is often small, but by the use of improved methods mines are worked which a few years ago would have been unprofitable. The world's output of gold remains fairly steady at about £90,000,000 a year. Of this the Transvaal mines produce about half. In 1930 the production of these mines reached the record figure of £45,558,980. Other producing countries are the United States, Canada, which is rapidly increasing its output, Russia, Mexico, Australia, Rhodesia and India.

Of the gold mined, about three quarters is used in the arts, gold being always in great demand for ornamental purposes, *e.g.*, for rings, watches, brooches and other articles of jewellery and personal wear, whilst much is beaten out to form gold leaf. When used in the arts, it is mixed with basic metals to a varying extent. Its purity is indicated by the number of carats, pure gold being taken as 24 carats. Gold articles are stamped by the assay offices as being of so many carats.

Gold, being the accepted standard of value nearly all over the world, has a marked effect on prices, although the nature of this is a matter of debate among economists. A good deal was said about this matter during the trade depression of 1929-31. Some argued that by making more use of the stocks of gold in the central banks, the bankers could do much to restore prosperous conditions; they could use the huge stocks of gold to create credit and so bring about a trade revival. Others argued that this would only mean the raising of prices without any corresponding benefit. Another theory is that the annual output of gold is not sufficient to finance the increasing amount of trade; in other words it does not keep pace with the output of other commodities. There seems indeed, an extraordinary ignorance, even amongst experts, of the influence of gold under the changed conditions that followed the Great War. The only certain fact is that the value of gold increases with falling prices and falls when prices rise.

The Gold Standard is in existence when a country will export gold when there is no other way of discharging its balance of debts abroad. Great Britain, by providing for the free export of gold, placed herself in this position in 1926, but abandoned it in 1931. Gold point is the point in the foreign exchanges when it pays a country to export gold.

In April, 1931, the amount of gold held by the treasuries and banks of four countries was as follows:

United States	£969,000,000
France	447,700,000
Great Britain	146,300,000
Germany	115,100,000

Since Dec., 1929, the United States had added £89,000,000 to its stock and France has added £112,000,000. The market price of gold varies considerably, it is usually just about £3 17s. 10½d. per oz.

Gold Coast British colony in West Africa (so called because gold was found in its river beds in the 14th century or earlier), with a coastline of 334 m. on the Gulf of Guinea. Covering about 24,000 sq. m., or, with Ashanti and the so-called Northern Territories, is 78,802 sq. m. in extent (the three are under the same government, which consists of a governor assisted by a legislative and an executive council). Cocoa, gold, diamonds, mahogany, and palm oil are produced and exported. Accra, a seaport, is the capital.

The Portuguese visited the coast in the 15th century and during the 19th the district became British, partly by purchase and partly by cession.

Goldcrest *See* WREN.

Golden Age Hesiod's mythical period of patriarchal simplicity and innocence. It was the period when Saturn, or Cronos, reigned in Latium. The phrase is applied to the culminating age of a country's prosperity, literature, or art.

Golden Bull Term used for a charter of exceptional importance, such as was sealed with a golden seal or bull. The chief of these was that drawn up by the Emperor Charles IV. in 1356, providing a constitution for the Holy Roman Empire.

Golden Calf Molten image made by Aaron. At the people's instigation, Aaron converted the ornaments brought from Egypt into a calf for worship, when Moses was receiving the Law on the sacred mount (Ex. xxxii.). Jeroboam established similar images at Dan and Bethel (1 Kings xii.).

Golden Fleece Fabled skin of a golden ram. By it the children of the King of Thebes, Phrixus and Hellê, were carried off from their enemies. Hellê fell into the sea, but Phrixus reached Colchis, where he sacrificed the ram. Aeëtes, King of Colchis, hung up its skin in the temple of Arês, and this was the golden fleece. Later, Jason and his Argonauts brought it back with them to Thessaly.

Golden Fleece Order of the. European order of knighthood, one of the oldest and most famous in the world. Founded in 1429 by Philip, Duke of Burgundy, it was dedicated to the Virgin and S. Andrew, and was kept in being by the succeeding Hapsburg and Bourbon dynasties, both in Spain and in Austria until these countries became republics. The badge contained a representation of the golden fleece.

Golden Gate Channel that leads from the Pacific Ocean into San Francisco Bay. It is about 5 m. long, and is so-called because of its beauty. A bridge is (1936) in course of construction to cross the Golden Gate. The main span will be over 4000 feet and the total length 6640 feet.

Golden Horn Opening of the Bosphorus. It separates the city of Istanbul, or Constantinople, from the suburbs of Pera and Galata; it is famed for its beauty.

Golden Number Chronological term used in determining the date of Easter and the Epact (*q.v.*). It represents the number of the year in the metonic or lunar cycle of 19 years; therefore the numbers range from 1 to 19. In the early calendars the number was marked in gold after each year, hence the name.

Golden Rod Genus of composite herbs (*Solidago*). The widespread *S. virgaurea*, common on British waysides, bears a wandlike spike of tiny yellow flowerheads. All the other species, of which there are about 100, are American, but *S. canadensus*, with pyramidal sprays of yellow flowers, is cultivated in British gardens.

Golden Rose Emblem of wrought gold, blessed by the Pope on the fourth Sunday in Lent. It is then often presented to a church, distinguished person, or community. At first a single rose it became a thorny spray with leaves and jewelled petals, a costly piece of goldsmith's work.

Golden Rule Christ's precept. It is found in the Sermon on the Mount, "Whatsoever ye would that men should do unto you, even so do ye also unto them" (Matt. vii. 12).

Golder's Green Residential district of London. It lies to the N.W. of the city, adjoining Hampstead. Its growth took place entirely during the 20th century.

Goldfinch Common British resident song bird (*Carduelis elegans*). Its length is about 5 in. and it has black, yellow and white wings, and bright red throat. It builds a moss-lined nest and lays two broods of 4 or 5 reddish-spotted blue and white eggs.

Goldfish Small fish allied to the carp. It was brought to England from China or Japan about 1700, and has since been universally kept in aquaria (and, as a child's plaything, in tiny bowls). The original fish was brown, the gold tints having since been produced by breeding. Under favourable conditions it will live and breed in tanks and ponds of small size. The water must be well aerated and weeds should grow in it.

Gold Leaf Thin sheet of gold used for gilding. Each is $\frac{1}{282000}$ of an inch in thickness, and $3\frac{1}{4}$ in. square. Small gold ingots are rolled out to form a strip not more than $\frac{1}{800}$ of an inch in thickness. The strip is cut into pieces an inch square, and these are placed, first, between pieces of vellum, or prepared paper, and then goldbeater's skin, and beaten until the required thickness is obtained.

Goldbeater's skin is specially prepared from a part of the large intestines of the ox.

Goldsborough Village of Yorkshire (W.R.). It is 3 m. from Knaresborough, on the L.N.E. Rly. It is noted for its hall, which is on the estate of the Earl of Harewood.

Goldsmith Worker in gold and precious metals, or dealer in gold and silver plate.

The Goldsmiths' Company is one of the oldest city companies of London and has its hall in Foster Lane, E.C., where plate is assayed and hall marked.

Goldsmith **Oliver.** Irish writer. Born Nov. 10, 1728, the son of a clergyman, he went from school to Trinity College, Dublin, but refused to take up any profession, although he dabbled in medicine. He passed some years in wanderings over Europe before (1756) settling in London. He tried several ways of getting a living, but the only one that brought any reward was that of a bookseller's hack. In 1759 he published his *Enquiry into the State of Polite Learning* and his fortunes began to mend. He started a paper called *The Bee*. In 1760-61 he wrote his "Chinese Letters" in *The Public Ledger*—afterwards issued as *A Citizen of the World*; they are the imaginary reflections of a Chinese philosopher on visiting England.

In 1761 he became friendly with Johnson and was one of the original members of the Johnson circle. Johnson was pleased to approve of *The Traveller*, published in 1764, and in 1766 Goldsmith followed up this success with a much greater one, his immortal novel, *The Vicar of Wakefield*. In 1770, much miscellaneous work having filled the intervening years, appeared his best poem, *The Deserted Village*, and in 1773 his dramatic masterpiece *She Stoops to Conquer*. A less successful play was *The Good-natured Man*. Goldsmith died in his chambers in the Temple, London, April 4, 1774, and his grave is marked by a statue outside the Temple Church.

Gold Stick Official at the British court. The office is held in turn by the colonels of the regiments of household cavalry, and the duties are to attend the sovereign on state occasions. There is also a gold stick for Scotland, this being the captain general of the Royal Company of Archers.

Gold Stripe Mark worn by soldiers of the British army who were wounded in the Great War. It was introduced in 1916, and took the form of a strip of gold lace worn on the left sleeve of the

coat. The French army has a similar decoration.

Goldwyn Samuel. American film producer and business organiser. Born in Warsaw in 1882, his parents (named Goldfish) took him in 1896 to America, where he was naturalised in 1902. He was a pioneer in urging American authors to write directly for the screen. He organised the Jesse Lasky Photoplay Company and was associated for a time with the great Metro-Goldwyn combine at Los Angeles. He was the subject of a *Life* by John Drinkwater.

Golf Popular outdoor game. It is played upon links, or open spaces, on which there are obstacles, or "bunkers," such as a sandhill or a pool of water. If these are not provided by nature they are usually made for the purpose. Each course consists of a number of stretches, usually 18, at the end of each of which is a green with a small hole in the middle of it. The aim of each player is to drive his ball into this hole in fewer strokes than his opponent. The ball is of wound elastic, coated with rubber. Each player has a number of clubs, each adapted for a particular kind of stroke : *e.g.*, the driver, brassie, iron, mashie, putter and niblick, and variations of these. A game is generally played by two players, one against one, but the foursome, in which two players play against two, is a popular variation.

All over Great Britain there are golf courses, and the game has taken a great hold in the United States. The oldest club is the Royal and Ancient Golf Club at St. Andrews, which is accepted as the ruling authority of the game. Clubs hold competitions amongst their members, medals being given and for these there is a system of handicapping, a certain number of strokes being given or received.

There are various competitions, for women as well as men. The chief of these is the men's open championships, for amateurs and professionals. There are also amateur championships for men and women, for England, Scotland, Ireland, France and other countries. Matches are played between the universities, and between Great Britain and the United States. In these the teams are usually eight-a-side.

Goliath Philistine of Gath. A gigantic man, he challenged Saul's hosts to single combat, whereupon David slew him with a stone from his shepherd's sling (1 Sam. xvii.).

Gomersal Urban district of Yorkshire (W.R.). It is 5½ m. from Bradford, and 214. m from London by the L.M.S. Rly. Here are textile manufactures, and there are collieries near. Pop. 3800.

Gomorrah Ancient city near the Dead Sea. Its actual site is unknown. Situated, like Sodom, in the Vale of Siddim (Gen. xiv.), it was the abode of Abram's nephew, Lot. Because of their wickedness the inhabitants were destroyed by fire and brimstone.

Goncourt De. Name of two French novelists. Edmond Louis Antoine Huot was born at Nancy, May 26, 1822, and his brother, Jules Alfred Huot, in Paris, Dec. 17, 1830. Until the death of the younger (June 20, 1870), they wrote all their works in collaboration, beginning with books on special history and on art, such as *Histoire de la Société Française pendant la Revolution*, 1854, *L'Art du XVIIIe Siècle*, 1859-75 and *La Maison d'un Artiste*. Among their novels may be mentioned *Soeur Philomène*, *Manette Salomon* and *Madame Gervaisais*. Alone, Edmond wrote on art and also produced several novels including *La Fille Elisa* ; he edited the letters of his brother and their combined *Journal*. He died July 16, 1896, leaving money to found the Goncourt Academy.

Gondola Boat used on the canals and lagoons of Venice. It has a prow and stern high above the water, and in the middle is a cabin. It is propelled by gondoliers, who stand up for their work, and is used for conveyance of passengers all over the city. Many persons have their own gondolas.

The car, or nacelle, fitted to an airship is also known as a gondola.

Gonzaga Famous Italian family. One of its members became ruler of Mantua in 1328, and his descendants were persons of importance in Italy for 300 years. Luigi Gonzaga (1568-91) a member of the Society of Jesus, was canonised as S. Aloysius. About 1705 the Emperor Joseph I. took Mantua, and annexed it to Austria, while Montferrat, another possession of the family, was given to Savoy. The duke went into exile, and in 1708 the family became extinct.

Good Hope Cape of S. Africa. This promontory, the most southerly point of the continent, is about 30 m. from Capetown and is often called simply the Cape. It is about 100 ft. high.

Goodrich Village of Herefordshire. About 3 m. from Ross, it has an old and interesting church. Near are the ruins of a castle, which was built to protect England against the Welsh, probably in the 12th century.

Goodwill Connection or reputation attached to a business. It is an asset, and considerable sums are paid for the goodwill of a sound business. When a business passes at death, a price is usually put upon the goodwill for purposes of probate. Many limited companies have goodwill as an asset in the balance sheet, but prudent finance provides for its gradual extinction. In some businesses of great value goodwill has been written down to nothing, thus providing the shareholders with a hidden reserve of great value. The professional connection of a doctor, lawyer or architect has also a value for its goodwill.

Goodwin Sands Sandbank off the coast of Kent. Named after the Saxon Earl Godwin, legend says it was once an island on which he had a house. The sands are about 6 m. from the coast at Deal, and extend for about 10 m. from north to south. They have a bad reputaion with seamen, as many vessels have been wrecked thereon, and are protected by four lightships.

Goodwood Seat of the dukes of Richmond and Gordon. It is 3 m. from Chichester and is chiefly celebrated for its racecourse, where races take place at the end of July each year, as they have done since 1802.

Goole Urban district, market town and river port of Yorkshire (W.R.). It stands at the junction of the Ouse and the Don, 25 m. from Hull, and is served by the L.N.E. Rly. The Aire and Calder navigation system also links it with the towns of Lancashire and Yorkshire. There are good docks for the shipping of coal and other products, and steamers go regularly from here to the ports of

Scandinavia and the Netherlands. Other industries are flour milling and engineering.

Goose Web-footed bird of the family *anatidae*. The male is called the gander, the young, goslings. There are about 40 species, among them being the grey lag goose, the bean goose, laughing goose, brent goose, and barnacle goose. Of these, the grey lag breeds in Scotland and Ireland, but other varieties are only visitors to Great Britain.

The domesticated goose is descended from the grey lag, and has been bred for the table (particularly for Christmas fare) in the British Islands for some centuries. In former days the quills of the goose were in great demand for writing, and its down is still of value.

A flat iron used by tailors is called a goose.

Gooseberry Fruit of a shrub of the saxifrage order (*ribes grossularia*). It grows wild in many parts of the world, and is also cultivated for its fruit. Fruit growers have produced many varieties and some gooseberries are very large. The fruit is somewhat acid, but is eaten both raw and cooked, and makes an agreeable preserve.

The Cape gooseberry is allied to the tomato. It comes from Peru, and is cultivated in India and elsewhere.

Goose Step Popular name of a military balancing exercise. The body rests upon each leg alternately, the other leg swinging to and fro with straight knee, toe pointed outward, and shoulder squared. In ceremonial parades the goose step march averages 75 paces to the minute.

Goossens **Eugene.** English conductor and composer. Born in London, May 26, 1893, he was a son of Eugene Goossens, at one time conductor of the Carl Rosa Opera Company. He was educated in Liverpool and at the Royal College of Music, London, and in 1915, after four years as a member of the orchestra at the Queen's Hall, London, became associated with the Beecham Opera Co. He founded an orchestra and gave concerts of his works in London and other centres. His opera *Judith* was produced in 1929.

Gopher Various small N. American rodents. They include ground squirrels allied to the Old World susliks, prairie dogs, and pocket gophers or pouched rats. The name is also applied to a N. American land tortoise (*testudo polyphemus*), which is destructive to potato crops, but its flesh is esteemed.

Gopher Wood Untranslated and unidentified Hebrew name of the timber of which Noah built the ark (Gen. vi.). The word denotes a resin yielding tree; of those suggested, cedar, pine, and cypress, the last is likeliest to be the gopher. The name applies also to the N. American leguminous yellow wood tree, cultivated for the shade it gives.

Gorbals District of Glasgow, once a separate burgh. It is on the Clyde, and on the L.M.S. Rly. The industries are those of Glasgow, with which it was incorporated in 1846.

Gordian Knot In Greek legend, a knot tied in the fastening of his ox cart by Gordius, a Phrygian, who founded Gordium. An oracle declared that he who loosened the knot would master Asia; Alexander the Great cut the knot with his sword. The phrase "cutting the gordian knot" therefore denotes bold solutions of knotty points.

Gordon Scottish family. Its founder is said to have been a Norman who settled at Gordon in Berwickshire. Sir Adam Gordon fought for Robert Bruce, and was rewarded with lands in Aberdeenshire, where the family became very powerful and which still remains the centre of its influence. In 1445 one of the Gordons was made Earl of Huntly, and in 1599 the 6th earl was made a marquess. George, the 4th marquess, was made Duke of Gordon in 1684, and there was a Duke of Gordon until the 5th duke died in 1836. Gordon Castle, near Fochabers, and his estates passed to the Duke of Richmond, who in 1876 was made also Duke of Gordon. Another branch of the Gordon family is represented by the Marquess of Aberdeen.

The Gordon Highlanders is one of the most famous regiments of the British Army. It consists of the old 75th and 92nd regiments of the line. The former was raised in 1788 among the Gordons, and the latter in 1794 by the 4th Duke of Gordon and his beautiful wife, Jane Maxwell. The regimental depôt is at Aberdeen.

Gordon **Charles George.** British soldier, born at Woolwich, Jan. 28, 1833. He saw service in the Crimean War in 1855, and in China in 1860 and 1863-64, in command of Chinese troops, successfully crushed the Taiping Rebellion, thereby gaining the nickname of "Chinese" Gordon. At the request of the Khedive, he was, in 1874, sent to organise the Egyptian Sudan, of which from 1877 to 1880 he was governor. Sent to the Sudan again in 1884 to organise the withdrawal of troops before the Mahdi's advance, he was besieged in Khartoum. After an heroic defence of nearly 12 months, the city was captured, Gordon being slain, Jan. 26, 1885.

The Gordon Boys' Home, near Brookwood, Surrey, was erected in memory of General Gordon. It accommodates 250 homeless and destitute boys, who are trained for civil life and the services. There are homes of a similar kind in other places.

Gordon Riots Rising that took place in London, June, 1780. The Roman Catholics in Great Britain lived under serious disabilities, some of which were removed in England in 1778, though it was found impossible to do the same in Scotland, public opinion being too strong. In 1779, to oppose this removal, a Protestant Association was formed, and Lord George Gordon, a younger son of the 3rd Duke of Gordon, became its leader. On June 2, 1780, he marched with a petition from St. George's Fields to Westminster at the head of 60,000 persons. There was a good deal of disorder, and some Roman Catholic places of worship were damaged. There was further rioting on the 4th, when the Bank of England was attacked and the prisons forced. The ministers, alarmed at the strength of the movement, feared to act, but George III. ordered the military to put down the rioters by force. This was quickly done. The riots are described in Dickens' *Barnaby Rudge*.

Lord George Gordon was tried and acquitted as being insane, but 21 others were executed. Later he was concerned in other exploits, and died in Newgate, Nov. 1, 1793.

Gore **Charles.** English prelate and theologian. Born Jan. 20, 1853, he was made Bishop of Worcester in 1902. He was largely responsible for creating the new Diocese of Birmingham, and was bishop there from 1905 to 1911, when he became Bishop of Oxford, which post he resigned in 1919. He

was one of the authors of *Lux Mundi*, and has written a number of theological works, being known also as a worker for social reform. He died Jan. 17, 1932.

Gorgons In Greek mythology, three-winged female monsters. According to Hesiod they were named Stheno, Euryale, and Medusa; they had snakes for hair, and turned all who looked upon them to stone. Medusa, who alone was mortal, was slain by Perseus, watching her mirrored in his shield, so that he need not look upon her. The Gorgoneion, or Gorgon's head, is a favourite door ornament.

Gorgonzola Town of Italy. It is about 12 m. N.E. of Milan, and is famous for the cheese bearing its name.

Gorhambury Estate in Hertfordshire. Once the property of Lord Bacon, it is 2 m. from St. Albans. The present house was built late in the 18th century; in the park are the ruins of one in which Bacon lived. In 1626 it passed out of the possession of the Bacons. In the 19th century it became the seat of the Earl of Verulam, but he sold it in 1931.

Gorilla Largest of the man-like or anthropoid apes. It is a native of Equatorial Africa. Allied to the chimpanzee, it differs in having small ears, an elongated head, nasal grooves, arms reaching to the knee, small thumbs, and beetling brow ridges. Its coarse hair is generally blackish in colour, with a chestnut head. The males are as much as 6½ ft. the females 4½ ft. in height. Unable to walk erect, they support themselves on the fore knuckles. They are practically untameable, and seldom live long in captivity. In 1930 a sanctuary for gorillas was made in Uganda.

Goring Village of Oxfordshire. It stands on the Thames, 9 m. from Reading, opposite Streatley in Berkshire, on the G.W. Rly. It is much visited for boating, being one of the beauty spots of the Thames. **Goring Gap** is the depression in the chalk hills through which the Thames flows.

Another Goring is the seaside resort in Sussex, now part of the borough of Worthing.

Gorizia City of Italy, much visited by tourists. It stands on the Isonzo, 23 m. from Trieste. The old town retains its walls, outside which a new town has been built. There are some manufactures and a trade in agricultural produce.

Gorky Maxim. Russian author. Born at Nijni Novgorod, Mar. 14, 1868, and christened Alexei Maximovitch Peshkov, at the age of nine he was apprenticed to a shoemaker. In 1884, failing to enter Kasan University, he took up a wandering life, the experiences of which served as useful material for his pen. In 1892 he published *Makar Chudra*, and in 1893 *Chelkash*, his first success. This was followed by many other works, including *Foma Gordeyev*, *Konovalov*, and a drama, called in English, *At the Lowest Depths*. Dealing in arresting fashion with the sordid side of life, Gorky is one of the greatest and most realistic of the Russian writers. During the Great War he served with the Red Cross service after which he joined the Bolshevists. In 1924 he published an autobiography, *Fragments from My Diary*.

Gorleston Watering place of Suffolk. It stands at the mouth of the Yare, 122 m. from London, on the L.N.E. Rly. The sands are very good and there are golf links. Gorleston is included in the Borough of Great Yarmouth.

Gorse Alternative name for furze (*q.v.*), a prickly evergreen flowering shrub.

Gorsedd Name used in Wales and Cornwall for a national assembly. At these, bards contend for prizes, and they are almost identical with the eisteddfods. One was held near Penzance in 1931, this being a revival of a ceremony a thousand years old.

Gorst Sir John Eldon. English politician. Born at Preston, May 24, 1835, he was educated there and at Cambridge. In 1866 he entered Parliament as Conservative M.P. for Cambridge town; from 1875-92 he represented Chatham and from 1892-1906 his own university. In 1885-86 he was Solicitor-General; in 1886-91 Under-Secretary for India, and in 1891-92 Financial Secretary to the Treasury. He was Minister for Education, 1895-1902. He died April 4, 1916. His son, Sir John Eldon Gorst, was British Consul-General in Egypt 1907-11.

Goschen Viscount. English title borne by the family of Goschen. George Joachim Goschen was born in London, Aug. 10, 1831, the son of a banker who had settled in England. In 1863 he was elected M.P. for the city of London, in 1865 Vice-President of the Board of Trade in the Liberal ministry, and in 1866 he became Chancellor of the Duchy of Lancaster and a Cabinet minister. Between 1868-74 he served under Gladstone, first as President of the Poor Law Board, and then First Lord of the Admiralty, and in 1880 he went to Turkey as ambassador.

Never an advanced Liberal, Goschen opposed Home Rule, and as a Unionist succeeded Lord Randolph Churchill, 1886, as Chancellor of the Exchequer, when he carried through the conversion scheme of 2½ per cent. consols. He retained office until 1892 and from 1900 to 1905 was First Lord of the Admiralty. In 1900 he was made a viscount and left the House of Commons where he had sat, with slight intervals, for a succession of constituencies since 1863. He died Feb. 7, 1907.

Gosforth Urban district of Northumberland. It is 3 m. from Newcastle-on-Tyne, on the L.N.E. Rly. In Gosforth Park race meetings are held. Pop. (1931) 18,042.

Another Gosforth is a village in Cumberland, 12 m. from Whitehaven.

Goshawk Bird of prey (*Astur*), of the falcon family. The European goshawk, *A. palumbarius*, is the largest, short-winged hawk used in falconry, the female being flown at rabbits, and the male which is smaller, at partridges. Once common, it rarely comes nowadays to Britain.

Goshen Fertile region in ancient Egypt. Allotted to the patriarch Joseph and his kinsmen, the Hebrews occupied it for the several centuries of their sojourn in Egypt. It lay east of the Nile.

Gospel Oak London street. It runs between Haverstock Hill and Rochford Street, and is so named because under an oak tree, between the parishes of Hampstead and St. Pancras, the gospel was read when the bounds were beaten. The name was given to the district around.

Gospel Word meaning good tidings. It is used especially for the first four books of the New Testament that are known collectively as the Gospels. Together

they give practically all the known facts about the life and teaching of Jesus Christ. The first three, written by Matthew, Mark and Luke, are called, from their similar structure, the synoptic gospels; the fourth, ascribed to John, emphasises certain other aspects. The synoptists are interdependent because they used common sources. Mark, the earliest, utilised Peter's personal knowledge; Matthew probably penned his own memoranda, which may be the conjectural source, sometimes called Q., whence the first and third evangelists derived the additional matter engrafted upon Mark. Of Mark's 661 verses all but 30 are in Matthew or Luke or both; Matthew and Luke collectively contain 200 more.

Wycliffe's followers were called **gospellers** and later the term **hot gospellers** was given to fanatical preachers.

Gosport Seaport and borough of Hampshire. It is 86 m. from London, on the S. Rly, and stands on the west side of Portsmouth Harbour. A ferry and a floating bridge connect it with Portsmouth. The Royal Clarence Victualling yard and barracks are here. Near is the Haslar Hospital. The urban district includes Alverstoke and Stokes Bay. Pop. (1931) 37,928.

Goss Name of a make of ivory porcelain invented by William Henry Goss. Produced first at his Stoke pottery in 1858, its best known form is armorial china in quaint shapes, bearing the arms of towns, colleges and other places of interest. His Parian busts and large, jewelled, Sèvres-like vases are also famed.

Goss **Sir John.** English organist and composer. Born at Fareham, Hants., Dec. 27, 1800, in 1811 he became a chorister of the Chapel Royal, London. He was made organist of S. Luke's, Chelsea, 1824, and in 1838 succeeded his master, Attwood, as organist of S. Paul's, London, being knighted on his resignation in 1872. He died May 10, 1880. Goss was the composer of some fine anthems and other church music.

Gosse **Sir Edmund William.** English writer. The only son of Philip Henry Gosse, the naturalist, he was born in London, Sept. 21, 1849. He was educated privately under the eyes of his father, and acquired a remarkable fund of knowledge. In 1867 he became an assistant in the British Museum, in 1875 translator to the Board of Trade, and in 1904 librarian to the House of Lords. In 1914 he retired. He was knighted in 1925 and died May 16, 1928, leaving a son, Philip, also a writer.

Gosse found time for much reading and writing as well as for association with other scholars, and was one of the leading literary men of his day. He wrote on English and foreign literature, his writings being marked by a charm of style that added to their value. As a poet he wrote *Madrigals, Songs and Sonnets* and *On Viol and Flute*, and his collected poems appeared in 1911. Criticism and biography are represented by *Gossip in a Library, Critical Kit-Kats, Portraits and Studies*, and lives of Donne, Gray, Swinburne, Patmore and others. In 1913 he issued five volumes of *Collected Essays* and in 1919 *Diversions of a Man of Letters*. He also wrote a drama, *King Erick*, and a novel, *The Dream of Narcisse*: but to many his greatest, certainly his most intimate, book is *Father and Son*, in which, with remarkable restraint and power, he tells the story of his own childhood. Gosse also wrote a good deal on French and Scandinavian literature.

Göteborg City and seaport of Sweden, formerly called Gothenburg. It stands near the mouth of the river Göta, on the S.W. coast of the country, and is its largest seaport. It is 285 m. from Stockholm, and is an important railway centre. Canals flow through the streets. The cathedral was rebuilt early in the 19th century. There is a university.

Göteborg has a fine harbour, and does a very large trade in timber and other products. It has also some manufactures, including shipbuilding, and is a fishing centre. It has a broadcasting station (322 M., 10 kW.). It was founded by Gustavus Adolphus in 1619. Pop. 233,300.

The Gothenburg System is one for the control of the liquor traffic. It was started in the city in 1871, and has been copied by other places. Under it, the liquor is sold in houses which are managed by a company under the control of the municipality. This can only make a small profit on its capital, and those in charge of the houses have no interest in promoting the sales of drink. The system is practically the same as that of the Public House Trust in Great Britain.

The **Göta Canal** is a ship canal that goes from Göteborg to the Baltic at Mem. It is 240 m. long, but for much of its course uses the river Göta and the Lakes Wener and Welter.

Gotha Town of Thuringia, Germany. It is 15 m. from Erfurt, and before 1918 was one of the capitals of the State of Saxe-Coburg-Gotha. The town has an observatory. Gotha is celebrated as a publishing centre, especially for maps, and the *Almanach de Gotha* was long published here. There are some manufactures. Pop. 45,800.

The **Gotha** is the name of a German aeroplane. It is a small, swift biplane, many of which were built and used during the Great War for raids on England.

Gotham Village of Nottinghamshire. It is 6 m. from Nottingham. Its main interest is its connection with the stories of the wise men of Gotham. These are said to have performed the most foolish actions, such as building a hedge round a cuckoo to imprison the bird. The collection of 20 stories about them is called *Merry Tales of the Mad Men of Gotham*, and their exploits are mentioned in books and plays of the 15th and 16th centuries.

Gothic Term denoting association with the Goths (*q.v.*). It indicates successively their unpolished manners and art; their language, which was once widespread, is now known mostly from Ulphilas's 4th century Bible translation, in which he uses an alphabet of Greek, Latin and runic characters; and the pointed, black-faced letter used in the earliest printed books.

GOTHIC ARCHITECTURE. Its most popular use is for the form of architecture called Gothic, although this has no connection with the Goths. It arose in France about 1150, and was much used for cathedrals and churches in that country. Its distinguishing feature is a pointed arch, which has made possible great beauty of design. It was soon brought to England where it flourished until about 1550, in periods known as Early English, Decorated and Perpendicular. There was a revival of Gothic architecture in the 19th century, but it is less suitable for secular than for ecclesi-

astical buildings, and at that time most new buildings were secular.

By common consent the Gothic Cathedral is one of the greatest products of the human mind. England and France contain many, Chartres, Canterbury and Salisbury for example. Westminster Abbey, London, the Sainte Chapelle in Paris and King's College, Cambridge, are other examples of its unsurpassed beauty.

Goths Name of a Teutonic people. They probably came from the N. of Europe, where Gothland perpetuates their name; they were, anyhow, dwelling on the shores of the Baltic in the 1st century. In the 3rd century they were in the S.E. of Europe, and were fighting the Romans. Soon they were divided into two branches, the eastern being the Ostrogoths and those in the western, the Visigoths. Owing to the preaching of Ulphilas they became Christians.

For a time the Goths lived in Dacia at peace with the Romans, but about 400, having in Alaric a warlike and ambitious leader, the Visigoths began to move. They marched westwards, reached Italy, and in 410 captured and plundered Rome. In a short time, however, they left Italy and established a Gothic kingdom in France and Spain, its capital being Toulouse and its first king Theodoric. In Spain they conquered the Vandals and occupied a dominant position until their last king Roderic, was killed in battle with the Moors in 711. In France they had been overthrown by the Franks under Clovis early in the 6th century. Such was the end of the Visigoths.

After the Visigoths had moved westward, the Ostrogoths were conquered by the Huns, but this subjection was only of brief duration. About 520 they, too, marched into Italy, where they appeared as the emissaries of the Empire at Byzantium. They established themselves there under their leader, Theodoric, who made Ravenna his capital, and, although professing allegiance to the emperor, ruled as an independent sovereign. Soon after his death, in 526, Justinian sent Belisarius against the Ostrogoths. A long struggle took place, its end coming when Narses, the successor of Belisarius, destroyed the power of the Ostrogoths, who, like their fellows, disappeared from history.

Göttingen Town of Germany. It stands on the Leine, 67 m. from Hanover, and has many objects of interest. In the old town the chief buildings are the Rathaus and the Church of S. John, while in the market place is the goose girl fountain. The industries include the manufacture of chemicals and scientific instruments; another is publishing. The university, founded by George II. in 1734, has a fine range of buildings, including a library, laboratories, museums and an observatory. Pop. 37,000.

Gottland Island in the Baltic Sea, also called Gothland. It belongs to Sweden, being about 60 m. from the S.E. coast of that country. The largest Baltic island, it is 76 m. long and covers 1220 sq. m. Visby is the capital, and there are some smaller towns. The soil is fertile and agriculture flourishes. Railways serve the island. In the Middle Ages, Gothland belonged to the Hanseatic League, being annexed by Sweden in 1645. Pop. (1931) 57,450.

Another Gottland is one of the three provinces into which Sweden was formerly divided. It included the S. part of the country.

Gouda Town of the Netherlands. It stands where the River Ysel joins the Gouw, 12 m. from Rotterdam. Canals flow through the town, which is famous for its cheese. Pop. (1932) 29,832.

Gough **Viscount.** Irish soldier. Born at Woodstown, Co. Limerick, Nov. 3, 1779, Hugh Gough entered the British Army, seeing service during the French wars, notably in the Peninsular War. Sent to India in 1837, he was given command in China, 1841-42. In 1843 he was made Commander-in-Chief in India, in which capacity he successfully fought the Mahrattas in 1843 and the Sikhs in 1845 and 1848. He was then superseded by Sir Charles Napier, and retired. In 1842 he was made a baronet, in 1846 a baron and in 1849 a viscount. He died March 2, 1869. The title is still held by his descendant.

Gough **Sir Hubert de la Poer.** British soldier. Born Aug. 12, 1870, he was educated at Eton and Sandhurst, joining the 16th Lancers in 1889. He served in the Tirah Expedition, 1897-98, and the S. African War, 1899-1902. In Ireland in 1914, being then in charge of a Lancer regiment, he resigned his commission rather than fight against Ulster. However, he commanded the 3rd Cavalry Brigade in France in 1914, and was soon appointed to a division and then to an army corps. In July, 1916, he was selected to command the 5th army. His conduct of the operations at the third Battle of Ypres in 1917 was severely criticised, and, when his troops fell back before the Germans in March, 1918, he was recalled. In 1919 he was appointed chief of the Allied Mission to the Baltic States, and he retired from the army in 1922. He received his knighthood in 1916. In 1931 Gough wrote his own account of the events of 1918.

Goulburn City of New South Wales. It stands on the river Wollondilly in an agricultural region, and is connected by rly. with Sydney, which is about 115 m. distant, and is a railway junction. Its industries include brewing, tanning and boot-making. There are two cathedrals. Pop. (1931) 12,570.

There is a river **Goulburn** in Victoria. This is a tributary of the Murray, and is 345 m. long.

Gould **Sir Francis Carruthers.** English caricaturist. Born at Barnstaple, Dec. 2, 1844, he was for some 20 years a member of the London Stock Exchange. In 1879 he first illustrated the Christmas number of *Truth*, and in 1887 he contributed cartoons to *The Pall Mall Gazette*. He later became assistant editor and cartoonist of *The Westminster Gazette*, for which he did some of his best work. His publications include: *Who Killed Cock Robin?* 1897; *Froissart's Modern Chronicles*, 1902-03; and *Picture Politics*, which were periodical collections of his *Westminster* cartoons. He was knighted in 1906, and died Jan. 1, 1925. Gould was the most popular caricaturist of his day. His pictures were clever, and without any trace of malice.

Gould **Jay.** American capitalist. Born at Roxbury, New York, May 27, 1836, he left his father's farm in 1852 to work in an ironmongery store, learning surveying in his spare time. After a short period in the timber trade, he took advantage of the railway panic in 1857 to buy railroad shares, becoming president and manager of the Rut-

land and Washington line. He became a broker in New York in 1859. Acquiring interests in railway lines he obtained control of several, and so amassed a great fortune. In 1881 he formed the Western Union Telegraph system. He died Dec. 2, 1892, his son, George Jay Gould (1864-1923), succeeding to his railway and other interests.

Gounod Charles François. French composer. Born in Paris, June 17, 1818, he was admitted to the Conservatoire in 1836, and in 1839 won the Grand Prix de Rome. His first opera, *Sappho*, was produced in 1851, and a year later *Ulysse* was played. In 1858 his operatic version of Molière's *Le Médecin Malgré Lui* was performed at the Theatre Lyrique, and at this theatre his masterpiece, *Faust*, based on Goethe's play, was produced on March 19, 1859. It was followed by numerous others, including *Romeo and Juliet*, 1867. He also composed beautiful church music, masses and oratorios. He died Oct. 18, 1893.

Gouraud Henri Joseph Eugène. French soldier. Born in Paris, Nov. 17, 1867, he entered the army in 1890 and saw service in the Sudan and Morocco. In May, 1915, having until then been at the head of a colonial army corps, he was given command of the French forces in Gallipoli, where he was severely wounded, losing his right arm. In Dec. 1915, and again, 1917-19, he commanded the 4th Army. In 1919 he was appointed High Commissioner in Syria and Commander-in-Chief in the Levant; in 1922 he became a member of the Supreme Council of War, and in 1924 was appointed Military Governor of Paris.

Gourd Succulent fruit of various trailing herbs (*Cucurbitaceae*) of the pumpkin order. Mostly of Asian or Mexican origin, they were cultivated in antiquity, and are mentioned in the Bible. The most valuable is the S. European globular yellow gourd derived from the genus *cucurbita maxima*, which sometimes reaches 240 lbs. in weight. Other edible forms are the pumpkin and the marrow. Various genera include the snake gourds, bitter gourds or colocynths, water melons, musk melons and calabashes.

Gourock Burgh and watering place of Renfrewshire. It is 3 m. from Greenock on the S. side of the Firth of Clyde, on the L.M.S. Rly. There is some shipping, and it is a yachting centre. The Gamble Institute is the chief building. Pop. (1931) 8844.

Gout Constitutional disorder. It is manifested by acute inflammation of the smaller joints, especially of the great toe, and is characterised by increase of uric acid in the blood, and deposition of sodium urates in the joints. It is dominated by a specific but unknown cause, called the gouty diathesis or predisposition, and is affected by heredity, inadequate exercise and over-indulgence in rich foods and alcohol. It only attacks adults, is commoner in men than in women, and may be acute, chronic or irregular.

Treatment. In an acute attack a lead and opium fomentation should be applied to the affected joint, which should then be wrapped in cotton wool and kept at rest in an elevated position. Three grains of calomel followed by a saline aperient should be given, and a milk diet adopted, with frequent draughts of alkaline mineral waters. Wine of colchicum will ease the pain during an attack. In **Chronic Gout** attention should be paid to the diet and general hygiene, and alcohol should be avoided.

Govan District of Glasgow. It stands on the S. side of the Clyde, opposite the city proper. Its industries are shipbuilding and engineering. There is also some shipping. Elder Park is an open space. Until 1912, when it was included in Glasgow, Govan was a burgh with its own council and a population of about 90,000.

Government System or method of governing; also the persons who form the governing body of a country. Governments were classified by Aristotle according to whether they were directed by the one, the few or the many, there being a good and a bad form of each. We may call these monarchy or tyranny, autocracy or oligarchy, and democracy; there were examples of all in the ancient world, though not perhaps many of democracy. In addition, there were governments, the Jewish, for instance, in which the priests played a large part, these being called theocracies. Centuries earlier, as scholars are proving, early man had his forms of government, which were neither so primitive nor so uniform as was at one time supposed.

The Greeks experimented with democracy, but for some centuries most of the world's governments were autocracies or oligarchies, the people having little or no voice therein. Under the influence of the Church, the Middle Ages discovered the idea of representative government, and in developing this idea England took the lead. In the course of time representative government became the rule throughout the civilised world, but it was not yet democracy, for the representation was that of only a small class in the community. Government rested, however, as it must always do among intelligent people, on the consent of the governed, though that consent was passive rather than active. The next step was to make those who controlled affairs responsible to the representatives. Here again England took the lead.

The great age of democracy proper began with Rousseau and the ideas of the French Revolution. Gradually it gained ground, and it may be said to have reached its apogee when, in the 20th century, women were given the vote in many countries. This made these governments for the first time real democracies, as all adults had a part therein. Government by the people, of the people, for the people, was realised. After the Great War two new forms of Government arose, with far-reaching and important implications. One was the Soviet Government set up in Russia in 1922 by the Communist Party, and based on the idea of a series of local elective bodies sending delegate to higher bodies, from the village and town soviets at the base to the All-Russian Congress of Soviets at the top. From this Congress is elected the Central Executive Committee which elects the Council of People's Commissars, whose Chairman is President of the U.S.S.R.

Diametrically opposed to this form of Government is the dictatorship which has arisen in Italy and Austria under the Fascist régime and in Germany and the Danzig Free State under the Nazi system. Both systems are contrary to all ideas of constitutional government and their effects are so far problematic.

As a term for the men responsible for the affairs of the country, **the government** means the politicians who occupy the offices of

state. These are united by some bond, usually a similarity of political opinions, and at their head is a Premier, or Prime Minister, called in some countries the President of the Council. The government may be called after the country, and we hear of the French or Italian Governments, meaning the men in charge, for the time being, of the affairs of that country, or it may be known as a Liberal or Socialist Government, according to the opinions of the men who comprise it, or it may be known by the name of its leader, as the Baldwin or the Briand Government. A change of government comes about in various ways, but is usually due to a loss of confidence.

Governor Official who governs a colony or dependency in the name of the king or other head of a state. In the British Empire, the governors of the self-governing dominions, Australia, Canada, etc., are called Governors-General. They represent the king, and like him keep quite outside party politics. Other colonies and dependencies, such as Ceylon and Fiji, have governors, and in some, Nigeria for example, there are **lieutenant-governors**, who under a governor look after a part of a colony. The governor also acts usually as Commander-in-Chief. The six states of the Australian Commonwealth have each a governor, but the provinces of the Dominion of Canada have lieutenant-governors appointed by the authorities there.

France and other countries with colonial possessions send out governors. In the United States each state has a governor, who is elected for two or four years, and paid a salary.

Governor Appliance on an engine for maintaining a uniform working speed under varying resistance. The ball governor introduced by James Watt is the usual type on stationary steam engines, and consists of two balls so attached to a vertical shaft rotated by the engine as to fly outward by their centrifugal force. The outward movement of the balls opens the throttle valve, thus reducing the amount of steam pressure.

Gowbarrow Hill or fell near Ullswater in the Lake District. It is on the N. side of the lake and on it is Gowbarrow Park, which, in 1906, was bought by the National Trust. The fell is 1580 ft. high.

Gower District of Glamorganshire. It forms a distinct part of the county, being almost surrounded by the Bristol Channel. It is 15 m. long and about 6 broad, and has Mumbles Head at one end and Worms Head at the other. Swansea and Oystermouth are the chief towns. Gower, or Gwyr, is famous for its romantic scenery and its castles. These were built by the Normans, who conquered the district in the 12th century. For long it had its own earl and sheriff, and was English rather than Welsh. In 1535 it was made part of Glamorganshire.

Gower **John.** English poet. Apart from the allusions to his sober and moral character made by his friend, Chaucer, little is known of his life. He was born about 1326, dwelt mostly in Kent, went blind shortly before his death in 1408, and was buried in S. Saviour's, Southwark. His three works are *Speculum Meditantis*, in French; *Vox Clamantis*, in Latin, which tells of Wat Tyler's rebellion; and *Confessio Amantis*, in English, a collection of tales.

Gowrie **Earl of.** Scottish title borne from 1581 to 1600, by the family of Ruthven. The 1st earl, William, 4th Lord Ruthven, was executed for treason in 1584, being succeeded by his son, William, who died in 1588. His brother John, 3rd and last Earl of Gowrie, was concerned in the mysterious Gowrie Conspiracy. This occurred in Gowrie House, Perth, Aug. 5, 1600. According to James VI., he was enticed there by Alexander Ruthven, brother to the earl, and by him led to a secluded wing, his life being then threatened. The king's followers arriving, Alexander was killed, and so was the Earl of Gowrie, who now appeared.

Goya Y Lucientes **Francisco José de.** Spanish painter. Born of peasant stock in a village of Aragon in 1746, he went to Saragossa to study art. His lawlessness made a flight to Madrid necessary, and thence he went to Italy. Returning to Madrid in 1775, he designed many tapestries for the royal tapestry factory at Santa Barbara, and was commissioned by the king to paint frescoes. He became court painter, and painted portraits of four of the Spanish sovereigns, as well as numerous members of the court. It is in his portraits that Goya's genius is best revealed. He also produced remarkably fine etchings. He died at Bordeaux, April 16, 1828.

Gozo Island in the Mediterranean Sea. Belonging to Great Britain, it is 8 m. long and covers 26 sq. m. It is 4 m. from Malta, from which it is governed. The chief towns are Victoria and Fort Chambray. Pop. 20,000.

Gracchus Name of three famous Romans. **Tiberius Sempronius Gracchus,** Governor of a province of Roman Spain, and twice consul in the 2nd century B.C., married Cornelia, daughter of Scipio Africanus. They had two sons, and Cornelia's devotion to them, together with her high character, have made her one of the most renowned of Roman matrons.

The elder son, named like his father, having been elected tribune in 133 B.C., tried to secure some part of the public lands for the poor. His proposals led to serious trouble, and during some fighting he was killed. In 123 his younger brother, **Gaius Sempronius Gracchus,** was elected tribune and took up the same cause, only to meet with the same fate as his brother. His death took place in 121 B.C.

Grace Favour of one kind or another. In this sense a grace is the opposite of a right. Days of grace are days, usually three, allowed for the payment of bills of exchange beyond the specified time. Permission to take a degree at the older universities is called a grace. An archbishop and a duke are addressed as your grace.

Another kind of grace is the thanksgiving said before and after meals; it is said in schools and college halls, and sometimes at public dinners. Many forms of grace are in Latin, this being the case at Oxford and Cambridge and at the older public schools. Popular short graces are *Benedictus benedicat* (May the Blessed bless), and *Benedicto benedicatur* (May the blessed be blessed).

In theology, grace is the term used for the favour shown by God to mankind. Its essence is that it is undeserved. Man has sinned,

but salvation is possible, not through his own merits, but by the grace or favour of God. It is expressed in the famous saying attributed to Bunyan when he saw a criminal going to execution: "There but for the grace of God goes John Bunyan."

In mythology three goddesses (Aglaia, brightness; Euphrosyne, joyfulness; and Thalia, bloom), daughters of Zeus, were called the graces.

Grace **William Gilbert.** English cricketer. Born at Downend, Gloucestershire, July 18, 1848, he was the son of a doctor and himself entered that profession. In 1863 he began to play in first-class cricket matches, and in 1870 he joined the Gloucestershire team. He remained a member of it, for much of the time as its captain, until 1899. He then became manager of the London County Cricket Club, continuing to play cricket almost until his death, Oct. 23, 1915.

Great as batsman, bowler and fieldsman, Grace played cricket for 50 years, and for over 30 was a leading figure in first-class cricket, in which his exploits won for him the title of champion. Some of his feats have been surpassed by others, but when all is taken into account, he remains the greatest cricketer who ever lived. In first-class cricket he scored over 50,000 runs and took over 2800 wickets. In 1871 he scored 2739 runs in the season, and in 1895 he scored 2346. His highest score was 344. In addition to being captain to Gloucestershire, he captained England in a number of test matches against Australia, and was for long the recognised leader of the Gentlemen in their matches against the Players, one such occasion being on his 50th birthday. In 1891-92 he captained the team that went to Australia.

Grace's knowledge of the game was unrivalled. For years his massive figure and black beard dominated every cricket field on which he played, whilst his name was familiar in every quarter of the land. To mark his services *The Daily Telegraph*, in 1896, raised a shilling fund for him. Grace wrote a book on cricket. Two of his brothers, Henry Mills Grace and George Frederick Grace, were also noted cricketers.

Gradient Term applied to the degree of slope on a road or railway. As a steep rise affects the hauling power of an engine, the gradient on most railroads seldom rises above 1 in 80.

The term is applied also to the difference in barometric pressure between two places at a distance from one another, the gradient being measured by $\frac{1}{100}$ ths of an inch difference between the barometer readings at a distance of 15 nautical miles.

Grading Method of marking and arranging agricultural produce, so as to show its quality. In 1928 a national scheme of grading was introduced into Great Britain. It is used for apples, eggs, potatoes and other foodstuffs. At certain places there are stations for grading the fruits and vegetables.

Graeco-Persian Wars. *See* GREECE, THERMOPYLAE, MARATHON, SALAMIS.

Grafting In gardening the removal of a bud or branch (scion) to the stem (stock) of a more vigorous tree. By this method the graft or scion becomes invigorated by its union with the stock, thus resulting in earlier and increased production of flowers and fruits.

Different methods are followed, such as tongue-wedge, saddle and cleft grafting. In tongue grafting a wedge-shaped opening is made in the stock, and the scion is cut to fit it and embedded firmly. The graft is protected by wax or clay until a union of the tissues is effected.

Grafting is also used in surgery. A piece of skin or bone is grafted on to another piece in order to cure a wound or for some other curative purpose.

Grafton City and river port of New South Wales. It stands near the mouth of the River Clarence, 310 m. from Sydney and 45 from the sea. There is a trade in the produce of the surrounding district; shipping is carried on and there are sugar mills Pop. with South Grafton (1931), 6,560.

Grafton **Duke of.** English title borne by the family of Fitzroy since 1675. **Henry Fitzroy**, son of Charles II., and Barbara Villiers, Duchess of Cleveland, was made Duke of Grafton in 1675. Lord High Constable under James II., he transferred his allegiance to William III., and died fighting for him in Cork in 1690. **Augustus Henry**, the 3rd duke (1735-1811), was a prominent statesman of his time. A supporter of Chatham, he was 1st Lord of the Treasury and nominally Prime Minister in 1766-67, and Lord Privy Seal in 1771-75 and 1782-83. The 7th duke, a general, who fought at Inkerman, died in 1918, and was succeeded by his son. His eldest son is known as Viscount Ipswich, and the family seat is Euston Hall, Thetford.

The Grafton Gallery is a picture gallery in Grafton Street, Piccadilly, London, W., where exhibitions are held from time to time.

Graham **Sir James Robert George.** English politician. Born June 1, 1792, at Netherby, he was educated at Westminster School and Oxford. He received a training in diplomacy when in 1813 he acted as private secretary to the British minister in Sicily. In 1818 he entered the House of Commons as a Whig, and after an absence returned to it in 1826. In 1824 he succeeded to the family baronetcy. In 1830 Sir Robert was made First Lord of the Admiralty, but he resigned in 1834. From 1841-46, he was Home Secretary in the ministry of Sir Robert Peel. He succeeded Peel as leader of his party in 1850, and from 1852-55 was again First Lord of the Admiralty. He died Oct. 25, 1861.

Graham **Peter.** Scottish painter. Born in Edinburgh in 1836, he studied art and soon began to exhibit. In 1866 he settled in London. He was elected R.A. in 1881, and died Oct. 19, 1921. Graham is known for his pictures of scenery in the Scottish Highlands and especially for his cattle. "A Rainy Day" is in the Tate Gallery, London.

Graham **Stephen.** English writer. Born in 1884, he spent many of his early years in Russia, living among the peasants. He also travelled over a large part of Europe and Asia. As a writer he made his name with his books on Russia, notably *A Vagabond in the Caucasus* and *Changing Russia*. Having been also in America and Africa, Graham joined the Scots Guards, and served in France in 1917-18, recounting his experience in *A Private in the Guards*. After the war he returned to his wandering life, and as a result wrote, among other books,

Children of the Slaves, Russia in Division, The Gentle Art of Tramping, The Death of Yesterday (1930), and *Boris Godunof* (1933).

Graham William. British politician. Born at Peebles, July 29, 1887. he was for a time in the civil service. In 1913 he was elected to the city Council of Edinburgh and, having become a figure in the Labour movement, he entered the House of Commons as M.P. for Central Edinburgh in 1918. He was Financial Secretary to the Treasury in 1924, and from 1929 to 1931 was President of the Board of Trade. In Aug., 1931, he resigned office and was chosen deputy leader of the Labour Party in Parliament, but lost his seat at the general election in Oct. His writings include *The Wages of Labour*. He died Jan. 8, 1932.

Grahame-White Claude. British aviator and aeronautical engineer. Born Aug. 21, 1879, he was educated at Bedford Grammar School. Starting in business as a motor engineer, he soon turned to aviation, becoming the first Englishman to be granted an aviation certificate. In 1909 he started an aviation school in Paris, and the next year won the Gordon Bennett Cup. He established the Grahame-White Aviation Company which owned Hendon Aerodrome, and during the Great War built aeroplanes for the government. He wrote *The Story of the Aeroplane*, 1911, and other works on the same subject.

Graham's Land British island in the Antarctic Ocean. It lies S. of Tierra del Fuego and N. of Alexander I. Land, and is a dependency of the Falkland Islands. It was discovered in 1832, but not until 1928 was it found to be an island. On it the Argentine Government has built a meteorological station.

Grahamstown City of the Cape Province, S. Africa. In the E. of the Province, it is the capital of the Albany district, and is 40 m. from the sea at Port Alfred. Grahamstown possesses Rhodes University College and S. Andrew's College, one of the leading public schools in the country. There is a trade in wool and other produce. Eur. pop. (1931), 7592.

Grail Word for a vessel or a cup. The Holy Grail is the vessel out of which Jesus Christ drank at the Last Supper. Many legends have grown up around it. One is that Joseph of Arimathea used it to collect the blood from the wounds of Christ, and later carried it to England. Romances were written about the Grail, notable ones being by Chrétien de Troyes and Robert de Borron. The Grail figures largely in the Arthurian legends. In Malory's *Morte d'Arthur* a sight of the Grail is the reward of the sinless knight, and the knights go off in pursuit of it. Tennyson follows out the idea, and for a moment Galahad sees the Grail. It also figures largely in Wagner's *Parsifal*.

Grain Unit of weight. It is supposed to be the weight of a grain of corn as it comes from the middle of a ripe ear. 7000 grains make a lb. avoirdupois, 5760 grains make a lb. Troy and 24 grains make a pennyweight.

Grain Cereals grown for food. There are five principal grains, wheat, maize, barley, oats and rye. The dealers in them are known as the grain market, its centre being Chicago, but much grain is dealt with in Liverpool. To store it immense elevators have been erected, chiefly at the ports. In 1932 the world's grain crop was estimated at 1,915,000,000 quarters. *See* WHEAT.

Graining Art of producing a grain, pattern or fibrous surface upon a material. In painting it refers to the imitation of the natural grain and colour of one wood upon another. In leather-work the term is applied to the treatment of skins to imitate morocco and other leathers; in paper-making to the embossing of papers to resemble leather; and in bookbinding to the production of a pattern on calf bindings.

Grammar Science of the right use of language, or a book which teaches it. Each language has its own grammar, which teaches the right use of words in relation to one another.

In England, schools for boys, set up at the time of the revival of learning, especially during the time of Edward VI., were called **grammar schools**, because Latin grammar was taught therein. Many of them *e.g.*, Leeds Grammar School and Bedford Grammar School, still retain this name.

Gramont Philibert de. French courtier. Born in 1621, he joined the army and served with distinction in Flanders and Spain. For an intrigue with a mistress of Louis XIV. he was exiled to England, 1662-64, where he attended the court of Charles II., and where he married Elizabeth Hamilton. He several times revisited England on diplomatic missions, and died in Paris, Jan. 10, 1707. In 1713, what purported to be his dictated *Memoirs* were published. Really written by his brother-in-law, Anthony Hamilton, they give a lively and vivid picture of the time.

Gramme Metric unit of weight. It is equivalent to approximately 15.432 grains and is equal in weight to one thousandth of a litre of distilled water. *See* METRIC SYSTEM.

Gramophone Machine for recording sound. It is constructed on the same principle as the phonograph invented by T. A. Edison in 1876, but has a recording disk instead of a cylinder, the sound record being cut in the form of a spiral groove on the disk. The record is mounted on a spindle which is rotated by means of a clockwork mechanism wound by hand or by an electric motor, the movement being controlled by a governor. The reproducer holding the sensitive diaphragm and needle is attached to a movable tubular arm which readily swings round to follow the course of the needle upon the record. In recent models the old sound box, tone arm and horn have been replaced by an electromagnetic system of reproduction, with valve amplification as in wireless.

The manufacture of gramophones and records is a large industry, the word "gramophone" itself being a protected trade name.

Grampians Mountain range of Scotland. It stretches across the country from Aberdeenshire to Dumbartonshire and Argyllshire, and forms a natural boundary between the N. and the S. The highest point is Ben Nevis, but there are others over 4000 ft. high and many over 3000 ft. Among these are Ben Macdhui, Ben Cruachan, Ben Lawers, Ben Lomond, Cairngorm, Cairntoul and Ben Alder. From the range, many rivers flow to the north and south.

A mountain range in Victoria, Australia, is called **the Grampians.** It lies in the west of the state, and has Mount William as its highest point.

Grampus Cetacean of the dolphin family (orca gladiator). Ranging from Greenland to the Antarctic, it sometimes attains a length of 21 ft., is black above and white beneath, with rounded flippers and formidable teeth. Fierce and voracious it is called the killer. It swallows live porpoises, seals and small dolphins, and packs of them hunt fully grown whales.

Granada City of Spain. The capital of the province of the same name, it is 63 m. from Malaga and is famous as an old Moorish stronghold. Near it is the Alhambra (*q.v.*). The chief buildings are the cathedral, with a chapel in which Ferdinand and Isabella are buried, the university buildings and some picturesque remains of Moorish days, including parts of the city walls. The city has some manufactures and does a considerable trade. Its golden age was for some centuries before 1492, when it was the capital of the Moorish kingdom of the same name. Pop. (1931) 118,905.

A city of Nicaragua is called **Granada.** It stands on the Nicaragua, 28 m. from Managua, 18,066.

Granada Moorish kingdom in Spain. It grew up around the city of Granada, and having been part of the district ruled by the caliphs of Cordova, became independent about 1238. It remained with its own rulers for about 200 years. The land was conquered by the Spaniards and in 1492 the last king of Granada, Boabdil, gave up his throne and went into exile. The kingdom was in the extreme south of the country, in the district now called Andalusia. It included Malaga as well as Granada.

Granby **Marquess of.** Title borne by the eldest son of the Duke of Rutland. The most famous holder was John Manners, the eldest son of the 3rd duke. Born Aug. 2, 1721, he was educated at Eton and Cambridge and assisted in the suppression of the Jacobite rebellion in 1745. In command of the British forces in Germany during the Seven Years' War, 1759, he did brilliant work in several battles, including Warburg in 1760. In 1766 he became Commander-in-Chief of the British Army. He had a seat in parliament from 1741 until his death, Oct. 18, 1770.

Grand **Sarah.** English novelist, whose real name was Frances Elizabeth M'Fall. A daughter of a naval officer, Edward Clarke, she married, at the age of 16, an army surgeon named M'Fall, who became a colonel in the R.A.M.C. Her first novel was *Ideala*, but the most famous was *The Heavenly Twins*, 1893, which made somewhat of a sensation in its day. Later she wrote *The Beth Book*, *The Winged Victory*, *Adam's Orchard* and *Variety*. Madame Grand took some part in the movement for women's rights, and in the municipal affairs of Bath, of which city she was mayoress, 1923 and 1925-29.

Grand Alliance **War of the.** Known also as the war of the League of Augsburg, it was the third of the wars waged by Louis XIV. against Spain, the Empire, Great Britain and Holland. In 1688 Louis sent his troops into Germany, more as a diplomatic threat than for war, and they plundered the country round Augsburg. The League of Augsburg took up the challenge and, converted into the "Grand Alliance" by the addition of new members in 1689, waged war against Louis.

The war was fought on the Rhine, in the Low Countries, in Ireland and on the sea. The outstanding personalities were Luxemburg, William of Orange, Vauban and Catinat. The chief occurrences were the Siege of Limerick (1690), Fleurus (1690), Staffarda in Piedmont (1690) and the Siege of Namur (1692), and in 1693 were Neerwinden and Marsaglia. At sea the Battle of La Hogue was won by Admiral Rooke in 1691.

Grand Bank Part of the N. Atlantic Ocean. It lies off Newfoundland and covers about 500,000 sq. m. The bank is really a ridge or elevation of the ocean bed, its greatest depth being only 160 fathoms. It is noted for the cod which abound here.

Grand Canal Name given to several canals. The most notable is the one which forms the chief highway of Venice. It runs right through the city with palaces on its banks. Another Grand Canal is in China. This goes from Hangchow to Tientsin, a distance of 850 m. The Yangtse-Kiang divides it into two parts; the section between the Yangtse-Kiang and the Yellow River was cut, perhaps, as early as 600 B.C. The last part dates from about 1280.

The **Grand Canal** of the Irish Free State goes from Dublin to Ballanasloe. It is 80 m. long and has branches which add another 65 m. to its length.

Grand Canyon *See* CANYON, COLORADO, ARIZONA.

Grand Duke European title. It first appeared in 1567 when Pius V. made the Duke of Tuscany a grand duke. This title was kept by his successors until 1859. In 1815, several of the German rulers were given this title, and from that time until 1918, it was borne by the rulers of Hesse, Baden, Oldenburg and Mecklenburg. It was also the title borne by members of the imperial family of Russia. To-day the only bearer of the title is the ruler of Luxemburg, who is the grand duchess.

Grand Falls Town of Newfoundland. It stands on the Exploits River, about 20 m. from its mouth. A railway connects it with Botwood, its port. It takes its name from falls in the river, which provide power for the large paper mills, to which the town owes its existence. Pop. 3800.

Another **Grand Falls** is in Labrador. This is a waterfall, one of the finest in the world, on the Hamilton or Grand River, over 300 ft. high.

A third **Grand Falls** is on the St. John river in New Brunswick. Here, 200 m. from St. John, is a small town called Grand Falls or Colebrooke. Pop. (1931) 1556.

Grand Fleet Name given to Great Britain's main naval force in the World War. It consisted of about 400 ships, there being several squadrons of battleships with their attendant cruisers, destroyers and submarines. It was based at Scapa Flow, Invergordon and Rosyth, and made periodical sweeps through the North Sea. It fought only one action, Jutland, but its presence on the seas had a great influence on the course of the war. It was commanded at first by Sir John (later Earl)

Jellicoe, and after Nov., 1916, by Sir David (later Earl) Beattie.

Grand Jury Superior kind of jury. It consists of any number between 12 and 23, and its duties are, at the opening of the assizes, to see if there is adequate reason for sending the cases for trial. Except for the indictment of certain specified offences, before Grand Juries of London and Middlesex, grand juries were abolished in 1933.

Grand National English steeplechase. It takes place in March or April at Aintree, near Liverpool, and is one of the sporting events of the year. The course is about 4½ m. long and there are something like 30 jumps. The race has been run regularly, except during 1916-18, since 1839.

Grand Pré Village of Nova Scotia. It is 46 m. from Halifax and is associated with the expulsion of the Acadians by the British in 1755. This is the subject of Longfellow's poem *Evangeline*.

Grand Prix International horse-race, run in summer at Longchamps, France. The course is 1 mile, 7 furlongs in length, and the stakes are 250,000 francs, the largest in Europe. This race was won three years in succession by English owners, from 1919-21, and again in 1928 by Lord Derby's horse, "Cri de Guerre."

Grand Rapids City of Michigan. It stands on the Grand River, and is an important railway centre. There are some manufactures and a trade in fruit and grain. Pop. 168,592.

Grand Union Canal Canal system in England. It was formed in 1928 when the Grand Junction Canal was united with the Regent and other canals. In 1931 the Leicester and Loughborough navigation and the Erewash Canal were acquired. The system thus provides water communication between the Thames and the Trent, and includes nearly all the canals between these two rivers.

Grange-over-Sands Watering place and urban district of Lancashire. It is situated on Morecambe Bay, 245½ m. from London by the L.M.S. Rly. Pop. (1931) 2648.

Grangemouth Burgh and seaport of Stirlingshire. It stands on the S. side of the Firth of Forth, at the terminus of the Forth and Clyde Canal, and is served by both the L.M.S. and L.N.E. Rlys. There are large docks, and its trade is chiefly in coal, iron ore and oil. Pop. (1931) 11,798.

Granger **James.** English writer and print collector. Born in Dorset in 1723, he studied at Christ Church, Oxford, and became Vicar of Shiplake in Oxfordshire. His best work is *The Biographical History of England, from Egbert the Great to the Revolution*, 1769. This was lavishly illustrated with portraits that he had collected from other sources, hence the term grangerising. He died April 4, 1776.

Granite Igneous rock of a crystalline and granular character. It is composed typically of quartz, felspar and mica, the latter mineral being in some granites replaced by hornblende. Minute quantities of other minerals such as zircon, apatite and rutile are usually present. Granites vary greatly in texture and colour, and are used largely as building stones and for paving, etc. They form large intrusive masses generally near the centres of mountain ranges, and occur in Cornwall, Devon, Wales and Aberdeenshire.

Grant **James.** Scottish novelist. Born in Edinburgh, Aug. 1, 1822, he served as ensign in the army, 1840 to 1843, when he resigned and entered an architect's office. He soon, however, devoted himself to literary work, producing his first novel, *The Romance of War*, in 1845. *Adventures of an Aide-de-Camp*, *The Yellow Frigate*, and *Playing with Fire* were others among his 56 novels. He also wrote historical works, including *Old and New Edinburgh* and *Scottish Soldiers of Fortune*. He died in London, May 5, 1887.

Grant **Ulysses Simpson.** American soldier and statesman. Born in Ohio, April 27, 1822, the son of a farmer, he was educated for the army at West Point. He served in the war against Mexico, 1845-48, but left the army in 1854 and became a farmer. He rejoined on the outbreak of the Civil War, and soon came to the front. Given a command, he took Fort Henry and Fort Donelson, and in 1862 fought the Battle of Shiloh. At the head of an army he took Vicksburg, after a long resistance won the Battle of Chattanooga and gained other victories. In 1864 he was appointed Commander-in-Chief, and the duel between him and Lee was the concluding stage of the struggle. Helped by superior resources, Grant was able to wear down his opponent and in April 1865 Lee surrendered.

In 1868 Grant, as a republican, was elected president, and in 1872 he was again chosen. His terms of office saw the settlement of the *Alabama* dispute with Great Britain. He retired from public life in 1876, but lived until July 23, 1885. In 1884 he lost his money through a banking failure, so earned something by writing his *Personal Memoirs*. Grant's tomb, overlooking the Hudson, is a prominent New York landmark.

Grantchester Village of Cambridgeshire. It stands on the Cam, once called the Granta, 2½ m. from Cambridge. Before its old mill was burned down in 1928, it was a very picturesque place. It owes some of its fame to Rupert Brooke's references to it.

Grantham Borough and market town of Lincolnshire. It stands on the Witham, 25 m. from Lincoln and 105 from London. It is a junction on the L.N.E. Rly., and is connected by canal with Nottingham and elsewhere. The chief building is S. Wulfram's Church, a large edifice with a fine spire. The Angel Inn was once the property of the Knights Templars. There is a market cross in the market place. The principal industries are engineering works and the making of agricultural implements. Grantham has associations with Sir Isaac Newton. Pop. (1931) 19,709.

Grant Land District in the Arctic Circle. It belongs to Great Britain and forms the N. part of Ellesmere Island. It was discovered in 1875.

Granton Seaport of Midlothian. It is part of the city of Edinburgh, and is situated on the Firth of Forth. There is trade in coal, timber and grain. The harbour is used by the North Sea fishing fleet.

Grantown Market town of Moray, or Elginshire. It is on the

Spey, 23 m. from Forres, on the L.M.S. Rly. It is the chief town of the district called Strathspey, and owing to its beautiful scenery is a holiday and health resort. Near is Castle Grant, the seat of the Countess of Seafield.

Granville-Barker Harley Granville. English dramatist. Born in London, Nov. 25, 1877, he took up the profession of actor, but turned to writing plays, his first, *The Marrying of Anne Leete*, being produced in 1901. This was followed by *The Voysey Inheritance*, 1905; *Waste*, 1907; and *The Madras House*, 1910, etc. He has also written plays in collaboration with other authors, *e.g.*, Laurence Housman, Bert Thomas and Dion Clayton Calthrop. His non-dramatic works include *A National Theatre* (with William Archer), 1907, and *The Red Cross in France*, 1916. For a time in 1907 he was a successful manager of the Savoy Theatre, with J. E. Vedrenne, with whom he had earlier, in 1904, managed the Court Theatre. His wife, Helen, was the author of *Come, Julia* (1931), and, in collaboration with her husband, wrote several plays and translated plays from the Spanish.

Granville Earl. *See* CARTERET, JOHN.

Granville Earl. English title borne since 1833 by the family of Leveson-Gower. The 1st earl was **Lord Granville Leveson-Gower** (1773-1846), a son of the Marquess of Stafford. He was ambassador in St. Petersburg and Paris. The title is still held by his descendants. The family seat is Stone Hall, Stafford.

The 2nd earl, **Granville George Leveson-Gower,** was born May 11, 1815, and was educated at Eton and Christ Church, Oxford. He entered the House of Commons in 1836, and in 1846 succeeded to the earldom. For the next 35 years he was a leader of the Liberal party, which he led in the House of Lords, from 1855 until his death. In 1851 he was Foreign Minister, and in 1853 Lord President of the Council. He was again Lord President, 1855-58 and 1859-66. Under Gladstone he was Colonial Secretary, 1868-70, Foreign Secretary, 1870-74 and 1880-85, and Colonial Secretary, 1886. Granville died March 31, 1891.

Grape Fruit of various shrubs of the vine family. The grape vine (*vitis vinifera*), indigenous to the Mediterranean region, has been cultivated throughout historic times for its clustered, edible berries. There are 1500 varieties, most of them grown for wine-making. Some are seedless, *e.g.*, sultanas. They are raised under glass in Britain, and in the open in Europe, especially France, Italy, Africa, Australia, Canada, Argentina and the United States. Several native N. American vines are cultivated, *e.g.*, *V. labrusca*; some have been introduced into France. *See* VINE; WINE.

Grape Fruit Fruit of an evergreen tree (*Citrus decumana*), also called the shaddock. It has oval leaves and white flowers, and bears fruit like a large yellow orange. It is cultivated in California and parts of Asia, and has become very popular on the dinner table, where its slightly acid taste makes it a pleasant opening to the meal.

Graph Diagram or chart used to interpret formulae and statements in science and commerce. In mathematics the use of graphs is of value in solving problems; in engineering and statistics the graphical method has long been employed. During recent years graphs have been introduced for expressing related facts in commerce such as the rise and fall of sales or of exports. The ordinary weather chart showing the variations in atmospheric pressure is a form of graph.

Graphite Form of carbon. It occurs as a soft, black mineral, greasy to the touch with a metallic lustre, and it usually contains iron oxide and other impurities. Known also as plumbago or blacklead, it is used as a lubricant, for stove polish and for making pencils and crucibles. Graphite occurs in veins or cavities in schistose, slaty and igneous rocks in Cumberland, Ceylon, Madagascar and Canada. Synthetic graphite from coal or coke is now in use for the lubrication of machinery.

Grapnel Small anchor. It has four or five claws or flukes and is used to hold small boats or vessels. It is also called a grappling iron.

Grapple Plant Flowering herb of the natural order *Pedalineae*. It grows in South Africa and bears purple flowers. The fruit has on it strong hooks which cling to the skin of animals, thus giving the plant its name. Great pain is caused if the fruit gets entangled in the mouth of the animal.

Grasmere Lake and urban district of Westmorland. The lake, which is about a mile long, is situated amid beautiful scenery in the middle of the Lake District. Grasmere stands on the Rothay, where it enters the lake and is 4 m. from Ambleside and 12 from Keswick. It is reached by road from either. The chief building is S. Oswald's Church, with the tomb of Wordsworth in the churchyard. Dove Cottage, where he lived, is near. A rush-gathering festival is held here every summer, and the sports in August attract many visitors. Pop. (1931) 988.

Grass In its widest sense all plants belonging to the natural order *gramineae*. It thus includes wheat and other cereals. More usually, however, it is confined to the herbage that grows in fields and on open spaces, and farmers distinguish between grassland which is used for pasture, and arable which is sown with wheat and other crops. They also distinguish between permanent and temporary grassland; the latter is sown with grass seed and after a year or so, when hay has been produced, is ploughed up again. For this purpose the kinds of grass which grow quickly are sown. Nurserymen supply a special seed for garden and other lawns, for they require a much finer grass than the ordinary field variety.

In Great Britain in 1932 about 17,448,000 acres were under grass, apart from what are called rough grazings on hillsides (15,764,000). Of this some 6,645,000 acres were sown with grass for hay making.

Grasshopper Name of various straight-winged insects, whose hindmost legs are adapted for leaping. In the long-horned or green grasshopper the chirp of the male is made by friction of the wings. In the green or brown short-horned family, which includes the locust, the chirp is produced by rubbing the hind legs against the wings. *See* CRICKET; LOCUST.

Grass of Parnassus Genus of perennial herbs of the saxifrage order. The British species (*Parnassia palustris*) is distributed all

over Europe, Asia and North America. Its several solitary white flowers contain a circlet of scales fringed with a comb of yellow, knotted hairs.

Grass Snake Snake of a non-venomous kind, found in Europe and occasionally in Great Britain, especially in the south. In colour it is olive-brown, greyish brown beneath, with light and then dark neckbands; hence it is sometimes called the ring snake. It averages 3 or 4 ft. in length and lives on frogs and fish.

Gratian Roman emperor. A son of Valentinian I., he was born in A.D. 359 and in 367 was given a share of the imperial authority. In 375, on his father's death, he and his infant brother, Valentinian II., became joint rulers of the Western Empire. During this reign the Goths were very dangerous, winning their great victory at Adrianople in 378. In 383 Gratian was defeated in battle by a rival, Maximus, after which he was killed by his own soldiers.

Another **Gratian,** Francis Gratian, was a mediaeval priest. He lived between about 1090 and 1150, and was, for the most of that time, a Benedictine monk. He collected the canons of the church into a work called *Decretum Gratiani* and is therefore regarded as the founder of canon law.

Grattan **Henry.** Irish statesman and orator. Born in Dublin, July 3, 1746, he was educated at Trinity College, Dublin, and became a barrister. In 1775 he entered the Irish House of Commons as M.P. for Charlemont and soon came to the front as an orator. He had much to do with securing legislative independence for Ireland in 1782 and urged the cause of Ireland in other directions. In 1805 he was elected M.P. for Malton and sat in the English Parliament until his death in London, June 6, 1820. He was buried in Westminster Abbey.

Grave Place of burial. In England most persons are buried in cemeteries, where a piece of ground is bought for the purpose. Some, however, are buried in churchyards, where a parishioner has a right to be buried if the churchyard is still open. Many graves dating from prehistoric times have been found and examined, and from them much valuable information has been obtained about the manners and customs of early man.

To look after the graves of the soldiers who fell in the Great War a commission has been set up. This has offices at 82 Baker St., London, W.1, and is responsible for about 600,000 graves in France, Mesopotamia, Gallipoli and other theatres of war. These are in 1600 cemeteries and, as far as possible, a record is kept of each man buried there. The graves have uniform headstones.

Gravel Deposits of small rock fragments. They occur in river valleys, or on the seashore, usually mixed with more or less sand or clay. The pebbles vary very much in size, angularity and composition. When composed of small angular fragments, a gravel is termed a grit, and this may pass into a coarse, sharp sand. Gravels are worked in the Thames and Trent valleys and at Doncaster, for making concrete aggregates, paving and rough-casting walls.

Gravelines Seaport of France. It stands on the little river Aa, about 1 m. from its mouth, and is 15 m. from Dunkirk and 13 from Calais. There is a large harbour from which timber and coal are shipped. Pop. 2000.

Just outside Gravelines a battle was fought between the English and Spanish on the one side, and the French on the other, on July 13, 1555, in which the French were routed.

Gravelotte Village of France. It is in Lorraine, about 6 m. from Metz, and famous because of the battle fought here between the French and the Germans, Aug. 6, 1870. The Germans, 150,000 strong, attacked a French army of 100,000 men under Bazaine, and, after some hard fighting, forced them to take refuge in the fortress of Metz. The Germans had over 20,000 men killed and wounded. The French lost about 13,000.

Graves **Alfred Perceval.** Irish poet. Born in Dublin, July 22, 1846, son of Charles Graves, Bishop of Limerick, he was educated at Trinity College, Dublin. In 1869 he entered the civil service and was an inspector of schools from 1875 to 1910. He helped to found the Irish Literary Society, of which he was twice president, and did much to promote the revival of interest in folk songs and music. His many works include *Songs of Old Ireland, Irish Songs and Ballads, Songs of Irish Wit and Humour, Songs of Erin, Welsh Poetry Old and New* and *To Return to all That*, an autobiography. He wrote the popular song "Father O'Flynn." He died Dec. 26, 1931, two days after completing the MS of a book for children on *The Lives of British and Irish Saints*.

Graves had four sons who were known as writers. **Philip Perceval Graves** became a member of the staff of *The Times*, which he represented at Constantinople. **Robert Ranke Graves** served in the Great War and became Professor of English in Cairo in 1926. He wrote several volumes of poems and an autobiography, *Good-bye to All That*, 1929. **Charles Graves** became a journalist and published *The Argentine and the Greek*. **John Graves** published *The Boys' Book of Football* in 1931.

Charles Larcom Graves, a brother of Alfred Graves, was assistant editor of *The Spectator*, 1899-1917. In 1902 he joined the staff of *Punch*, for which he wrote a great deal, including Punch's *History of Modern England*. He also wrote *Wisdom While You Wait*, *Hustled History*, and other books with E. V. Lucas, as well as the *Life of Sir Hubert Parry* and *New Times and Old Rhymes*.

Gravesend River port, market town and urban district of Kent. It stands on the south side of the Thames, 24 m. from London and is reached by the Southern Rly. A ferry connects it with Tilbury, north of the river. Shipping is the principal industry and the port is an important pilot centre. Here are paper mills and printing works. Gravesend is also a yachting centre. Pop. (1931) 35,490.

Gravitation Law relating to the attractive force between material bodies. It was defined by Newton in the statement that every body attracts or tends to approach every other body with a force proportional to the masses and inversely as the square of the distance. This applies equally to the planets as to the smallest particle of matter. As an outcome of gravitation, we have weight as a property of matter, giving the tendency of a body to fall towards the earth. Gravitation also accounts for the orbital move-

ments of the planets round the sun, and the movements of satellites round the planets.

Gray Thomas. English poet. Born in London, Dec. 26, 1716, he was educated at Eton and Cambridge, meeting at Eton, Horace Walpole, with whom he toured the Continent, 1739-41. On his return he settled in Cambridge, becoming in 1768 Professor of Modern History. His output of poetry was small, but of a very high standard, and marked with a depth of feeling uncommon in his age. His first poem, *Ode to Spring*, appeared in 1742; in 1750 came his most famous, *Elegy Written in a Country Churchyard*. He also wrote *Progress of Poesy*; *The Bard*; *The Fatal Sisters* and *The Descent of Odin*. In 1757 he was offered, and refused, the laureateship. He died July 30, 1771. He was buried at Stoke Poges.

Grayling Genus of freshwater fishes (*Thymallus*) of the salmon family. It is a small mouthed, large-scaled fish and its enlarged dorsal fin has from 20 to 24 rays. The beautifully iridescent *T. vulgaris*, which frequents clear English streams, has been introduced into Scotland. It rarely attains 4 lbs. in weight, and spawns in springtime. March to June is the close season.

Grays Urban district of Essex, in full, Grays Thurrock. It is 20 m. from London and stands on the Thames. Bricks and cement are made here. Pop. (1931) 18,172.

Gray's Inn One of the four inns of court in London. The buildings are in the angle formed by Holborn and Gray's Inn Road. The finest of these are the hall, erected in the time of Elizabeth, and the chapel. The library has a valuable collection of books and manuscripts, and consists of the old library and a new one, opened in 1929. Behind the two squares are gardens covering 30 acres, which were laid out by Francis Bacon. The name comes from the fact that the land belonged to Lord Gray de Wilton, who had a house here. In 1733 the Honourable Society of Gray's Inn acquired it and it has since been closely associated with the practice of the law. The sign of the inn is a griffin.

Graz City of Austria. It stands on the River Mur, 90 m. from Vienna, and is the chief town of the district of Styria. There is a university, and overlooking the city is the citadel. It is a manufacturing centre, and has a broadcasting station (252.1 M., 7 kW.). Pop. 152,700.

Great Barrier Reef Coral reef off the coast of Australia. It is 1200 m. long and covers 100,000 sq. m., and it serves to protect the coast of Queensland. Between the reef and the mainland is a channel, in some places 30 m. wide, in which are numerous islands. There are a number of sea passages through the reef, which was crossed by Captain Cook.

Great Bear Lake and river of Canada. Both are in the North-West Territories, within the Arctic Circle. The lake has a length of 176 m. and covers 11,200 sq. m. The river flows from the lake to the Mackenzie River, about 100 m. away.

The Great Bear is also a constellation in the Northern Hemisphere. It is also known as the Plough, or, more correctly, Ursa Major.

Great Britain Name in general use for the island that contains England, Wales and Scotland. It is thus the larger part of the United Kingdom of Great Britain and Northern Ireland, and the headquarters of the British Empire. It was used to distinguish this island from Brittany, or little Britain, and was first used officially in 1603, when James I. called himself King of Great Britain. *See* ENGLAND; SCOTLAND; WALES.

Great Dane Breed of dog. Classed as a German Boarhound and probably containing greyhound blood, it is the largest European mastiff, and stands about 30 in. high, weighing from 120 to 170 lb. Gracefully built, it carries the head high, and is crop-eared, long-tailed and sleek-coated; in colour it is bluish-grey, black or black-and-yellow. Formerly used in deer hunting, it has developed in Britain since 1870 as companion and show dog. It is amenable to discipline when trained to indoor manners, but should never be chained.

Great Eastern Name of a British steamer. She was built in 1856, Isambard Brunel being her designer, and was called the Leviathan. She was 692 ft. long and her tonnage was 18,900, making her the largest vessel in the world. She was built on the Thames at Millwall, but was not a success, and after a time she was used for laying the Atlantic and other cables.

Great Fire London conflagration, Sept. 2-6, 1666. Starting in a bakery in Pudding Lane, in four days it devastated 400 streets and lanes, 13,200 houses, S. Paul's Cathedral, 89 parish churches, the Guildhall and other public buildings, gaols, markets and 52 halls. The area affected comprised 373 acres within, and 63 acres without the walls, from the Tower to the Temple Church. The loss of property was put at £10,730,500; 200,000 people were made homeless, but casualties were very few.

Great Fish Canadian river. Rising in Lake Sussex, north of Lake Aylmer, it flows N.E. for 560 m. into the Arctic Ocean at Elliot Bay. Rapids and rocks impede navigation. Sir George Back, whose name it sometimes bears, discovered and explored it in 1834; Franklin's expedition perished near its mouth in 1848.

Another **Great Fish** is a river of Cape Province, S. Africa. It rises in the Sneeuwbergen Mts., and after a course of 230 m. reaches the Indian Ocean. **Great Fish Bay** is an inlet of the Atlantic in the S.W. of Portugese E. Africa.

Great Gable Mountain of Cumberland. It is about 7 m. from Keswick, near Scafell. It is 2950 ft. high and its ascent is a favourite climb. Green Gable, a hill near, is 2500 ft. high. There is a memorial on the summit from which one of the finest views in the country is obtained.

Great Harry English warship. She was built by Henry VIII. in or about 1514 and named after him. Her tonnage was 1000 and she had two decks with guns on each. A painting of the vessel by Holbein still exists.

Great Lakes Name given to the five great lakes that lie between Canada and the United States. They are Superior, Michigan, Huron, Erie and Ontario and cover over 94,000 sq. m. The international boundary runs through four of them, Michigan being wholly American. The lakes form a series of steps one below the other and, by means of canals, vessels can go from

the head of Lake Superior to the St. Lawrence and Montreal, or to New York by way of Buffalo. The Sault Ste. Marie Canals connect Superior with Huron. From Huron to Erie Lake St. Clair and the Detroit River are utilised, between Erie and Ontario the Welland Canal (*q.v.*) has been cut in order to avoid the obstacles at Niagara. Since the Great War a new Welland canal has been constructed. The St. Lawrence carries the waters of the lakes to the ocean.

Great Plague Epidemic of bubonic plague which ravaged London in 1665. Many periodical visitations occurred after Saxon times—including the Black Death. Cases occurred in the winter of 1664-5 and the total number of deaths for 1665 reached 68,596, two-thirds of the population of 460,000 having fled from the city. The Great Fire of 1666 (*q.v.*) helped to purify London.

Great Powers Term used for the leading countries of the world. It came into use soon after the Peace of 1815, when the affairs of Europe were settled by conferences between the leading powers. At this time they were Great Britain, France, Austria and Russia. After 1871 Germany became a great power and soon Italy joined the circle. These were all European powers, but with the growth of world politics, Japan and the United States became recognised as Great Powers. The World War destroyed the position of the three empires, Germany, Russia and Austria. The peace of 1919 was arranged by five great powers, Great Britain, France, Italy, the United States and Japan.

Great Rebellion Name given to the civil war between the Royalists, under Charles I. and the Parliament. It began in 1642 and ended with the execution of the king in Jan., 1649. It is usually divided into two parts, one ending with the King's defeat at Naseby in 1645, the other being the renewal of the struggle with the aid of the Scots in 1648.

Great Salt Lake Shallow saline lake in Utah, U.S.A. Three rivers enter it, but there is no outlet, hence salts have accumulated, principally sodium chloride, less sodium sulphate and carbonate, reaching at times over 20 per cent. Salts are deposited on the shores. The area is 1500 sq. m. and depth about 20 feet.

Great Schism Name given to the period from 1378 to 1417, when there were two or more popes. It ended in 1417, when the Council of Constance elected Martin V., who was generally recognised.

Great Seal Sign of the sovereign used to signify his approval. In Great Britain it is kept by the Lord Chancellor, and is affixed by him to documents of state. A new seal was made in 1930, owing to the altered status of Ireland. Until 1707 there was a separate great seal for Scotland.

Great Slave Lake and river of Canada. The lake is in the North-West Territories, covers 10,700 sq. m., is 300 m. long, and is frozen over for about half the year. The Mackenzie River flows from the lake into the Arctic Ocean.

Grebe Family of diving birds (*Podicops*). They are found in temperate regions and two species are found in lakes and ponds in Great Britain. These are the great crested grebe, which is nearly 2 ft. in length and has a coloured ruff in the breeding season, and the little grebe or dabchick, which may be 10 in. long. The red-necked, horned and black-necked grebes visit Great Britain for breeding. *See* DABCHICK.

Greece Monarchy of Europe. It is at the southern end of the Balkan Peninsula and consists of a mainland area and a great number of islands. Its land boundaries are Albania, Yugoslavia, Bulgaria and Turkey, but it is chiefly remarkable for its enormous coastline, due to the land being deeply indented by the sea, especially on the east side, where is the Aegean Sea. The area is 50,257 sq. m.—about the size of England; this total includes Crete and the islands Scyros, Chios and many others dotted over the Aegean and fringing the coast on the other side, where is the Ionian Sea.

The north of the country was ceded by Turkey after the Great War. The centre, where are Thessaly and Attica, and the south, which is almost cut off from the rest by the Gulf of Corinth, form the historic Greece. The land is mountainous almost everywhere, but in the valleys the soil is very fertile. Wheat, barley and maize are grown, as are olives, tobacco and currants. Minerals are fairly plentiful. Athens is the capital with a population of 452,919. There are many ports including the Piraeus, Salonika and Patras.

From 1924 to 1935 Greece was governed by a president and a ministry responsible to a parliament of two Houses. In 1935, however, a *plébiscite* vote decided in favour of the restoration of the monarchy, and the king, George II., was recalled to Greece. The people belong mainly to the Greek Church. There is an army recruited by compulsory service and a small navy. The unit of currency is the drachma stabilised at ·375 to the £ sterling, but the stabilisation has been suspended since April, 1933. Pop. (1931) 6,480,000.

HISTORY. Greece is famous as the home of the world's greatest civilisation. Many centuries before Christ Mycenæ was a powerful city with wonderful buildings, and there were doubtless others in the land. These were the work of the Minoans, who were succeeded by the Achaeans and then came the Dorians. Later still, about 1000 B.C., these people were called Hellénes and from Greece their settlements spread to Asia Minor, Italy and Sicily, the islands of the Aegean Sea, and, indeed, almost all round the European and Asiatic coasts of the Mediterranean Sea. The Greece of this time is the Greece pictured by Homer.

By the 6th century B.C., Greece, or Hellas, consisted of a number of city states, each independent. The kings who doubtless ruled in many of these had disappeared; their places were taken by rulers called tyrants and each city had its slave population. Wars between them were frequent, but these were on a very small scale. Trade was active, and owing to the situation of the cities, most of this was done by sea. Among the city states Athens, Sparta, Corinth, Thebes were, or were soon to be, prominent.

Among these people there was a high degree of intelligence and soon art and literature began to flourish as they had never flourished before. From Hellas the world has received its greatest works of art in building and sculpture, some of its greatest dramatic and poetic literature, its fundamental ideas on acting and dancing, its philosophy and its politics, and a certain amount of scientific knowledge.

This civilisation reached its greatest development in Athens in the time of Pericles, the 5th century B.C., an age which, for intellectual activity, has never been equalled. This was also the time when Greece was engaged in the unequal struggle with Persia. In this the Greeks won undying fame for their valour. At Marathon on land and at Salamis on sea, they beat the Persian hosts. These victories did not, indeed, save Greece from invasion, but in the end the Persians were utterly defeated.

Only with great difficulty and in the presence of great danger had the little city states united together, and the union was never very lasting or very real. The smaller and weaker cities came under the protection of Athens, or another of the more powerful ones, and leagues, such as the Delian League, were formed, but jealousies were too strong for a single country to arise. Instead, in 431 B.C., Athens and Sparta entered upon the great struggle called the Peloponnesian War. This was ended in 404 with the defeat of Athens and the loss of her dominant position. Sparta for a short time, and then Thebes, were the most powerful of the city states.

Macedonia, a kingdom in the north of Greece and hardly regarded as part of Hellas proper, passed, in 359, under the rule of a certain Philip. He became the most powerful man in Greece and was so when he died, and was succeeded by Alexander the Great. He exercised a kind of sovereignty over Greece, but interfered very little indeed with the affairs of its little states. The position of Macedonia, in the 2nd century B.C. was challenged by Rome and in 146 B.C. Greece, its glory gone, became part of the great Roman Empire which borrowed greatly from its civilisation.

Now comparatively unimportant, Greece remained in the Roman Empire, and when this was divided, was included in the Eastern Empire, which was Greek, and not Latin in speech and customs. In 1204, on the collapse of the Byzantine Empire, Greece became part of the Latin kingdom of Romania, but it had been recovered by the emperor at Constantinople by about 1300. In the 15th century it was conquered by the Turks, who dominated it until the 19th century, although from time to time this authority was disputed by Venice.

In 1821 the Greeks revolted against Turkish misrule and, aided by Great Britain and France, Greece was created an independent kingdom in 1830. In 1833, Otto, a prince of Bavaria, became its king, but he was expelled in 1862. The throne was then offered to a Danish prince who, in 1883, became George I., King of Hellenes. He was killed in 1913 and his son and successor, Constantine, was dethroned in 1917. Constantine's son, Alexander, then had a short reign which ended in his death and in his father's return. In 1922 Constantine abdicated and in 1923 his son, George II., was exiled. In 1924 Greece became a republic with Venizelos as its foremost figure. In 1935 the monarchy was restored and the king recalled from exile.

GREEK LANGUAGE. There are two forms of the Greek language—one is the language which was spoken at Constantinople and throughout much of the Eastern Empire. It lost its official status as an imperial tongue in 1453, but it continued to be spoken, although in an altered form, and is to-day the language of Greece and the adjacent lands. It differs a great deal from ancient or classical Greek.

Classical Greek, the Greek in which the masterpieces of Greek literature are written, was a dormant tongue for over 1000 years. At the revival of learning its wonderful treasures were discovered by scholars and since then it has been one of the two classical languages of the universities and schools of Europe. In most of these the study has now ceased to be compulsory, but it remains part of the education of the scholar.

The Greek alphabet consists of the following letters :—

Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ
Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω

α β γ δ ε ζ η θ ι κ λ μ
ν ξ ο π ρ σ ς τ υ φ χ ψ ω

Greek Church Name sometimes used for the Eastern or Orthodox Church. During the first centuries of the Christian era the church, like the Empire, was divided into two branches, the Eastern and Western. The division came about gradually, but by the 9th century it was complete, as the two churches then differed about a clause in the Nicene Creed. The Eastern Church used the Greek language and is therefore known as the Greek Church.

This church does not recognise a single head, but is under several patriarchs, the chief authority being the synod, of which each country has its own. It allows the clergy to marry and gives communion in both kinds to the laity, while there are other differences in faith and ritual between it and the Roman Church. The Church has about 144,000,000 adherents, but since 1917 its position in Russia, where the majority of its followers are, has been very precarious. The Anglican Church maintains friendly relations with the Greek Church. In England there are Greek churches in Bayswater, London, Manchester, Liverpool and Cardiff.

Greek Fire Inflammable composition used in mediaeval warfare. It was especially employed by the Byzantine Greeks in their wars against the Saracens. It is supposed to have been composed of resin or pitch, sulphur, nitre and naphtha, with other inflammable substances, and, probably, quicklime. The formula was guarded jealously by the Byzantines and the composition was said to be able to burn under water.

Green **John Richard.** English historian. Born in Oxford, Dec. 12, 1837, he was educated at Magdalen College School and Jesus College, Oxford. He was ordained and held a living in Stepney for a short time. In 1868 he was appointed librarian at Lambeth Palace, but poor health soon compelled his retirement. In spite of this handicap he did a good deal of historical work and "died working" at Mentone, March 7, 1883.

Green's work is the attractive and popular *Short History of the English People*, of which many editions have appeared. He also wrote *The Making of England* and *The Conquest of England*, books in much greater detail, and articles in periodicals. In 1877 Green married an Irish lady, Alice Sophia Amelia Stopford. She also wrote on historical subjects, her books including *Henry II.* and *Town Life in the 15th Century*. Later she wrote a good deal on Irish history and politics. Mrs. Green died in 1929.

Green **Thomas Hill.** English philosopher. Born at Birkin, Yorkshire, April 7, 1836, the son of a clergyman, he was educated

at Rugby and Balliol College, Oxford. In 1860 he was chosen a fellow of Balliol and there he served as tutor and lecturer for the next 22 years. From 1878 until his death, March 26, 1882, he was also Whyte Professor of Moral Philosophy.

Green taught an idealistic philosophy which he had learned from Aristotle, Kant and Hegel. Owing to the number of able men who came under his influence and to other causes, his teaching has been remarkably influential, especially in the sphere of politics. It led him to advocate social reforms, such as the causes of temperance, education and housing, and to come forward as a Liberal politician. His chief writings are *Lectures on the Principles of Political Obligation* and *Prolegomena to Ethics*. Green, as Mr. Gray, is a character in *Robert Elsmere*.

Greenaway Kate. English artist. Born in London, Mar. 17, 1846, she studied art at South Kensington, Heatherley's Academy and the Slade School, and in 1868 exhibited a number of water-colour drawings. In 1877 she exhibited at the Royal Academy. Her illustrations of children dressed in the quaint costumes of the early 19th century became very popular. One of her books, *Under the Window*, 1879, had a large sale in English, French and German editions. She died Nov. 6, 1901.

Green Cross Society Society formed in 1930. Its objects are to protect the countryside and prevent litter. In 1933 it started a fund for planting trees in Palestine. During the Great War the Green Cross Society was the popular name of the Women's Reserve Ambulance.

Greene Harry Plunket. Irish singer. Born in Dublin, June 24, 1865, he was the son of R. J. Greene, a barrister, and a grandson of the 3rd Lord Plunket. He studied law, but the excellent quality of his voice made him abandon it for music. Studying in Stuttgart and Florence, he made his London debut as a baritone singer in Handel's *Messiah*, Jan. 21, 1888. He excels in oratorio and the interpretation of *Lieder*, and maintains that interpretation, diction and dramatic sincerity are more requisite in a singer than vocal excellence. He has written a book *Interpretation in Song*, and was for some years Professor of Singing at the Royal Academy of Music and the Royal College of Music.

Greene Robert. English poet and dramatist. Born at Norwich in 1558, he was educated at Cambridge. Settling in London, he soon became known as a writer of plays and lyrics. His principal works are the dramas *Orlando Furioso*, *The Scottish History of James IV.*, *Friar Bacon and Friar Bungay* and *Pandosto*. He also wrote a pamphlet called *Greene's Groatsworth of Wit Bought with a Million of Repentance*, in which he speaks slightingly of Shakespeare and other contemporary dramatists. On his own showing he led a wild and dissolute life, and he died in poverty, Sept. 3, 1592.

Greenfinch Common British resident song bird (*Ligurinus chloris*). A stoutly-built bird, it is about 6 in. long and in colour is yellowish-green and yellow, with black wing and tail tips; the hen is of soberer hue. Its untidy, hair-lined nest shelters two broods of from 5 to 6 reddish-spotted white eggs.

Greenfly Popular name for various insects of the aphis or plant louse family. Besides green blight, black, grey and brown forms occur. Several generations of living young develop asexually, without immediate male agency. Some infest one plant species only, others migrate from host to host according to season; thus the hop aphis passes the winter on the damson. The seven British apple aphides include American blight. Five kinds attack currants and gooseberries; others affect roses and geraniums as well as corn and timber trees.

Greenford District of Middlesex, part of the borough of Ealing. It is 8 m. from London with a station on the G.W. Rly. Since the Great War, the district has been greatly developed, and various industries have been established here, including works owned by Messrs. J. Lyons & Co. The Grand Union Canal passes through the district.

Greengage Small, round, dessert variety of plum. It is a native of France and large supplies come thence each season. It is named after Sir William Gage, of Hengrave Hall, Bury St. Edmunds, who introduced it into England about 1725. The honour is also claimed for one of the Gages of Firle in Sussex, and for a Jesuit, John Gage.

Greenheart Valuable timber tree (*Nectandra rodiaei*) of the laurel order. A native of British Guiana, it reached 60 or 70 ft. in height. The close textured heart wood, greenish-yellow to greenish-brown in colour, is heavier than teak, and, as it contains an oil obnoxious to marine worms, it is extensively used in shipbuilding. Its ash-coloured bark, known as bibiru bark, is used as a febrifuge.

Greenhithe District of Kent. It stands on the Thames, 3 m. from Dartford, on the Southern Rly. The chief industry is shipping.

Greenland Island in the Arctic Ocean, one of the largest in the world. It covers 826,000 sq. m. Its length is 1600 sq. m., its extreme breadth 700 m. and only its southern part, which terminates in Cape Farewell, is outside the Arctic regions. Davis Strait lies between it and Canadian territory. The island belongs to Denmark, but nearly all the inhabitants are Eskimos. The coast is very rugged and the interior mountainous with many glaciers. The people live in a few settlements on the S. and W. coasts, the largest being Sydproven. Godhavn, on Disco Island, is the capital. The climate is very cold except for a short period each year, and the only products are whale and seal oil and furs. The trade is a state monopoly. Cod and other fish are found off the shores, and coal of poor quality has been found. Pop. 14,400.

Greenland was discovered in the 10th century and was settled by Norsemen. Presumably the climate was then more equable than it became later and this would account for the name given to the place. About 1400 the settlements were destroyed or vacated owing to increasing cold. Remains of churches and other buildings have been found. In the 19th and 20th centuries Nansen and other explorers have examined the interior of the country.

In June, 1930, some Norwegians hoisted their country's flag at a spot on the east coast of Greenland. The Danish Government raised objections to this and negotiations followed.

In 1929, 1930 and 1931 several expeditions

set out to explore the interior of Greenland. One was the British Arctic Air Route expedition under H. G. Watkins. The aim of this was to find if an air route across Greenland to Canada from England was possible. A German expedition under Alfred Wegener went out and Wegener lost his life and a relief expedition was sent to search for him. Another expedition was organised by some Danes.

Greenock Burgh and seaport of Renfrewshire. It stands on the south side of the Firth of Clyde, 22 m. from Glasgow, and is served by the L.M.S. Rly. The old west church, founded in 1580, has been removed to Seafield Parade to make room for the extension of a shipbuilding yard. The church contains some fine glass. Highland Mary is buried in the churchyard. The Watt Institution, which has a fine library, is named after James Watt, who was born here. Greenock's industries include shipbuilding, engineering and sugar refining. There is also a good deal of shipping, for which there are large docks and quays. Pop. (1931) 78,948.

Greenore Seaport and watering place of Co. Louth, Irish Free State. It is on the east side of Carlingford Lough and has a regular service of steamers with Holyhead.

Green Park London park. It lies between Piccadilly, St. James's Park and Constitution Hill, with Buckingham Palace looking on to it, and covers 53 acres. It is Crown property and has been a park since the 17th century.

Greensand In geology, a formation of the Cretaceous system. It consists of sand mixed with glauconite, which gives it the greenish colour. It is divided into the Upper and Lower Greensands, between which lies the clay called Gault. It is found in Kent and Sussex, in the Isle of Wight and in the west of England. A belt of it stretches across the country from Dorset and Wiltshire to the east coast. There is also greensand in Scotland, Ireland and France. In it are sandstones that make good building stones, and sand used in glass making.

Greenshank Wading bird (*Totanus canescens*) of the snipe family. Allied to the sandpipers, it is slenderly built and is about 14 in. long, with long, olive-tinted legs, a long neck and slightly uptilted black bill. It migrates in summer to Britain and breeds in Scotland. Its primitive ground-nest shelters four dark-blotched greyish eggs. Its winter wanderings embrace India, South Africa and Australia.

Greenstone In geology a convenient field name for more or less altered basic igneous rocks which have a dark greenish colour. The colour is due to the formation of chlorite and allied minerals. Greenstones occur as dykes and intrusive masses in many parts of Great Britain and comprise such rocks as diabase and diorite.

Greenwich Borough of London, one of the 28 in the county. It lies on the south side of the Thames, 6 m. from the city, and has stations on the Southern Rly. The Blackwall Tunnel and a tunnel for foot passengers link it with the north side of the river. Apart from Greenwich Hospital, its chief buildings are S. Alphege Church, the observatory and hospitals. Some of the inns, the Ship and the Trafalgar for instance, are noteworthy. The industries include engineering works and the making of cables and linoleum. Near the river is an enormous power station for generating electricity. A new town hall overlooking the river is being planned. Pop. (1931) 100,879.

Greenwich is famous for its associations with royalty. Here, Humphrey, Duke of Gloucester, built a castle, and in a palace that succeeded it the Tudor sovereigns passed a good deal of time. Henry VIII., Mary and Elizabeth were born here. The present buildings facing the river form a fine pile. They were begun in 1667 and finished in 1705 when they were opened as a home or hospital for sailors. They comprise several blocks, one of which was designed by Wren. The most famous apartments are the painted hall, which contains Nelson relics, and the chapel with its fine carvings. Other parts are occupied by the Royal Naval College and the Naval Staff College. The Royal Hospital School has been removed to new buildings at Holbrook, in Suffolk. A house near, formerly owned by Anne of Denmark, is now a Naval Museum.

Behind the hospital is Greenwich Park, now public property, which covers about 200 acres and is beautifully laid out. In it is the Royal Observatory. This was opened in 1676 and here the Astronomer Royal lives and works. Standard time is reckoned from this observatory, which stands on the first meridian—hence Greenwich time.

Greenwich Village is a district of New York. It is frequented by artists, literary men and others of Bohemian tastes.

Greenwood **Arthur.** English politician. He studied at the University of Manchester and became a writer and lecturer on economic subjects. He held a post in the University of Leeds before 1917, when he was made Secretary to the Ministry of Reconstruction. Having joined the Labour Party, he became head of its information bureau and in 1922 was elected M.P. for the Nelson and Colne division of Lancashire. In 1924 he was Parliamentary Secretary to the Ministry of Health and in 1929 Minister of Health in the Labour Government. He resigned in Aug., 1931, and lost his seat in the following Oct. In 1932 and again in 1935 he was elected for Wakefield.

Greenwood **Frederick.** English journalist. Born in London, Mar. 25, 1830, he became first editor of *The Queen*, 1861-63 and later was editor of *The Cornhill Magazine*, 1864-68 and *The Pall Mall Gazette*, 1865. When the latter paper changed its politics, 1880, Greenwood resigned and the same year started a new paper, *The St. James's Gazette*. He held strong views as to foreign affairs, and suggested the purchase by Great Britain of the Suez Canal shares (1875). His works include *Margaret Denzil's History*, *The Lover's Lexicon* and *Imagination in Dreams*. He died Dec. 14, 1909.

Gregorian Chant Plainsong system of antiphonal psalmody as devised by S. Gregory. Eight groups of chants correspond to the eight modes or tones. They are represented on the piano by the white notes only. The four authentic modes:

No. 1.	Dorian	D to D
No. 3.	Phrygian	E to E
No. 5.	Lydian	F to F
No. 7.	Mixo-Lydian ..	G to G

are paired with a plagal mode lying a perfect 4th lower than each of them. This gives Nos. 2, 4, 6 and 8, named as are their authentic partners plus the prefix hypo.

The chant begins with an intoning note and

continues with a reciting note, which is followed by the mediation, marking the half of the chant, a reciting note and an ending conclude.

Gregory Name of 16 popes. The two most important are Gregory I. and Gregory VII. noticed below. The five who came between these two are of little account. Of the others **Gregory IX.** was pope from 1227-41 and his reign was chiefly occupied by a struggle with Emperor Frederick II. **Gregory X.** was pope from 1271-76; **Gregory XI.**, 1370-78; and **Gregory XII.**, 1406-15, when he abdicated as ordered by the Council of Constance and thus helped to end the Great Schism in the church. **Gregory XIII.**, pope from 1572-85, was the pope who reformed the calendar, called after him the Gregorian Calendar, and celebrated the massacre of S. Bartholomew with a *Te Deum*. **Gregory XIV.** was pope 1590-91 and **Gregory XV.**, 1621-23. **Gregory XVI.**, pope from 1831-46, was known for his opposition to the liberal ideas of that time.

Gregory I. Pope, called the Great. He was born in Rome about 540, a member of a wealthy family, and became a prominent official of the city. In 574 he became a monk and later was one of the seven deacons who looked after the Christians in Rome, and became secretary to the pope, who sent him on an important mission to Constantinople. In 590 he was elected pope, and during his fourteen years of office he did a good deal for the temporal power of the papacy, by improved management of its great estates and in other ways. He was equally successful as the temporal ruler of Rome and as the spiritual ruler of a great part of Christendom, in both cases asserting his rights, but equally zealous in spreading the faith and caring for the unfortunate. His best known actions are the sending of Augustine to England in 596 and the invention of the Gregorian system of chanting. Gregory wrote a great deal, and many volumes of his writings have been published. He died March 12, 604, and was soon afterwards canonised.

Gregory VII. Pope from 1073 to 1085, also known as Hildebrand. Born about 1020, probably at Siena, he was educated in a monastery at Rome and became a monk and chaplain to Pope Gregory VI. Pope Leo IX. made him a cardinal deacon and appointed him to look after the estates of the church. In this capacity he proved himself a man of exceptional ability and he was soon the dominant member of the papal court. In 1054 he declined to become pope, securing the election of Victor II. The next two popes, Nicholas II. and Alexander II. were also his nominees, but there was a good deal of opposition to both, especially to Alexander. However, in the end Hildebrand's determination won through.

In 1073 Hildebrand himself was elected and he took the name of Gregory VII. He reigned for 12 years, perhaps the most thrilling in the long history of the Papacy. His two great aims were to reform the church and to assert its authority over the temporal power, represented by the emperor. He fought hard to put down simony and he strongly favoured celibacy for the clergy. Following out his reforming policy, the pope forbade the investiture of clerics by lay rulers, and this brought on his famous quarrel with the Emperor Henry IV., who submitted at Canossa in 1077. The pope's victory lasted for three years, at the end of which time the quarrel was renewed. Henry took possession of Rome, after a long siege in 1084, and set up a rival pope. Gregory escaped to Monte Cassino, and then went to Salerno, where he died May 25, 1085.

Gregory Augusta, Lady. Irish dramatist. Born Mar. 5, 1852, in 1881 she married Sir William Gregory, an Irish M.P. who died in 1892. Deeply interested in the Irish literary revival, she became a director of the Abbey Theatre, Dublin, about which she wrote *Our Irish Theatre*, 1924. She translated three of Molière's plays for production there, but is better known by her own dramas. These include *The White Cockade, The Rising of the Moon, The Gaol Gate, The Full Moon,* and many others. She died May 22, 1932.

Greiffenhagen Maurice. English artist. Born Dec. 15, 1862, he studied at the Royal Academy Schools, London. In 1906 he was made head of the Life Department at the Glasgow School of Art, but after a time settled in London. In 1916 he was elected A.R.A. and in 1922 R.A. His works include "The Judgment of Paris" in Sydney, and "Dawn" and "Women by a Lake," bought by the Chantrey trustees. He died December 26, 1931.

Grenada Island of the West Indies. It belongs to Great Britain, being one of the Windward Islands, and is 86 m. from Trinidad. It covers 133 sq. m. Its mountain range contains several extinct volcanoes, with lakes formed in their craters. St. George's is the capital and chief port. Cocoa, nutmegs, mace, cotton, sugar and other tropical products are grown and exported; rum is another important export. The island is under a governor and a legislative council. It was discovered by Columbus in 1498, settled by the French and became English in 1762. Pop. (1931) 78,662

Grenade Small shell or bomb that is thrown by hand. In its earliest form the grenade was made of brass or earthenware, was filled with gunpowder and pieces of iron, and exploded by means of a fuse. The use of grenades died out about the beginning of the last century, but revived again in a new form in recent years.

A **grenadier** was originally a picked soldier, trained in the use of hand grenades. France allotted four to each company of the Royal Regiment in 1667, and grenadier companies to three others. England followed suit in 1678. The Premier Battalions of the Guards, having appropriated the name, an army order, in 1915, decreed that men trained to use hand grenades would henceforward be called bombers.

Grenadier Guards Regiment of the British Army. It was raised in 1660 and ranks as the first regiment of foot guards, although the Coldstream Guards are older. It forms part of the brigade of guards, and may march through the City of London with fixed bayonets. Their record of service is a fine one, including Quatre Bras and Waterloo. In the Great War the Grenadiers sent four battalions to France, and their total casualties were nearly 12,000. The regiment has now three battalions.

Grenadines Group of small islands in the Caribbean Sea. They lie between St. Vincent and Grenada, and belong to Great Britain. They cover 14 sq. m. Three only, including Carriacou, the largest, are inhabited. They are administered partly from St. Vincent and partly from Grenada. Pop. 8000.

Grenfell **Julian Henry Francis.** English soldier and poet. Born Mar. 30, 1888, the eldest son of Lord Desborough, he was educated at Eton and Balliol College, Oxford. In 1910 he joined the Royal Dragoons, and in the Great War was awarded the D.S.O. Wounded at Ypres on May 3, he died at Boulogne, May 13, 1915. His verses *Into Battle* were published in *The Times*, and he wrote other poems. He was also a fine boxer and something of a scholar. His brother, Gerald William Grenfell (b. 1890) was killed at Hooge, July 30, 1915.

Grenfell **Sir Wilfred Thomason.** English medical missionary. Born Feb. 28, 1865, and educated at Marlborough and Oxford, he became house surgeon of the London Hospital under Sir Frederick Treves. In 1889 he joined the Royal National Mission for Deep Sea Fishermen, and cruised the North Sea in the first hospital ship. In 1892 he went as medical missionary to Labrador, and established hospitals, missions, homes, etc., there and in Newfoundland. He was attached to the Harvard Surgical Unit in France early in the Great War. In 1927 he was knighted. His works include *The Harvest of the Sea*, 1905, and *A Labrador Doctor*, 1918.

Grenoble City and river port of France. It stands on the Isère, 75 m. from Lyons, in the midst of magnificent mountain scenery. There is a university. The city has some manufactures, including the making of gloves, paper and fancy goods, and there is a trade along the river. It has a broadcasting station (566 M., 2 kW.). Before the French Revolution Grenoble was the chief town of Dauphiné. Pop. (1931) 90,748.

Grenville **George.** English statesman. Born Oct. 14, 1712, he was a younger brother of Richard Grenville, Earl Temple. He was educated at Eton and Oxford, and in 1741 became M.P. for Buckingham. Having held several minor positions in the government, he was made a Secretary of State and First Lord of the Admiralty in 1762. In 1763 he became Prime Minister, a post he retained for two years. His government was responsible for the prosecution of John Wilkes and for the Stamp Act of 1765. He died in London, Nov. 13, 1770. In his early days Grenville was allied politically with Pitt, who was related to the Grenvilles by marriage, but later the two parted.

Grenville's son, **William Wyndham Grenville** (1759-1834) was also a statesman. He entered the House of Commons in 1782, and, having been Speaker in 1789, was made Home Secretary. From 1791 to 1801 he was Foreign Secretary and as such closely associated with his kinsman, William Pitt. In 1806-07 he was premier of a coalition ministry. In 1790 he was made a baron, but the title became extinct when he died at Dropmore, Jan. 12, 1834.

Grenville **Sir Richard.** English sailor. Born about 1541, a member of an old Cornish family, he was M.P. for Cornwall, 1571 and 1584, and sheriff of Cornwall in 1571. In 1591, when a squadron under Sir Thomas Howard was sent to the Azores, to intercept the treasure fleet of Spain, Grenville, as vice-admiral, was second in command. The Spanish fleet received warning, and a fleet of 53 vessels attacked Howard's sixteen off Flores. Half Howard's men being ill of the scurvy, he led before them, Grenville in his flagship the *Revenge* being somehow separated. Attempting to break through the Spanish line, the valiant ship fought the entire fleet for 15 hours, but was eventually captured, Grenville dying of his wounds a few hours later, Aug. 31, 1591. The story is told in Tennyson's *The Revenge*.

Gresham **Sir Thomas.** English merchant and financier. Born in London about 1519, he was educated at Cambridge and then entered Gray's Inn. In 1543 he became a member of the Mercers' Company. Going to the Netherlands, he amassed a large fortune as a merchant and was also financial adviser to the government. He was knighted by Queen Elizabeth in 1559, before becoming ambassador to the Duchess of Parma. He died Nov. 21, 1579.

Gresham built the Royal Exchange in London and left his house in Bishopsgate and a sum of money to the Mercers' Company, to found the Gresham College, in which every year courses of lectures in seven subjects are delivered by seven professors. Rooms in the Royal Exchange were used for the lectures until 1843, then Gresham College was built for this and other educational work.

Gresham's name is associated with the principle, called **Gresham's law**, that good money drives out bad.

Greta River of Cumberland. It flows west into the Derwent near Derwentwater, and is 4 m. long. Greta Hall, which stands on the river, was the home of Southey for forty years. Other Gretas are tributaries of the Lune and Tees.

Gretna Village of Cumberland. It is near Carlisle and has a station on the L.M.S. Rly. Enormous munition works were erected here during the Great War.

Gretna Green Village of Dumfriesshire. It is 9 m. from Carlisle just across the River Sark that divides England from Scotland. Owing to its position, it was a favourite place for runaway marriages, since the law of Scotland was much more lax in this matter than the law of England. The marriages were celebrated in the village smithy by the blacksmith, or in the inn by the innkeeper.

Greuze **Jean Baptiste.** French artist. Born near Mâcon, Aug. 21, 1725, he early showed promise as a painter, and when 30 years of age was elected to the Paris Academy. His paintings are of a sentimental and somewhat conventional character, though the homeliness of his themes and his close study of nature gave them a certain charm and secured him great popularity. He died in poverty, Mar. 21, 1805. Several of his works, such as "A Girl with Doves," are in the Wallace Collection.

Greville **Charles Cavendish Fulke.** English diarist. Born Apr. 2, 1794, he was educated at Eton and Oxford and early became secretary to Earl Bathhurst and nonresident secretary of Jamaica. From 1821 to 1859 he was Clerk of the Privy Council. Throughout his official career he kept a diary, and this was published in seven volumes, 1876-87, as *The Greville Memoirs*, a valuable and outspoken contribution to the history of his time. He died Jan. 18, 1865.

Grévy **François Paul Jules.** French statesman. Born at Mont-sous-Vaudrey, Aug. 15, 1807, he studied law in Paris, becoming an advocate in 1837. He was elected deputy to the Constituent Assembly and sat in the Legislative Assembly, 1849-51, when for a time he returned to his legal practice. In 1869 he was elected to the Chamber, and, having

made a reputation as an orator, was chosen President of the National Assembly in 1871, as he was in 1876, 1877 and 1879. In 1879 he was elected President of the Republic and at the end of his seven years of office was again chosen. In 1887 he resigned and on Sept. 9, 1891, he died.

Grey Earl. English title borne since 1806 by the family of Grey. The first holder, Charles Grey, fought with distinction in the Seven Years' War and the American War of Independence, rising to the rank of general. In 1801 he became Baron Grey, and in 1806 Earl Grey and Viscount Howick. He was succeeded, when he died in 1807, by his son, Charles, the statesman.

Charles Grey, born Mar. 10, 1764, was elected M.P. for Northumberland in 1786. Associating himself with Fox, for many years he was an opponent of the policy of Pitt and an advocate of political and social reform. He became First Lord of the Admiralty and then Foreign Secretary in the coalition ministry of 1806-07. From 1807 to 1830 he was leader of the Whigs, then in opposition. In 1830 he became Premier and his ministry was responsible for the great Reform Act of 1832. He resigned in 1834 and died, July 17, 1845.

Henry George Grey (1802-94) his eldest son, succeeded him as 3rd earl. He entered the House of Commons in 1826 and held office in several Whig ministries. From 1846 to 1852 he was Secretary for War and the Colonies. He was succeeded by his nephew, Albert Henry George Grey, 4th earl (1851-1917) who, a great traveller in his early life, was administrator of Rhodesia, 1896-97 and Governor-General of Canada, 1904-11. His son, Charles Robert Grey (b. 1879), succeeded him as 5th earl. The family seat is Howick Hall near Lesbury.

Grey Lady Jane. Queen of England for nine days. Born at Bradgate Park, Leicester, in Oct., 1537, she was the eldest daughter of Henry Grey, Duke of Suffolk, her mother being a granddaughter of Henry VII. Of remarkable intellectual attainments, she received a thorough education, and when she had barely reached womanhood astounded with her learning the greatest scholars of the day, including Roger Ascham. The Duke of Northumberland, desiring the aggrandisement of his family, married her in May, 1553, to his son, Lord Guildford Dudley, and then sought to alter the succession in her favour. After the death of Edward on July 6, 1553, she was proclaimed queen, but Mary's friends were too strong for her, and on the 19th she was arrested. She was tried, sentenced to death for high treason, and on Feb. 12, 1554, together with her husband, was beheaded on Tower Hill.

Grey Sir George. English official. Born April 12, 1812, he was the son of an officer, and himself entered the army. In 1839 he retired, and in 1841 was made Governor of S. Australia. In 1845 he went as Governor to New Zealand, and there he did a great work. He left it in 1853 to become Governor of Cape Colony, but returned in 1861, and was again Governor until 1867. From 1877 to 1884, Grey, who was knighted in 1848, was Prime Minister of New Zealand. He wrote accounts of two expeditions along the coasts of Australia in which he took part, and books on the early inhabitants of New Zealand. He died in London, Sept. 20, 1898.

Another Sir George Grey was a Whig politician Born in 1799, a grandson of the 1st Earl Grey, he was elected M.P. for Devonport in 1832, and sat in Parliament until 1874. Having filled minor positions, he was Home Secretary in 1846 to 1852, 1855-58 and 1861-66. He died, Sept. 9, 1882, his baronetcy passing to his grandson, who later became Viscount Grey of Fallodon (*q.v.*).

Grey of Fallodon Viscount. English statesman. Born April 25, 1862, Edward Grey was the eldest son of Lieut.-Col. C. H. Grey and a member of the old Northumberland family. He went to Winchester and then to Balliol College, Oxford. While there, in 1882, he became a baronet on the death of his grandfather, Sir George Grey. At the same time he inherited Fallodon Hall and the family estates.

In 1885 Grey was elected M.P. for Berwick-on-Tweed. From 1892-95 he was Under-Secretary for Foreign Affairs, and during the ten years, 1895-1905, he came to the front as one of the leaders of the Liberal party. In 1905 he became Foreign Secretary, and he held that post until 1916. He was responsible for the policy of Great Britain during the fateful years that preceded the Great War, and it was his lot to conduct the negotiations that ended in his country's participation in the struggle. He remained at the Foreign Office until Dec., 1916, when he resigned with Asquith and other Liberals. He was then made a viscount. Partly owing to failing eyesight Grey took little further part in public life, but occasionally he appeared as a moderate Liberal on the public platform. He died in 1933.

On his two hobbies, fly-fishing and the observation of bird life, he wrote books, including *The Charm of Birds*, and in 1925 he issued his memoirs *Twenty-Five Years*. Later he edited *The Fallodon Papers*. His honours include the Order of the Garter and the Chancellorship of the University of Oxford, to which he was elected in 1928. He was twice married, his second wife, formerly the wife of Lord Glenconner, dying in 1928. In early life Grey was amateur tennis champion.

Greyfriars Name given, from the colour of their dress, to the members of the Franciscan order. The most famous house of the order was in Edinburgh, and the name is still borne by two churches there. The monastery of the Greyfriars was founded in 1436 and destroyed in 1547. In 1614 the church called the Greyfriars was built, and in its churchyard the National Covenant was signed in 1638. It contains many memorials, including one to the Scottish martyrs.

Greyhound Breed of dog. A tall, slenderly built, long-limbed hound, it is smooth-haired and in colour uniformly grey or sandy. Being very fleet it is kept for coursing hares by sight. The old English greyhounds, sometimes used for hunting, were heavier than the modern breed. Rough-haired Scotch, Persian, Afghan and Russian breeds exist and Italian greyhounds are miniature pets.

Greyhound Racing Outdoor sport. It is a form of coursing, the chief difference being that mechanical, not real, hares are used. It began in the United States and since about 1926 has become very popular in Great Britain. The hare is worked by electricity, and as soon as it is set in motion the dogs are released by opening a trap door. The sport affords ample opportunity

for betting, and bookmakers attend the meetings, which are usually held in the evenings, and sometimes on Sundays. In 1933 totalisators on those courses were made illegal. The ban was removed with certain reservations, in 1935.

The first track was opened in England in 1925. There are now some 50, controlled by the National Greyhound Racing Club.

Greymouth Town and port of New Zealand. It stands on the west side of South Island, at the mouth of the Grey River. It is about 100 m. from Christchurch, which is almost directly on the other side of the island. The two are linked by railway and a line connects Greymouth with Westport. There is a good harbour, and in the district coal is mined.

Greywethers Name given to blocks of sandstone found scattered over parts of Wiltshire, and adjacent districts of southern England. Of hard siliceous composition, they are used for various building purposes. The name is probably derived from their appearance, which resembles that of the sheep called the greywether. A local name for them is sarsen or, in Cornwall, sarsden stones.

Grieg Edvard Hagerup. Norwegian composer. Of Scottish descent, he was born at Bergen, June 15, 1843, and studied at Leipzig and Copenhagen. After imbibing the romanticism of Schumann and Mendelssohn, Grieg studied with Gade and became the friend of Nordraak who encouraged his project of establishing a definite Scandinavian idiom of composition. In 1867 he founded the Music Union at Christiania, being its conductor until 1880. He visited Rome and was on several occasions in England. His best known composition is the music to Ibsen's *Peer Gynt*. He died at Bergen, Sept. 4, 1907.

Griffin Imaginary monster. It is usually depicted as combining an eagle's head, bearing pointed ears, clawed front legs and wings, with a lion's body, and hind legs and tufted tail. It originated in Asia and became a decorative motive in classical architecture. The Griffin, the memorial which was erected to replace Temple Bar, between Fleet Street and the Strand, in 1880, was suggested by the heraldic supporters of the city's coat of arms.

Griffith Arthur. Irish politician. Born in Dublin, March 31, 1872, he became a printer and journalist. In 1899 he founded *The United Irishman*, a weekly journal which he edited. In 1904 appeared his pamphlet *The Resurrection of Hungary*. He was one of the founders of the Sinn Fein movement, and in 1907 his paper took that name, although later it was changed to *Eire*. He supported the Irish volunteers, but took no part in the Easter Rising of 1916, though he was, nevertheless, interned. Imprisoned again in 1918, on his release he was elected Vice-President of the Irish Republic, and was again imprisoned for a short time. During De Valera's absence in America, 1919-20, he was head of the Republic and had a prominent share in the final settlement of the Irish question in 1921. He was then elected head of the Irish executive, but died suddenly, Aug. 12, 1922.

Griffith David Llewelyn Wark. American film producer. Born in Kentucky in 1880, in 1908 he was acting and directing the Biograph Film Company. Later, as an independent producer, he was responsible for *The Birth of a Nation, Intolerance, Way Down East*, etc. His films always expound some moral or propagandist principle.

Griffon Breed of dog. Used for hunting game birds, it is somewhat taller than a setter and has a rough coat of a grizzly, liver colour. The Brussels griffon, or Griffon Bruxellois, is a Belgian toy dog of terrier extraction, introduced into Britain in 1895. It is large headed, black-eyed and deep-chested, with harsh, wiry liver-coloured coat and black-moustached lips. Small sizes have a maximum weight of 5 lb., but there are larger ones weighing up to 10 lb.

Grimaldi Joseph. English clown. Born in London, Dec. 18, 1779, he came of a family of clowns and dancers, and began his theatrical career at Drury Lane, when an infant. Afterwards he played at Sadler's Wells and continued to amuse audiences in London and the provinces until 1828. He died May 31, 1837.

Grimm Name of two brothers, German philologists and folk-lorists. Both were born at Hanau, in Hesse-Cassel, Jakob Ludwig Karl on Jan. 4, 1785, and Wilhelm Karl on Feb. 24, 1786. Both studied law at Marburg, and they remained together all their lives. They obtained posts in the library at Cassel, and Jakob was librarian and lecturer at Göttingen from 1829 to 1837. In 1840 both received professorships at Berlin.

The brothers wrote independent works, but they are best known for that in which they collaborated, *Kinder-und Hausmärchen*, 1812, 1814 and 1822. This was immediately successful and has been translated into many languages, becoming immortalised in English as *Grimm's Fairy Tales*. Jakob Grimm produced a valuable *German Grammar*, 1819; and *German Mythology*, 1835; his *Geschichte der deutschen Sprache*, 1848, was a painstaking and suggestive study of German philology. He died Sept. 20, 1863, and his brother Dec. 16, 1859.

In philology the law that regulates the change of consonants between one language and another is called **Grimm's law**. Thus d in English very often becomes t in German.

Grimsby County borough and seaport of Lincolnshire. It is 15 m. from Hull and 155 from London, and stands near the mouth of the Humber, being reached by the L.N.E. Rly. Grimsby is the largest fishing port in the world, and its docks have been extended and equipped to deal with the enormous quantity of fish which is landed here and sold in the large fish market. There is also a trade in butter, coal, timber and other commodities. The docks belong to the L.N.E. Rly. and the port includes those at Immingham. Pop. (1931) 92,463.

Grimspound Ancient British stronghold on Dartmoor, Devon. Situated 4½ m. S. of Chagford, it comprises two concentric irregularly oval walls of coursed granite, 3½ ft. apart, which were originally 8 ft. high; there are three entrances and the whole covers 4 acres. Enclosing 24 ruined hut circles, it was a defence for the villagers and their livestock against animal and human foes.

Grindelwald Pleasure resort of Switzerland. It stands in a valley in the Bernese Oberland, 13 m. from Interlaken. The valley is 13 m. long and a little river flows through it. Grindelwald is a popular tourist centre, as near it are the Wetterhorn, Schreckhorn, Eiger and other Alpine peaks, as well as two noted glaciers.

Grinnell Land District of the Arctic regions, part of Canada. It is the eastern part of Ellesmere Island and was discovered in 1854. Coal has been found here, and on it are wolves, foxes and other animals. The name is that of one of its discoverers.

Grinstead East. Market town of Sussex. It is 30 m. from London and is reached by the S. Rly. Here is Sackville College, an almshouse erected by an Earl of Dorset in the 17th century. Pop. (1931) 7900.

West Grinstead is a village 18 m. away. It also has a station on the S. Rly.

Griqualand Two districts, East and West, of Cape Province, S. Africa. Griqualand East is in the north-east of the province, to the south of Natal. Kokstadt is the chief town and the area is 6600 sq. m. Griqualand West is on the western side of the Orange Free State, in the centre of the province and north of the Orange River. In it diamonds (first discovered 1867) are found, and Kimberley is the chief town. Griqualand East became British in 1875 and Griqualand West in 1871. The name is that of the Griquas, a race descended from Dutch fathers and native mothers.

Grizzly Largest American bear (*Ursus horribilis*). It is found from Alaska, through the Rocky Mountains, to Mexico and is still common in British Columbia. It has yellowish-brown fur, sometimes cinnamon coloured, and is formidable when attacked or hungry. Bears weighing 1400 lb. are known to have existed.

Groat Old English silver coin of the value of fourpence. Originally issued in the reign of Edward III., it was in circulation until the time of Charles II. In 1836 a silver fourpenny piece was issued, but it was discontinued 20 years later.

Grocer Retail dealer in tea, coffee and other household goods. It meant originally a wholesaler, or a dealer *en gros*. In Great Britain the grocers have a strong trade organisation. They conduct the Institute of Certificated Grocers at 50 Doughty St., London, W.C. 1, and a weekly paper, *The Grocer*, is published in their interests. They hold an annual conference.

The Grocers' Company is one of the 12 great livery companies of London. The hall is in Princes St., London, E.C. 2, and much of its large income is devoted to educational and charitable purposes. Oundle School is supported by the company, which also supports and maintains a school at Hackney.

Grodno City of Poland. It stands on the Niemen, 160 m. from Warsaw and 95 from Vilna, and is a manufacturing and trading centre. Grodno was taken from Poland by Russia in 1796, and remained Russia's until 1918. Lithuania laid claim, but the Poles secured it in 1923. Pop. 61,600.

Groin In architecture the angle formed by the crossing of two vaults or arches. It is seen in its fullest development in Gothic buildings of the Middle Ages. In churches of this period the groined vaulting is one of the most beautiful features of their architecture.

Grolier Jean. French book collector. Born at Lyons in 1479, he was French Ambassador to Milan and Rome, and was appointed treasurer to Francis I. in 1537. He was a great collector of books and an authority on the art of book binding. His library of 3000 volumes was sold ten years after his death in 1565. Some of them are now in the British Museum, and some in the Bibliothèque Nationale, Paris.

Groningen Town and port of the Netherlands, and capital of the northern province of the same name. There is a university founded in 1614, for which new buildings have been erected. The town has some manufactures and is a printing centre. Its markets are important, and it has some shipping, since small vessels can reach its harbour. During the Great War members of the British force who escaped from Antwerp were interned here. Pop. (1932) 107,158.

Groote Schuur Residence of the Premier of S. Africa. It is about 4 m. from Capetown, its station being Rondesbosch. The house was built by Cecil Rhodes, who lived here. After his death it became national property. There is a memorial to him in the grounds.

Grosbeak Indefinite name of various stout-billed birds. Most of them are of the finch and weaver bird families. Except the hawfinch, sometimes called the common grosbeak, only stragglers reach Britain, *e.g.*, the pine grosbeak and the scarlet grosbeak or rose finch. Virginian grosbeaks, or cardinal birds, are handsome songsters.

Grossmith George. English actor and entertainer. Born Dec. 9, 1847, he was a reporter at Bow Street, London, before he began his career as an entertainer in 1870. In 1877 he first appeared in Gilbert and Sullivan Opera, *The Sorcerer*, and later, at the Savoy, he took leading parts in eight others. In 1889 he returned to his old profession of entertainer. He died March 1, 1912.

With his brother, **Weedon Grossmith** (1853-1919), who made a name both as an actor and an artist, he wrote *The Diary of a Nobody* for *Punch*. His son, George Grossmith (1874-1935) became an actor and played a large part in the popularising of revues. He was also a theatrical manager, and advisory director of programmes to the B.B.C.

Grosvenor Name of a family holding three British peerages. A baronetcy was given to a member of the family in 1622, and Sir Richard Grosvenor, 7th baronet, was, in 1761, made Baron Grosvenor; in 1784 he became Earl Grosvenor and Viscount Belgrave. He died in 1802 and was succeeded by his son Robert, who in 1831 became Marquess of Westminster. Hugh Lupus, the 3rd marquess, was created Duke of Westminster in 1874.

In 1857, Lord Robert Grosvenor, a son of the 1st Marquess of Westminster, became Baron Ebury. Lord Richard Grosvenor, son of the 2nd marquess, was, in 1886, made Baron Stalbridge.

The Duke of Westminster owns valuable property in the west end of London, known sometimes as the Grosvenor estate. It includes Grosvenor Square, Grosvenor Street and the neighbourhood. Grosvenor House, long his London residence, has been pulled down and the site is occupied by shops and flats, which are owned by a public company.

Grote George. English historian. Born near Beckenham, Nov. 17, 1794, he was educated at Charterhouse School. When 16 years of age he entered his father's bank, with which he was connected until 1843. He continued his studies, however, reading especially the classics and works on economy and philosophy. In 1832 he was elected M.P. for the city of London, and as a radical he sat

in Parliament until 1841. He was active in establishing London University and was interested in philanthropic and educational work of other kinds. Grote is known, however, as the historian of Greece. His *History of Greece* in 12 volumes was long a standard work for students, and is not yet entirely superseded. He died June, 18, 1871.

Grotius Hugo. Dutch jurist. Born at Delft, April 10, 1583, he studied at Leyden and practised as a lawyer. His remarkable abilities attracted attention, and he was made Pensionary of Rotterdam and Historiographer of the United Provinces. In 1619, having taken some part in politics, he was put in prison, but in 1620 he escaped to France and lived for some years in Paris. In 1634 he entered the Swedish service, and was sent to Paris as ambassador. He died Aug. 29, 1645.

Grotius is known as the author of *De Jure Belli et Pacis* (*Concerning the Law of War and Peace*), a masterly work, published in 1625, which laid the foundations of international law. In 1915 a Grotius Society was founded in London for the study of international law.

Grotto Underground chamber, either natural, artificially enlarged, or entirely artificial. Among natural grottos is the picturesque Blue Grotto on the island of Capri, which has been hollowed out by the sea and extends 175 ft. Near Naples is the Grotto del Cane, remarkable for its vapours, and in the Greek island of Antiparos, one of the Cyclades, there is a grotto with a fine stalactite formation.

Grouchy Emmanuel. French soldier. Born in Paris, Sept. 5, 1766, he entered the army. He helped to suppress the rising in La Vendée in 1793, and took part in the expedition to Ireland in 1798. He served with distinction in Italy and against Austria. He went with Napoleon to Russia and was with him during the retreat from Moscow, and at the Battle of Leipzig. He led the beaten French armies back to Paris after Waterloo, but on the return of the Bourbons escaped to the United States. In 1819 he returned to France, and in 1830 regained his rank as a marshal. He died May 29, 1847.

Ground-hog *See* WOODCHUCK.

Ground-Nut Fruit of an annual leguminous herb (*Arachis hypogaea*). A native of S. America, it is now cultivated in most warm countries for its valuable oil. The flower stalk twists downward and buries the immature fruits in the soil, where they ripen, becoming wrinkled pods which contain one or two seeds. These are called monkey or pea nuts in Britain, and pea nuts in the United States.

Ground Rent Name given to the rent paid for the ground on which a house or other building stands, as distinct from the rent paid for the building itself. Ground rent is paid for all leasehold land, and the owner who receives it is called the ground landlord. Freehold land does not pay ground rent.

Groundsel Common herbaceous plant (*Senecio vulgaris*) of the order Compositae. Found in all parts of the British Isles, it has deeply cut leaves and small yellow flowers succeeded by a white fluffy seed head. A sprig of groundsel in the cage is greatly appreciated by canaries and other cage birds.

Ground-squirrel *See* CHIPMUNK.

Group Captain Rank in the Royal Air Force. It is below air commodore and above wing commander. It corresponds to that of colonel in the army and captain in the navy.

Grouse Name of a family of game birds. In Great Britain it is used for the red grouse or moor fowl (*Lagopus scoticus*), a form of the willow grouse. The grouse is preserved for shooting, and in Scotland and the north of England large moorland areas are devoted to it. The season lasts from Aug. 12 to Dec. 10. The bird is a table delicacy and weighs from 20 to 30 oz. The hen bird lays from 7 to 10 eggs. Other species of grouse are the wood grouse, or capercaillie, the snow grouse, or ptarmigan, the spruce or Canadian grouse and the sage grouse. The sand grouse belongs to another family.

Groyne Low wall, built on the seashore and running seaward to check the lateral drift of sand and shingle. It is made of masonry, concrete or heavy timber bolted to piles. Sand and shingle tend to accumulate on one side of the groyne, and so raise the general level of the foreshore, thus forming a barrier against the encroachment of the sea. Groynes are also constructed on rivers to regulate the flow of water and to prevent erosion of the banks.

Grub Street Name of an old London street. It ran from Fore Street to Chiswell Street and since 1830 has been called Milton Street. Here, in the 18th century, literary hacks of the poorest kind are said to have made their homes. Since that time the term has been used to denote writers who eke out a precarious living.

Grundy Mrs. Personification, in Great Britain, of propriety, respectability and convention. "What would Mrs. Grundy say?" was the frequent remark of Dame Ashfield, a character in *Speed the Plough*, a play written by Thomas Morton in 1798. It became a catchword and still persists.

Gruyère District of Switzerland. It is in the canton of Freiburg, around the little town of Gruyères. It gives its name to a kind of cheese made here.

Guaco Name of a plant of the order *eupatoriaceae*. It grows in S. America, where it is believed that any one who eats it cannot be harmed by snake bite.

Guadalajara City of Mexico. It is 280 m. from Mexico City and is connected by railway with the capital and the coast. The chief building is the cathedral, an enormous and magnificent structure, dating from the early 17th century. There is a university. The city is a prosperous manufacturing and trading centre. Pop. 143,400.

An older **Guadalajara** is a town of Spain, 33 m. from Madrid.

Guadalquivir River of Spain. It rises in the mountains in the south of the country, and flows, mainly in a westerly direction, to the Atlantic Ocean, which it enters about 20 m. north of Cadiz. It is navigable as far as Seville, while barges can reach Cordova. Its length is 370 miles.

Guadeloupe Two islands of the W. Indies belonging to France. Called Grande Terre and Basse Terre, they form part of the Lesser Antilles and lie between Antigua and Dominica, being divided by a narrow channel. The two cover 522 sq. m.,

but with their dependencies, five smaller islands, the total is 688 sq. m. Coffee, sugar, bananas, cocoa and other tropical products are exported, as is rum. Basse Terre is the capital, but Pointe-à-Pitre is the chief port and much the largest place. The affairs are managed by a governor and a council. Pop. (1932) 267,407.

Guaiacum *See* LIGNUM VITAE.

Guam Island of the Pacific Ocean. It belongs to the United States and is the largest of the Marianas Islands. It is 32 m. long and covers 206 sq. m. Agana is the capital and Pita the chief port. Coconuts, copra, sugar and other tropical products grow, and there are large forest areas. Guam was taken from Spain in 1898. Pop. 18,509.

Guanaco Animal found in S. America. It is really a wild llama and lives in large herds in the mountains. It is about 4 ft. high at the shoulder.

Guano Accumulated excrement of sea-fowl. Deposits 50 or 60 ft. thick, found on islands of Peru, have been utilised for manure since about 1841. It owes its value to its content of ammonia and phosphorus. The deposits are now much depleted, but have been supplemented by others in W. Africa.

Guarantee Promise or undertaking to make good any default by another person. An overdraft at a bank is often guaranteed. In such a case the person guaranteeing it will make good any loss the bank may sustain through the failure of the borrower. Similarly, debts owing to individuals and firms are sometimes guaranteed.

Sometimes a guarantee is required from a person who is appointed to a position of trust, a cashier for instance. To give such, guarantee associations exist. The employee, or employer, makes an annual or other payment to such a society which, in return, will make good any loss the employer may suffer through the employee's misdeeds.

Guardian Person who looks after another, usually a minor or a person of weak intelligence. A child's natural guardian is the father or mother, but when they are dead one or two guardians are usually appointed by will. The powers of the guardian are very much the same as those of the parent. Sometimes, when disputes arise, a guardian is appointed by the Court of Chancery, and to this court a guardian can appeal if in a serious difficulty with his ward.

Another kind of guardian was the person elected in England and Wales to look after the administration of the Poor Law. In each union of parishes there was a Board of Guardians. They were abolished in 1929 and their duties transferred to Public Assistance Committees appointed by the county and county borough councils.

Guards Name given to military units with special physical and other qualifications. The first guards were the picked soldiers who were selected for the honourable duty of guarding the person of the king or leader. The Roman emperor had the Praetorian Guard and the Kings of France had regiments of guards. Napoleon had his old and his young guard, and there were guards in other armies, notably the Prussian.

In England, apart from the Yeomen of the Guard, guards first appeared in the time of Charles II. Regiments of them were then formed, and these, soon divided into horse and foot, are the ancestors of the guards of to-day. There are two regiments of horse guards in the British Army, the Life Guards and the Royal Horse Guards; they form the sovereign's escort on ceremonial occasions. Of foot guards there are five regiments, Grenadiers, Coldstream, Scots, Irish and Welsh. Together they form the brigade of guards, with a depôt at Caterham, Surrey.

Guatemala Republic of Central America. It lies to the south-west of Mexico, and touches both the Atlantic and the Pacific Oceans, although it has only a short coastline on the former. Much of the area is mountainous and there are some volcanoes, whilst earthquakes are frequent. The area is 42,353 sq. m. Guatemala is the capital. Other places are Quezaltenango, Coban and Zacapa. The chief ports are Puerto Barrios and Livingston on the Atlantic; and San José and Champerico on the Pacific. The chief products are coffee and sugar, bananas and other tropical plants and fruits. From here the United States gets most of its chicle from which chewing gum is made. There are considerable forests, especially of mahogany and dyewoods, rich deposits of minerals, though little is mined.

Guatemala is governed by a president elected for six years, a national assembly, elected by universal suffrage for four years, and a council of state. The people are chiefly Roman Catholics. Military service is compulsory. There is a central bank, and the unit of currency is the quetzal equal to the American dollar. The population is about 2,000,000, of whom over half are Indians. In the land are many remains of Maya civilisation.

Guatemala was a Spanish possession for about 300 years before 1821 when it became free. From 1821 to 1847 it was part of the confederation of Central America; it then became an independent republic. Early in the 20th century the United States interfered to put down civil war, which had been raging for some years.

Guatemala City of Central America, the largest and most important capital of the republic of the same name. It is 80 m. from San José, its port on the Pacific, and is also connected by railway with the Gulf of Honduras on the Atlantic. There have been four cities of this name, three being destroyed by earthquakes, the third in Jan., 1918. The new city is laid out on spacious lines about 12 m. south of the old site. There are some manufactures and a considerable trade. Pop. 165,928.

Guava Small tree that grows in the W. Indies. It bears white flowers and the fruit, shaped somewhat like a pear, is edible. It has an acid taste, but is sweeter than the lemon. It is made into jelly and into a kind of cheese.

Guayaquil City and seaport of Ecuador. It stands on the estuary of the River Guayas and is 150 m. from Quito, the capital of the republic. The industries are shipping, for which there is a good harbour, and a number of manufactures. It is the terminus of the railway line to Quito. Pop. (1932) 120,000.

The **Gulf of Guayaquil** is an opening of the Pacific Ocean. It is 100 m. wide at the mouth and contains the island of Puna.

Gudgeon Genus of small fresh water fish (*gobio fluviatilis*). Common throughout Europe, it is found in rivers and streams of the British Isles. The angles of the mouth have barbels like the carp, to which

it is related. The flesh has a delicate flavour. It is very easily caught by anglers.

Guedalla **Philip.** British author. Born March 12, 1889, he was educated at Rugby and Balliol College, Oxford, where he was President of the Union. He became a barrister and was legal adviser to certain government departments during the Great War. He won a reputation by his historical writings, notably the *Partition of Europe*, 1715-1815, 1914, and *The Second Empire*, 1922, and increased it by his sketches and essays, such as those in the volumes, *Supers and Supermen*, 1920, and *A Gallery*, 1924, and by his biography of Lord Palmerston, 1926. In 1931 his life of the Duke of Wellington appeared. In 1933 he published *Letters of Queen Victoria and Gladstone*, and in 1934 *The Hundred Days*.

Guelder Rose (*Viburnum opulus*). Small tree of the honeysuckle order. A native of Britain, it is distributed in temperate and colder northern regions. Its roundish clusters of small creamy flowers are ringed by larger white sterile corollas, and are succeeded by scarlet fruits. It grows to a height of 7 or 8 ft. A cultivated variety, with all flowers sterile, is called the snowball tree.

Guelph City of Ontario, Canada. It is 46 m. from Toronto, on the C.N.R. and C.P.R. There are some manufactures and a trade in agricultural produce. Here is the Ontario Agricultural College. Pop. 21,075.

Guelph **Family.** *See* WINDSOR.

Guernsey One of the Channel Islands. It is 9 m. long and covers 24¼ sq. m. being the second largest of the group. St. Peter Port is the capital; St. Sampson's is next in size, the others being villages only. There are some old churches and manor houses in the island, as well as prehistoric remains. The chief industry is market gardening, fruit, flowers, and vegetables being largely grown. Its breed of cattle is famous and fishing is carried on. Many persons earn a living by catering for the numerous visitors. There is a regular service from Southampton both by air and sea.

The island has its own government under the lieutenant-governor, and bailiffs, and for this purpose includes Herm and Sark. The royal court is the court of justice, and the legislature is called the States. It consists of both elected and official members. Guernsey is in the diocese of Winchester. Pop. 38,315.

Guerilla Spanish word meaning a little war and used for irregular warfare. Guerilla warfare consists in attacks upon a regular army by bands of irregular troops, usually the inhabitants of an invaded country. There was a good deal of guerilla warfare when the English troops were in the Spanish Peninsula between 1808-1812. The Boers resorted to guerilla warfare in 1901-02, and in the 20th century the French and Spanish forces in Morocco suffered a good deal from it.

Guesclin **Bertrand du.** Constable of France. Born in Brittany in 1320, he made a name for himself by his exploits in fighting the English in Brittany. In 1364 he defeated the King of Navarre's army at Cocherel, and four months later he was taken prisoner by the English at Auray. On being set free he took part in the war against Pedro the Cruel in Spain, and in 1367, at the battle at Navarette, he was again taken prisoner by the Black Prince. He captured Pedro in 1369, however, and in 1370 was made constable of France by Charles V., later recovering much territory from the English. He died July 13, 1380.

Guest **Sir Josiah John.** Welsh ironmaster. Born Feb. 2, 1785, at Dowlais, Glamorganshire, he was the grandson of John Guest, founder of the Dowlais Iron Works. Of these works he became manager in 1815 and made them the largest of their kind in Great Britain. He was M.P. for Honiton, 1826-31 and for Merthyr Tydvil, 1832-52, and was made a baronet in 1838. He died Nov. 26, 1852. His eldest son was made Baron Wimborne, and one of his grandsons, Frederick Edward Guest (b. 1875), is a soldier and politician. The Dowlais Iron Works now belong to the firm of Guest, Keen and Nettlefolds.

Sir Josiah Guest married Lady Charlotte, daughter of the Earl of Lindsey. She published the collection of Welsh tales called *The Mabinogion*. She married a second time, and died Jan. 15, 1895.

Guiana District in the north-east of S. America. It is divided into three portions, belonging to Great Britain, France and the Netherlands. To the south is a district belonging to Brazil sometimes called Brazilian Guiana. Its area is about 175,000 sq. m.

Guiana **British.** British crown colony. It is on the north coast of the continent and covers 89,500 sq. m., its neighbours being Venezuela, Brazil and Dutch Guiana. It is largely forest, only a small portion of the soil being cultivated. Georgetown is the capital. The three rivers are the Berbice, Essequibo and Demerara. Sugar, rice and other tropical products are grown, and the exports include timber and balata. The colony is under a governor and an executive council; since 1928 there has been a legislative council. English law prevails. English and American coins circulate. Having been a Dutch possession for many years, this part of Guiana was taken by Great Britain in 1796 and ceded to her in 1814. Pop. (1931) 318,312.

Guiana **Dutch.** Colony of the Netherlands. It is on the north coast of South America between British and French Guiana, with Brazil to the south. It covers 54,300 sq. m. and is known also as Surinam. Paramaribo is the capital. Pop. (1931) 155,888.

Guiana **French.** French colony. It lies on the north coast with Dutch Guiana on the west and Brazil to the east and south. At Maroni there is a penal settlement. Sugar, rice and other tropical products are grown and there are immense areas covered with timber. The colony is under a governor and a council. It sends a deputy to the chamber in Paris. Cayenne is the capital. The area is 34,740 sq. m. Pop. (1931) 22,169.

Guides **Corps of.** Corps in the Indian Army. It was first raised in 1846 for service on the frontiers by Sir Henry Lawrence, and was called the Queen's Own Corps of Guides. The corps includes both cavalry and infantry, and its headquarters are at Mardan. The guides have a fine record of service, which is recorded in *The Story of the Guides*, by Sir G. J. Younghusband.

An earlier corps was a force in the French Army in the time of Napoleon.

Guienne Name of one of the old provinces of France. It was in the south-

west of the country and was at first part of Aquitaine. It soon became a separate province with Bordeaux as its capital and from 1154 to 1451 was an English possession. After its recovery by France it was united with Gascony.

Guilbert Yvette. French lyric artiste. Born in Paris in 1869, she worked for a dressmaker and on a newspaper. In 1893 she appeared on the stage in Paris, and was for many years the chief French actress in her own line. She appeared in London and other capitals, and passed some time in the United States. She has written two novels, volumes of autobiography and a book on how to sing a song, which has been translated into English. In private life she is the wife of Dr. M. Schiller.

Guild Association of men in a common employment or cause. The word means a payment, and comes from the Anglo-Saxon *geld*. The members subscribed to the guild, the money being used for the assistance of the poorer brethren, also for feasts and Masses for the dead. The earliest guilds appeared in the 12th century, and in a short time, as trade and industry grew, they became very powerful. In some cases they secured a charter, and became the council or governing body of the town: this accounts for the use of the word guildhall for a town hall.

Other guilds remained craft guilds, or associations of workers in the same trade. These controlled the trade, regulated the supply of apprentices and acted very much as modern trade unions do. The guilds began to decay about the 16th century, and disappeared with the coming of the industrial revolution. In London, however, the guilds remain as the city livery companies, of which there are 77, although their original functions have ceased. In the 19th century the word was revived for a voluntary association of workers and also for a religious association. Guilds were established, for instance, in the building trade.

Guildford City and market town of Surrey. It is 29 m. from London and is reached by two branches of the S. Rly. The Wey flows past the town. There are remains of the castle, including the keep and the gatehouse in which is a museum. Abbot's Hospital, an almshouse, founded by George Abbot, Archbishop of Canterbury, is also worthy of mention. In 1927 Guildford was made the seat of a bishop and a new cathedral has been planned. There is an agricultural trade; flour mills and breweries are among the chief industries. The town has extensive caves which have been lit and opened to the public. Pop. 30,800.

A small town of Western Australia is called **Guildford**. It is 9 m. from Perth. Pop. 2500.

Guildhall Hall erected by a mediaeval guild to house its meetings. As in many towns the guilds and the governing body of the town were identical, guildhalls became the headquarters of the municipal corporations, and this word is still used for some of them. Of existing guildhalls the finest is the one in London, the headquarters of the city corporation. It is at the end of King Street, E.C., and was built in the 15th century. It was damaged in the Great Fire, since when much restoration work has been done. A thorough restoration was carried out in 1864. The chief room is the Great Hall, in which the city banquets are held. Connected with the Guildhall is a library and reading-room, an art gallery and a museum. Additional buildings for the work of the corporation, including a court room, were erected in the 20th century. The Guildhall School of Music is in John Carpenter Street, London, E.C. 4.

There are guildhalls in Exeter, York, Rochester and other cities and towns, and some modern buildings, the one at Nottingham, for instance, have been given this name.

Guild Socialism School of Socalist thought which became prominent after 1910 in Great Britain. Its main idea is one of self-government in industry and the organisation of the economic life of a community on a functional basis. In 1915 the National Guilds League was formed by G. D. H. Cole and others, and in the course of the war, the shops' stewards movement was begun, and the workers gained more control. After the war Guild Socialism spread, and the National Building Guild executed many important housing contracts. The National Guilds League is now dissolved, but some of its ideas have become embodied in the Socialist scheme, notably the belief that power with responsibility should be as widely diffused as possible throughout the mass of the people.

Guillemot Genus of long-billed, short-tailed diving birds (*Uria*) of the auk family. They are abundant on rocky British coasts in the breeding season, being there represented by the common *U. troile*, and the black guillemot. Both lay eggs on the cliffs. The birds are found also in the northern parts of Europe.

Guillotine Instrument for decapitating criminals. It was adopted in France during the French Revolution and was named after Ignace Guillotin, a physician who recommended its use to the Assembly in 1789. It consists of an upright frame in which is suspended a heavy triangular blade which, when released by a cord, falls upon the neck of the victim.

The word is applied also to various types of machine used for cutting paper and cardboard.

Guinea English gold coin. It was first minted in 1663 from gold from the Guinea coast and was then worth 20s. In 1717 its value was fixed at 21s. Coins for five and two guineas were minted; and half and quarter guineas were issued. In 1817 the minting of the guinea ceased, but professional fees are still usually paid in guineas.

Guinea Name given in the 15th century to much of W. Africa. The Guinea coast lies between the Senegal River and Cape Negro, that is, along the coast of the great Gulf of Guinea.

The **Gulf of Guinea** is part of the Atlantic on the west coast of Africa. In it are a number of bays including the Bights of Benin and Biafra.

Guinea **French.** French colony in W. Africa. It is situated between Sierra Leone and Portuguese Guinea, its remaining boundaries being other French possessions, and has a coast line on the Atlantic Ocean. It covers 89,436 sq. m. Conakry is the capital and chief seaport. Rubber, palm oil, rice, cotton, bananas and coffee are the chief products. Many cattle, sheep and goats are kept. The colony has a railway line from Conakry to the Niger, and some good roads. Pop. (1931) 2,236,968.

Guinea **Portuguese.** Portuguese colony in W. Africa. It lies between Senegal and other territories belonging to France, with a coastline on the Atlantic Ocean. Its area is 13,944 sq. m. It includes the archipelago of

Bijagoz and the island of Bolama. Bolama, on the island, is the capital, and Bissau is the chief port. The colony exports rubber, ivory, oil and hides. Pop. (1930) 364,929.

Guinea Spanish. Colony of Spain in W. Africa. It consists of Rio Muni on the mainland and the islands of Fernando Po, Annobon, Corisco, and Great and Little Elobey. The capital is Santa Isabel (pop. 8345) on Fernando Po. There is very little export trade. The area is 10,036 sq. m. Pop. 140,000.

Guinea Fowl Game bird (*Numida meleagris*). It has a short bill, a red wattle and a fleshy casque. The Portuguese brought it from Africa to Europe in the 16th century. It lives in large flocks in Africa and parts of Europe. The bird is used for the table and its eggs are eaten. It was a delicacy to the Greeks and Romans.

Guinea Pig Small domesticated rodent. It is a descendant of the cavy of Peru, and was introduced from Guiana into Europe in the 16th century. There are many varieties. The animals, which are very prolific, are kept as pets and are much used by scientists for experiments.

Guinevere Wife of King Arthur. According to the story as told in the *Morte d'Arthur*, she was a daughter of the King of Cameliord. She married Arthur, but was unfaithful to him and accepted the love of Lancelot. This led to the break up of Arthur's court and the death of the king. Guinevere then went into a nunnery at Amesbury where she died. In other versions of the story the queen's lover was Modred.

Guinness Name of an Irish family of brewers. Arthur Guinness, who owned a brewery at Leixlip in the 18th century, transferred it to Dublin, where it became famous for its stout known as porter. His grandson, Benjamin Lee Guinness (1798-1868), greatly enlarged the business, which in 1886 became a limited company. He was made a baronet in 1867. His eldest son, Sir Arthur Edward Guinness, was, in 1880, created Baron Ardilaun. He died in 1915 without sons. Another son, Edward Cecil Guinness, was made Earl of Iveagh in 1919.

Guisborough Urban district and market town of Yorkshire (N.R.). It is 9 m. from Middlesborough, with a station on the L.N.E. Rly. The industries are connected with the iron ore deposits near. The town has ruins of a priory. Pop. (1931) 6006.

Guiscard **Robert.** Norman soldier. Born in Normandy about 1020, he was one of the many sons of Tancred of Hauteville, some of whom had captured Apulia from the Greeks. Following his elder brothers to Italy about 1046, in 1057 he succeeded as Count of Apulia, being recognised by the Pope as duke. Invading Greece, he won the Battle of Durazzo in 1081, then, returning to Italy to the aid of Pope Gregory VII., he drove the emperor, Henry IV., from the country. He died in July, 1085.

Guise Town of France. It is on the Oise, 30 m. from Laon and is a manufacturing centre. It is chiefly famous, however, for giving its name to a family that played a large part in the affairs of France. The chief building is the castle. Pop. (1931) 7,370.

Early in the Great War Guise was occupied by the Germans, and on Aug. 29-30, 1914, there was a battle near here between the French and the Germans. The French 5th Army, led by Lanrezac, stopped in its retreat and turned on the pursuing Germans, who were driven back across the Oise, but the arrival of reinforcements to them, and the failure of support to the French, turned the tide, and on the 30th, Lanrezac broke off the engagement and continued his retreat. In the autumn of 1918 the Germans were driven from Guise.

Guise Famous French family. The countship of Guise was held by a junior branch of the ruling family of Lorraine. **Claude** (1496-1550), second son of Rene II., Duke of Lorraine, inherited it and the Duchy of Aumale in 1508, and in 1513 married Antoinette de Bourbon, a member of the royal family. He fought with distinction in several campaigns, and in 1526 became Governor of Champagne and Duke of Guise.

The 2nd duke was **François** (1519-63) who, after a distinguished career as a soldier, became, under Francis II., the virtual ruler of France. His brother, **Charles** (1524-74), Archbishop of Rheims and a cardinal, shared his brother's power.

Henri, the 3rd duke (1550-88), was, like his father, a soldier, and played a conspicuous part in the massacre of S. Bartholomew, 1572. He conspired against Henry III., who had him murdered Dec. 25, 1588.

These dukes and their relatives were the Guises who were so prominent in French history in the 16th century. The later dukes were less important. Henri, the 5th duke, was Archbishop of Rheims before he succeeded to the title. The last duke was François who died in 1675. A member of the family, Mary, married James V. of Scotland, and was the mother of Mary, Queen of Scots.

Guiseley Urban district of Yorkshire (W.R.). It is 2 m. from Otley, on the L.M.S. Rly., and the woollen industry is the main occupation of the inhabitants. Pop. (1931) 5607.

Guitar Musical instrument with a long neck and fretted fingerboard. Its music is written an octave higher than it is sounded and on the treble staff. The guitar is Spanish, and possibly a descendant of a bowed instrument.

Guitry **Lucien Germain.** French actor. Born in Paris in 1860, he first appeared on the stage in *La Dame aux Camélias*, 1878. Then, after some years in St. Petersburg, he returned to Paris where he was a producer at the Comédie Française and manager of the Renaissance Theatre. He was the foremost French actor of his time. He died June 1, 1925.

His son **Sacha** was born at St. Petersburg, Feb. 21, 1885, and made a name both as actor and as dramatist. Among his successful plays are *Le Page, Nono, La Clef, Deburau, Jacqueline* and *Mozart*. His wife was the actress Yvonne Printemps.

Guizot **François Pièrre Guillaume.** French scholar and politician. Born at Nimes, Oct. 4, 1787, he was educated, being a Huguenot, in Geneva. Later he studied law in Paris and began to write. In 1812 he was made Professor of Modern History at the university, and in 1814 he entered the public service as Secretary of the Interior. In 1830 he entered the Chamber of Deputies, and was made a minister. At this time he did a great work for education, establishing schools all over the country. In 1840 Guizot was sent as Ambassador to London, but he soon returned

to France as Foreign Minister and then Prime Minister to Louis Phillipe. His conduct of affairs, both at home and abroad, was far from successful and very unlike the liberal ideas he had advocated in his early days. In 1848 he shared his master's fate and escaped to England. He returned in 1849 and gave his concluding years to writing. He died Sept. 12, 1874.

Guizot's writings are chiefly historical and some deal with the history of England, of which country he was a great admirer. His *History of Civilisation in Europe*, long a classic, is perhaps the best.

Gujarat Town of India. It is in the Punjab, 75 m. from Lahore and is the capital of Gujarat district. It is also a manufacturing town. Here, on Feb. 21, 1849, Lord Gough defeated an army of Sikhs, 60,000 strong. The victory led to the capture of Gujarat, then one of their fortresses, and the surrender of the Punjab.

Gules One of the seven heraldic colours. It means red and is shown on heraldic drawings by vertical lines drawn closely together.

Gulf Stream Oceanic current in the North Atlantic. A warm north current, driven by the N.E. trade winds, divides at the W. Indies, one part passing through the Caribbean Sea and the Gulf of Mexico, the other skirting the N.E. shores of the islands. Near Florida, these currents meet and flow N.E. as the Gulf Stream, at first 30 m. wide and with a speed of 4 knots. It gradually becomes shallower and cooler, and where it encounters the prevailing west winds of the N. Atlantic, spreads out into the Gulf Stream drift which reaches Great Britain and W. Europe, where, still warmer than the surrounding water, it raises the temperature of W. Europe considerably.

Gulfweed Coarse, olive-brown sea-weed (*Sargassum bacciferum*) of the bladderwrack family. It grows in the Gulf of Mexico and is carried northwards by the Gulf Stream, sometimes reaching British waters and even Malta. It collects in the Atlantic, in what is known as the Sargasso Sea, where Columbus saw it in 1492, and covers enormous areas. Its branches bear stalked berry-like air bladders which keep it afloat.

Gull Family of web-footed sea birds, *Larinae*. The upper bill tends down over the lower; the tail is usually squared. They are white or grey in colour and are strong swimmers and powerful and swift in flight. They move in flocks and their nests are usually in cliffs. Their eggs are edible. Of regular British residents the sea-mew (*L. canus*), misnamed the common gull, is frequently seen inland. The bird Londoners see from the Thames bridges in winter is the black-headed gull (*L. ridibundus*); the one familiar to visitors on the south coast is the herring gull (*L. argentatus*).

Gullane Watering place of East Lothian, or Haddingtonshire. It stands on Gullane Bay, part of the Firth of Forth, and is 20 m. from Edinburgh, on the L.N.E. Rly. Gullane figures in R. L. Stevenson's *Catriona*. Pop. 1440.

Gum Name of various trees. Chiefly found in Australia, they grow to an enormous height with a corresponding girth, and specimens over 500 ft. high and 80 ft. in circumference have been known. The timber and the bark are both valuable; they also produce a resinous juice. The blue gum tree, which grows in Europe, produces a powerful antiseptic oil. Gum trees also grow in N. America, species being the sweet gum, cotton gum and black gum.

Gum Substance exuding from certain plants and hardening on exposure to the air. It is a tasteless, odourless, amorphous carbohydrate, yielding an adhesive liquid, and is either soluble in water, as gum arabic, swelling up and forming a mucilage, as gum tragacanth, or partly soluble, partly mucilaginous, as cherry gum. The basic ingredient of chewing gum is chicle gum, obtained from a tropical American tree. British gum, used on postage stamps, is dextrine prepared artificially by roasting starch. Gum resins are vegetable juices combining gum, soluble in water, and resin, soluble in alcohol. When powdered they form emulsions in water, *e.g.*, ammoniacum and myrrh.

Gum Fleshy tissue, covered by mucous membrane, connected with the membrane enveloping the jaw bones. It forms a raised collar round the base of each tooth's crown. Scurvy or neglected teeth may cause inflammation; abscesses, resulting from carious teeth or chill, may break through and form gumboils. Should the abscess produce pus in the socket between tooth and gum its discharge is called pyorrhœa.

Gumbinnen Town of East Prussia, Germany. It is an industrial town, 65 m. by rail from Königsberg, and stands at the junction of two little rivers, the Pissa and the Romana. Pop. 19,500.

Near Gumbinnen, on Aug. 20, 1914, a large Russian army, having advanced into East Prussia, met a smaller German force which had retreated before it. The Germans made a good fight, holding their entrenched positions throughout the day, but in the end they were compelled to retreat to Konigsberg.

Gun General term for various kinds of firearms. It includes all varieties from the sporting gun and rifle to the heavy cannon of artillery and naval ordnance. The sporting guns are all breechloaders, and most are double barrelled with a smooth bore of varied dimensions. In artillery and naval ordnance guns vary greatly in size, calibre and character, from the field and machine gun to the long range and heavy cannon of warships.

According to the Firearms Act of 1920, no person is allowed to possess, use or carry any firearms unless a licence has been granted by the police; and further, no sale of firearms by a registered dealer may be made unless a licence is produced. The licence costs 10s. a year. In addition every person who possesses a gun, with some few exceptions, must take out a certificate which costs 5s. for the first year, and 2s.6d. a year afterwards. It is renewable every three years. *See* ARTILLERY.

The Gunmakers' Company is one of the smallest livery companies of the City of London.

Gunboat Small type of vessel carrying heavy guns. From its light draught, it is intended for operations in shallow coastal waters or rivers. Gunboats were formerly of value for patrolling the large rivers of China and Africa, but they have been superseded by larger and more efficient craft. In the Great War a number of river or coast service monitors, originally intended for Brazil, were used for operations in Mesopotamia, and were officially classed as gunboats.

Guncotton Explosive compound, also known as pyroxylin or nitrocellulose. It consists of highly nitrated cellulose prepared from cotton waste, which is soaked in a mixture of sulphuric and nitric acids diluted with about 8 per cent. of water, and afterwards washed and dried. It is used with nitroglycerine in making smokeless powders and cordite, also in blasting explosives. Guncotton has the advantage over gunpowder in its smokeless combustion, rapidity of action and resistance to moisture.

Gunmetal Bronze alloy. Consisting typically of 90 per cent. of copper and 10 per cent. of tin, it thus approximates to the composition of ancient bronze. It was used formerly for making cannon, hence the name, and is employed now for castings of bearings and other parts of machinery, bolts and fittings, and some kinds of pumps. Usually the composition of modern gun-metal averages about 86 per cent. of copper, 10 per cent. of tin and 4 per cent. of zinc, the latter being sometimes replaced by lead for bearings.

Gunnersbury District of Middlesex. It is 13 m. from London, on the L.M.S. and District Rlys. Gunnersbury House was the residence of Amelia, daughter of George II. Later the estate, on which a new house was built, became the property of the Rothschild family. After the Great War it was bought by the councils of Acton and Ealing, and made into a public park.

Gunpowder Oldest known explosive. It consists of a mixture of saltpetre, charcoal and sulphur, in varying proportions, according to the purpose for which it is required. For firearms it has been largely superseded by smokeless powders, but it is still used for blasting purposes and in some kinds of sporting cartridges. The charcoal used in making gunpowder is obtained from dogwood, alder or willow, but in Germany coke from lignite has been used instead of the dearer charcoal.

Gunpowder Plot Plot to blow up the Houses of Parliament on Nov. 5, 1605, the day on which James I. was to open Parliament. The plot had been concocted by a group of discontented Roman Catholics, but one of these, Francis Tresham, had sent a warning to a friend in Parliament, Lord Mounteagle. This led to the discovery of Guy Fawkes, a brave but desperate soldier, in the cellars. Fawkes was tortured and executed, and the other conspirators, including Robert Catesby, were captured later and executed. Many books and pamphlets have been written about the plot.

The plot made a great impression in the country and since then Nov. 5 has been commemorated by the lighting of bonfires and by firework displays. Since then, too, the vaults under the Houses of Parliament are always searched before the opening ceremony.

Gunter **Edmund.** English mathematician. Born in Hertfordshire, in 1581, he was educated at Westminster School and Oxford, and in 1615 was made vicar of S. George's, Southwark. Appointed Professor of Astronomy at Gresham College, 1619, he was the inventor of several useful mathematical devices known by his name. These include Gunter's chain, 22 yds. long and of 100 links, which is used in surveying; Gunter's scale, used in trigonometry and navigation; Gunter's quadrant for estimating altitudes, and time; and Gunter's line, a logarithmic line. He died Dec. 10, 1626.

Gurkha Name used for certain tribes who live in Nepal. They appear to have settled in Nepal in the 16th century. Owing to their fighting qualities they are recruited for the Indian army, in which there are several Gurkha regiments. Their enlistment is regulated by an agreement between Nepal and the Government of India. Their chief weapon is a heavy curved knife called the kukri.

Gurnard Family of fishes allied to the bullheads. They have spiny, armoured heads, crawl over the sea floor on six sensitive, finger-like feelers, and emit grunt-like sounds when captured. British coasts yield the red gurnard, the grey gurnard, and, less commonly, the streaked and lanthorn gurnards, besides the great sapphirine and piper gurnards, which sometimes weigh as much as 5 lb.

Gurney Name of a famous family of bankers. It appeared in Norfolk in the 12th century and in the 17th became associated with the Quaker movement. John Gurney became a merchant in Norwich and his sons, John and Henry, became bankers in that city. A later member of the family was Joseph John Gurney, famous as a philanthropist. He was the brother of Elizabeth Fry and his home life at Earlham Hall is described in *The Gurneys of Earlham* by A. Hare. He died Jan. 4, 1847.

Joseph J. Gurney had a brother, Samuel, who was associated with the London banking firm of Overend, Gurney & Co. which failed in 1866. This did not include the bank in Norwich, which, in 1896, was amalgamated with Barclay's Bank.

Gurney Name of a family of shorthand writers. Thomas Gurney (1705-1770) was born in Bedfordshire and was for a time a schoolmaster. In 1737 he was appointed shorthand writer at the Old Bailey, London, the first appointment of its kind. He also became shorthand writer in other courts of justice and in the House of Commons. He published, in *Brachygraphy*, a description of his system. He died June 22, 1770, and was succeeded by his son, Joseph (1744-1815), who carried on the business.

Joseph's younger son, **William Brodie Gurney** (1777-1855) was, in 1813, appointed official shorthand writer in the Houses of Parliament, and the family retained that position until the 20th century. His son, **Joseph Gurney** (1804-79) took over the work in 1849, and, on his resignation in 1872, the post passed to his nephew, **W. H. Gurney Salter.** On the latter's retirement the position passed away from the family.

Gusher Term used for an oil well. From these the oil spurts out without assistance as soon as the supply has been struck. The flow from some of the American gushers is enormous, sometimes as much as 50,000 barrels in a day. If it is desired to stop the flow, the wells are closed by an elaborate process called capping.

Gustavus Name of five kings of Sweden, the second being known as Gustavus Adolphus. The first two belonged to the house of Vasa, a name given to Gustavus, a son of Eric, a Swedish nobleman. Born May 12, 1496, he won fame in fights with the Danes who, under his leadership, were driven from Sweden. The people then chose him as their king in 1523 and later made the crown

hereditary. He did a good deal for his country which, under him, adopted the reformed religion. Gustavus died Sept. 29, 1560.

Gustavus III. was king from 1771 to 1792. Owing to his love of French customs and his extravagance, he was very unpopular and was shot in Stockholm, March 29, 1792. **Gustavus IV.**, a son of Gustavus III, became king when only 14 years old. After an unprosperous reign, he was dethroned in 1809. He lived mainly in Switzerland until his death, Feb. 9, 1837.

Gustavus II. King of Sweden, known as **Gustavus Adolphus.** A son of King Charles IX., he was born in Stockholm, Dec. 9, 1594. When quite young he began to share in the government and, in 1611, on his father's death, he became the third king of the Vasa family. Much of his reign was spent in warfare, but he found time to improve the state of his country, which was poor in every way.

Gustavus is chiefly famous as a soldier. Under his direction the Swedish army became remarkably efficient, proving its worth in wars conducted by the king, who forced Denmark to surrender territory taken from Sweden, and compelled Russia to give him part of Finland and Livonia. Later he was equally successful in his struggle with Poland. In 1630, having won for himself the reputation of the first soldier in Europe, Gustavus led his experienced army into Germany to assist the Protestants in the Thirty Years' War. For two years he dominated the scene, winning one victory after another, and changing the fortunes of the struggle. His two greatest victories were Breitenfeld, Sept. 17, 1631, and Lützen, Nov. 16, 1632. At Lützen he was killed. Gustavus left his throne to his only child, a daughter, Christina.

Gustavus V. King of Sweden. A son of Oscar II., he was born July 16, 1858, and served for a time in the army. In 1907 he became king. Gustavus married in 1881 a daughter of the Grand Duke of Baden. Their family consists of two sons, the Crown Prince Gustavus Adolphus, and William, Duke of Sodermanland. The former married, firstly, Margaret, daughter of the Duke of Connaught, and secondly, in 1923, Lady Louise Mountbatten. By his first wife he had five sons.

Gut Tough, semi-transparent material prepared from the intestines of sheep and other animals. It is used for various purposes. The intestines, after being cleaned, scraped and washed, form the coverings for sausages, or, cut into strips which are spun or twisted, are used for violin strings, cords for tennis rackets, etc. Silkworm gut, employed for dressing the hook ends of fishing tackle, is prepared from the glutinous secretion of the silk glands of the silkworm.

Gutenberg **Johann.** German printer. Born about 1400, at Mainz, he became an artisan at Strasbourg, where he worked on an idea that had come to him, nothing less than the printing of books from movable type. Returning to Mainz in 1448, he obtained money from Johann Fust and set up a printing press. Some work was done, but it is not certain that all the books attributed to Gutenberg were from his press; indeed, printing was probably done in rough fashion before his day, but the value of his work cannot be overestimated. He died about 1468. In 1901 a Gutenberg Museum was opened at Mainz.

Guthrie **Sir James.** Scottish painter. Born at Greenock, June 10, 1859, and educated at Glasgow University, he studied art in London and Paris. He became a member of the Glasgow School of Painters and in 1902 was elected president of the Royal Scottish Academy. He had been an associate since 1888 and a member since 1892. At first a painter of subject pictures, he later concentrated on portraits. *The Funeral in the Highlands, To Pastures New* and *Schoolmates* are among the best known of his subject paintings. He died Sept. 6, 1930.

Guthrie **Thomas.** Scottish divine. Born July 12, 1803, he was educated at the University of Edinburgh and in Paris. He became a minister in an Aberdeenshire village, and was chosen minister of the Old Greyfriars Church in Edinburgh in 1837. In 1840 he moved to S. John's Church. In 1843 Guthrie followed Chalmers in leaving the established church. A church, Free S. John's, was opened for him and there he remained until his retirement in 1864. He was moderator of the church in 1862 and for some years edited *The Sunday Magazine*. He died Feb. 24, 1875. His son, **Charles John Guthrie** (1849-1920), became a judge of the Court of Session as Lord Guthrie.

Guthrum Leader of the Danes. In 871 or earlier he appeared in England, where he won several successes over Alfred the Great. In 878, however, Alfred was victorious at Ethandun, and he and Guthrum made the Treaty of Wedmore by which England was divided between them. Guthrum became a Christian and reigned over the Danelagh until his death in 890.

Gutta Percha Brownish red substance which exudes from the stems of certain Malayan trees. Formerly *Palaquium gutta* was the chief source of supply, but, owing to reckless destruction, it is now only met with in botanic gardens, gutta percha being obtained from other species and the allied *payena leerii*. Gutta percha is tough, inelastic, plastic at 149°F., and less resilient and durable than rubber. It is used for insulating cables, for belting and for acid-proof vessels.

Guy **Thomas.** English bookseller and founder of Guy's Hospital. Born in Southwark, about 1645, and educated at Tamworth, he was apprenticed to a London bookseller. In 1669 he started in business for himself. He was M.P. for Tamworth, 1695-1707. He died Dec. 27, 1724.

Guy was very successful in his business and increased his fortune by the judicious buying and selling of South Sea shares. His charities included gifts to Tamworth, where he built a town hall and some almshouses, and gifts of money to S. Thomas' Hospital and Christ's Hospital, London. He set apart nearly a quarter of a million for the building and endowment of the hospital in Southwark that bears his name. This is one of the largest of the London hospitals. It has over 600 beds and is equipped with everything to make it a medical school of the first rank.

Guyon **Madame.** French mystic. **Jean** Marie Bouvier de la Mothe was born April 13, 1648, and in 1664 married Jacques Guyon. He died in 1676 and his widow, now wealthy, gave her time to philanthropic work. She began also to study and practise the doctrine of quietism, a kind of mysticism. For this she was expelled from

Geneva, so, in 1686, she settled in Paris where she exercised a good deal of influence. She was, on account of her teaching, imprisoned in 1688 for a short time, and was again a prisoner from 1695 to 1702. She died at Blois, June 9, 1717. Madame Guyon wrote a good many books explaining her doctrine. She ranks as one of the leaders of modern mysticism.

Gwalior State of India. It is in the Central India Agency and is ruled by a maharajah. It covers 26,350 sq. m. and much of it is forest. The capital is Lashkar. Pop. (1931) 3,523,070, nearly all Hindus. The state, which was once part of the great Maratha empire, came first under British influence in 1782.

Near Lashkar is Gwalior city, the old capital. This has ruins of Jain and other temples, a palace, and several other buildings of historic interest. Overlooking it is the fort of Gwalior, restored in 1886. It is 65 m. from Agra with which it is connected by railway.

Gwynn Nell. English actress, mistress of Charles II. Born probably in London, Feb. 2, 1650, Eleanor, or Nell, Gwynn became an orange girl at the Theatre Royal, Drury Lane, London. She first appeared as an actress in 1665, and continued on the stage until 1682, being very successful in comedies of a somewhat vulgar kind. In 1669 she became the mistress of Charles II., and gave birth, May 8, 1670, to a son, Charles, who was later created Duke of St. Albans. A second son, James, was born in 1671. She died of apoplexy in 1687, and was buried at S. Martin's in-the-Fields, London.

Gymkhana Miscellaneous sports display. It originated in Indian military stations, apparently about 1861, to relieve the monotony of station life for both officers and men. It began with pony races at catch weights and afterwards included other competitions, serious and amusing, on foot, bicycle and horseback.

Gymnastics Athletic exercises for strengthening the body. They were practised by the Greeks, who attained a level of physical excellence never since surpassed. After a period of decline, the practice of gymnastics was revived in many European countries early in the 19th century, and under one form or other is now part of the educational system, for both boys and girls in Great Britain and other countries. It is also an important part of the training of men in the fighting services.

There are in the main two kinds of gymnastics. In one, apparatus, such as parallel and horizontal bars, vaulting horses, Indian clubs, ladders, ropes, rings, etc., is required. In the other, which is known as Swedish drill, or the Swedish system, from its origin in that country, little or no apparatus is needed. Eurhythmics is a form of gymnastics in which music plays a part.

A gymnasium is a place fitted with apparatus for gymnastic exercises. To-day these are provided in most schools and are found in training centres of all kinds. The Germans used the word for a school for higher education.

Gympie Town of Queensland. It is on the railway, 90 m. from Brisbane, and is the centre of a mining district in which gold and other metals are produced. Its port is Maryborough, about 40 m. away. Pop. (1931) 9,592.

Gynaecology Branch of medical science covering the special ailments of women. Ancient records show that it was a specialised branch of medicine over 3000 years ago. Improvements are largely due to Sir J. Y. Simpson (1811-1870) of Edinburgh (who introduced chloroform), and it has since benefited by modern methods of operative surgery.

Gyp In the university of Cambridge the usual name for a college servant. The Oxford equivalent is scout.

Gypsies Nomad people. They are believed to be of Indian origin, and entered Europe early in the 15th century. They are now found in most of the countries of southern Europe, especially, perhaps, in Hungary, the Balkan countries, Italy and Spain. There are some thousands of them in England. In 1931 a permanent camp for the gypsies was opened in Surrey. They live in caravans and earn a livelihood as tinkers, makers and sellers of basketware and in other ways. Many of the women tell fortunes. The true gypsy has a tawny skin, black hair, lustrous eyes and gleaming teeth. They have their own customs and speech and are very superstitious. They call themselves Romani and in Italy are known as Zingari.

Gypsophila Hardy plant also known as chalk plant or gauze flower. With slender stems and sprays of tiny white flowers, it is grown chiefly for cutting, being in table decoration, or bouquets, frequently mingled with other flowers, *e.g.*, sweet peas.

Gypsum Mineral, a hydrous sulphate of lime, occurring in nature in several different forms. In the massive state, it is a soft, white material, or reddish-brown in impure varieties. It occurs in England in large beds in Triassic marls, associated with rock salt, and in Tertiary strata near Paris. It also occurs as alabaster, a semi-crystalline variety, or in fine crystals, as selenite, and in fibrous form, as satin spar. Gypsum is used for making plaster of Paris and as a top dressing for soils.

Gypsy Moth European moth, *Porthetria dispar*. Introduced into the U.S.A., it became a pest in woods and orchards around Massachusetts about 1885. The larvae sometimes defoliate the plants but are controlled by suitable poisons, while parasites and predators from Europe have proved beneficial.

Gyroplane Form of aeroplane. In the form known as the autogiro, invented by Sr. de la Cierva, the fixed wings of the normal aeroplane are replaced by wings set round a vertical axis about which they are free to revolve while the plane is in motion. This machine cannot remain stationary in the air, but cannot stall, and lands at a low speed.

Gyroscope Mechanical device designed to illustrate the dynamics of rotating bodies. The name was given by Foucault in 1852. The commonest example is the gyroscopic top which consists of a heavy fly-wheel revolving about an axle at right angles to the plane of the wheel within a brass ring. The wheel is set spinning rapidly, the direction of its axis remaining unchanged unless some other force intervenes. Many gyroscopic devices are used for stabilising purposes, such as the gyro-compass, the gyro-directing mechanism for torpedoes, and the gyro-governor, in which a gyroscopic regulator controls the speed of an engine.

HAAKON Name of seven kings of Norway. The first reigned from about 940 to 961 and was called the Good. He passed his early life in England. The succeeding five were comparatively unimportant.

Haakon VII. was a son of Frederick VIII., King of Denmark. Born Aug. 3, 1872, he married in 1898 Maud, daughter of King Edward VII. In 1905, on the separation of Norway from Sweden, he was chosen king and he took the name of Haakon instead of his own name, Charles. He was crowned, June 22, 1906. His heir is his son, Olaf, who married a princess of Sweden.

Haarlem Town and river port of the Netherlands. In the province of North Holland, it is 11 m. from Amsterdam, with which it is connected by railway. The chief buildings are the old church, with its lofty tower, the meat market, now used for municipal purposes, the weigh house and several nurseries. The town hall contains a valuable collection of paintings. The River Spaaren flows through the town and is used for shipping. Haarlem is a centre of the bulb-growing industry, and from here millions of bulbs are exported. Printing is another industry. Pop. (1932) 122,386.

Habakkuk One of the minor prophets of the Bible. He lived about 600 B.C., and one tradition about him is that he was carried to Babylon by an angel in order that he might furnish Daniel with food. His book consists of a prophecy directed against the Babylonians, for whom he pleads with God, and a lyrical poem about the divine majesty.

Habeas Corpus Term meaning "you may have the body;" used in English law. Several Acts of Parliament begin with these words, the most famous being the one of 1679. Its object was to prevent persons being kept in prison without being brought to trial, a practice frequently resorted to in the 16th and 17th centuries. Under the **Act of 1679**, if a person is so detained, a writ can be issued to his gaoler ordering him to bring the prisoner for trial to a certain place on a certain day. The writ can also be issued if a child is kept forcibly away from its parent or guardian. In times of disorder the Habeas Corpus has been suspended so that suspected persons could be imprisoned and kept without trial.

Haberdasher Name of a retail trader who sells small wares and articles accessory to dress and furniture. He is usually a draper also, and the tendency is for that term alone to be used.

The Haberdashers' Company is one of the twelve livery companies of London. Its hall is in Gresham St., and it has a large income much of which is set aside for the maintenance of schools and almshouses. The company has schools for boys at Hatcham and Hampstead, and for girls at Acton and Hatcham.

Hackenschmidt **Georges.** Russian wrestler. He was born in 1878, and soon became famed for his strength and skill as a wrestler. After defeating many rivals in catch-as-catch-can contests on the Continent, he came to England in 1901 and on the music hall stage met some of the foremost wrestlers of the day. On April 4, 1908, in a bout with Gotch at Chicago, after wrestling for two hours, Hackenschmidt refused to continue and forfeited the world's championship.

Hackney Breed of horse. It mingles thoroughbred with English shire or cart horse strains, and is used for riding and driving: sometimes it is kept for hire. The name is often shortened to hack. Compact, 14 hands and over, it has good action and disposition. There is a Hackney Horse Society for promoting the breed and shows are held.

The Hackney cab, now almost obsolete, was so named because it was drawn by horses of this kind.

Hackney Borough of London, one of the 28 in the county. It lies to the north-east of the city. The open spaces include Hackney Marshes, Hackney Downs and part of Victoria Park. Pop. (1931) 215,380.

Haddington Burgh of East Lothian (Haddingtonshire), also the county town. It is on the Tyne, 18 m. from Edinburgh, on the L.N.E. Rly. Mrs. Carlyle is buried in the churchyard. John Knox, who was born near, gives his name to the Knox Institute. A 15th century bridge crosses the river. Pop. (1931) 4405.

Haddingtonshire County of Scotland, also called East Lothian. In the south-east of the country it has a coastline on the North Sea and the Firth of Forth. Its area is 267 sq. m. Haddington is the county town. Other places are North Berwick, Dunbar and Gullane. The county is chiefly an agricultural area, but it has some coal mines. In the south are the Lammermuir Hills. Pop. (1931) 47,369.

Haddock Food fish of the cod genus (*gadus aeglefinus*). Ranging the North Atlantic, it is recognised by the black patches above the breast fins and the black lateral lines. It averages 4 lb. in weight, but may reach 17 lb. and exceed 3 ft. in length. It hugs British coasts in winter, spawning in spring, and is taken by mussel bait or trawling. It is eaten either freshly cooked or split, dried and smoked, when it is called Findon, or Finnan haddock. **Norway haddock** and **Jerusalem haddock**, both spiny-finned, are quite distinct varieties.

Haddon Hall Derbyshire residence of the Duke of Rutland. It stands on the Wye, 2 m. from Bakewell, and is one of the most historic houses in England. Part of it dates from the 12th century. The chief rooms are the long gallery and the banqueting hall. The chapel is also noteworthy. Haddon belonged to the Vernons before passing to the Manners family after the elopement of the heiress, Dorothy Vernon, with Sir John Manners about 1580. Soon after 1700 the Manners family ceased to reside there, but after the Great War it was again made habitable and is now used as a residence by the Duke of Rutland. Sir Arthur Sullivan wrote an opera, *Haddon Hall*.

Hades In Greek mythology, the god of the underworld, also called

Pluto. Later, the word denoted the invisible underworld itself, the abode of the departed, conceived as situated within the earth, and bounded by the river Styx, over which Charon ferried the dead. The Greek New Testament uses it for the Hebrew Sheol, or Gehenna, translated hell in the authorised version of the Bible, but frequently retained as Hades in the revised version, *e.g.*, Luke xvi.

Hadfield Town of Derbyshire. It is 187 m. from London by the L.N.E. Rly., and is 13 m. from Manchester. There are cotton manufactures. The Derwent rises near here. Pop. 6371.

Hadfield **Sir Robert Abbott.** English scientist. Born at Sheffield, Nov. 29, 1859, he entered business there, and in the iron and steel industry he soon became a leading figure. He built up the business of Hadfields, Ltd., and was master cutler in 1899. He devoted much time to the technical side of the industry and his inventions were of the highest importance. For these he was elected F.R.S., and received numerous other honours, both at home and abroad. In 1908 he was made a knight, and in 1917 a baronet. Hadfield has written a great deal on metallurgy.

Hadham Two villages of Hertfordshire, Great and Little. **Great** or **Much Hadham** is 4 m. from Bishop Stortford, and 26 from London, on the L.N.E. Rly. The Bishop of London had a palace here at one time. **Little Hadham,** which is quite near, possesses a 12th century church. Here is Hadham Hall, an Elizabethan building.

Hadleigh Village of Essex. It is 5 m. from Southend and is notable because of the farm colony founded here by the Salvation Army in 1891.

Hadleigh Urban district of Suffolk. It is 9 m. from Ipswich, and 70 m. from London by the L.N.E. Rly., and stands on the River Brett. There are flour mills and malting works. Pop. (1931) 2952.

Hadley Wood District of Middlesex. It is 10 m. from London, on the L.N.E. Rly. It is part of the urban district of Barnet.

Hadrian Roman emperor. Publius Aelius Hadrianus was born of Roman parents in A.D. 76. He became known as a soldier and an administrator and, having been consul in 108, he was selected by his friend and patron, the Emperor Trajan, as his successor. He reigned from 117 to 138, on the whole successfully. He abolished the farming of taxes and was responsible for other salutary reforms. He made no additions to the empire, through which he travelled extensively. He visited Britain, where he was responsible for the wall called after him, and erected the famous villa near Tivoli of which the ruins still exist. He died in 138, having written a poem to his soul.

Hadrian's Wall Defensive wall extending from the Solway Firth across England to Wallsend-on-Tyne. It was built about A.D. 122 by Hadrian and repaired by Severus in the 3rd century. It was garrisoned by about 11,000 soldiers and possessed a number of large and small forts. The wall was 73 m. long and its course may still be traced. Excavations along it have revealed Roman coins, pottery, etc., in great abundance. Here and there are substantial remains in the shape of forts and camps. It was classed as an ancient monument in 1928 and parts of it, those near Chesters and Housesteads, for example, are national property. *See* CHESTERS.

Haeckel **Ernst Heinrich** German scientist. Born at Potsdam, Feb. 16, 1834, he was educated at Würzburg, Berlin, and Vienna, and became a doctor. After practising for a few years, he settled at Jena as Professor of Comparative Anatomy and Director of the Zoological Institute. His fame rests upon his writings on evolution, in which he firmly believed. He wrote a book translated into English as *The Natural History of Creation*, in which he showed that the descent of man from the ape was unbroken. His most popular work, *The Riddle of the Universe*, explains the universe as brought about by purely natural causes, without the intervention of any divine power. He died Aug. 8, 1919.

Haematite Most widely distributed of the iron oxides. Haematite is a peroxide of iron containing in its purest forms 70 per cent. of iron. It is distinguished by giving a reddish streak when scratched, and occurs in black metallic crystals as "specular iron," dull red fibrous masses, or reniform masses with a radiate structure, and as red ochre, an earthy variety. Haematite is an important iron ore and is found in sedimentary rocks in many parts of the world.

Haemophilia Congenital tendency to bleed immoderately from slight wounds or even spontaneously, as from the nose. It is almost entirely confined to males, called bleeders, and is transmitted solely through the female line. On this account, tooth drawing and other operations are dreaded, as the excessive bleeding is difficult to arrest, and may prove fatal.

Haemorrhage Escape of blood from a blood vessel. It is arterial when an artery is injured, bright-red blood flowing in spurts rhythmically with the beating of the heart; venous when a dark and steady stream flows from a vein; and capillary when blood oozes gently out of the torn surfaces of wounds from the minute vessels connecting arteries and veins. Bleeding can be controlled by pressing on the bleeding point, pressing on the main artery supplying it, or applying a styptic according to the type of bleeding.

Treatment. Medical aid should be obtained at once. The patient should be kept lying down near an open window with all tight clothing loosened. No stimulants should be given until the bleeding is checked, but if he can swallow, he may be given ice to suck. The body must be kept warm as for collapse (*see* SHOCK).

External haemorrhage can usually be checked by firm bandaging or by pressure on the artery on the side of the wound near the heart. Never give stimulants until haemorrhage has ceased.

In haemorrhage from the **socket of an extracted tooth** make the patient rinse out the mouth with very hot water; if the bleeding does not cease, add to the tumblerful of hot water a teaspoonful of powdered alum. The socket can be plugged with clean cotton wool, leaving a surplus of wool outside the plugged part, and the mouth should then be closed by means of a bandage under the chin and tied on top of the head.

Hafiz Persian poet. He was born at Shiraz and lived in the 14th century, his real name being Shams-ud-din Mohammed. He taught philosophy at Shiraz

until his death about 1388. His tomb may still be seen near the city.

The poems of Hafiz are short lyrics, somewhat sensuous, and embody the mystic philosophy of the Sûfi sect. They have been translated into English.

Hafnium Very rare metallic element. It has the atomic weight 178.6 and the symbol Hf. It is related in many ways to the metal zirconium, and was discovered in 1923 in the mineral zircon, a natural silicate of zirconium. Little is known of its properties and compounds.

Hagar Sarah's Egyptian handmaid. She became Abraham's concubine and the mother of Ishmael. Sarah caused her banishment to the wilderness, whence later she returned to Abraham. She was finally sent away. (Gen. xxi., 9-21).

Hagen **Walter.** American golfer. Born at Rochester, New York, in 1893, he became a professional golfer. In 1914 and 1919 he won the open championship of the U.S.A., and in 1922 he won the open championship of Great Britain, as he did also in 1924, 1928 and 1929. One of the world's greatest golfers, he won the world open championship in 1928 and 1929, the open championship of France in 1920, of Belgium in 1924, and of Canada in 1931. In U.S.A. Hagen won the open championship in 1921, and in 1924, 1925, 1926, and 1927, and the professional championship in 1914 and 1919. He was in the successful Ryder Cup team in 1935.

Hagenbeck **Carl.** German trainer of animals. He was born at Hamburg in 1844, the son of a man who did a little business in buying and selling wild animals. Carl took this up with avidity, travelled a good deal and showed in public animals he had trained. In 1897, at Stellingen, near Hamburg, he opened a zoological garden on new principles, keeping the animals, as far as possible, in the open. Hagenbeck died in 1913, but the gardens still bear his name.

Haggai One of the minor prophets of the Old Testament. His book contains four prophecies, designed to encourage Zerubbabel and his compatriots to rebuild the temple at Jerusalem. Their keynotes are the reiterated counsels, "be strong" and "consider." They are dated in the second year of Darius Hystaspis, 520 B.C.

Haggard **Sir Henry Rider.** English novelist. Born at Bradenham, Norfolk, June 22, 1856, he was educated at Ipswich Grammar School. He began his career as an official in the Transvaal, whither he went in 1875. In 1879, having returned to England, he became a barrister, and in 1882 he published *Cetewayo and his White Neighbours*. In 1884 he published *Dawn*, the first of his novels, and this was followed by others, most of which were very successful. The best known are *She*, 1887, which created quite a sensation, *King Solomon's Mines*, *Jess* and those associated with the name of Allan Quatermain. Others are *Colonel Quaritch, V.C.*, *Nada the Lily*, *Montezuma's Daughter*, *People of the Mist*, *Joan Haste*, and *Ayesha*. With Andrew Lang he wrote *The World's Desire*. Haggard, himself a landowner in Suffolk, took a great interest in agricultural problems, on which he wrote several books. In 1910 he was knighted, and he died May 14, 1925.

Haggis Scottish dish of French origin. It consists of the heart, lungs and liver, finely minced and half the liver grated, of a sheep, to which are added two chopped onions, one pound of suet, the juice of one lemon, half a pint of oatmeal, two teaspoonfuls of salt, one teaspoonful of pepper, half a grated nutmeg, and half a pint of gravy. This mixture is placed in a cleansed sheep's stomach (called the haggis bag) which is then sewn up and left to boil for three hours. During the first half-hour it should be pricked with a needle.

Hagiology Historical research and criticism specially applied to the lives of saints. Hagiology includes all biographies of saints and martyrs. The oldest is that of Eusebius. The Jesuit, Heribert Rosweyde, revised existing hagiologies and started the great collection called the *Acta Sanctorum*.

Hagley Village of Worcestershire. It is 13 m. from Wolverhampton, on the G.W. Rly. Hagley Hall has been for some centuries the seat of the Lytteltons.

Hague **The.** Capital of the Netherlands. It is situated about 3 m. from the sea, and 14 m. from Rotterdam, and is well served by railway lines. The legislature meets in the Binnenhof, in which is the famous Hall of the Knights. The Palace of Peace is an imposing block. The Maurits-Huis contains a fine collection of pictures, once owned by the house of Orange. There are many museums, among them the famous Mesdag, and several libraries, including the valuable royal library. The Vyver is an ornamental lake in the middle of the city. Near it is a large tower, formerly a prison. There are some fine squares and spacious parks, notably the Willems Park where is an imposing national monument.

In the city the sovereign has a palace, enlarged early in the 19th century, with large gardens. To the east is the palace called the Huisten Bosch, in a large park. Near are the zoological gardens. The Hague has an industrial quarter, and here are printing works and manufactures of earthenware, motor-cars, furniture, etc. Pop. (1932) 449,614.

For some centuries the Hague was a residence of the counts of Holland. In 1814, after it had been in French possession for a few years, it was made the capital of the new kingdom of the Netherlands.

HAGUE CONFERENCES. In the 19th century the Hague became popular as the seat of international conferences. The most important was the peace conference called by the Tsar Nicholas II. in 1899, and the one that followed it in 1907. At the earlier of these the Hague Tribunal was established.

Hague Tribunal Short name for the Permanent Court of International Justice which sits at the Hague. It was founded in 1899, and a building, the Palace of Peace, was erected for its work by Andrew Carnegie and others. Its judges are now appointed by the League of Nations for 9 years and hear cases between sovereign states that are referred to them.

Hahnemann **Samuel Christian Friedrich.** German physician. Born at Meissen, April 10, 1755, and educated at Leipzig, he maintained that like must be cured by like: drugs must be used in small quantities to produce in the sick person the same results that they would produce in a healthy one. This was called **homoeopathy.** He died in Paris, July 2, 1843. Hahnemann's chief books have been translated into English as *The Friend of Health* and *The Organon of the Rational Art of Healing*.

Haifa Seaport city of Palestine, situated on the Bay of Acre, at the foot of Mt. Carmel. Under British mandatory rule it has developed a flourishing export trade in Hauran wheat and Trans-Jordanian products. One of the two ocean terminals of the Iraq Petroleum Company's pipeline is at Haifa. Its fine modern harbour was opened to shipping in 1933. Pop. (1931) 50,533.

Haig Earl. British soldier. Born June 19, 1861, Douglas Haig belonged to a Fifeshire family engaged in the distilling business. He went to Clifton College and Brasenose College, Oxford, afterwards passing through Sandhurst into the army, 7th Hussars. He took a course at the staff college and served in the Sudan in 1898; in 1900-02 he was in South Africa, where he was Chief of the Staff to Sir John French, and later commanded some columns in the guerrilla warfare.

By now Haig had made a reputation and during the next 10 years he filled important posts. From 1903-06 he was Inspector General of Cavalry in India; from 1906-07 Director of Military Training in England; from 1907-09 Director of Staff Duties, and from 1909-12 again in India, this time as Chief of the Staff.

In 1912 Sir Douglas Haig, as he had now become, was appointed to the Aldershot Command. This meant the leadership of the army corps there, and in Aug., 1914, he went with it to France. He commanded the first corps at Mons and through the terrible winter months, leaving it in Jan., 1915, to take over the first army. He led this at Loos, after which, in Dec., he succeeded French as Commander-in-Chief on the western front. This onerous position he held to the end of the war, being responsible for the Battle of the Somme (1916), the indecisive engagements of 1917, and, in 1918, the final offensive which drove back the Germans and finished the struggle.

Honours were showered upon Haig at the peace. He was made an earl, given the Order of Merit and voted £100,000. Bemersyde, the old home of the Haigs, was presented to him unofficially. He died in London, Jan. 29, 1928, and was buried in Dryburgh Abbey. Since 1917 he had been a field-marshal. He married the Hon. Dorothy Vivian, and left an only son who succeeded to his title, Earl Haig of Bemersyde. Memorials to Haig took the form of houses for ex-service men to cost £500,000, a statue in Whitehall and Haig House at Ypres.

Haileybury English public school. It is just outside Hertford and originated as a college, opened in 1806 by the East India Co., for educating boys for its service. In 1862, the company having been dissolved, the buildings were acquired for a public school and have since been much enlarged. There is accommodation for over 500 boys.

Hailsham Market town of Sussex. It is 54 m. from London by the S. Rly., and 7 m. from Eastbourne. It is an agricultural centre. Pop. 4600.

Hailsham Viscount. English lawyer. Born in 1872, Douglas McGarel Hogg was the eldest son of the philanthropist, Quintin Hogg. He was educated at Eton and, after some years in business, became a barrister in 1902. In 1922 he was elected Conservative M.P. for Marylebone, was made Attorney-General and was knighted. He left office in 1923, but returned in 1924 and was Attorney-General until made Lord Chancellor and a peer in 1928. In 1929 he resigned with the Unionist Government and acted as one of the Opposition leaders in the House of Lords. In 1929 he was made a viscount, in 1931 joined the National Government as Secretary for War and became Lord Chancellor again in Baldwin's Ministry in June and Nov., 1935.

Hainault Province of Belgium, once an independent country. It is the district around Mons and Charleroi. The inhabitants are chiefly Walloons. For some centuries Hainault had its own counts, the first appearing about 900. Later it became part of Burgundy and then of the Netherlands.

An open space in Essex is called **Hainault Forest.** It adjoins Epping Forest and covers 800 acres, but only about 250 acres are forest proper. It was bought for the public and opened by the London County Council in 1906, and on it is a golf course.

Hair Filamentous outgrowth from the skin, forming the coat of mammals, and corresponding to the feather in birds. The word applies also to analogous outgrowths from the bodies of plants, insects and other organisms. Each hair is secreted by a single papilla in a skin follicle, with fat-forming glands, and comprises a bulbous root, shaft and point. It contains neither blood vessels nor nerves, but coloured pigment, the failure of which produces grey hair. The absence of hair is known as baldness (*q.v.*).

Commercially hair is much used. The finer kinds, such as the hair of goats, etc., are used for making shawls and other garments. The hair of horses, being coarser, is used as a stuffing and padding for furniture. Other kinds of hair are also used for upholstery and hair forms the stuffing of a great number of mattresses. The hair of the cow is used for making felt for roofing and similar purposes.

Hairdressing Method of dressing the hair. The word is used chiefly in connection with women's hair, but to a lesser extent men's hair is dressed, although the traders who attend to this are usually called barbers, because their duties include attention to the beard.

Fashion in hairdressing has varied very much with various countries and ages, but amongst civilised and semi-civilised peoples attention has always been paid to it. The Great War was partly responsible for a drastic change in the method of dressing women's hair, principally owing to the fact that the majority of women began to wear the hair short. This meant more frequent visits to the hairdresser, and in consequence the women's side of the business enjoyed unprecedented prosperity.

In Great Britain hairdressing is an organised calling. It has its trade organisations and papers, including *The Hairdressers' Weekly Journal*. There is a Hairdressers Registration Council at 20 Cranbourne Gardens, London, N.W. 11, and a Hairdressers' Parliamentary Committee for looking after its interests. Since 1930 hairdressers have been compelled by law to close their shops on Sunday.

Haiti Island of the West Indies. Sometimes called Hayti or San Domingo, it lies between Porto Rico and Cuba, the three dividing the Atlantic Ocean from the Caribbean Sea. It is 400 m. long and covers 29,500 sq. m. The area is mountainous, but the soil is generally fertile. Much of the land is forest. The island is divided into two republics, Haiti in the west, and San Domingo in the east. Columbus, who discovered it in 1492, called it

Hispaniola. In 1640 France took possession of the island, and it remained French until 1804 when a negro republic was established. In 1844 the negroes of the east broke away and formed the republic of San Domingo. The slaves were freed in 1789 ; an attempt by Napoleon to revive the old system failed.

Haiti Republic of the West Indies. It occupies the western part of the island of the same name. It covers 10,204 sq. m. Port au Prince is the capital and chief seaport, other towns are Cape Haitien, Cayes and Jacmel. Cocoa, coffee, sugar and other tropical products are grown. The people are chiefly negroes and mulattoes ; they speak a dialect called Creole French and in religion are Roman Catholics.

Since 1915 the republic has been under the protection of the United States. It is ruled by a president and a council of state, the executive being in the hands of secretaries of state, except certain branches, finance and the constabulary, for instance, which are under American advisers. The banking system is also in American hands. The unit of currency is the gourde, a gourde being equal to one-fifth of the American dollar. There are some good roads and a few miles of railway in the republic. Pop. 2,500,000.

Hake Fish of the cod family (*merluccius vulgaris*). Having no barbels and fewer dorsal and anal fins than cod, it may reach 3 ft. in length and surpass 30 lb. in weight. It is caught in pilchard nets, especially at night, and in trawlers in the North Atlantic, where is its chief home. It is a food fish.

Hakluyt **Richard.** English writer. Born in Herefordshire about 1552, he was educated at Westminster School and Oxford. He lectured on cosmography at Oxford and began to collect information about the voyages of English and other sailors. In 1582 he published *Divers Voyages Touching the Discovery of America.* Having been ordained, he was a chaplain in Paris from 1583 to 1588. In 1590 he was chosen rector of Netheringsett in Suffolk, and in 1602 Prebendary of Westminster. He died Nov. 23, 1616, and was buried in Westminster Abbey.

Hakluyt's chief work is the collection called *Principal Navigations, Voyages and Discoveries of the English Nation.* He left many manuscripts, some of which have been published by the Hakluyt Society, which was founded in his honour in 1846.

Halbert Weapon used by soldiers in the 14th and 15th centuries. It was a combination of the pike and the axe and had a staff about 5 ft. long. The Yeoman of the Guard still carry halberts, but they have not been used in warfare since early in the 16th century. Another form of the word is halberd : the soldiers using it were called halberdiers.

Haldane Name of a famous Scottish family. Robert Haldane of Cloan, a lawyer, married Mary Burdon Sanderson, a remarkable woman who lived to be almost a centenarian. Their eldest son was **Viscount Haldane** (*q.v.*). Other sons were **John Scott Haldane,** an eminent scientist, especially interested in mining matters, and Sir William Stowell Haldane, a lawyer and one of the Development Commissioners. Their daughter, Elizabeth Sanderson Haldane, wrote books, and in 1918 was made a Companion of Honour.

John S. Haldane's son, John Burdon Sanderson Haldane, made a reputation as a scientist. In 1922 he was appointed reader in biochemistry in the University of Cambridge, and in 1927 head of the genetical department of the John Innes Horticultural Institution.

A distant relative was **Sir James Aylmer Lowthrop Haldane** (b. 1862). He was a soldier who served on the western front during the Great War in command of a division and an army corps, and was Commander-in-Chief in Mesopotamia, 1920-21.

Haldane **Viscount.** British statesman. Born, July 30, 1856, he was Richard Burdon Haldane, a son of Robert Haldane of Cloanden, Perthshire. For his education he went to Edinburgh Academy and then to universities in that city and in Germany. He became a barrister in 1879 and practised in London ; he was never a popular advocate, but his mental gifts made him very successful in chancery cases.

In 1885 Haldane was elected Liberal M.P. for Haddingtonshire and for 20 years, although a private member only, was a political force. In 1905 he was made Secretary for War, and in that capacity he did great work ; he created the Territorial Army, and organised the force that took the field in Aug. 1914. In 1912 he became Lord Chancellor and a peer, but early in 1915 he resigned. His acquaintance with Germany and the Germans made him suspect to many, and his retirement was inevitable.

After the war Haldane appeared on Labour platforms and was soon a member of that party. In 1924 he became again Lord Chancellor and also leader of the Labour Government in the House of Lords. When the Government resigned he remained the party leader in the Lords, and he held that position until his death, Aug. 19, 1928. Haldane never married.

Strenuous as was Haldane's political and professional life, it by no means occupied the whole of his versatile mind. He kept up the study of philosophy and ranked among the leading philosophers of the day. His ideas are expressed in *The Pathway to Reality* and other writings. Education was another of his interests. He was chairman of the Royal Commission on the university of London and helped to found the newer English universities. In 1929 his *Autobiography* appeared ; in his lifetime he had published *Before the War,* a defence of his activities.

Hale Urban district of Lancashire. It is 10 m. from Manchester, on the Cheshire Lincs. Rly., and is practically a residential suburb of that city. In the churchyard is the grave of John Middleton, who was said to be 9 ft. 3 ins. high. He died in 1623. Pop. (1931) 10,669.

Hale **George Ellery.** American astronomer. Born in Chicago, June 29, 1868, he was educated at Boston. His first experience of astronomical work was gained in the observatory at Harvard, and he soon became a director of an astrophysical observatory and professor of astrophysics. In 1895 he became director of the Yerkes Observatory, and in 1897 Professor of Astrophysics at Chicago. He invented the spectroheliograph and in 1904 was appointed director of the great observatory at Mount Wilson, California. He has edited *The Astrophysical Journal,* and written a good deal on his particular subject, astrophysics.

Halesowen Urban district and market town of Worcestershire. It is 6 m. from Birmingham, on the joint line of the L.M.S. and G.W. Rlys. Iron and steel goods are manufactured. William Shenstone,

the poet, was born here. Near are the remains of an abbey. Pop. (1931) 31,058.

Halévy Name of a family of French scholars. **Ludovic Halévy** made his reputation as a dramatist. He died May 8, 1908, leaving a son, **Elie Halévy.** He was born at Etretat, Sept. 6, 1870, and became a professor in Paris. He is known as a student of English history and institutions and his works include *The Formation of Philosophic Radicalism, The History of the English People in the 19th Century,* and *The World Crisis of* 1914-18, (1930), to give them their English titles.

The composer, **Jacques François Fromental Elie Halévy,** was a professor of music in Paris and wrote many operas. He died March 17, 1862.

Halibut Fish, the largest of the flatfish family (*hippoglossus vulgaris*). It is distributed round the northern coasts of Great Britain, but is infrequent in the English Channel. It is longer than the flounder, sometimes surpassing 8 ft. in length and 200 lbs. in weight. The eyes and dark colouration are on the right side. The fish is a popular article of food and was at one time much eaten on holy days. Its old name is holibut.

Halicarnassus Ancient city of Asia Minor. Situated on the Carian coast opposite the island of Cos, it was a Dorian colony, reaching its acme under Mausolus, who died in 353 B.C. It was the birthplace of Herodotus and Dionysius.

Halidon Hill Hill near Berwick-on-Tweed. Here on July 19, 1333, the Scots were defeated by an English army under Edward III. that was marching to take Berwick. The English, on the hill, were attacked by the Scots who were driven back. The forces on each side were small.

Halifax County borough and market town of Yorkshire. It is 7 m. from Bradford and 194 from London, standing at the union of the rivers Hebble and Calder. It can be reached by both the L.M.S. and L.N.E. Rlys. The Piece Hall, or market hall, dates from the 13th century.

The industries of Halifax are the making of carpets, woollen goods, chemicals, machinery, and toffee. Pop. (1931) 98,122. **The Halifax Building Society** is one of the largest in the country.

Halifax City and seaport of Nova Scotia and the capital of the province. It stands on a harbour named after it, one of the finest in the world, and owes its importance to its site. It is 837 m. from Montreal and here both the C.N.R. and the C.P.R. have terminals. Dalhousie University is the chief of several colleges and schools.

The chief winter port of Canada, Halifax has extensive docks; from here ships go to the West Indies and across the Atlantic as well as to other American ports. Since 1758 it has been a naval station and a garrison town. Here the Canadian Government, which took over the naval dockyard in 1906, has accommodation and stores for warships. Apart from shipping, the chief industries are shipbuilding, oil refining and certain manufactures. There is some fishing and it has a broadcasting station (49.59 M.). Pop. (1931) 59,275.

Halifax **Marquess of.** English statesman and writer. Born in 1633, George Savile was a son of Sir William Savile, Bart. In 1660 he was elected M.P. for Pontefract, and in 1668 he was made Viscount Halifax, the family estates being in Yorkshire.

He took part in business of state and became prominent as the leader of those who objected to the proposed exclusion of James II. from the throne and for about four years (1681-85) was the chief adviser of Charles II. When James became king he was made Lord President of the Council, but he soon resigned and used his influence to check the sovereign's arbitrary acts; to nullify the Declaration of Indulgence he wrote his famous *Letter to a Dissenter.*

He did not share in the invitation to William of Orange, but as he presided over the Council and the House of Lords at this time, he it was who formally offered the crown to William and Mary. He was made Lord Privy Seal by William, but in 1689 he resigned and returned to his seat, Rufford Abbey, occasionally appearing in Parliament. In 1679 he had been made an earl and in 1682 a marquess. He died April 5, 1695. His title became extinct when his son, William, the 2nd marquess, died in 1700. A grandson was the great Earl of Chesterfield, (*q.v.*).

Halifax was a fine orator, but his chief fame is due to his writings and his position as the great advocate of moderation and compromise in politics. His ideas on this subject are expressed in his greatest work, *The Character of a Trimmer,* the hero being himself. He also wrote *Maxims of State, the Anatomy of an Equivalent,* a life of Charles II., and other books, including a collection of aphorisms.

Halifax **Earl of.** English title, now extinct. The first earl was George Savile who was made earl in 1679 and marquess in 1682, but these titles became extinct when his son died in 1700. In 1714 Charles Montagu was made Earl of Halifax, but in the next year the title again became extinct. At once, however, it was given to his nephew, George Montagu, who was succeeded in 1739 by his son who married an heiress and took the name of Dunk. He was Lord Lieutenant of Ireland, First Lord of the Admiralty and Secretary of State under George II. and George III. When he died, June, 8, 1771, the earldom again became extinct.

Halifax **Earl of.** English statesman. Charles Montagu was born April 16, 1661, a member of the family of the Earl of Manchester. He went to Westminster School and Trinity College, Cambridge, and in 1689 was elected M.P. for Maldon. He was Chancellor of the Exchequer, 1694-97, and First Lord of the Treasury, 1697-99. He was one of William III.'s most trusted advisers, and was concerned in the reform of the coinage and the foundation of the Bank of England. Being a Whig he was in retirement during Anne's reign, but he was again First Lord of the Treasury when George I. came to the throne. In 1701 he had been made a baron, and in 1714 he was made an earl, but very soon, May 19, 1715, he died without sons.

Halifax **Viscount.** English title borne since 1866 by the family of Wood. Sir Charles Wood, Bart., was elected an M.P. in 1826. From 1846 to 1852 he was Chancellor of the Exchequer in the Liberal ministry: from 1855-58 he was First Lord of the Admiralty and from 1859-66 Secretary for India. In 1866 he was made a viscount, and he died Aug. 8, 1885.

His son, **Charles Lindley Wood,** who became the 2nd viscount, was born June 7, 1837, and educated at Eton and Christ Church, Oxford. He was long president of the English Church Union and leader of the Anglo-Catholic party.

His son Edward created **Baron Irwin** was viceroy of India 1926-31 and made K.G. in 1931. In Jan. 1934 he became Viscount on his father's death.

Hall **Oliver.** English artist. Born in London in 1869, he studied art there. He became known by his etchings, and then by his landscape paintings, one of which, "Shap Moors," is in the Tate Gallery, London. In 1920 he was elected A.R.A., and in 1927 became an R.A.

Hallam **Henry.** English historian. A son of Rev. John Hallam, he was born at Windsor, July 9, 1777, and educated at Eton and Christ Church, Oxford. He entered the civil service, but found much time for writing. His *View of the State of Europe during the Middle Ages*, is still valuable, but his *Constitutional History of England*, once a text book, is now obsolete. This shows the author's Whig beliefs, also expressed in the articles he wrote for *The Edinburgh Review*. A third book is his *Introduction to the Literature of Europe in the 15th, 16th and 17th centuries*. He died at Penshurst, Jan. 21, 1859.

Hallam's son, **Arthur Henry Hallam,** is known for his friendship with Tennyson. He died in Vienna, Sept. 15, 1833, being only 22 years old. In his memory Tennyson wrote *In Memoriam*.

Hallamshire District of Yorkshire. It is the area around Sheffield One of the divisions into which that city is divided for sending members to Parliament is the Hallam division.

Halle City of Germany. It stands on the Saale, 21 m. from Leipzig and is an important railway junction. It is perhaps chiefly famous for its university, but in the 19th century it became a great industrial centre and new quarters sprang up all around the old town. The university, founded in 1694, possesses a fine range of buildings which include a large library and an observatory. Its medical school is notable. The town's oldest industry is salt mining. Other industries include the manufacture of machinery and confectionery, sugar refining, printing and malting. Pop. 194,600.

Hallé **Sir Charles.** English musician. Born in Germany, April 11, 1819, he studied music in Paris and elsewhere. In 1848 he settled in London and became a naturalised Englishman. Hallé won a reputation by the concerts he gave in London and by his work for music in Manchester, where he founded the Royal College of Music and conducted a fine orchestra. In 1888 he was knighted and he died Oct. 25, 1895.

In 1888 Hallé married **Wilma Neruda,** the widow of Ludwig Normann. She, too, was a German by birth, and having studied music, became one of the leading violinists of the day. Lady Hallé died April 15, 1911.

Hallelujah Hebrew word of praise identical with *Alleluia*. It is a doxology in the synagogues, occurs in the Psalms and in the Jewish hymns and in the Mass (except in times of mourning). It was also in the first Prayer Book of Edward VI. The **Hallelujah Chorus** is part of Handel's *Messiah*. Since 1743 it has been the custom for audiences to stand during its performance.

Halley **Edmund.** English astronomer. Born in London, Oct. 29, 1656, he was educated at St. Paul's School and Queen's College, Oxford. Interested in astronomy, he went on voyages and journeys with the object of extending his knowledge of that subject. Having returned to England he wrote on sun spots, magnetism, and other phenomena, and worked with Newton, whilst another interest was surveying to ascertain the nature of the tides. In 1703 he was made Savilian Professor of Geometry at Oxford, and in 1720 Astronomer-Royal at Greenwich. From 1713 to 1721 Halley was secretary of the Royal Society. He died at Greenwich, where he had done valuable work on the planets, Jan. 14, 1742, and was buried at Lee.

HALLEY'S COMET. In 1682 Halley observed the movement of the comet which since then has been named after him. This returned in 1759, in 1835 and in 1910. Its period is therefore 75 or 76 years. Its earlier appearances have been noted since 240 B.C.

Hall Mark Mark stamped upon articles of gold and silver plate. It is done at the Goldsmiths' Hall, London, or other assay offices to indicate the quality of the metal and other details. The hall mark, in addition to showing the standard of quality, indicates the place where the assay has been done by some emblem such as a leopard's head for London. It also gives the date, the year being shown by a letter of the alphabet, and the maker's initials. Plate made between 1784 and 1890 also has a duty mark.

Hallowe'en Scottish name for All Hallows Eve, October 31, the vigil of All Hallows, or All Saints' Day. It is one of many Christian festivals grafted on ancient pagan ceremonies, and its superstitious practices, *e.g.*, divination by nuts, or by mystic midnight rites, are survivals of spirit and nature worship.

Hallstatt Village of Austria. It is on the lake of the same name, 32 m. from Salzburg. The chief industry is the working of the salt mines. Hallstatt owes its main interest to the prehistoric cemetery unearthed in 1846. No fewer than 3000 graves were found and an examination of the articles therein, which were of gold, bronze, iron and amber, showed that their occupants were men and women who enjoyed a fairly high measure of civilisation. They worked the salt mines, grew crops and possessed cattle. Their implements were of iron and the name has been given to the first part of the Iron Age. The early **Hallstattian Age** is from 850-600 B.C. and the later 600-400 B.C.

Hallucination Apparent perception of an external object which does not exist. It differs from illusion, in which a sensation is misinterpreted. In either case belief in the reality of the object involves delusion. It usually affects sight or hearing or both, and may attend persons who are normally sane, through sleeplessness or other brain derangement. It may also indicate insanity. The seeing of ghosts is best explained as an hallucination.

Halo Term in meteorology applied to the coloured ring, red inside and blue outside, sometimes seen round the sun or moon. It is due to the refraction of light by small ice crystals in cirro-stratus clouds.

In art a halo, or nimbus, is a disc or other symbolic form shown round the head of saints and divine personages.

Halogens Chemical term for the elements fluorine, chlorine, bromine and iodine, which produce salts similar to common salt. These elements form a well-defined series of increasing atomic weights—

19.0, 35.475, 79.916 and 126.932 respectively, and their affinities for other elements increase or decrease in the same order.

Hals Franz. Dutch painter. He was born at Antwerp between 1580 and 1584. His life was spent mainly at Haarlem, where he painted and taught painting and where he died in August, 1666.

One of the greatest masters of portraiture, especially in the realistic and life-like painting of the head and hands, his work greatly influenced the style of the Dutch school of painting. His well-known picture, "The Laughing Cavalier," is in the Wallace Collection, London, and others are in the National Gallery, London. Most of them, however, are in the Netherlands, especially at Haarlem, but there are others in the Louvre, Paris.

Halsbury Earl of. English lawyer. Hardinge Stanley Giffard was born Sept. 3, 1823, in London, his father, Stanley Lees Giffard, being a writer. He was educated at Merton College, Oxford, and became a barrister. In 1875 he was made Solicitor General in the Conservative ministry, and in 1877 he was elected M.P. for Launceston. In 1885 he was made Lord Chancellor and a baron. He was again Lord Chancellor, 1886-92 and 1895-1905. In 1898 he was made Earl of Halsbury. He died Dec. 11, 1921. He was succeeded by his son, hitherto known as Viscount Tiverton. Halsbury was noted for his physical vigour, which enabled him to live nearly a century, and for his unbending Toryism. He edited *The Encyclopaedia of the Laws of England.*

Halton Village of Buckinghamshire. It is 4 m. from Aylesbury and is one of the centres of the Air Force. A camp was established here in 1917, and this became, as it now is, a training ground for those entering the air force.

Another Halton is a village of Cheshire. It is 11 m. from Chester, on the L.M.S. Rly. Here are the ruins of a castle. Pop. 1250.

Ham Son of Noah. Gen. x. makes him the ancestor of peoples occupying Ethiopia, Egypt and other parts of northern Africa, whom modern ethnologists class as Hamitic, in contrast with Semitic.

Ham Urban district of Surrey. It is about 10 m. to the west of London, lying between Twickenham and Teddington. There is a common at Ham. Near are Richmond Park and Ham House, built early in the 17th century and a seat of the Earl of Dysart. It is famous for its art treasures and its meadows called Ham Walks. Pop. (1931) 2206.

Hamadan Town of Persia. It is 180 m. to the south-west of Teheran and is an important trading centre, as it has been for many centuries. The caravan roads to Bagdad and the Caspian Sea pass through it. There are some manufactures. In April, 1918, the town was occupied by the British. It covers the site of the ancient Ecbatana. Pop. 30,000.

Hamadryad According to Greek mythology, a nymph presiding over and living in a tree. Her life began and ended with that of the tree.

Another hamadryad is a large species of cobra, called also the king cobra. It feeds largely on other snakes.

Haman Character in the Biblical book of Esther. He was the grand vizier of Ahasuerus, King of Persia. He formed a plot to avenge himself on Mordecai by extirpating the Jewish race. This was exposed by Esther and he was hanged upon the lofty gallows prepared for Mordecai, who succeeded him. His effigy formerly appeared at the commemorative feast of Purim.

Hamble River of Hampshire. It falls into the sea near Southampton where it forms Hambledon Creek. At its mouth on Southampton Water, 5 m. south of Southampton, is a station for flying boats and seaplanes, also called Hamble. In 1931 a flying school was opened here.

Hambleden Viscount. English title borne by the family of Smith. The statesman, W. H. Smith, left a widow who in 1891 was created Viscountess Hambleden. This title was inherited on her death in 1913 by their son, William Frederick Danvers Smith. Born Aug. 12, 1868, he was educated at Eton and New College, Oxford. From 1891 to 1910 he was Unionist M.P. for the Strand division of London and until his death head of the firm of W. H. Smith and Son, the distributors of newspapers. He was known as an oarsman and a benefactor of King's College Hospital. He died June 16, 1928, his title passing to his elder son.

Hambleden is the name of a village in Buckinghamshire.

Hambledon Village of Hampshire. It is 6 m. from Fareham and is famous as the early home of cricket in England. About 1750 the Hambledon Club was formed and this played the game on Windmill and Broad Halfpenny Downs. William Beldham, called Silver Billy, and other famous cricketers of that time were among the Hambledon men.

Hamburg City and seaport of Germany; also a state of the German republic. It stands on the Elbe, 75 m. from its mouth at Cuxhaven and 180 from Berlin. The second largest city in the land, it covers a large area and includes suburbs that were once separate towns. The Bille flows through it to join the Elbe; it is also traversed by canals. Another river, the Alster, has been dammed up to form two lakes, outer and inner, which are a feature of the city. It is connected by railway with all parts of Germany, has a service of electric trains and is an airport.

The city hall and the law courts are fine modern buildings. There is a university, opened just after the Great War, and an institute of tropical medicine. The city has botanical gardens, two observatories, several museums and near, at Stellengen, is Hagenbeck's famous zoological park. The Lombards bridge divides the two Alsters. The Hall of Art contains a collection of modern German pictures. It has a broadcasting station (372 M., 1.5 kW.).

The extensive docks accommodate the largest vessels. They include miles of sheds and quays; near them are the great shipbuilding and ship repairing yards of one of the world's largest seaports. Part of it constitutes a free port which has an enormous transit trade; the whole is over 6 m. long. Of the many lines that have their headquarters here, the greatest is the **Hamburg Amerika** founded in 1847.

Apart from the shipping which has now recovered from the paralysis of the Great War, Hamburg is a great manufacturing town. Beer, spirits, chemicals and machinery are made. The preparation of foodstuffs is a large industry and others are the refining of oil and sugar.

In the Middle Ages Hamburg was a leading member of the Hanseatic League. In 1510 it was made, and it still is, a free city. In 1815 it joined the German Confederation, in 1866 the North German Confederation, and in 1871 the German Empire. In 1918 it became a state of the new republic. Pop. (1929) 1,143,079.

The state of Hamburg covers 160 sq. m., and includes, in addition to the city, some detached portions of land, several being islands in the Elbe. Cuxhaven, its outport, and Ritzebuttel are also included. It is governed by a house of burgesses elected by all adults and an executive chosen by the house. Pop. (1929) 1,226,111.

Hameln (or Hamelin). Prussian town in the province of Hanover. It stands on the Weser and dates as a town from the 11th century. Pop. (1925) 25,633. It is chiefly notable as the town of Browning's legend of the Pied Piper, who in 1284 rid the town of a plague of rats. The inhabitants refusing to pay him, he charmed the children of the town to follow him into a door in the Koppelberg hill, whence none returned.

Hamilcar Name of three noted Carthaginian soldiers. The most famous was **Hamilcar Barca**, or lightning, the father of Hannibal. He lived in the 3rd century B.C., and spent his life in warfare. He commanded the Carthaginians in Sicily during the first Punic War and made peace with the Romans in 241 B.C. He then returned to Carthage and put down a rising of the mercenaries. His last year was passed in Spain where he built up the power of Carthage. He was killed in battle in 228 B.C.

Hamilton Burgh and market town of Lanarkshire. It is 11 m. from Glasgow and is served by the L.M.S. and L.N.E. Rlys. Here are barracks, as the burgh is the depôt of the Cameronians (Scottish Rifles). The chief industry is coal mining and around are market gardens. Pop. (1931) 39,400.

Near the town is a park of 1500 acres, in which Hamilton Palace, the residence of the Dukes of Hamilton, stood until it was demolished. The park is used as a race-course. The burgh of Netherton stood here before 1600. Hamilton was then called Cadzow, and there are still ruins of Cadzow Castle. In Cadzow Park is a famous herd of white cattle.

Hamilton City and port of Ontario, Canada. It stands on Burlington Bay, a branch of Lake Ontario, 39 m. from Toronto. It has stations on the two great railway lines, the C.N.R. and C.P.R., and from here electric railways radiate. Iron and steel goods are made and other industries include the making of furniture, textiles, etc. There is also some shipping to other ports of the Great Lakes. Electrical energy is obtained from water power. **Burlington Beach** is a strip of land in front of the city. It is used as a pleasure resort, whilst a canal passes through it. Pop. (1931) 154,914.

Hamilton Capital of the Bermudas. It is on Great Bermuda, and has a good harbour, although somewhat difficult of approach. Since prohibition was introduced in the United States it has become popular with Americans. Pop. (1931) 3259.

Hamilton Town of New Zealand. In North Island, it is 86 m. from Auckland. It is served by a railway line and is the centre of a farming district. Pop. 18,250.

Hamilton Town of Victoria. It is 198 m. by railway from Melbourne. It is the centre of a large grazing district where butter is made. Races are held here. Pop. (1931) 5300.

Another **Hamilton** is a town of New South Wales. It is 75 m. from Sydney. Pop. 6000.

Hamilton **Alexander.** American statesman. Born in the West Indies, Jan. 11, 1757, he was the child of a Scottish father and a native mother. He was educated in New York, became a lawyer and was assistant to Washington during the War of Independence. In 1782 he was chosen a member of Congress and he had a large share in framing the constitution of the country. He was the leader of the party that stood for a strong central government and he put forward his ideas in *The Federalist*. From 1789 to 1795 he was Secretary to the Treasury and did a great work in organising the country's finances. In 1799, Washington being dead, he was appointed to command the army raised to resist a threatened French invasion. On July 11, 1804, Aaron Burr wounded him in a duel and he died on the following day.

Hamilton **Duke of.** Scottish title, the senior of its kind. Sir James Hamilton of Cadzow in Lanarkshire married a daughter of James III., and their son was made Earl of Arran in 1503. His son was regent of Scotland and was made Duke of Châtellerault by the King of France in 1549. His son, **John**, was made Marquess of Hamilton in 1599. **James**, the 2nd marquess, was made a duke in 1643. In 1648 he led an army into England to help Charles I., but was defeated at Preston, and in 1649 was executed. His brother, **William**, the 2nd duke, was killed at the Battle of Worcester in Sept. 1651, and the title became extinct. In 1660, **William Douglas, Earl of Selkirk**, having married the heiress of the last duke, was made Duke of Hamilton, and this title still remains with the family of Douglas-Hamilton.

James Douglas, who in 1698 succeeded to the dukedom, was allowed to take precedence from 1643. He ranks therefore as the 4th duke. He was made Duke of Brandon in 1711, and was killed in a duel with Lord Mohun, as described by Thackeray in *Esmond*. **James**, the 6th duke, married Elizabeth Gunning. **James**, the 7th duke, inherited the title of Marquess of Douglas. **Alexander**, the 10th duke, was ambassador at St. Petersburg. **William**, the 11th duke, married a daughter of the Grand Duke of Baden and spent much of his time at the court of Napoleon III. His son, **Alexander**, the 12th duke, died without sons in 1895, when a kinsman, **Alfred**, inherited the titles and the estates in Lanarkshire. Other estates, including the island of Arran with Brodick Castle, passed to the daughter of the 12th duke, who later became **Duchess of Montrose.**

The duke's seat is now Dungavel, Lanarkshire. His eldest son is the **Marquess of Douglas and Clydesdale**, a noted airman and boxer, elected Unionist M.P. for East Renfrewshire in 1930. In 1933 he flew over Mount Everest (*see* **Everest**).

Hamilton **Emma, Lady.** Mistress of Lord Nelson. She was born, it is said, at Great Neston, in Cheshire, April 26, 1765, the daughter of a labourer, and was known as Emily Lyon. She lived for a time at Hawarden and then went to London as a servant. She had several lovers, and in 1781 became the mistress of the Hon. Charles Greville, leaving him in 1786 for Sir William Hamilton,

British minister at Naples. In 1791 Hamilton married her and she became very friendly with the Queen of Naples. At Naples in 1793 she met Nelson, but their intimacy did not begin until 1798. Their child, Horatia, was born in 1801. Left a widow in 1803, Lady Hamilton's extravagance soon landed her in debt and in prison. She died Jan. 15, 1815.

Lady Hamilton's beauty attracted the attention of George Romney, who painted her more than 20 times. Sir Joshua Reynolds also painted her. A number of books have been written about her.

Hamilton Sir Ian Standish Monteith. British soldier. Born at Corfu, Jan. 16, 1853, the son of a soldier, he was educated at Cheam and Wellington College, entering the Gordon Highlanders in 1872. In Afghanistan in 1878 he began a long career of active service. He was wounded and taken prisoner at Majuba in 1880, and was later in Egypt and Burma, as well as in the Chitral and Tirah campaigns on the Indian Frontier. In 1899 he was Chief of the Staff in Ladysmith, and served against the Boers to the end of the struggle, either as Chief of the Staff to Kitchener, or in command of a force during the guerilla warfare. From 1902 to 1915, he was, in succession, Quartermaster-General, Commander of the Southern District, Adjutant-General and Inspector-General of Oversea Forces. In 1904-05 he was with the Japanese armies in Manchuria.

In 1915 Hamilton was appointed to the command of the force that attacked the Turks in Gallipoli, and he conducted this costly campaign almost to the end. He retired from the army in 1920, being then a general and the recipient of numerous honours.

Hamilton is a graceful writer in prose and verse, and by no means a soldier of the conventional type. His books include *A Staff Officer's Scrapbook* and *A Gallipoli Diary*.

Hamilton Patrick. Scottish martyr. Born in Lanarkshire about 1504, he was descended through his mother from King James II. He was sent to Paris for his university education, and at Louvain he learned something of the reformed teaching. Having returned to Scotland, he was accused of heresy, but escaped punishment by going to Germany, where he was influenced by Luther. He went back to Scotland in 1527 and was soon taken and put on trial for heresy. He was found guilty and on Feb. 29, 1528, was burned at St. Andrews. In Germany, Hamilton wrote *Loci Communes*, or *Patrick's Places*, a statement of his religious faith.

Hammerfest Town and port of Norway. It is on an island in the north of the country, 675 m. from Trondhjem. There is a harbour and the port is a centre of the whale fishery. It exports cod liver oil and other products of the northern seas, and has the reputation of being the most northerly town in the world. Pop. 2700.

Hammerhead Large bird found in Africa. It belongs to the stork family, is brown in colour and is about 2 ft. long. It is found near lakes as it feeds on fish and frogs. The feathers on the head give it a certain resemblance to a hammer, hence its name. It is also called hammerkop and umbrette.

Hammersmith Borough of the county of London. To the west of the city, it has the Thames on its southern side and here a bridge crosses the river. It adjoins Chiswick and Kensington, and part of it is called West Kensington. The borough includes Wormwood Scrubs with the prison. The Lyric Theatre is famous for its association with the revival of *The Beggar's Opera* and the performance of other successful plays. In the borough are Olympia, a vast building used for exhibitions and the like, and the White City at Shepherd's Bush. Pop. (1931) 135,621.

Hammond Walter Reginald. English cricketer, born at Dover, June 3, 1903. Having become a professional cricketer he played first for Gloucestershire. His performance in 1927, both as a batsman and bowler, made his reputation and he became one of the leading cricketers in England. He visited Australia and in 1930 played in the test matches in England.

Hammurabi King of Babylon. The sixth monarch of the 1st dynasty of Babylon and the son and successor of Sin-muballidh, he has been identifiable with Amraphel, King of Shinar (Gen. xiv.). He threw off Chedorlaomer's supremacy, dominated the Sumerian and Akkadian city states, and made Babylonia a single monarchy. His brilliant reign of 43 years was marked by much building and canal construction; he left valuable letters, and a Semitic code of laws. His date is about 2100 B.C. A stela in the British Museum bears his sculptured representation.

Hampden Name of two villages in Buckinghamshire, Great and Little. **Great Hampden** is three miles from Missenden and in its church is a memorial to John Hampden who was buried here. Near is Hampden House, once his residence. This was rebuilt in 1754 and is now the seat of the Earl of Buckinghamshire.

The title of **Viscount Hampden** has been borne since 1884 by the family of Brand. Henry Bouverie William Brand was a Liberal M.P. from 1852 to 1884. From 1872 to 1884 he was Speaker of the House of Commons. He died March 14, 1892.

Hampden John. English statesman. Born at Hampden in 1594, he was a son of William Hampden, and was related through his mother to Oliver Cromwell. He was educated at Magdalen College, Oxford, and studied law. In 1621 he was elected to the House of Commons for Grampound, then for Wendover and then for Buckinghamshire. In 1627 he was imprisoned for refusing to contribute to a forced loan, but his fame rests on his opposition to Ship-Money. He refused to pay this tax, and in the end won his case. Hampden was one of those who impeached Strafford and one of the five members whom Charles I. tried to arrest. He raised a regiment when the Civil War began and led it at Edgehill and in other fights. On June 18, 1643, he was wounded at Chalgrove Field, and died on June 24, 1643.

Hampshire County of England. Its full name is the county of Southampton; it is in the south of the country with a coastline on the English Channel. It includes the Isle of Wight, which, however, has its own county council. The total area is 1623 sq. m. Winchester is the county town, but Southampton, Portsmouth and Bournemouth are larger. Other towns are Aldershot, Basingstoke and Eastleigh, and there are several interesting market and other towns, Alton, Fareham, Petersfield, Stockbridge and Andover among them. Lymington, Havant and Bosham

are small seaports. Portsmouth Harbour is the headquarters of the navy; Southampton Water is a great commercial harbour.

The rivers include the Itchen, Test, Hamble, Avon and Lymington. There are Downs in the north and around Winchester; sheep farming is one of the chief industries. The county contains the New Forest and remains of Wolmer and other forest areas. Places of historic interest, in addition to Winchester, are Beaulieu and Christchurch, Basing House and Hurst Castle. It is served by the Southern and G.W. Rlys. Hampshire is famous for its early association with the game of cricket, and is now a first class county. Pop. (1931) 1,014,115.

The Hampshire Regiment was formerly the 37th and 67th Foot. These were raised in 1702 and 1758 respectively and have since had a long and honourable record of service. The depôt is at Winchester.

Several British warships have been named the Hampshire. One existed in the time of the Commonwealth. Another, a cruiser of 11,000 tons, was lost off the Orkneys on June 5, 1916. Lord Kitchener and 600 officers and men were drowned.

Hampstead Borough of the county of London. It lies to the north-west of the city, about 6 m. away. The borough includes, in addition to Hampstead proper, Haverstock Hill and West Hampstead stretching along the Edgware Road. Here are Westfield College for women, Hackney and New College, a theological institution, and University College School.

In old Hampstead some delightful houses still stand. A notable thoroughfare is Well Walk, named when there was a spa here. At one time Keats lived therein; another house he occupied, Lawn Bank, is now a memorial to him. To the north of Hampstead Heath is the Hampstead Garden Suburb. This was laid out in 1907, and is one of the most successful enterprises of its kind. The land is owned by a trust. Pop. (1931) 88,914.

Hampstead Heath Public recreation ground in the north of London. On high ground, about 430 ft. above sea level, it covers altogether some 600 acres, part of it being known as Parliament Hill. It was once noted for its fairs and is still a popular resort on bank holidays. On or near it are the famous inns known as The Spaniards, Jack Straw's Castle and The Bull and Bush.

Hampton Urban district of Middlesex. It stands on the Thames, 15 m. from London, on the S. Rly., and contains Hampton Court. A ferry goes from here to the other side of the river. A house here is called Garrick's Villa, because the great actor lived in it for a time. Pop. (1931) 13,053.

About 3 m. from Hampton is **Hampton Wick,** also an urban district. The chief building is the church of S. John the Baptist. A bridge over the Thames connects Hampton with Kingston. Pop. 2957.

Another Hampton is **Hampton-in-Arden,** Warwickshire. This is 102 m. from London, on the L.M.S. Rly. Pop. 1100.

Hampton Court Palace on the Thames near London. It is at Hampton, 15 m. from London, and is one of the finest buildings of its kind. It was erected by Cardinal Wolsey and enlarged by Henry VIII., who took it from his fallen minister. Later, further additions were designed by Wren. It contains over 1000 rooms. George III. was the last king to reside here. Parts of the palace are occupied as residences by private persons, but the larger apartments are open to the public. These include the great hall, the haunted gallery and the chapel royal. Other interesting features are the gateways, the great vine, the old clock and the maze. There is a valuable collection of pictures. The park covers 600 acres and there are over 40 acres of beautiful gardens. Adjacent is Bushey Park.

In 1604 the **Hampton Court Conference** was held here. This was convened by James I. in order to compose the differences between the Anglican clergy and the Puritans. It had no definite result.

Hamsun **Knut.** Norwegian novelist. Born Aug. 4, 1859, he became a clerk and then tried various other occupations, farming and teaching among them. He went to the United States, but was equally unsuccessful. In 1888 his first novel, *Sult*, was published in a Danish magazine, and this made his reputation. He wrote other novels which have been translated into English and other languages. The English titles of some are, *Shallow Soil, Growth of the Soil, The Women at the Well, Mysteries* and *Vagabonds* (1931). In 1920 he received a Nobel Prize.

Han River of China. A tributary of the Yang-tse Kiang, it is about 1300 m. long. It rises in the mountains in the province of Shensi and flows to join the Yang-tse at Hankow. It is navigable for large vessels for about 450 m., and for small ones for almost the whole of its course.

Hand Prehensile extremity of the fore limb. Beyond the eight carpal bones of the wrist are the five metacarpal bones of the palm, and 14 phalanges serving one two-jointed thumb and four three-jointed fingers. The hands are a fundamental distinction between mankind and the lower animals. They arose from withdrawing the fore limbs from the office of support and locomotion, leaving this to be discharged solely by the hind limbs, and endowing them with the faculty of grasping by means of perfectly mobile fingers and opposable thumbs.

Hand Unit of length, used in the measurement of horses. Originally roughly the breadth of the palm of a man's hand, it has been standardised at four inches.

Handel **George Frederick.** English musician. Born at Halle in Lower Saxony, Feb. 23, 1685, he was the son of a surgeon there. Despite parental opposition, he studied music and after a time became organist of the church in his native town. In 1703 he joined an orchestra at Hamburg and there his first opera, *Almira*, was composed. After three years in Italy, he became, in 1710, chapel master to George, Elector of Hanover, and in 1712 he settled in England, two years before his master became king. He produced *Rinaldo* in London, and in 1713 his famous Utrecht *Te Deum* appeared. He became organist to the Duke of Chandos at Edgware and in 1726 was naturalised. From then until 1750 he was busy composing operas and oratorios. In 1751 he became blind and he died April 14, 1759. He was buried in Westminster Abbey.

Handel is best known by his oratorios His masterpiece, *The Messiah*, was produced in Dublin in 1742. *Esther, Alexander's Feast, Samson, Judas Maccabaeus* and *Jephtha* are

other famous pieces. He composed much other music, sacred and secular, the latter including operas written for the Royal Academy of Music. For the coronation of George II. he composed *Zadok the Priest*, and he wrote *Anthems* and *Lessons* for the Duke of Chandos.

Handicap Method of treating competitors in a race or other sporting event so that each shall have a fair chance of success. The method of handicapping varies with the kind of sport. In horse racing the horses must carry certain weights, these being fixed by officials of the Jockey Club and other organisations. In golf the weaker competitors are given a certain number of strokes. In lawn tennis the players owe or receive 15 points or some other score. In foot races and billiards a handicap takes the form of a start to the weaker competitor.

Handsworth District of Yorkshire (W.R.). It is 4 m. from Sheffield. Here are collieries, nursery gardens and quarries.

Another **Handsworth** is a district of Birmingham. It is in Staffordshire, to the north-west of the city, and until 1911 was a separate urban district. It is an industrial area. Handsworth College is a centre for training Wesleyan ministers.

Hangar Large shed used for housing aircraft. It may be of a temporary or permanent character. Large hangars often of concrete construction form an important part of the buildings of an aerodrome.

Hanging Gardens Gardens at Babylon, one of the Seven Wonders of the World. They were arranged in terraces, the highest being 300 ft. above the plain, and contained halls and other buildings, placed amidst luxuriant tropical flowers and trees. It is said that they were laid out by Semiramis, but it is more probable that Nebuchadnezzar was responsible for them.

Hankey **Sir Maurice Pascal Alers.** English administrator. Born April 1, 1877, he was educated at Rugby and entered the marines. In 1902 he became an official in the Naval Intelligence Department at the Admiralty and was soon associated with the Committee of Imperial Defence. In 1912 he became its secretary, and in 1916 Secretary to the War Cabinet. In 1919, when a secretariat for the cabinet was formally established, he was placed at its head. In 1916 he was knighted and in 1919 he was awarded £25,000, presumably for his work at the Peace Conference.

Hankow Treaty port of China. It stands on the north bank of the Yang-tse-Kiang, where it is joined by the Han, about 600 m. from its mouth. It is connected by railway with Peiping nearly 800 m. away. There is a harbour with accommodation for large steamers, but they can only ascend the river during the summer.

Opposite on the south bank of the Yang-tse is Wuchang and across the Han is Hanyang: through these cities much of the commerce of the centre of the country passes. In Hankow the British, French and Japanese have settlements, and near it are some of the richest deposits of iron ore in the world. The population of the three cities in 1931 was 777,993

Hanley District of Stoke-on-Trent, once a separate borough and market town. It is 18 m. from Stafford and 148 from London, and is reached by the L.M.S. Rly. The main industry is the manufacture of pottery. In 1910 Hanley was made part of the city of Stoke-on-Trent (*q.v.*).

Hannah Wife of Elkanah and the prophet Samuel's mother (1. Sam. i.-ii.). Receiving her son in answer to prayer, she dedicated him to the service of the temple under the high priest, Eli; her song is a prototype of the Magnificat.

Hannibal Carthaginian soldier and one of the world's great captains. A son of Hamilcar Barca, he was born about 247 B.C. His boyhood and youth were passed partly in Spain in military surroundings, and there he learned that hatred of Rome that dominated his life. When, in 229, Hamilcar died, his young son was hailed as his successor, and soon entered upon his wonderful career. He brought parts of Spain under the authority of Carthage and took Saguntum in 218, thus bringing on a war with Rome.

In the same year Hannibal set out for Italy. He crossed the Pyrenees, defeated a Roman army in Gaul and made his memorable passage of the Alps, which cost thousands of lives and himself the loss of an eye. He won a first victory over the Romans at Ticinus, and then a much greater success at Trebia. Marching towards Rome, he almost annihilated one great Roman army at the Trasimone Lake (217) and another at Cannae (216). In 216 he passed a memorable winter in Capua, from which he emerged to carry on a predatory and indecisive warfare that lasted for nearly ten years. Victory seemed impossible and his skill avoided defeat until the disaster at the Metauras in 207. His brother, Hasdrubal, in that year succeeded in reaching Italy with an army, but before he could join the other Carthaginian force he was defeated and killed in battle. His head was cut off and thrown into the camp of Hannibal, who thus learned his fate. For four more years Hannibal carried on the hopeless struggle and then in 203 returned to Carthage which was being invaded by the Romans. At Zama he met his old enemy, Scipio, in battle, but this time Hannibal was utterly beaten. He left his country as an exile and lived for a time in Asia Minor. The Romans demanded his surrender, to avoid which he took poison in 183.

Hanno Carthaginian sailor. He lived about 500 B.C. and is famous for the voyage he made along the west coast of Africa. He wrote an account of this which has been translated into English and is one of the earliest extant writings of its kind.

Another **Hanno**, who flourished about 250 B.C., is known as the opponent of the party in Carthage led by Hamilcar and his sons. His policy was to keep at peace with Rome. Hanno was governor of Libya where his rule led to serious trouble.

Hanoi City and river port of Asia, the capital of Tongking and of French Indo-China. It stands on the Song-koi, or Red River, about 80 m. from its mouth. It is laid out on modern lines with all modern conveniences. There is a university. Near the city is the Great Lake, on the side of which is built a Buddhist temple with a famous statue of Buddha. The city is well served by railways and has some manufactures. Small steamers can reach it. The river is here crossed by a bridge a mile long. Pop. (1932) 123,210.

Hanotaux **Albert Auguste Gabriel.** French statesman and scholar. Born Nov. 19, 1853, he became an official in the foreign office. From 1886 to 1889

he was a member of the Chamber of Deputies. From 1894-98, with a brief interval in 1895-96, he was Minister for Foreign Affairs, his policy being one of friendship with Russia and advance in Africa. He resigned after the French rebuff at Fashoda and devoted the rest of his life to literary work. In 1897 he was elected to the Academy.

Hanotaux has written some monumental works, including his *Histoire de la France Contemporaine*, which has been translated into English, and his *Histoire de la Guerre de* 1914 in 18 volumes. His *Histoire de la Nation française* is in 15 volumes; he wrote a notable book on Richelieu.

Hanover District of Germany, once a separate kingdom. It is now a province of Prussia, having Hanover as its capital, and covers 14,897 sq. m. The duchy of Lüneburg-Celle was ruled in 1692 by Ernest Augustus, who was made an elector as a reward for helping the Emperor Leopold I. and styled himself Elector of Hanover, this being the name of his capital. Hanover remained an electorate until the dissolution of the Empire in 1806. In 1814 it was made a kingdom. Its rulers from 1714 to 1837 were also Kings of Great Britain and Ireland.

In 1837 Hanover was separated from Great Britain and Ernest Augustus, Duke of Cumberland, became the king. He died in 1857 and was succeeded by his son George V. In 1866 George took the side of Austria in the war against Prussia. The Prussians, therefore, invaded Hanover and annexed it. The king and then his son, the Duke of Cumberland, maintained their rights to the throne, but these were never recognised, and Hanover has since remained part of Prussia.

Hanover Town of Germany, once the capital of the kingdom of Hanover. It is 116 m. from Hamburg and 163 from Berlin, and is an important railway junction, standing at the junction of the rivers Leine and Ihme. It is also an airport and is connected with the Rhine by a canal.

The town consists of an old town, a new town and suburbs around them. There are some fine squares and beautiful public gardens, including a zoological garden. The opera house and several theatres may be mentioned, and there is a hall seating 6000 people. Near the town are some extensive woods owned by the municipality, and Herrenhausen, formerly the residence of the rulers of Hanover. The suburbs include Calenberg and Linden. Machinery, rubber, textiles and chemicals are the chief industries; also printing. It has a broadcasting station (566 M., 0.25 kW.). Pop. (1925) 425,274.

Hansard Name given to the official reports of the proceedings of Parliament. In 1803, Thomas Curson Hansard, a printer, began to issue accounts of the debates. After his death in 1828 the work was continued by his family, and in 1857 a grant of money was made to help them in the work.

In 1895 the Hansards ceased to do this work, which was taken over by the staff of *The Times*. In 1908 this arrangement ended and the debates are now reported by a staff engaged by the Government. The name Hansard is, however, retained for the volumes that contain the debates and speeches. A verbatim report of the proceedings of each sitting is issued each day that Parliament meets.

Hanseatic League Union of towns, chiefly in the north of Europe, for trading purposes. In the 12th century, in some of the cities that took the lead in developing trade with foreign countries, merchants formed themselves into a hansa or association for the purpose of securing privileges. Later, two or more of these hansa united themselves together for the same purpose and in this way the great Hanseatic League began. In forming this league Lübeck, Hamburg and Bremen took the leading part, and in the 14th century they had made it into a great confederation, equal in power, and more than equal in wealth, to many of the European states. Most of the seaports on the Baltic and the eastern side of the North Sea were members. Its headquarters were at Lübeck.

The 14th century, when the Baltic was a great highway of trade, was the most flourishing period of the League's history. Its membership meant valuable privileges for merchants in England and other lands, not the least being protection, for the League kept an army. From 1340 to 1370 it carried on a war with Denmark, in which it was victorious. In the 15th century, the power of the League declined. Various causes contributed to this, one being the growth of nationality. The discovery of America was another blow, and the Thirty Years' War brought the League to an end. For long after, however, the towns of the League were called Hanse Towns.

Hansom Name of a type of cab now rarely seen. It was named after J. A. Hansom, a Yorkshireman, who registered the first one as a patent. The earliest hansom had the driver's seat at the side and was fitted with two enormous wheels. Later the seat was placed at the back.

Hanway **Jonas.** English philanthropist. Born at Portsmouth, Aug. 12, 1712, he entered business at Lisbon. Later he was a merchant in Russia and Persia. He settled in London and was from 1762 to 1783 a civil servant. He died Sept. 5, 1786. Hanway was the first man to carry an umbrella in London; he founded a hospital for fallen women, and attacked the habit of drinking tea.

Hanwell District of Middlesex, part of the borough of Ealing, and 7 m. from London. The Brent and the Grand Union Canal flow through the district which includes Ellhorne.

Hanworth District of Middlesex. It is 16 m. from London, and its station is Feltham on the S. Rly. Here is the London Air Park.

Hapsburg Name of great European family. It is taken from a castle near the union of the Aar and the Rhine, where the early Hapsburgs lived. They were counts, and in 1273 one of them, **Rudolph**, was chosen German King. He secured Austria and Styria, and his descendants were dukes and then archdukes of Austria. Rudolph's son, Albert, was German King, as was another member of the family, Frederick, but only for short periods.

In 1438 **Albert**, Archduke of Austria, a descendant of Rudolph, was chosen German King. He had just inherited by right of his wife the kingdoms of Bohemia and Hungary, and with Austria and the duchies associated with it he ruled over a fairly extensive territory. From this time until 1806, the Hapsburgs were German kings and Roman emperors, though they were descended not from Albert but from a relative, **Frederick**, who became German King in 1440.

Frederick's son was **Maximilian I.**, who was succeeded by a grandson, **Charles V.** Charles had a brother, **Ferdinand**, who became King of Bohemia and Hungary and who succeeded as emperor on his brother's abdication. From this time the Hapsburgs were divided into two branches, the Austrian Hapsburgs descended from Ferdinand and the Spanish Hapsburgs descended from Charles's son, Philip II. The Spanish Hapsburgs became extinct when Charles II. died in 1700; the Austrian Hapsburgs, when Charles VI. died in 1740.

The later Hapsburgs are descended from the marriage of the Empress **Maria Theresa**, the daughter of Charles VI., and **Francis**, Duke of Lorraine, and are sometimes called the house of Hapsburg-Lorraine. **Francis II.**, a grandson of Maria Theresa and Francis, resigned the imperial crown in 1806, and the Holy Roman Empire came to an end. In 1804 he had declared himself Emperor of Austria, and his descendants, notably **Francis Joseph**, kept this dignity until 1918, being also Kings of Hungary and Bohemia and until 1859 having lands in Italy. The last emperor was **Charles**, who abdicated in 1918 and died in 1922, leaving his son, Francis Joseph Otto, as head of the house.

Hara-Kiri Japanese practice of self-disembowelment. As an honourable atonement for wrongs done by nobles and officials, it was formally recognised in the 14th century and was effected ceremonially with a jewelled dagger sent by the Mikado. For centuries about 1500 such suicides, half of them voluntary, occurred annually. Obligatory hara-kiri ceased in 1868; the voluntary form remains. General Nogi observed it, his wife simultaneously cutting her throat, when the Mikado Mitsuhito died in 1912.

Harbin Town and river port of Manchuria. It stands on the Sungari River, 325 m. from Mukden and is a junction on the Chinese Eastern Rly. It is a treaty port and has an international settlement. Pop. 330,436.

Harbour Stretch of water where ships can anchor in safety. There are natural harbours and artificial harbours. The best natural harbours are found where the sea penetrates the land by a somewhat narrow entrance, as is the case with Sydney and Cork harbours, which are among the finest in the world. The entrance to New York makes a fine natural harbour; other good examples are Milford Haven and Portsmouth. The mouths of rivers may make harbours, but these are less protected than are land-locked arms of the sea and are more liable to be silted up with sand or debris.

Artificial harbours are made in suitable places by the construction of breakwaters and other works of that kind, some of these being marvels of engineering skill. Dover, Southampton and Buenos Aires are examples. Every civilised maritime country has harbours of this kind, constantly being improved to accommodate larger and larger vessels. Many small harbours which made prosperous seaports are now useless because they cannot accommodate the larger vessels of to-day.

A modern harbour is equipped with docks of all kinds and appliances for expediting the handling of cargo. Some harbours, those at Dover, Rosyth and Cherbourg, for instance, have been built for naval purposes.

In most large ports, such as London, Liverpool and Glasgow, the harbour is owned and managed by a special authority appointed for that purpose. In other ports the docks belong to a railway company, Southampton being an example. In some small ports they are the property of the local authority.

Harbour Grace Town and port of Newfoundland. On the shores of Conception Bay, in the east coast of the island, it has a harbour of considerable size. Here is a Roman Catholic cathedral. It is connected by railway with St. John's. Pop. 3825.

Harcourt **Viscount.** Title held by the family of Harcourt. The first viscount was **Simon Harcourt**, who was made Lord Keeper of the Great Seal in 1710. He was made a baron in 1711 and a viscount in 1721. He died July 23, 1727. His son, Simon, the 2nd viscount, was made an earl in 1749, and was Lord Lieutenant of Ireland, 1772-77. When he died in 1777 the titles passed in turn to his two sons. When, in 1830, William, the 3rd earl, who was a distinguished soldier, died, the Harcourt titles became extinct.

In 1916 the title of Viscount Harcourt was revived for **Lewis Vernon Harcourt.** Born Feb. 1, 1863, he was the elder son of Sir William Harcourt who had inherited the family estates, including the manor house of Stanton Harcourt and Nuneham Park, both in Oxfordshire. The former had been a family residence for 600 years. Lewis Harcourt was an M.P. from 1904 to 1916. From 1905-10 he was First Commissioner of Works, and from 1910-15 Secretary for the Colonies. He died Feb. 24, 1922, leaving an only son to inherit his title.

Harcourt **Sir William.** English statesman. William George Granville Venables Vernon Harcourt, born Oct. 14, 1827, was a grandson of Edward Harcourt, Archbishop of York. He went to Trinity College, Cambridge, and became a barrister. His powerful intellect soon showed itself in his contributions to *The Saturday Review* and in the letters which, signed *Historicus*, he wrote to *The Times*. From 1867 to 1877 he was Whewell Professor of International Law at Cambridge.

Harcourt, true to the Whig creed of his family, joined the Liberal party, and in 1868 was elected M.P. for the city of Oxford. From 1880 to 1895 he represented Derby, and from 1895 to 1904 a division of Monmouthshire. In 1873-74 he was Solicitor General and from 1880-85 was Home Secretary under Gladstone, whom he followed when Home Rule split the Liberal party. In 1886 he was Chancellor of the Exchequer for a few months, and he returned to that position in 1892. In 1894 he succeeded Gladstone as leader in the House of Commons, but not, to his disappointment, as Premier. He was responsible for the introduction of the death duties. He left office in 1895 and led the party in opposition until 1898, when he resigned; but he kept his seat in the Commons until his death, Oct. 1, 1904. In his later years he lived at Nuneham, near Oxford, the old seat of the Harcourts, which he inherited from a kinsman. He left two sons, Lewis (*q.v.*), created a viscount, and Robert. His life has been written by A. G. Gardiner.

Although a thorough aristocrat, Harcourt became more radical in his political opinions as he advanced through life. A man of commanding presence, he was recognised as one of the first debaters of his time; he had an equally high reputation as a wit.

Hardanger Fjord or inlet of the coast of Norway. It extends for about 70 m. inland, Vik being at its head, and

has a branch which goes to Odde. The fjord is much visited by tourists who are attracted by the wonderful mountain and other scenery. Near is the waterfall called the Vöringfos.

Hardie **James Keir.** Scottish politician. Born April 15, 1856, he became a coal miner in Lanarkshire. In 1880 he was chosen secretary of a trade union there, and he soon appeared as an ardent socialist. From 1882-86 he edited *The Cumnock News*, and from 1900 to 1915 *The Labour Leader*. In 1892 he entered the House of Commons as M.P. for South West Ham. He lost his seat in 1895, but in 1900 he was elected for Merthyr Tydfil, which he represented until his death, Sept. 26, 1915. Hardie is best remembered, perhaps, as the founder of the Independent Labour Party.

Harding **Warren Gamaliel.** American president. The son of a doctor, he was born in Ohio, Nov. 2, 1865. He started life, after an education in a local school and college, as a schoolmaster, but soon became a printer. In 1884 he became the owner of *The Marion Star* and was soon an influential person in that town. He was a member of the Senate of Ohio, 1900-04, and was Lieutenant-Governor of the State, 1904-06. As a republican he was elected to the Senate of the U.S.A. in 1914, and he became prominent as an opponent of President Wilson's policy in the early days of the World War. In 1920 Harding was nominated for the presidency and he won a signal victory over his Democrat opponent. The chief event of his term of office was the calling of the Washington Conference, but he died before the expiration of his four years, Aug. 2, 1923.

Hardinge Name of a noted Kentish family. **Henry Hardinge,** born at Wrotham, March 30, 1785, became a soldier and served in the Peninsular War. He then turned to politics and in 1820 was elected an M.P. In 1828 he was made Secretary for War, and in 1830, and again 1834-35, he was Chief Secretary for Ireland. In 1841-44 he was again Secretary for War. From 1844-48 he was Governor-General of India where he was responsible for the war against the Sikhs and the annexation of the Punjab. In 1852 he succeeded Wellington as Commander-in-Chief of the British army. He died Sept. 24, 1856.

In 1846 Hardinge was made a viscount and the title is still held by his descendants. **Charles Hardinge,** a younger son of the 2nd viscount, entered the diplomatic service in 1880. In 1904-06 he was ambassador at St. Petersburg and 1906-10 was Under-Secretary at the Foreign Office. From 1910 to 1916 he was Viceroy of India, and in 1910 was made Baron Hardinge of Penshurst. When he left India he resumed his former position at the Foreign Office, remaining there until 1920, when he became ambassador in Paris, a post he vacated in 1922.

A railway bridge across the Ganges at Sara, opened in 1917, is named the **Hardinge Bridge.**

Hardingstone Village of Northamptonshire. It is about a mile south of Northampton. Here is one of the crosses erected by Edward I. to mark the resting place of his wife's body on its way to London. On Hardingstone Fields the Battle of Northampton was fought in 1459.

Hard Labour Particular kind of imprisonment. In Great Britain, under certain conditions, judges can sentence those convicted of crime to a term of imprisonment with hard labour. This means solitary confinement and the discharge of some heavy task, making sacks or picking oakum. This lasts for the first 28 days of the term of imprisonment; after that time unless they are unruly, the prisoners are given easier tasks, similar to those given to prisoners who are not sentenced to hard labour.

Hardwick Hall Seat of the Duke of Devonshire. It is in Derbyshire, 6 m. from Chesterfield, and is reached from Rowtharn station on the L.M.S. Rly. It was built by Elizabeth, Countess of Shrewsbury, about 1600, and from her it passed to the Cavendish family who have since retained it. The long gallery is a fine apartment, but the house is chiefly famous for its windows (whence the saying, "Hardwick Hall more glass than wall") and its tapestries. Near are the ruins of an earlier hall.

Hardwicke **Sir Cedric. English actor.** Born in 1893 at Lye in Worcestershire, he was educated at Bridgnorth. He made his first appearance on the stage in London, and in 1914 was touring in South Africa with F. R. Benson's Shakespearean Company. In 1924 he settled in London and during the next few years made a great reputation. His successes included parts in *Back to Methuselah*, *The Apple Cart* and others of G. B. Shaw's plays, as well as in *The Farmer's Wife*, *Yellow Sands* and *The Barretts of Wimpole Street*. He has also acted for the films in the characters of Nelson and Dreyfus. In 1932 he published an autobiography, *Let's Pretend*. Knighted New Year's Day, 1934.

Hardwicke **Earl of.** English title borne since 1754 by the family of Yorke. **Philip Yorke,** the son of a lawyer at Dover, was born Dec. 1, 1690, and became a barrister. In 1719 he was elected M.P. for Lewes, later becoming Solicitor-General and then Attorney-General. In 1733 he was made Lord Chief Justice, and from 1737 to 1756 was Lord Chancellor. From 1757 to 1762 he was a member of the Cabinet without office. He died March 6, 1764. In 1733 he had been made a baron and in 1754 an earl. The title is still held by a descendant, and the earl's eldest son is called Viscount Royston. A younger son of the 1st earl, Charles Yorke, also became Lord Chancellor. Hardwicke ranks as one of the greatest of British lawyers. The **Hardwicke Society,** a debating society of London barristers, is named after him.

Hardwood Name used for the timber of broad-leaved deciduous trees. It includes mahogany, rosewood, ebony and ironwood, as well as oak, walnut and ash. The world's hardwoods occupy 1200 million acres in temperate regions, and 3600 million acres in the tropics.

Hardy **Thomas.** English writer. Born at Upper Bockhampton, near Dorchester, Dorset, June 2, 1840, he was educated at the grammar school there. He went to London to study architecture, winning prizes from the professional associations and working under Sir Arthur Blomfield. Hardy's real interest, however, was in literature, and he soon began to write. His first novel, *Desperate Remedies*, appeared in 1871 and *Under the Greenwood Tree* in 1872. Then came in quick succession, *A Pair of Blue Eyes* (1873), *Far from the Madding Crowd* (1874), *The Hand of Ethelberta* (1876), *The Return of the Native* (1878), *The Trumpet Major* (1880), *A Laodicean* (1881), *Two on a Tower* (1882),

The Mayor of Casterbridge (1886), *The Woodlanders* (1887), *Tess of the D'Urbervilles* (1891), *Jude the Obscure* (1895), and *The Well-Beloved* (1897). Volumes of short stories are *Wessex Tales* (1888), *A Group of Noble Dames* (1891), and *Life's Little Ironies* (1894).

Hardy was also a poet and published several volumes of verse. His last great work was a dramatic poem of the Napoleonic wars, *The Dynasts*, regarded by some as the supreme achievement of his genius. In 1910 he was given the Order of Merit. He died at his residence, Max Gate, Dorchester, Jan. 12, 1928. He was twice married, but left no children. His *Life* was written by his widow. In 1931 a statue to him was erected in Dorchester.

To Hardy recognition came slowly, but for many years before his death he was regarded as one of the great English writers. His style is remarkably lucid and his powers of description, especially of scenes of rural life, have rarely, if ever, been excelled. Two other qualities help to assure him a place amongst the immortals. One is his philosophy of life and the other the intense local colour which permeates his works. His philosophy is that of fate, indifferent to suffering, caring nothing for either good or evil, playing with the lives of men and women as it will. His books are full of the history and folklore of the country which he knew and about which he wrote with such detail. He calls it Wessex, but to many it is the Hardy country, and its towns and villages can be easily recognised beneath the pseudonyms which he has given them.

Hardy **Sir Thomas Masterman.** English sailor. Born at Kingston, Dorset, April 5, 1769, he entered the navy in 1793, having previously been in the merchant service. In 1796 began the friendship with Nelson for which he is known. They fought at the Battle of the Nile in the same ship, and at Trafalgar. Hardy was captain of the *Victory* when Nelson, it is said, addressed to him his dying words. In 1806 he was made a baronet, and he held naval commands for the rest of his life. He was Commander-in-Chief in South America and First Sea Lord of the Admiralty before 1834, when he was made Governor of Greenwich Hospital. He died at Greenwich, Sept. 20, 1839.

Hare Name of a family of rodents which includes the rabbits. It is found in most parts of the world except Australia. In Great Britain the word is used for the brown hare (*Lepus europaeus*). It is about 2 ft. long and weighs 7 or 8 lb. It has a short tail, long ears and a cleft upper lip. It runs swiftly by leaps and lives in grassy furrows. The young of the hare is called the leveret. The hare is used in coursing and is also hunted by harriers and beagles.

Hare and Hounds is the name given to runs across country. One or two runners, called the hares, go in front and scatter pieces of paper to show the way they have taken. The others follow the trail and try to catch the hares.

Hare **Sir John.** English actor. Born in London, May 16, 1844, he was educated at Giggleswick. He began to act in 1865, appearing in T. W. Robertson's comedies, where he was a great success in the parts of old men. In 1875 he undertook the management of the Court Theatre, from 1879-88 he and W. H. Kendal managed the St. James's, and from 1889-95 he controlled the Garrick Theatre. He produced some of A. W. Pinero's dramas, including *The Gay Lord Quex* at the Globe Theatre in 1899, and played in them personally. Hare had many successes, notably as Spencer Jermyn in *The Hobby Horse* and as Benjamin Goldfinch in *A Pair of Spectacles*. Knighted in 1907, he died Dec. 28, 1921.

Harebell Name of the Scottish bluebell (*Campanula rotundifolia*) as distinct from the wild hyacinth, or English bluebell. The stems are slender, and the lower leaves heart-shaped, the upper being slighter and narrower in shape. The flowers are bell-like and of a clear blue colour, nodding on stiff-angled stems. It is found on heaths and meadow land from July to September.

Harefield Village of Middlesex. It stands on the Colne, 5 m. from Uxbridge. The village is famous because here, at Harefield Place, now pulled down, Alice Spenser, Dowager Countess of Derby (b. 1637), with her second husband, Lord Egerton, lived. She was the Amaryllis of Spenser and for her Milton wrote *Arcades*. Some almshouses founded by the Countess still stand.

Harelip Vertical fissure, present at birth, on one or both sides of the middle line of the upper lip, so called from a fancied resemblance to the hare's cleft lip. It often accompanies the imperfect development of the roof of the mouth called cleft palate, and is amenable to surgical treatment.

Harem Name applied collectively to the quarter assigned to the females of a Mohammedan household and to the occupants. Harems are found in Turkey, Persia and other Mohammedan countries, but the rules about the seclusion of women have been modified since the Great War. In former days harems on a magnificent scale were maintained at Constantinople by the Sultan and elsewhere by other Mohammedan princes.

Haresfield Hill or beacon of Gloucestershire. It is one of the Cotswold Hills and is near Gloucester. It commands a magnificent view, and on it the Romans had a watch station. In 1931 260 acres of the beacon became the property of the National Trust.

Harewood **Earl of.** English title held by the family of Lascelles. In 1796 **Edward Lascelles,** the head of a Yorkshire family, residing at Harewood House near Leeds, was made a baron, and in 1812 an earl. The title passed from one descendant to another until it came in 1929 to **Henry George Charles Lascelles** as the 6th earl. He was born Sept. 9, 1882, and educated at Eton and Sandhurst. During the Great War he served with the Grenadier Guards, winning the D.S.O. On Feb. 28, 1922, being then Viscount Lascelles, he married Princess Mary. Their family consists of two sons, the elder bearing the courtesy title of Viscount Lascelles. The earl inherited a large fortune from his uncle, the Marquess of Clanricarde, who died in 1916.

Harewood House, about 12 m. from Leeds, is a fine building dating from the 18th century. The church has some interesting monuments.

Harfleur Seaport of France. It is 6 m. from Havre, and stands near the junction of the little river Lézarde and the Seine. At one time Harfleur was the most important port in Normandy, and as such it was captured by Henry V. in 1415, the English keeping it until 1449. Later the river became choked with sand and the port lost its trade. In the 19th century this was revived by cutting a canal to the Seine. Along this a new harbour

was built, and there is now a certain amount of fishing and shipping. Pop. 2700.

Hargreaves James. English inventor. He was born in Lancashire about 1745 and became a weaver at Standhill near Blackburn. There, about 1764, he invented and built a machine for spinning cotton much more quickly by using eight spindles in a row. He called it the spinning jenny from the name of his wife. It is one of the inventions which have made the great modern cotton industry possible. In 1768 the machine was destroyed by those who found it would decrease the demand for labour, but Hargreaves erected another in Nottingham where he also built a mill. His progress was handicapped by lawsuits due to difficulties about the patents. He died April 22, 1778.

Haricot French word originally denoting a stew of mutton and vegetables, including beans. It is now used for the French or kidney bean. In summer these are boiled in their pods and known as *haricots verts*. In winter, when dried, a day's soaking in cold water is essential to make them tender.

Harlech Town of Merionethshire. It is 10 m. from Barmouth, on the G.W. Rly. At one time it was a borough and the county town, but now it is a small pleasure resort with golf links and sands. The chief object of interest is the ruined castle built in the time of Edward I. With it is associated the popular song, "March of the men of Harlech."

Harlequin Character in pantomime. Clad in a many-coloured glittering garment, he generally represents Columbine's lover, and is a type of light-hearted gaiety and the enemy of the clown. When masked he is supposed to be invisible.

Harlequins Name of a London Rugby football club. It dates from 1871 and for long had a ground at Wandsworth Common. Since 1908 the club has had its headquarters at Twickenham, on the ground of the Rugby Union.

Harlesden District of north-west London. It is part of the urban district of Willesden and is 7 m. from the city.

Harley Name of the family that once held the earldom of Oxford. Robert, the 1st earl, and his son, Edward, the 2nd earl, made a valuable collection of books and manuscripts. In 1753 this enormous collection, the **Harleian Manuscripts**, was bought for the nation and it is now in the British Museum. The Harleian Society at 4 Trafalgar Square, London, W.C., was founded in 1869.

The London thoroughfare called **Harley St.** is named after this family. It runs from Cavendish Square to Marylebone Road, and is famous for its association with the medical profession. In or near Harley St. nearly all the leading physicians have their consulting rooms.

Harlington Village of Middlesex. It is 13 m. from London. Henry Bennet, Earl of Arlington, a member of the Cabal, took his title from here. Harlington has now become an industrial area, and is part of the urban district of Hayes and Harlington.

Harlow Town of Essex. It is 24 m. from London, on the L.N.E. Rly. At one time Harlow was a market town and had manufactures of cloth and pottery. In 1928 Roman remains, including those of a temple, were unearthed here. Pop. 2960.

Harmattan Dry wind that blows from the Sahara during the months between October and March. It carries a great quantity of dust to the jungles of the south. It is sometimes called "the doctor," because of its healthy properties.

Harmonica Set of water-filled glass vessels played with a wet finger and called sometimes the musical glasses. The musical glasses were popular in the 17th century and were improved into a determinate instrument. Benjamin Franklin mounted the glasses on a spindle revolving over a trough of water. The word is also used for a toy dulcimer of glass or metal.

Harmonium Musical instrument invented by Alexandre Debain (1809-77). In it vibrators or free reeds, which were tongues of metal, set in periodic motion by air pressure induced by bellows which the player works by treadles, produce the tones of the harmonium. It has one or two keyboards and stops, which, by regulating the air supply, control the quality of tone.

Harmony In popular musical phraseology harmony denotes any sequence of sounds that is pleasing to the ear. Technically it is the science dealing with the concord of sounds of varying pitch, based on counterpoint. Pythagoras was the originator of the science, but the Greeks seem to have made little actual use of their knowledge. The modern development of harmony dates roughly from the Renaissance.

Harmsworth Name of a family famous in journalism. Alfred Harmsworth, a barrister, left seven sons. Two became respectively **Viscount Northcliffe** (*q.v.*) and **Viscount Rothermere** (*q.v.*). Of the others two became baronets, Robert Leicester in 1918, and Hildebrand in 1922. **Sir Robert** was Liberal M.P. for Caithness, 1900-18.

Cecil Bisshopp Harmsworth, another brother, was a Liberal M.P. from 1906-10 and again, 1911-22. He was Under Secretary to the Home Office, 1915, and to the Foreign Office, 1918-22. Viscount Rothermere's only surviving son, Esmond, was Unionist M.P. for the Thanet division, 1919-29. All the members of the family are interested in newspaper companies.

Harnack **Adolf von.** German theologian. A son of Theodosius Harnack, Professor of Theology at Dorpat, he was born there, May 7, 1851. He studied under his father, and in 1874 was made Lecturer in Church History at Leipzig. In 1876 he became Professor of Ecclesiastical History at Leipzig: in 1879 at Giessen, in 1886 at Marburg, and in 1889, being now recognised as one of the world's foremost theologians, he was transferred to Berlin. In 1905 he left his professorship to become Director of the Royal Library. He died at Heidelberg, June 10, 1930.

A Protestant holding somewhat advanced views, Harnack wrote a great deal. Some of his books have been translated into English, these including *The History of Dogma*, *What is Christianity?* and *Studies in the New Testament*.

Harold I. King of the English, called Harefoot. A son of Canute the Great, he claimed the throne on his father's death in 1035. It was also claimed by his half-brother, Hardicanute, but Harold, having an English mother, Algiva, thought his claim was the stronger. The country was divided between

them, Harold becoming king of the land north of the Thames, but in 1037, as Hardicanute was a continuous absentee, all England was put under Harold. He reigned until his death at Oxford, March 10, 1040.

Harold II. King of the English. He was born about 1022, being a son of Earl Godwin. About 1046 he was made Earl of East Anglia by his brother-in-law, Edward the Confessor. In 1051 Godwin and his sons were banished; at this time we hear of Harold in Ireland and as ravaging the coasts of England. Soon he returned, and in 1053 succeeded his father as Earl of Wessex. By his wars against the Welsh he won a good deal of fame, and in 1066, on Edward's death, the Witan chose him as king and he was crowned at Westminster.

Some time before this, Harold had visited Normandy, had gone with William on a campaign into Brittany, and may have promised the English crown to the Norman duke. Just after he became king, Harold, King of Norway, and Tostig, a rebellious brother of the English king, invaded England, as did William of Normandy. Harold defeated the Norwegians at Stamford Bridge on Sept 25, and then led his army south. At Hastings he met the Normans and there, on Oct. 14, 1066, he was killed with two of his brothers. Harold married the widow of a Welsh prince, but his chief love was Edith, called Swan-neck, who bore him five children. She discovered his body on the field of battle and had it buried at Waltham in the church he had built.

Harold Name of three kings of Norway. Harold I. reigned from 872 to 930. He was at first a chieftain, one of several, in Norway, but succeeded in driving out the others and bringing the whole land under his own rule. Harold II. is unimportant. Harold III. was the king who invaded England in 1066 and was killed at Stamford Bridge. Before becoming king in 1046, he had been leader of the Varangian guard at Byzantium; He was called Hardrada, or "stern in council."

Haroun Al-Raschid Caliph of Bagdad. A son of Mohammed Mahdi, he was born in Sept., 763, and when quite young conducted a successful war against the emperor at Byzantium. In 786 he became caliph in succession to his brother, and he reigned until his death in March, 809. Haroun's reign is marked by the murder of the Barmecides and another victory over Byzantium, which again paid him tribute. His real fame, however, is as living at Bagdad in great splendour, surrounded by wealth, learning and luxury, as immortalised in *The Arabian Nights*.

Harp Musical instrument common to all races and periods, and originating in the twang of a taut bowstring. The earliest harps were bow-shaped and two-sided. Later came three-sided harps, and to-day the harp is the only instrument with mechanical fixed tones and separate strings for sharps, flats and naturals. The sound board next to the player gives resonance, the hollow pillars contain rods to work the mechanism, the comb contains the transposing mechanism and on the pedestal are the pedals. The strings are of coloured catgut, except the lowest, which are of wire. The compass of the harp is 6½ octaves.

The harp is one of the oldest of musical instruments and from earliest times kings and leaders have had their harpers. They were known in Egypt, and there are many references to them in Greek literature.

Harpenden Urban district of Hertfordshire. It is 25 m. from London, on both the L.M.S. and L.N.E. Rlys. Here is St. George's co-educational school, and near by is Rothamsted. Pop. (1931) 8349.

Harper's Ferry Town of West Virginia, U.S.A. It is 55 m. from Washington, where the Rivers Potomac and Shenandoah meet. Here the United States had an arsenal, which, on Oct. 16, 1859, was captured by John Brown and a few followers, but regained the following day. John Brown (*q.v.*) was hanged.

Harpoon Dart-like barbed weapon used for killing whales. It was originally thrown by hand from an open boat. The older form is superseded now by the shot-harpoon invented in 1870 by a Norwegian, Sven Foyn. This is fired from a gun, and in the modern type carries an explosive charge which bursts in the whale's body.

Harpsichord Musical instrument. It is the most important of keyboard instruments preceding the piano. In it the depression of the keys raised wooden "jacks" in which were mounted quills, or leather plectra. These twitched, or plucked, the metal strings, giving a pleasing but unvarying unsustained tone. In the 17th and 18th centuries the harpsichord accompanied recitatives as an orchestral instrument, but was most effective when used as a solo instrument.

Harpy Mythical monster with the face of a woman and the body of a vulture. They defiled whatever they touched. Juno sent them to deprive the blind Phineus of food, but later the sons of Boreas rescued him. Aeneas met them on his voyage to Italy.

The harpy eagle is a large specie of eagle found in South America.

Harrier Breed of dog maintained for hunting hares by scent. The dogs, smaller than fox-hounds, may be 20 in. high and have large pointed ears. They are maintained in packs, of which there are about 50 in England, and a number in Ireland.

The name harrier is also used for men who run in cross-country races. These form teams and matches are held, the competitors being six or some other number on each side.

Harrier also a genus of hawks. Slender with long legs and wings and short beaks they are usually found in marshy districts where they prey upon fish and frogs as well as small birds and mammals. Though rare three species occur in Great Britain, the hen harrier, Montagu's harrier and the marsh harrier.

Harrington Urban district of Cumberland. It stands on the coast, 5 m. from Whitehaven, and the chief industry is coal mining. Pop. (1931) 4125.

Harrington Earl of. English title borne since 1742 by the family of Stanhope. William Stanhope, a leading politician in the time of George II., was the first earl. A son of John Stanhope of Elvaston, Derbyshire, he served as a soldier and a diplomat, chiefly in Spain, and in 1730 was made a baron. From 1730 to 1746 he was a Secretary of State, and from 1747 to 1751 Lord Lieutenant of Ireland. In 1742 he was made an earl, and died Dec. 8, 1756.

William, the 2nd earl, and Charles, the 3rd earl, were both soldiers of note. Charles, the 4th

earl, was the eccentric being who married the actress, Mary Foote, and Leicester, the 5th earl, was a noted sportsman, being perhaps the most prominent master of the foxhounds in his day. He died in 1917. The earl's seat is Elvaston Castle, near Derby, and his eldest son is called Viscount Petersham.

Harris Southern part of the Island of Lewis. Off the west coast of Scotland, it is about 20 m. long and forms part of the County of Inverness. The soil is very poor, fit for little more than the grazing of sheep. Fishing is an industry and the district gives its name to the tweed which is woven here. Tarbert on the coast is the chief town. Leverburgh is a fishing port made by Lord Leverhulme, who bought much of the land. Scarasta is a small watering place.

The Sound of Harris, dividing Harris from North Uist is about 7 m. wide and 10 m. long. It is the only channel for large vessels in the Outer Hebrides.

Harris Baron. English title. George Harris, born at Brasted, Kent, March 18, 1746, was the son of a clergyman and became a soldier. After service in America he went to India, where he made his reputation by his successes against Tippoo Sahib. He led the force that stormed Seringapatam and was instrumental in the acquisition of Mysore by Great Britain. In 1815 he was made Baron Harris. He died, May, 1829.

In 1872 the title came to George Robert Canning Harris, as 4th baron. Born Feb. 3, 1851, he went to Eton and Oxford, where he was famous as a cricketer. From 1875 to 1899 he was captain of Kent, and in 1930, when 80 years old, he played in a match at Eton. He had played also for England against Australia. He was Under Secretary for India and then for War, 1885-89, and from 1890-93 was Governor of Bombay. He is also known for his connection with the mining industry of South Africa. He died, March 24, 1932.

Harris Sir Augustus Henry Glossop. English actor manager. Born in Paris in 1852, he became an actor and appeared in Manchester in 1873. He is chiefly known as the manager of Drury Lane Theatre, London, which he took in 1879. There he produced melodramas and a popular series of Christmas pantomimes. He died June 22, 1896, having been a knight since 1891.

Harrismith Town of the Orange Free State. It stands on the River Wilge, 261 m. from Durban and 60 from Ladysmith, being connected with both by railway. It is the trading centre for a large district and, standing some 5000 ft. high, is a health resort. Pop. 6000.

Harrison Frederic. English scholar. Born in London, Oct. 18, 1831, he was educated at King's College, London and Wadham College, Oxford. For a time he was at Wadham as a tutor and fellow, and was one of the group who, taking up the teaching of Comte, founded the positivist movement in England. Having become a barrister he settled in London and from 1877-89 was Professor of Jurisprudence at the Inns of Court. He is chiefly known, however, as a graceful and forceful writer on a great variety of subjects. He was also what would now be called an uncompromising Victorian, as well as a stout individualist. He wrote lives of Cromwell, William the Silent and Ruskin. *The Meaning of History*, *The Choice of Books*, *The Creed of a Layman* and *The German Peril* are others of his books. In 1908, always a great climber, he wrote *My Alpine Jubilee*, in 1911, *Autobiographic Memoirs*, and in 1920 *Novissima Verba*. He died at Bath, Jan. 14, 1923.

Harrogate Borough and inland watering place of Yorkshire. It is 203 m. from London and 18 from Leeds and is reached by both the L.M.S. and L.N.E. Rlys. It is chiefly known for its mineral springs, the waters of which are efficacious for various complaints. They belong to the corporation. Visitors are also attracted by the beautiful surroundings: in the vicinity is some of the finest Yorkshire scenery, with Fountains Abbey, Bolton and other beauty spots. The chief buildings are the Royal Hall, the opera house, and the winter gardens, as well as the various pump rooms, baths and hotels. Harlow Moor and The Stray are open spaces. Pop. (1931) 39,785.

Harrow Agricultural implement for turning over the surface soil. It consists of a square or rhombic shaped frame bearing a number of fixed steel teeth, or "tines" projecting downwards. In the drag harrow the teeth are curved, but in the disc harrow they are replaced by saucer-shaped cutting discs. In the spring-tined harrow the teeth are curved and non-rigid.

Harrow Urban district of Middlesex. It is 12 m. from London and is served by the L.M.S., L.N.E., district and tube railways. Its full name is Harrow-on-the-Hill, and it has grown enormously in the 20th century. Here is Harrow School (*q.v.*). A new hospital was opened here in 1931. Pop. (1931) 16,378.

Harrowby Earl of. English title borne by the family of Ryder.

Sir Dudley Ryder, who was Lord Chief Justice, 1754-56, had a son, Nathaniel, who, in 1776, was made a baron. His son, Dudley, entered the House of Commons and took office under Pitt in 1789. In 1804-05 he was Secretary of State for Foreign Affairs, and from 1812-27 he was Lord President of the Council. In 1827, when he was made an earl, he refused the office of Prime Minister. In 1831-32 he had a good deal to do with the negotiations that led to the passing of the Reform Bill. Although a Tory, he was in favour of religious liberty and other reforms. He died Dec. 26, 1847, the last survivor of Pitt's colleagues.

His son, Dudley, the 2nd earl (1798-1882), and his grandson, Dudley, the 3rd earl (1831-1900), were both active politicians, the latter being Vice-President of the Council, 1874-78, and President of the Board of Trade, 1878-80. The present earl is descended from his brother who became the 4th earl. The earl's seat is Sandon Hall, Staffordshire, and his eldest son is called Viscount Sandon.

Harrowby is a village of Lincolnshire, just outside Grantham.

Harrow School English public school. Founded by John Lyon in 1571, it was for long a village school. Towards the end of the 18th century it became one of the chief schools in the land, rivalling Eton and Winchester. It accommodates about 700 boys and has a fine range of buildings and extensive playing fields. The buildings include the speech room, library and chapel, all modern. The old school, dating from 1611, with the fourth form room, still remains. A memorial hall was erected in honour of 619 Harrovians who fell in the Great War. The headmasters of Harrow have included

Christopher Wordsworth, C. J. Vaughan and H. M. Butler. Among its pupils were Byron, Peel, Palmerston and, more recently, Baldwin, Churchill and Galsworthy. For many years the school has been famous for its music.

Hartal Hindu word for a day of lamentation. In 1930 and at other times a hartal, or day of the kind, was proclaimed as part of the campaign against British rule.

Harte **Francis Bret.** American writer. Born Aug. 25, 1839, in Albany, he went to California about 1854, where he gained experience, but little else, as a miner and a schoolmaster. He then settled in San Francisco, where he worked as a compositor and then as a journalist on *The Golden Era*. From 1864-70 he was secretary to the California mint, and from 1868-70 he edited *The Overland Monthly*. He then lived in New York writing and lecturing until 1878 when he was appointed commercial agent at Crefeld, in Germany. From 1880-85 he was American consul at Glasgow, and the rest of his days were passed in England. He died at Camberley, May 5, 1902.

Bret Harte won great fame by his humorous poems and prose, much of which appeared first in periodicals. Mention may be made of his *Condensed Novels, The Luck of Roaring Camp, The Outcasts of Poker Flat* and *Plain Language from Truthful James*, but there are many others. His verses are inimitable.

Hartebeest Genus of antelopes native to Africa. One of the swiftest of the antelopes, it is about 4 ft. high and reddish brown in colour. It is disappearing rapidly from South Africa. Of several species, the handsomest is Hunter's, found in Somaliland.

Hartford City and port of the United States. It is in Connecticut, being the capital of that state, and is 125 m. from Boston. It stands on the Connecticut River and is served by several railway lines. There is a harbour and a good deal of shipping; other industries are the making of motor-cars, typewriters and other kinds of machinery. It is also an insurance centre. Pop. (1931) 164,072.

Hartington **Marquess of.** Title borne by the eldest son of the Duke of Devonshire. Its most famous bearer was the statesman who became the 8th duke. Hartington is a village in Dovedale.

Hartland Village of Devonshire. In the north of the county, it is 4 m. from Clovelly. Four miles farther is **Hartland Point**, a cape on which a lighthouse stands.

Hartlebury Village of Worcestershire. It is 6 m. from Bewdley, on the G.W. Rly. It is chiefly famous for its castle, the residence of the Bishops of Worcester since the 13th century. The present building dates from the 18th century.

Hartlepool Borough and seaport of Durham. It stands on the coast, 18 m. from Durham and 247 from London, on the L.N.E. Rly. The principal industries are shipping, shipbuilding and fishing. There is a good harbour. The Sandwell Gate is a relic of the city's past. With **West Hartlepool** it was bombarded by the Germans, Dec. 16, 1914. A good deal of damage was done to property and 113 persons were killed, a further 300 being wounded. Pop. (1931) 20,545.

Hartlepool **West.** County borough and market town of Durham. It is 245 m. from London and 2 m. to the south of Hartlepool, being served by the L.N.E. Rly. The industries are shipping and shipbuilding, much coal being exported from here and timber imported. There are also engineering works and flour mills. The extensive docks cover some 400 acres. The town, which is quite modern, includes the watering place of Seaton Carew, to the south, and Stranton with an old church. Pop. 68,134.

Hartshorn Old name for liquid ammonia and carbonate of ammonia. These were prepared originally by the destructive distillation of the horns and hoofs of deer and other animals, the impure ammonia solution being known as spirit of hartshorn and the carbonate as salt of hartshorn. *See* AMMONIA.

Harty **Sir Herbert Hamilton.** British conductor and composer. Born at Hillsborough, Co. Down, Dec. 4, 1879, he studied music in London and elsewhere. He made a reputation with his piece, *An Irish Symphony*, which was followed by others. In 1920 he was appointed conductor of the Hallé Orchestra in Manchester, and in 1925 he was knighted. In 1931 he was prominent as a critic of the B.B.C. programmes.

Harvard **John.** Founder of Harvard University. The son of a butcher, he was born in Southwark in 1607. He went from school at Southwark to Emmanuel College, Cambridge. In 1637 he went to America and was chosen minister of a church at Charlestown, now part of Boston, but in the next year, Sept. 14, 1638, he died. He left some property to a college which was named after him and developed into Harvard University. Memorials to Harvard in England are a chapel in the cathedral at Southwark and Harvard House at Stratford-on-Avon, which was built by his maternal grandfather.

Harvard University One of the chief universities of the United States. It is at Cambridge, now part of Boston. Some Cambridge graduates founded a college there, and in 1637 the first building was opened. It first president was Nathaniel Eaton, and it was strongly sectarian, but all religious tests have now been abolished. It is governed by a board of overseers and a corporation, its head being the president.

To-day the university has a fine range of buildings in and near Boston, and its activities cover every branch of learning. To the original Harvard College, a medical school and a law school were added in 1782 and 1817 respectively. Schools of engineering and other branches of applied science were established later. In 1909 a school of business administration was opened. The university has an observatory in the Andes, a school of forestry and a school of agriculture. It has libraries and museums, halls of residence and many other buildings. In 1930 a sum of £600,000 was given to the university to build a college on the lines of those at Oxford and Cambridge. It is famous for its sporting activities. Its students, which include women, number (1932), 8,536.

Harvest Mite Familiar name for six-legged larval forms of a family of velvety ticks, not insects; also called the harvest bug. In Britain the common crimson-haired *microtrombidium autumnale*, infests grass and herbage, and burrows into the skin of man and other animals. It may be destroyed by ammonia. The adults feed on insects.

Harvey **Sir George.** Scottish painter. Born at St. Ninians in 1806, he

studied painting in Edinburgh and soon made a reputation. He was one of the original associates of the Royal Scottish Academy and in 1864 was made its president. His chief pictures deal with historical incidents such as "Covenanters Preaching" and "Bunyan in Bedford Gaol." He was knighted in 1867, and died, Jan. 22, 1876.

Harvey William. English physician. He was born at Folkestone, April 1, 1578, and was educated at King's School, Canterbury. He studied medicine at Cambridge and Padua and settled down in London about 1603. He became physician to St. Bartholomew's Hospital, lecturer at the College of Physicians, and medical attendant to James I. and then to Charles I. He was in attendance on Charles at Oxford during the Civil War and was made warden of Merton College. He died in London, June 3, 1657.

Harvey is famous for discovering the circulation of the blood, which he explained in his lectures at the College of Physicians and afterwards in a book, published in 1628.

To commemorate Harvey's work the Harveian Society was founded in 1831. In 1931 the centenary of its existence was celebrated.

Harwich Seaport and borough of Essex. It stands on the estuary formed by the Orwell and the Stour, 70 m. from London. There is a large harbour and from Parkestone Quay the L.N.E. Rly. runs a regular service of boats to Amsterdam, the Hook of Holland, Hamburg and elsewhere. It is also the terminus of the ferry service to Zeebrugge. Fishing is an industry and there are one or two manufactures. The borough includes Dovercourt and is a famous yachting centre. During the Great War Harwich was an important station for the navy. An old seaport, the town sent members to Parliament from 1604 to 1867. Pop. (1931) 12,700.

Harwood Great. Urban district and market town of Lancashire. It is 5 m. from Blackburn, on the L.M.S. Rly. The principal industries are cotton manufacturing and coal mining. It is called Great Harwood to distinguish it from **Little Harwood**, a village 2 m. from Blackburn. Pop. (1931) 12,787.

Harz Mountains Range of mountains in Germany. In the north-west of the country, they are chiefly in Brunswick, between the rivers Saale and Leine. They extend for about 60 m. from east to west and are about 20 m. broad. The average height of the range is about 2000 ft. and the highest, the Brocken, is 3750 ft.

The Harz are famed as a pleasure resort and for their mineral wealth. Therein are Harzburg and other centres for tourists and pleasure-seekers. The scenery is very fine, and legends gather round almost every hill and valley. The minerals found include silver, lead and copper; the mining centres are Clausthal and Mansfeld.

Hasdrubal Carthaginian soldier. A son of Hamilcar Barca and a brother of Hannibal he lived in the 3rd century B.C. He went to Spain with Hannibal and in 218 was left in command there whilst his brother marched into Italy. For ten years he fought the Romans, and in 207 led his army into Italy. He was met and defeated by the Romans at the Battle of the Metaurus, where he was killed.

Another, **Hasdrubal**, became, in 228 B.C., commander of the Carthaginian Army in Spain. There he made a treaty with the Romans, dividing the country between them. In 221 he was murdered.

Hashish Preparation of the hemp plant, especially the Indian variety, *cannabis indica*. It possesses narcotic and intoxicating principles. The dried leaves and small stalks are smoked, made into a confection, or infused for drinking. The most favoured forms come from the flowering and fruiting heads. The word assassin means really "hashish eaters."

Haslar District of Gosport. Here is a naval hospital, the largest in the country. Opened in 1753 it has since been enlarged. It accommodates over 2000 patients and the grounds cover 60 acres. On Haslar Point, at the entrance to Portsmouth Harbour, the Navy has a submarine depot.

Haslemere Borough and market town of Surrey. It is 43 m. from London, on the S. Rly. Near by are Hindhead and other beauty spots; also Aldworth, once the residence of Lord Tennyson. Pop. (1931) 4340.

Haslingden Borough and market town of Lancashire. It is 205 m. from London, by the L.M.S. Rly., and 19 m. from Manchester. There are collieries and quarries, and also textile manufactures. Pop. (1931) 16,637.

Hastings County borough and watering place of Sussex. It is 62 m. from London, on the S. Rly. A fine promenade runs for 3 m. along the sea front to S. Leonards, which is within the borough. Apart from catering for visitors, fishing is the chief industry, there being a distinct fishing quarter and a fish market. An old town, Hastings is one of the Cinque Ports and was long a flourishing seaport. Pop. (1931) 65,199.

Hastings Town of N. Island, New Zealand. It is 12 m. from Napier. The town, the business centre of a district where sheep are reared, has a refrigerating works and other industries. It was seriously damaged by the great earthquake of 1931. Pop. (1932) 16,750.

Hastings Battle of. Battle fought between the Norman invaders of England and the Anglo-Saxons, on Oct. 14, 1066, and regarded as one of the decisive battles of the world. William, Duke of Normandy, who claimed the English crown on the death of Edward the Confessor, landed at Pevensey and marched inland. Having just defeated the Norwegians at Stamford Bridge, Harold hurried south to meet him, collecting reinforcements on the way. He took up a position on a hill, about 6 m. from Hastings, and there the Normans found him. The battle was stubbornly contested, but after a time William tried a ruse. Some of his men pretended to fly. Many of the Saxons followed, thus breaking their ranks, but the *huscarles* stood firm around their king. Shooting in the air, the Norman archers killed a number of them, including Harold and his two brothers. The Saxon Army was destroyed, and William was free to march to London. This battle, which is sometimes called Senlac, is depicted on the Bayeux Tapestry.

Hastings Marquess of. English title, now extinct. It was given in 1817 to Francis Rawdon-Hastings, Earl of Moira, a soldier. He married the Countess of Loudoun, and their son and grandson inherited both titles. When Henry, the 4th

marquess, notorious as a spendthrift and a sportsman, died without sons (Nov., 1868), the title of Marquess of Hastings became extinct. The earldom of Loudoun, however, passed to his sister, who also inherited the estates. The seat of the Marquess was Donington Hall, near Derby.

The English **Barony of Hastings** is held by the family of Astley. It dates from 1925, but was in abeyance from 1391 to 1841. In that year it was given to Sir Jack Astley, a descendant of John Hastings, the 1st baron, who was a claimant to the Scottish throne.

Hastings **Sir Patrick.** English lawyer. Born in 1880, he was educated at Charterhouse School and became a mining engineer. Soon he turned to the law, became a barrister and in a few years had a large practice. In 1919 he was made a K.C., and in 1922 he entered the House of Commons as Labour M.P. for the Wallsend division. In the Labour Ministry of 1923 he was Attorney-General, but in 1926 he resigned and left political life. Sir Patrick has written two plays.

Hastings **Warren.** English administrator. Born at Churchill, Oxfordshire, Dec. 6, 1732, he was a son of Rev. P. Hastings and was educated in London, finishing at Westminster School. In 1750 he went to India as a writer under the East India Co., and he was one of the little army that marched to Calcutta with Clive. He was made President at Murshidabad in 1758 and from 1761-64 was a member of the Council of Bengal. His imperious nature made him difficult to work with, and in 1764 he returned to England. In 1768 he was again in India as a member of the Council of Madras.

In 1772 Hastings was made President of the Council for Bengal, and in 1773 the first Governor-General of India, a post which he held for 12 years. In spite of the opposition of Sir Philip Francis and other members of the Council, Hastings did a great work, and the British authority in India is due in no small measure to his pioneer efforts. He was, however, unscrupulous in his methods of raising money, and in other ways acted in an arbitrary and perhaps unjust manner. The result was that, when in 1784 he resigned and returned to England, there was a loud and insistent demand for his impeachment.

The trial of Hastings before the House of Lords, in Westminster Hall, aroused great interest at the time, and has not ceased to be a subject of controversy. It began in Feb., 1788. Arrayed against him was the united eloquence of Burke, Fox and Sheridan, and for seven years the proceedings continued. The chief charges were his share in the murder of Nuncomar, the robbery of the begums of Oudh and the hiring out of British troops to make war on the Rohillas. The House of Lords acquitted him in April, 1795. The trial cost Hastings his fortune, but the East India Co. came to his rescue and he was able to buy Daylesford in Worcestershire, the old seat of the family. There he lived quietly until his death on Aug. 22, 1818.

Haswall Market town of Durham. It is 252 m. from London, on the L.N.E. Rly. The chief industry is coal mining. Pop. 5860.

Hatcham District of London. About 4 m. to the S.E. of the city, on the S. Rly., it is in the boroughs of Deptford, Lewisham and Camberwell.

Hatchment Panel displaying over his dwelling place a deceased person's armorial bearings. For unmarried or widowed persons the panels are painted black; should a husband or wife survive, the survivor's half of the achievement is painted white. The hatchment is shaped like a lozenge. The custom was for the hatchment, after the funeral, to be placed in the church, and there are still many of them in country churches.

Hatfield Town of Hertfordshire, in full Bishop's Hatfield. It is on the Lea, 17¼ m. from London on the L.N.E. Rly. Apart from Hatfield House (*q.v.*) there are the ruins of a palace, once the residence of the bishops of Ely. Before coming to the throne, Queen Elizabeth lived here. Pop. 5700.

Hatfield Village of Yorkshire (W.R.). It stands on the Don, 7 m. from Doncaster. The opening of coal mines has altered the nature of the village, which is now a populous colliery centre. The district round Hatfield, called Hatfield Chase, was once a forest, used by the kings for hunting. It lay between the rivers Don, Idle and Thorne. Much of it was a swamp and in 1626 it was drained by Dutch engineers.

Hatfield House Residence of the Marquess of Salisbury. It was built early in the 17th century by Robert Cecil, who had just acquired the estate, and is one of the finest Jacobean houses in England. The hall, the long gallery, the library and the chapel are fine apartments. The house has a valuable collection of portraits and other works of art, as well as of state papers. The park in which it stands is 10 m. in circumference.

Hatfield Peverel Town of Essex. It is 6 m. from Chelmsford on the L.N.E. Rly. Pop. 1300.

Hathaway **Anne.** Wife of William Shakespeare. The daughter of Richard Hathaway, a farmer at Shottery, Warwickshire, she was born in 1556. On Nov. 28, 1582, she married the poet whom she survived, dying in 1623. She had four children, but only two, both daughters, attained maturity. Ann Hathaway's cottage at Shottery is public property, and the adjacent farm has been purchased and renamed Hathaway Farm.

Hathersage Village of Derbyshire. It is 34 m. from Manchester and 161 from London, on the L.M.S. Rly. Around the village is some of the finest of the Derbyshire scenery. Little John is said to have been buried in the churchyard. Pins and needles are made here. Pop. 1600.

Hathor Egyptian goddess. Originally a sky deity, she was often depicted as a cow, or with a cow-eared human face. A life-size statue of a cow in sandstone, worshipped at Hathor in the 15th century B.C., was unearthed at Thebes in 1906. The Hathor Temple at Dendera still stands. The seven Hathors were kindly fates.

Hatry **Clarence Charles.** English financier. Born in 1890, he went into business in London, and became a successful company promoter. He founded the Commercial Bank of London, and, until this failed in 1920, controlled a number of associated undertakings. In 1929, with his associates, he raised money by pledging securities with

the banks. It was soon discovered that some of the stock was forged, and the shares of his companies fell heavily. On Sept. 19 he made a full confession and steps were taken to deal with the situation. In Jan., 1930, he and his associates were tried and found guilty. All were sentenced to penal servitude, his sentence being for 14 years. The amount of money involved in this failure was over £13,000,000, but the net loss was a much smaller sum.

Hatteras Island and cape of the United States. It is in N. Carolina. Heavy seas render the cape dangerous to navigation.

Hatton **Sir Christopher.** English courtier. Born at Holdenby, Northamptonshire, in 1540, he became a lawyer. He is chiefly known as one of Elizabeth's favourites, her admiration being due, presumably, to his fine figure and gallant bearing. She employed him on public business, secured for him a seat in Parliament, and in 1587 made him Lord Chancellor. He died Nov. 20, 1591.

Hatton Garden, a London thoroughfare between Holborn Circus and Clerkenwell Road, perpetuates his name, as his residence was therein.

Hauberk Piece of armour. The word was applied originally to chain mail protecting the neck. From about the 12th century onwards it was used for a tunic or coat of chain mail. A garment worn as penance in the time of Chaucer was also known as a hauberk.

Hauptmann **Gerhart.** German author. He was born in Silesia, Nov. 15, 1862, his father being the keeper of the village inn. He was educated at Breslau, studied art in Italy and travelled. In 1889 he published his first notable work, a play, *Vor Sonnenaufgang* (Before Sunset), a realistic piece which had great influence in Germany and made him known abroad. A number of other dramas, comedies and tragedies, the latter including *The Weavers*, followed. He also wrote novels, including *The Island of the Great Mother*, 1924, which, like others of his works has been translated into English, and a poem *Ihma*. In 1912 he received a Nobel prize for literature.

Hausa Negroid people mostly living in the Sudan and Nigeria, where they form a number of native states. Their language, spoken by about 15,000,000 people, is Hamitic and is the lingua franca of the Sudan. The Hausa, who are mainly Mohammedans, are physically a fine race.

Hautboy English way of spelling *hautbois*, a wooden high-toned musical instrument. In Handel's time it was written *hoboy* and is now oboe.

Havana City and capital of Cuba. It stands on the N. coast on a bay which forms a fine natural harbour. There is an old town with narrow streets and a new town with fine thoroughfares and squares. It has a broadcasting station (49.5 M.).

Havana is famous for its manufacture of tobacco and cigars, whilst sugar is another staple industry. There is much shipping, for which there are modern docks. Railways connect the city with the other towns of the island. Havana was founded in 1514 and still bears traces of its Spanish origin. Pop. 1930) 589,079.

Havant Urban district and market town of Hampshire. It is 7 m. from Portsmouth and 67 from London on the S. Rly. It stands on Langstone Harbour and was at one time a prosperous port. The industries are tanning, brewing and malting. Pop. (1931) 4264.

Havel River of Germany. It rises in the state of Mecklenburg-Strelitz and flows chiefly S. to Spandau where the Spree falls into it. Having passed Potsdam it flows mainly W. until it falls into the Elbe near Wittenberge. Its length is 220 m., and most of it is navigable, whilst canals connect it with other German rivers.

Havelock **Sir Henry.** English soldier. He was born in Sunderland, April 5, 1795, and was educated at Charterhouse. In 1823 he went to India, and saw a good deal of active service against the Afghans and the Sikhs, rising to command a division in the Persian War of 1856 and to be Adjutant-General. When the Indian Mutiny began he led a force from Allahabad to Cawnpore, which he entered. He then advanced towards Lucknow, but after fighting eight battles was forced to fall back until reinforcements arrived. With these he made his way into Lucknow, but was beseiged in the residency until relieved by Sir Colin Campbell. A week later, Nov. 24, 1857, he died of dysentery. Havelock was made a knight and a baronetcy was conferred on his son, Sir Henry Havelock-Allan, who won the V.C., and was for a time an M.P. He was killed by the Afridis in 1897.

Haverfordwest Borough, market town and river port of Pembrokeshire; also the county town. It stands on the West Cleddau River, 8 m. from Milford Haven on the G.W. Rly. The old town is on one side of the river and the suburbs of Prendergast and Cartlet on the other, two bridges connecting them. A trade in agricultural produce is carried on. In the days when ships were small it was a prosperous port. Pop. (1931) 6113.

Havergal **Frances Ridley.** English hymn writer. Born at Astley, Worcestershire, Dec. 14, 1836, the daughter of a clergyman, she wrote an enormous quantity of verse of a religious character, including many hymns. She died June 3, 1879.

Haverhill Urban district and market town of Suffolk. It is 18 m. from Cambridge and 55 from London, being served by the L.N.E. Rly. The chief industries are the making of clothing and boots. There is an agricultural trade. Pop. (1931) 3827.

Another **Haverhill** is a city of Massachusetts. It is on the Merrimac River, 32 m. from Boston, and is a manufacturing centre. Pop. 48,710.

Havre Seaport and important railway terminus of France, also called Le Havre. It is on the estuary of the Seine, 55 m. from Rouen and 143 from Paris.

There is a regular steamer service with Southampton, and from here there is a large export trade to America and Britain. During the Great War it was a base for the British forces, and immense numbers of men and quantities of stores passed through it. Other industries are shipbuilding, the manufacture of machinery, oil refineries and engineering works. Havre was made a seaport in the 16th century. From 1914-18, it was the seat of the Belgium Government. Pop. (1931) 165,076.

Hawaii Island of the Pacific Ocean, also called Owyhee. It belongs to the United States and lies 2000 m. to the S.W. of San Francisco. Its area is 4016 sq. m.

Hilo is the capital. Sugar, coffee and other tropical products are grown and exported. On the island are Mauna Loa and Mauna Kea, two of the greatest volcanoes in the world, which form part of its greatest mass of volcanic material. They are nearly 14,000 ft. high.

The group of islands of which Hawaii is the largest, are known as the Hawaiian or Sandwich Islands. The others are Maui, Oahu, Molokai, Kauai, Lanai, Niihau and Kahoolawe. There are many smaller ones, all uninhabited. Honolulu on Oahu is the capital of the group. Apart from Hawaii itself, they cover 2440 sq. m. There is a naval station at Pearl Harbour and there are railways on the larger islands. Pop. (1930) 368,300.

The islands were discovered by Captain Cook in 1778, and were for many years independent. In 1893 the queen died and a republic came into being, but this only lasted until 1898, as in that year the United States annexed the islands. The English called them the Sandwich Islands, and by this name they were long known.

Hawarden Village of Flintshire. It is 6 m. from Chester on the L.N.E. Rly. It has become a coal mining centre, but its chief interest is the castle, long the residence of W. E. Gladstone. This was built in the 18th century upon the site of an older building, of which the ruins remain in the park. It was the seat of the Stanleys and then of the Glynnes, from whom it passed to the Gladstones. It still remains in the family. In Broadlands House is the Gladstone Museum. Pop. 6500.

Hawes Market town of Yorkshire (N.R.). It is 16 m. from Leyburn, on the L.N.E. Rly. It is chiefly a market for agricultural produce and is also a good centre for tourists. Pop. 1500.

Hawes Junction, an important junction on the L.M.S. system, is 6 m. from the town. A terrible accident took place here on Christmas Eve, 1910.

Haweswater Lake of Westmorland. It is 14 m. from Penrith and 9 from Shap, in the E. of the Lake District. It is 2½ m. long and is surrounded by somewhat desolate scenery.

Like Thirlmere the lake is used to supply Manchester with water, and in 1930 it was decided to enlarge it for this purpose. The scheme includes raising the level of the lake by 90 ft., and the destruction of a church, a vicarage, an inn and three farm houses at Mardale.

Hawfinch Stout-billed bird of the finch family (*coccothraustes vulgaris*). It is distributed over Europe, Asia and N. Africa, and is common in England. It is 7 in. long. The plumage of the male is deep brown on the back with blue-black wings and a white-tipped tail. The females lay four, five or six black-spotted, olive-green eggs.

Hawick Burgh and market town of Roxburghshire. It stands on the Teviot, 53 m. from Edinburgh, on the L.N.E. Rly. The town is a centre of the wool industry and has a large cattle market. The common riding is a festival held here every year. A magnificent X-ray institution was gifted to the town by Sir Thomas Henderson in 1933. Pop. (1931) 17,059.

Hawk Name denoting indefinitely all diurnal birds of prey not being vultures or eagles. Thus limited, it comprises a sub-family, including the harriers, represented in Britain by the goshawk and the sparrow hawk, besides the S. American caracara sub-family.

Hawkbit Genus of biennial or perennial herbs of the composite order (*leontodon*). The yellow flower-heads, all their florets being strap-shaped, appear on numerous simple or branched milk-juiced stalks springing from the root stock. Unlike dandelions, the pappus hairs are feathery. Two British species have leaves bearing forked hairs; one is smooth-leaved. The herb is found in Europe and parts of Asia.

Hawke Baron. English title held by the family of Hawke. Edward Hawke, a Londoner, was born in 1705 and entered the navy. In 1747 he commanded the fleet which defeated the French off Cape Finisterre. He was then knighted and elected M.P. for Bristol, but remained on active service. In 1756, when the Seven Years' War began, Hawke went to the Mediterranean, and in 1759 he won his greatest victory by crushing the French fleet in Quiberon Bay. From 1766-71 he was First Lord of the Admiralty, and in 1776 was made a baron. He died Oct. 17, 1781.

Hawke's descendant, **Martin Bladen Hawke**, the 7th baron, was born Aug. 16, 1860, and won fame as a cricketer. He played for Eton and Cambridge, and captained teams in Australia, 1891-92 and 1894-95, and in S. Africa, 1895-96; but he is best remembered as the captain of the Yorkshire team during its greatest days, 1883 to 1910.

The British cruiser Hawke was sunk by a German submarine, Oct. 15, 1914, off the E. coast of Scotland, over 500 officers and men being lost.

Hawkes Bay District of New Zealand. It covers some 4000 sq. m. in North Island, and is a region in which timber felling and sheep rearing are the chief industries. The chief ports are Napier, Gisborne and Hastings, all of which were severely damaged by an earthquake in 1931.

Hawkesbury River of New South Wales. It is 330 m. long and falls into Broken Bay about 25 m. from Sydney. It is formed by the Nepean and Grose rivers.

The English title of **Baron Hawkesbury** is borne by the Earl of Liverpool. In 1786 it was given to Charles Jenkinson, who was made earl in 1796. His son, Robert Banks Jenkinson, the 2nd earl, was known as Lord Hawkesbury until he succeeded to the earldom in 1808. He was Foreign Secretary in 1801-02.

Hawkhurst Town of Kent. It is 47 m. from London on the S. Rly. At one time Hawkhurst was a market town and a centre of the cloth manufacture. Pop. 3340.

Hawking Sport of hunting game with hawks or falcons, also called falconry. It is a very old pastime, having been known in China and Greece before the Christian era. It is, or has been, practised in many of the countries of the world, Asiatic as well as European. In England falconry was practised by the Anglo-Saxons and for some seven centuries it was perhaps the chief sport of the richer classes.

Great care was taken in choosing and training the hawks, and kings and nobles had for this purpose staffs of falconers. The birds used in hawking were the peregrine falcon, gerfalcon, merlin and others belonging to the long-winged class, and the sparrow hawk,

goshawk and others of the short-winged class. The female bird, being much the larger, was usually taken, although the male bird, called the tiercel, was sometimes used.

When fully trained and ready for the field, the hawk's eyes were covered with a hood, and was carried on the wrist of the falconer, being attached thereto with straps called jesses. She was also provided with bells so that, having been flown, her whereabouts could be located. The falconer also carried a lure and a cadge, the former for the bird's food and the latter to carry her on. He wore a leather glove to protect the wrist. When the game was sighted the hawk was unhooded and loosed by the falconer, who was on horseback and who was often accompanied by dogs to retrieve the fallen bird or animal. In the 20th century there was a revival of the sport, and a British Falconers' Club was founded.

Hawkins Sir John. English seaman. Born at Plymouth in 1532, he was the son of a sailor and went to sea when a boy. In 1562 he obtained command of a ship, which was profitably engaged in carrying slaves from Africa to S. America. In 1567 he led a small fleet on the same errand, Drake being one of his officers. He got a great deal of plunder, but he lost this in a fight with the Spaniards and narrowly escaped with his life. He was later chosen M.P. for Plymouth in 1572, and served as comptroller of the navy whilst carrying on a shipbuilding business at Deptford. He fought his own ship the *Victory*, against the Spaniards in 1588, and was knighted. Then he took to the sea again, joining in plundering expeditions, and he was with Drake when he died off Porto Rico, Nov. 12, 1595.

Hawkins had an only son, **Richard**. He, too, was a sailor, making voyages under Drake and fighting a ship against the Armada. In 1594, when plundering Spanish possessions in S. America, he was beaten in a sea fight and taken prisoner. He was a captive until 1602, being knighted and elected M.P. soon after his release. He died April 17, 1622.

Hawkshead Village of Lancashire. It is situated in the Lake District, being about a mile from Bowness, and is chiefly interesting because Wordsworth was educated at the grammar school. This was closed in 1910.

Hawkstone Village of Shropshire. It is 4 m. from Wem and is famed for its hall, long the seat of the Hill family. It dates from the early 18th century and stands in a fine park. The hills near are called the Hawkstone Hills.

Hawkweed Large genus of milk-juiced perennial herbs of the composite order (*hieracium*). They are native to N. temperate and Arctic regions. The yellow or orange flower heads, sometimes brown striped, with all the florets strap-shaped, are solitary or clustered, the pappus hairs are rough and brown. Among many British species is the mouse ear, *H. pilosella*.

Hawkwood Sir John. English soldier. Born about 1330, he became a soldier, and for his services at Crécy and Poitiers Edward III. made him a knight. Soon after 1360 he went to Italy, where he gathered together a body of mercenaries, called the White Company. Their services were hired out to rulers who wanted help, and at their head Hawkwood won renown as one of the most famous fighters of the day. He died in Florence in 1394.

Haworth Urban district of Yorkshire (W.R.). It is about 4 m. from Keighley on the L.M.S. Rly. The village is chiefly famed for its association with the Brontës. Patrick Brontë was curate here, 1820-61, and here his daughters lived, wrote, and, save one, are buried. The parsonage is now a Brontë Museum. Pop. (1931), 5912.

Hawthorn Small tree found in Great Britain and other parts of the temperate regions. It bears white or red flowers which grow in large clusters and are very fragrant when they bloom in the spring. Hawthorn, also called the may and the whitethorn, bears berries called haws. It belongs to the natural order *rosaceae*.

Hawthornden Village of Midlothian. It is 8 m. from Edinburgh on the L.N.E. Rly. The glen through which the Esk flows is a noted beauty spot, and the place is also famous as the home of William Drummond, the poet.

HAWTHORNDEN PRIZE In Drummond's memory the Hawthornden Prize was founded by Miss Alice Warrender. This is a sum of £100 given each year to the author of an imaginative work. The author selected must be under 41 years of age. It has been won by Siegfried Sassoon with *Memoirs of a Fox Hunting Man*, and Lord David Cecil with *The Stricken Deer*.

Hawthorne Nathaniel. American writer. Born July 4, 1804, at Salem, Massachusetts, the son of a sailor, he went to Bowdoin College, Maine, but took up no regular profession. He wrote a good deal, but this was not very profitable, and in 1839 he was given a post in the custom house at Boston. In 1841 he left this to join the Brook Farm community, a Socialist experiment, but was forced to accept employment again, this time as a surveyor at Salem. He was there until 1850, and in 1852 he settled at Concord. From 1853-57 he was consul at Liverpool, after which he travelled in Europe before returning to Concord. He died at Plymouth, New Hampshire, May 18, 1864.

One of the greatest of American writers and certainly one of the most charming, Hawthorne writes delightfully of the New England he knew and of its Puritan people. His most notable book is *The Scarlet Letter*. Hardly less powerful in plot and attractive in style is *The House of the Seven Gables*. *Twice Told Tales* are short stories, as are the charming *Mosses from an Old Manse*. His other writings include *Fanshawe*, his first novel, some volumes of historical stories for children, *The Wonder Book*, *The Snow Image*, *The Blithedale Romance* and *Tanglewood Tales*. His descriptions of England are in *Our Old Home*. His son, Julius Hawthorne, wrote a number of novels.

Hawtrey Sir Charles Henry. English actor manager. Born Sept. 21, 1858, he was a son of Rev. John Hawtrey, a master at Eton and a grandson of Rev. Edward Craven Hawtrey, who was headmaster of that school, 1834-52. He went to Rugby and Oxford and became an actor, first appearing on the London stage in 1881. In 1883 he adopted a German play and calling it *The Private Secretary* produced it in London. A conspicuous success, it made Hawtrey's reputation, and for the next 30 years he was one of the most popular comedians on the stage, numerous successes standing to his credit. As a manager he controlled Her Majesty's

Theatre, and then The Comedy. He was knighted in 1922 and died July 30, 1923.

Haxey Village of Lincolnshire. It is in the Isle of Axholme, 7 m. from Gainsborough and has a station on the L.N.E. Rly. It is famed for the game called **Haxey Hood** that has been played there for over 600 years. It is a kind of football and in it hundreds of players take part. On the afternoon of Jan. 6 the game begins with a procession of players to the base of an old village cross. The lord of the hood wears a red coat and a hat wreathed with flowers and carries a wand made of 13 willows tied 13 times with willow bands. He has a retinue of 12 men, called boggans, and a fool dressed in motley, carrying a rod with bladder attached. The fool makes a speech standing upon the base of the cross, and invites every one to take part in the ancient game. The lord then leads the way to a field on the top of the hill near where the game is played. It originated in a struggle for the possession of a hood lost by Lady Mowbray.

Hay Grass, clover and other herbage mown and dried for use as fodder. It is derived from rotation crops or permanent meadow and pasture. Sun-drying reduces the moisture from three-fourths in the green plants to one-fifth in the dry. Hay making, once done solely by manual labour, is now done by mowing machines, self-acting horse rakes and hay elevators. The British hay harvest for 1930 was 14,426,000 tons. A ton or load of hay comprises 36 trusses, each weighing 56 lb. for old, or 60 lb. for new hay.

Hay Town of Brecknockshire. It is on the Wye, 21 m. from Hereford on the G.W. Rly. It is a good centre for the Black Mountains. There are remains of a castle. Pop. 1600.

Hay is the name of a town of New South Wales. In the Riverina district, it stands on the Murrumbidgee, 460 m. from Sydney. Pop. 2500.

A river of Canada is called the Hay. It rises on the borders of Alberta and British Columbia and flows for 350 m. to the Great Slave Lake.

Hay Ian. Pen name of the British novelist, Ian Hay Beith. Born April 17, 1876, he was educated at Fettes College and S. John's College, Cambridge. He became a schoolmaster, and was for a time at Fettes. In 1907 he published *Pip*, a novel. This was a success and others followed including *A Man's Man*, *A Safety Match* and *A Knight on Wheels*. In 1914 he joined the Argyll and Sutherland Highlanders, and wrote *The First Hundred Thousand*, one of the best books written on life in the training camps and at the front. It was followed by others. After the war Hay wrote other novels, but he made a greater success with his plays, especially *Tilly of Bloomsbury* and *The Sport of Kings*. With P. G. Wodehouse he wrote *Ba Ba Black Sheep* and *The Damsel in Distress*, and with Stephen King-Hall *The Midshipmaid*.

Hay John. American writer and politician. Born at Salem, Indiana, Oct. 8, 1838, he entered the office of Abraham Lincoln and became a lawyer. In 1861 he was made private secretary to Lincoln. After Lincoln's murder in 1865, he was in the diplomatic service until 1870. He was then occupied as a journalist and a civil servant. In 1897 he was sent to London as ambassador, but in 1898 he returned to Washington to become Secretary of State, and served under M'Kinley and Roosevelt until his death, July 1, 1905.

Hay was prominently associated with the foreign policy of his country, his work including the treaty with Great Britain about the Panama Canal called the Hay-Pauncefote Treaty and the settlement of the boundary of Alaska. He wrote with J. G. Nicolai a long biography of Lincoln, and the popular and humorous *Pike County Ballads*.

Haydock Urban district of Lancashire. It is 227¼ m. from London by the L.N.E. Rly., and about 14 m. from Liverpool. Here is Haydock Park race course. There are iron works and collieries. Pop. (1931) 10,352.

Haydn **Franz Josef.** Austrian composer. He was born at Rohrau, Lower Austria, March 31, 1732, and when a boy became a chorister in S. Stephen's Cathedral, Vienna. Expelled for a prank in 1748, he studied music and supported himself until Metatasio introduced him to wealthy patrons. As chapel master to the Esterhazy family he became famous between 1762 and 1790 as a composer of quartets, symphonies, etc. In 1791 and 1794 he visited England; in 1797 he composed *The Emperor's Hymn*, and in 1798 and 1801 *The Creation* and *The Seasons*. He died in Vienna, March 27, 1809. 104 symphonies and numberless other works testify to Haydn's genius.

Haydon **Benjamin Robert.** English painter. Born at Plymouth, Jan. 26, 1786, he was educated at Plympton and then studied art in London. His paintings soon gained recognition, and he still has a place as an historical painter. Among them are "Dentatus," "Christ's Entry into Jerusalem," "The Banishment of Aristides," "Wellington at Waterloo," "The Judgment of Solomon," "Napaleon at St. Helena" and "The Raising of Lazarus." Often in debt and other difficulties, he committed suicide, June 22, 1846.

Haydon's lectures on painting which were very popular, have been published. He also wrote an *Autobiography*. His *Correspondence* and *Table Talk* were also published.

Hayes Urban district of Middlesex. It is 13 m. from London, and the Grand Union Canal passes through it. Of late Hayes has become an industrial centre, and here are works for making printing machines, gramophones, etc. Pop (1931) 23,646.

Hayes Village of Kent. It is 15 m. from London, on the S. Rly. Hayes Common is a fine open space covering over 200 acres. At Hayes Place the Earl of Chatham lived and died, and his son, William Pitt, was born. In 1930 the house was pulled down.

Hay Fever Complaint affecting the mucous membrane of the eyes, ears and throat. It takes the form of a violent cold and it may be associated with asthma. It is due to the irritation caused by inhaling the pollen or dust of plants and grasses in sensitive persons, Timothy grass being one of the worst, and attacks persons liable to it mainly during the hay-making season. They should, therefore, avoid fields of hay. Sneezing, headache and a general feeling of lassitude are symptoms of the complaint, which rarely attacks old people. To cure it an anti-toxin has been prepared.

Hayle Urban district and seaport of Cornwall. It is 7 m. from Penzance on the G.W. Rly. It has a harbour and fishing is the chief industry. Pop. (1931) 915.

Hayle is the name of a river 10 m. long that flows into St. Ives Bay.

Hayling Island of Hampshire. It is situated between the harbours of Langstone and Chichester and covers about 10 sq. m., being about 4 m. long. The island is a popular seaside resort, and on it are golf links. Havant is the nearest town.

Haymarket London thoroughfare. It extends from Piccadilly to Pall Mall, and is so-called because a hay market was held here until 1830. In it is the Haymarket Theatre, built in 1821 as a successor to one dating from 1720. Here was erected in 1705 the Queen's Opera House, which gave way to the King's Theatre, named Her Majesty's from 1837 to 1901, when it took its present name, His Majesty's.

Hayter Sir George. English artist. Born in London, Dec. 17, 1792, he studied at the R.A. schools there, and in Rome, later making a reputation by his portraits and miniatures. In 1841 he was appointed painter to Queen Victoria, and in 1842 was made a knight. He died Jan 18, 1871.

Hayward Thomas. English cricketer. Born at Cambridge, March 29, 1871, he became a professional cricketer, and settling in London qualified to play for Surrey. In 1893 he appeared first in the team, and of it he remained a prominent member until the Great War. In 1906 he made 3518 runs in the season, and altogether he scored 104 centuries. In 1898 he made 315 in a single innings, his highest score. He represented England against Australia several times.

Hayward's Heath Urban district and market town of Sussex. It is 38 m. from London on the S. Rly. A large cattle market is held here. Pop. (1931) 5382.

Hazel Genus of shrubs or trees related to the birch family. The common *Corylus avellana* yields a useful elastic wood. Cultivated varieties furnish cobs, filberts and Barcelona nuts. The tree is found in Europe and Asia; in England it may grow as high as 30 ft., but is usually much shorter. A twig of the hazel is used by water diviners.

Hazel Grove District of Cheshire. It is 2 m. from Stockport on the L.M.S. Rly. With Bramhall it forms an urban district, and is a centre of the cotton industry. Pop. (1931) 13,300.

Hazlitt William. English writer. The son of a Unitarian minister, he was born at Maidstone, April 10, 1778. He studied to become a minister, but forsook this career for that of an artist. He lived in Paris and painted portraits, but soon, having become friendly with Coleridge, turned to writing, settling in London in 1812. There he worked for *The Morning Chronicle* and other papers, including *The Edinburgh Review* and *The London Magazine*. He died in Frith Street, London, Sept. 18, 1830.

Hazlitt ranks as one of the great English essayists, and as a critic he is also in the first flight. Notable among his books are *Characters of Shakespeare's Plays*, *Lectures on the English Poets*, *Dramatic Literature of the Age of Elizabeth*, and *The Spirit of the Age*. He wrote a long life of Napoleon and many other works. His essays are in his *Table Talks* and *The Plain Speakers*.

Hazlitt had a son, **William Hazlitt** (1811-93), a public official who found time for a good deal of literary work. He left a son, **William Carew Hazlitt** (1834-1913), who wrote on many subjects, but notably on Shakespeare and Lamb.

Headache Pain in the cranial part of the head, more deeply seated than that of superficial scalp irritation. Either temporary or persistent, it may result from organic injury, *e.g.*, haemorrhage from abnormal blood states, *e.g.*, anaemia; or from Bright's Disease or constipation. It may be due to coal gas or other poisoning; exhaustion, due to overwork, excess, or nervous breakdown, including hysterical headache; peripheral irritation, from eye strain or alimentary disturbance, including bilious headache; or congestion of the brain and its envelopes.

Aspirin tablets, two if necessary, will generally relieve a headache (though some people are unable to tolerate them), and a rest in bed in a darkened room is also helpful. Sometimes a cup of tea will be enough to relieve a **headache caused by fatigue**, and bathing the forehead and eyelids with eau-de-cologne is very refreshing.

A **Bilious Headache** is relieved by resting in bed and sipping water with ½ teaspoonful of bicarbonate of soda. If attacks are frequent a doctor should be consulted for individual treatment. It should also be remembered that a headache is often the first symptom of some definite disease.

Head Hunting Custom among some primitive peoples of making incursions for procuring human heads as trophies, or individually to qualify for manhood or marriage. It formerly involved ceremonial expeditions. It was largely practised in Borneo and Formosa, where there were cases as recently as 1930, and parts of India and Africa, but it has been to a large extent suppressed.

Headlam Arthur Cayley. English prelate. Born at Whorlton, Durham, Aug. 2, 1862, the son of a clergyman, he was educated at Winchester and Oxford. He was ordained and for some years remained in Oxford as a lecturer. In 1896 he was made rector of Welwyn, and in 1903 Principal of King's College, London, where he remained until 1918 when he was appointed Regius Professor of Divinity at Oxford. In 1923 he was made Bishop of Gloucester, having been for 20 years (1901-21) editor of *The Church Quarterly Review*.

Heage Urban district of Derbyshire. It is 3 m. from Belper and is an industrial centre. Pop. (1931), 4054.

Health Soundness of body; in general a condition of bodily efficiency, the opposite of disease. Since about the middle of the 19th century great attention has been paid in Great Britain to all matters affecting the public health and the result is already apparent in increased longevity and other ways. Medical men and women are appointed to look after the health of children. Sanitation is a matter of national concern and in other ways the state does a good deal under the direction of the Ministry of Health. For the same aim, there are several health societies.

The drinking of healths, derived from ancient ceremonies of pouring libations to the gods and drinking to the departed at solemn feasts, survives in the social custom of drinking toasts at banquets. *See* TOAST.

Health Insurance Scheme for insuring workers against sickness and disablement. It was introduced in Great Britain in 1911 and since 1926 has been linked with a scheme

of old age pensions. Manual workers, with some exceptions, and those non-manual workers whose remuneration is less than £250 a year, must be insured, provided they are between the ages of 16 and 65. The payments are made weekly by affixing stamps to a card. Each person is provided with an insurance card which should be carefully kept.

The whole of the contribution is payable in the first instance by the employer, and must be paid by stamping a card at or before the time of payment of wages for the week for which the contribution is due. The employer is then entitled to recover, by deduction from the wages, the employee's share of the contribution so paid. The employee's share is ordinarily 9*d.* in the case of men, and 6*d.* in the case of women, but in certain cases of low wage-earners the employee's share is less. It is also less for those under 14 years of age. The employer's share is 9d. for men and 7d. for women, and he must pay for employees over 65.

The ordinary benefits to which insured persons are entitled in return for contributions in respect of health insurance are—medical, sickness, disablement and maternity benefits.

Medical benefit consists of the provision of medical attendance and treatment, including treatment and attendance for tuberculosis and the provision of proper and sufficient medicines and such medical and surgical appliances (and chemical reagents) as are named in the regulations made by the Minister of Health.

The ordinary rates of sickness benefit are 15*s.* 0*d.* a week for men and 12*s.* 0*d.* for women, but until a person has been insured for 104 weeks and 104 weekly contributions have been paid in respect of him, sickness benefit is payable at the reduced rates of 9*s.* 0*d.* for men and 7*s.* 6*d.* for women. The normal rate of disablement benefit is 7*s.* 6*d.* a week for men and 6*s.* 0*d.* for women. All these rates are subject to reduction when the member is in arrears.

Disablement benefit is a continuation of the periodical payments at a lower rate in respect of incapacity after the period of sickness benefit has been exhausted. The normal rate is 7*s.* 6*d.* a week.

Maternity benefit consists of the payment of a sum of 40*s.* 0*d.* on the confinement of the wife or, in the case of a posthumous child, of the widow of an insured man, or of a woman whether married or unmarried who is herself insured. Some women, therefore, are entitled to a double maternity benefit.

Most insured persons belong to an approved society, as in this way they obtain the full advantages of the scheme. These societies are formed by trade unions and friendly societies, and payments are made by them. In addition each insured person must have his or her name on the panel of a medical man who receives a certain yearly sum for each patient.

In 1934 no fewer than 19,000,000 persons were insured under the scheme in Great Britain and Northern Ireland. The approxmate income of the fund was £38,000,000 and about £32,000,000 was paid out in benefits.

Germany has a somewhat similar system of social insurance. This was in existence before the British one, which, in some respects, was modelled upon it. In 1930 France introduced a national insurance scheme of a somewhat similar character.

Health Board of. Department of the British Government that existed from 1848 to 1858. It was concerned with the care of the public health, duties which were taken over by the Home Office, then by the Local Government Board and finally by the Ministry of Health.

Health Ministry of. Department of the British Government. It was created in 1919 to supersede the Local Government Board and also take over duties performed by other departments of state, such as national health insurance. It deals with all matters affecting local government including rating and the public health. Its head is the minister, who is a member of the Cabinet and is paid £5000 a year. He is assisted by a parliamentary secretary and a large staff, on which are a number of medical men. The offices are Whitehall, London, S.W.

The Ministry is only concerned directly with England. For Wales there is a Board of Health with headquarters at Cardiff. Scotland has a department of health at 125 George St., Edinburgh, which is under the Secretary for Scotland.

Healy Timothy Michael. Irish politician, Born in Bantry, May 17, 1855, he was educated by the Christian Brothers. In 1871 he went to England and in London he worked as a clerk and then as a journalist. In 1880 he was elected M.P. for Wexford, in 1883 for Monaghan, in 1885 for Londonderry, South, in 1887 for Longford, North, in 1892 for Louth, North, and in 1910 for Cork, North-East, a seat he retained until 1918. Healy threw himself keenly into political work and was soon one of the most prominent members of the Nationalist Party and one of the few real orators in the House of Commons. Strongly attached to the Roman Catholic Faith, he was one of the small group who actively opposed Parnell in 1890, and in 1900, when the party was united again, he was expelled from it for his opposition to the United Irish League.

In 1922 Healy was selected as the first Governor-General of the Irish Free State, a post he held for five years. He died March 26, 1931. Both an Irish and English barrister, Healy wrote *Letters and Leaders of My Day.*

Heanor Market town and urban district of Derbyshire. It is 141 m. from London by the L.N.E. Rly., and 3½ m. from Ilkeston. Hosiery is manufactured, and there are collieries. Pop. (1931) 22,386.

Hearing One of the five senses. It is awakened by exciting the auditory nerves by sound vibrations conducted from outside by the pair of organs called the ears. Man perceives vibrations ranging from 30 to 50,000 a second. When irregular in duration or intensity, they constitute noise; when regular and periodic they become musical. *See* DEAFNESS.

Hearst William Randolph. American journalist. Born in California in 1863, his father was a rich mine owner and a senator. In 1886 young Hearst took over *The San Francisco Examiner*, which he developed on the lines of the so-called yellow press, everything sacrificed to sensation. In 1895 he obtained a paper in New York, which he called *The New York American*, and round these two he gathered others until he was the owner of a powerful group, all showing the same features and all, at times, bitterly hostile to Britain. He also secured weekly and monthly papers, including several in London.

Heart Main organ of blood circulation in man and many other animals. The human heart is a hollow, muscular, somewhat

conical four-chambered force pump enclosed in a fibrous bag. It is situated in the chest between the lungs and weighs from 10 to 12 oz. in men and from 8 to 10 oz. in women. The right and left auricles contract, pumping into their respective ventricles venous blood from the body and aerated blood from the lungs; the right and left ventricles contract, pumping venous blood into the lungs and aerated blood into the main blood vessels. These rhythmic contractions, or systole, and dilatations, or diastole, followed by an equivalent pause, constitute the pulse or heart beat, normally 60 to 90 times a minute. The heart is popularly regarded as the seat of the affections.

DISEASES OF THE HEART. The heart is subject to a number of diseases, one of the worst being angina pectoris, which is very painful. Those affected are liable to sudden death, and should avoid extra exertion of any kind. There is a hospital for diseases of the heart in Marylebone, London.

Heartburn Burning sensation referred to the region of the heart and in the throat, caused by too much acid in the stomach, a similar condition to that known as acidity.

Treatment.—½ teaspoonful of bicarbonate of soda in water will give immediate relief, and essence of peppermint is also good. The cause of heartburn is often too much sugar and unsuitable starch (such as new bread). Some people find that fresh fruit or strong tea sets up this condition; the diet should therefore be studied with a view to the elimination of unsuitable foods.

Heartsease Popular and poetic name formerly shared by the wallflower with some species of violets, especially *V. tricolor* and its subspecies *V. lutea*. An infusion of them was deemed to ease the love-sick heart. The word is now confined to the latter, whose mingling of purple, white and golden-yellow in the same flower distinguishes it from one-coloured violets and two-coloured pansy violets. From the three-coloured cornfield weed, which is widely distributed in Britain, Europe, Asia and N. Africa, have been produced many garden varieties, habitually called pansies.

Heat Form of energy. Formerly heat was regarded as a subtle substance which flowed in from an outside source, but it is now known to be a form of energy which is produced from other forms of energy by means of friction or chemical action, as in the case of combustion. Temperature may be regarded as heat potential and determines the transference of heat; it may be compared with level in relation to liquids, pressure in pneumatics and voltage in electricity.

The heat capacity of substances varies, and the amount of heat required to raise the temperature of a unit mass of a substance through one degree is known as **specific heat**. A rise in temperature of a substance causes expansion, and a further rise to a height varying with the substance causes a change of state from solid to liquid or liquid to gas. The amount of heat needed for such a change of state is known as **latent heat**.

Heath Rigid, evergreen shrub (*erica*). It is native to Europe, N. Asia and Africa. British species include the fine-leaved *E. cinerea*, the cross-leaved *E. tetralix*, and others characteristic of S.W. Europe. Greenhouse favourites comprise the brier root, *E. arborea*, and many from South Africa, besides some Australian heaths. They belong mainly to the order *erica*, but partly to *epacris*.

A stretch of open, uncultivated land is called a **heath**, especially in the south of England.

Heathcoat **John.** English inventor. Born at Duffield, Derbyshire, Aug. 7, 1783, he finished his apprenticeship to a blacksmith and went to Nottingham. After a short spell in business in that town he began to manufacture lace in Loughborough, and there in 1808 he invented a machine for making lace, hitherto made by hand. In 1816 his factory was destroyed by the Luddites, so he transferred his business to Tiverton. From 1832 to 1859 Heathcoat was M.P. for Tiverton. He died Jan. 18, 1861. His descendants, the family of Heathcoat-Amory, still carry on the business he founded.

Heather Shrub of the heath order. A native of Europe, Siberia and Greenland, it is also called ling. Unlike true heath (*erica*) its coloured calyces are longer than the corollas. There is a great deal of it in Scotland and Ireland, where it is used for besoms, thatchwork and as outdoor bedding. The flowers are usually purple, but there is a variety that is white.

Heathfield Village of Sussex. It is on the Cuckmere, 15 m. from Tunbridge Wells and 45 from London, on the S. Rly. Near is Cade Street, where, in 1450, Jack Cade was killed. Pop. 3150.

Heathfield **Baron.** British soldier. George Augustus Eliott was born at Stobs, Dec. 25, 1717, being a member of the famous border family of that name. He became a soldier and served with the Prussian Army in 1735-36 and then with the British at Dettingen and Fontenoy. In the Seven Years' War he obtained notice and promotion, but it was not until later that he became a national hero. In 1775 he commanded the troops at Gibraltar and was responsible for defending the fortress against French and Spanish attacks for four years (1779-83). In 1787 he was made a baron and he died July 6, 1790.

Heaton Norris District of Lancashire. It stands on the Mersey, adjoining Stockport, on the L.M.S. Rly. The chief industry is cotton manufacture. Near are the districts of Heaton Mersey, Heaton Chapel and Heaton Moor, in the Stockport area.

Heaton Park, Manchester, was at one time the seat of the Earl of Wilton. In 1902 it was bought by the city; the park is now a pleasure ground and the house a museum.

Another **Heaton** is a district of Newcastle-on-Tyne.

Heaven Name for the visible vault or firmament enveloping the earth in which the celestial bodies appear. Blended with this is the conception of heaven as God's dwelling-place, and the place or state of existence of the blessed after earthly life ends. The doctrine of a heavenly reward for earthly righteousness was found among the Jews and developed in Christian thought. Mohammedans associate heaven with a future of sensual delights. The Christian view is spiritual, not material, heaven being sometimes emphasised as a timeless state which may even accompany present experience.

Heaviside **Oliver.** English scientist. Born May 13, 1850, he was

at first employed in telegraphy and subsequently devoted himself to electrical investigation, publishing in 1892 his *Electrical Papers*. His work had an important bearing on long-distance telephony. He died Feb. 3, 1925.

The Heaviside layer is a conducting layer in the upper atmosphere suggested by him to explain various electro-magnetic phenomena, including the reflection of wireless waves (especially short waves) towards the earth, giving unexpected reception strength at long distances.

Hebburn Urban district of Durham. It is near Jarrow, and stands on the Tyne, being 267 m. from London, by the L.N.E. Rly. Here are engineering works, shipbuilding yards, and other industries connected with shipping. Pop. (1931) 24,125.

Hebden Bridge Market town and urban district of Yorkshire (W.R.). It stands on the rivers Hebden and Calder, 7 m. from Halifax, on the L.M.S. Rly. Cotton goods and other textiles are made here. Near is Hardcastle Crags, a pleasure resort. Pop. (1931) 6312.

Hebdomadal Council Body that governs the University of Oxford. It consists of the chancellor, vice-chancellor, proctors and 18 members elected by congregation.

Hebe In Greek mythology, the goddess of youth, identical with Dia and Juventas. She was the daughter of Zeus and Hera and the cup bearer of the gods. She also attended to Hera's chariot and peacocks and, when Hercules was deified, became his bride.

Heber Reginald. English prelate. The son of a clergyman, he was born at Malpas, Cheshire, April 21, 1783. He went to Brasenose College, Oxford, and was ordained. For a time he was in Oxford as Fellow of All Souls College, but on his marriage he became Vicar of Hodnet in Shropshire. In 1823 he was chosen Bishop of Calcutta and he was there until his death, April 3, 1826. Heber is best known for his hymns. He was successful in writing prize poems at Oxford. He wrote, among other hymns, *From Greenland's Icy Mountains* and *Holy, Holy, Holy, Lord God Almighty*.

Hebrew Name used for the Jewish race, especially to describe its language, literature and religion. The Hebrew language is Semitic; in it the Old Testament was written. It developed into rabbinic or new Hebrew and then into modern Hebrew. The writing is from right to left.

Hebrews Epistle to the. Book of the New Testament. Although the English Bible attributes it to S. Paul, it bears in the oldest manuscript the anonymous superscription "to the Hebrews," and even that was a deduction by early copyists. Its vocabulary and formal rhetorical style distinguish it from letters admittedly Pauline; neither ancient authority nor modern scholarship accepts his authorship without question. Addressed to Jewish Christians, perhaps in Rome, it has been, at various times, conjecturally attributed to Barnabas, Priscilla, Luke and others.

Hebrides Groups of islands off the west coast of Scotland. They number about 500, but only about 100 are inhabited and they are parts of the counties of Ross and Cromarty, Argyll and Inverness. They are divided into two groups, Outer and Inner, The Minch and Little Minch being a channel between them. The Inner Hebrides include Skye, Islay, Jura, Mull, Colonsay, Rum, Tiree, as well as Staffa and Iona. The Outer Hebrides include Lewis-Harris, Taransay and Benbecula, the two Uists, North and South, Barra, the Flannan Islands, etc. St. Kilda, now uninhabited, is the most westerly of all. The soil is poor and only oats, barley and potatoes are grown. Sheep rearing and fishing are the main occupations. The total area is about 2850 sq. m. Pop. 75,000.

The islands were ruled by the kings of Norway until 1266, when they were ceded to Scotland. For two centuries they were the domains of the Lords of the Isles, a branch of the Macdonalds. Many of the islanders speak Gaelic and are Roman Catholics. The islands have a literature of their own.

Hebron Town of Palestine. Situated 20 m. south of Jerusalem, 3000 ft. above the Mediterranean, it is one of Palestine's oldest settlements. First called Kirjath-arba (Gen. xxiii.) it was the home of Abraham, Isaac and Jacob. Mohammedans reverence it equally with Mecca and Medina. Captured by Saladin in 1187, the Turkish occupation ceased when the British entered it in 1917. Its walled enclosure of Herodian date shelters, according to tradition, the Cave of Machpelah and the patriarchal remains. Pop. (1931) 17,532.

Hecate In Greek mythology, the goddess of night, animal fertility, witchcraft and the underworld. Sometimes discharging the functions of Artemis, she appeared at first single-formed, but afterwards triple-formed, symbolising the moon's three phases. She was represented on pillars at cross-roads, especially at Athens. Black ewe lambs and puppies were sacrificed to her.

Hecatomb In Greece, the sacrifice of 100 oxen or 100 other beasts of one kind. Particularly observed by Lacedaemonians on possessing a hundred cities. Early poets use the word more generally for a great but indefinite public sacrifice, *e.g.*, one of 23 goats and lambs, and even of great destruction by physical visitation.

Heckmondwike Market town and urban district of Yorkshire (W.R.). It is 8 m. from Bradford and is served by the L.M.S. and L.N.E. Rlys. Its industries are the manufacture of carpets, machinery and textiles. Pop. (1931) 8991.

Hecla Volcano of Iceland, in the south of the island, about 70 m. from Reykjavik. It is 5100 ft. high and has a crater over a mile round. The volcano is frequently in eruption and there are records of its activity as far back as the 11th century.

Hectare Measure of land in the metric system. It is equal to 2.471 acres. The word means 100 ares, an are being 100 metres.

Hectograph Apparatus for making numerous copies of a document. It consists of a shallow tray filled with a glycerine-gelatine mixture or a preparation of clay. The original, written or typed in special ink, is placed face downwards on the gelatine, which absorbs the ink and from this impression copies may be made.

Hector In Greek legend the eldest son of the Trojan king, Priam, by Hecuba. He was Troy's outstanding champion during the war with the Greeks. After Hector slew Patroclus, Achilles emerged from retirement,

chased him thrice round the walls of Troy, slew him and dragged his body at his chariot wheels to the Greek camp. Entreated by the aged Priam, Achilles gave up the body for burial. Hector's wife was Andromache, and the description of their affection, with their little son, Astyanax, given by Homer in the *Iliad*, is one of the finest passages in Greek or any literature.

Hecuba In Greek legend, wife of Priam, King of Troy, and mother of Hector, Paris, Cassandra and other children. It was her tragic lot, after losing her husband and favourite sons, to be made captive by the Greeks. In one story, utilised by Euripides in his tragedy, *Hecuba*, she wreaked vengeance on the children of Polymestor after he had murdered her son, Polydorus, in the Thracian Chersonese (Gallipoli), but was turned into a dog and threw herself into the sea.

Hedgehog Genus of insect-eating mammals (*Erinaceus*). They are natives of Europe and parts of Asia and Africa. All are able to roll themselves into balls by muscular layers beneath the skin, and also to erect a protective armour of short, prickly spines. The common urchin, *E. europaeus*, with short, naked tail, is a nocturnal feeder, hibernating in winter. Besides insects it consumes snakes, birds' eggs and small mammals. In the garden it is useful for destroying harmful insects.

Hedgeley Moor District in Northumberland. It is 8 m. from Alnwick and is famed for the battle fought there during the Wars of the Roses. On April 25, 1464, a Lancastrian force was beaten by the Yorkists and one of their leaders, Sir Ralph Percy, was killed.

Hedge Mustard Large genus of annual or biennial herbs of the cruciferous order (*sisymbrium*). They are natives of temperate and cold regions. The common *S. officinale* has leaves variously incised and sprays of small, yellow flowers. **Jack-by-the-hedge**, *S. alliaria*, has larger white flowers, and a garlic-like odour. The hedge mustard was formerly used in medicine.

Hedin **Sven Anders.** Swedish traveller. Born at Stockholm, Feb. 19, 1865, the son of an architect, he went to several universities in his own land and in Germany. In 1885 he made his first considerable journey through Persia and Mesopotamia, and for the next 30 years he was almost constantly in the more unknown parts of the globe. His chief field was central Asia. During the Great War, Hedin showed marked German sympathies and returned the British knighthood conferred upon him in 1909. He has written many books which have been translated into English. These include *Through Asia*, 1898; *Adventures in Tibet*, 1904; *Overland to India*, 1910; *From Pole to Pole*, 1911; *The War Against Russia*, 1915; *Southern Tibet*, 9 vols., 1917-22; *Mount Everest*, 1922; *My Life as an Explorer*, 1926; *The Gobi Desert*, 1929 and *Lop-nov, the Wandering Lake*, 1931.

Hedingham Name of two villages in Essex, Castle Hedingham and Sible Hedingham. **Castle Hedingham** is famed for its castle, the seat of the great family of De Vere. The keep remains. Pop. 900.

Sible Hedingham, 60 m. from London, has also a fine old church. It dates from the 14th century and has associations with the family of Hawkwood. Pop. 1750.

Hednesford Market town of Staffordshire. It is 129 m. from London by the L.M.S. Rly., and is 10 m. from Walsall. There are tile works and collieries.

Hedon Borough of Yorkshire (E.R.). It stands near the Humber, 5 m. from Hull, and is served by the L.N.E. Rly. At one time Hedon was a flourishing port. It is still a chartered town. Pop. (1931) 1509.

Hedonism Ethical view of life which regards pleasure, bodily or mental, as the highest good. It developed into the philosophies of Aristippus and Epicurus. Influenced by Christian altruism, modern hedonistic doctrines, represented by Bentham, Mill and others, emphasise the claims of the community, and aim at the greatest happiness of the greatest number.

Heem Family of Dutch painters. David van Heem was born at Utrecht and painted pictures of still life. One is in the National Gallery, London. He died in 1632. His son, Jan David van Heem, was a much greater artist. He is represented in the Wallace Collection, London, and in other famous galleries. He died in 1683, leaving a son, Cornelis van Heem (1631-95) also a painter.

Heere **Lucas de.** Flemish painter. Born at Ghent in 1534, from 1568 to 1577 he was in England, when he painted portraits of Queen Elizabeth, the Earl of Essex, and others. A curious and allegorical picture by him is at Hampton Court. He also painted in Paris, where he died in 1584.

Hegel **George William Frederick.** German philosopher. Born at Stuttgart, Aug. 27, 1770, he was educated at Tübingen and began life as a teacher. In 1800 he settled at Jena, where he became a professor, but left that city in 1806 and edited a newspaper at Bamberg. In 1808 he became head of a school at Nuremberg, and in 1816, his reputation as a philosopher being now made, he was chosen Professor of Philosophy at Heidelberg. In 1818 he went to Berlin as professor at the university there and he died Nov. 14, 1831.

Hegel's philosophy is contained in his books, some of which have been translated into English. He was one of the foremost exponents of idealism. He taught that the world of objects is not only related to an intelligence, but can be nothing more than the manifestation or revelation of that intelligence. The material world could not exist of itself. Matter is but the necessary counterpart of spirit and in it spirit reveals and realises itself. God himself is just the self-development of the absolute. The universal principle is the idea; being and the idea are identical. This philosophy was very influential in England and the philosophers who adopted it are sometimes known as the English Hegelians.

Heidelberg Town of Baden, Germany. It stands on the Neckar, 54 m. from Frankfort, and is a railway junction. For some centuries before 1721 it was the capital of the Rhenish Palatinate. On a hill above the town and the river is the castle, the sections of which are named after the princes who built them. The chapel is noteworthy and in the cellars is the great tun of Heidelberg, a vat capable of holding 17,000 gallons. Two bridges cross the river. Pop. (1925) 73,034.

The University of Heidelberg was founded in 1385 and in the 17th century was a famous Protestant centre. It has a fine range of buildings, including a fine library and an

observatory. One block, the gift of some Americans, was opened in 1931. There are some industries and Heidelberg, owing to its educational and other advantages, attracts residents. Pop. (1933) 84,641.

The Heidelberg Catechism is a statement of the Protestant faith, drawn up in 1563. It was accepted at the time by both Lutherans and Calvinists.

The Heidelberg Jaw is a jawbone of an early type of man found near Heidelberg in 1907.

Heine Heinrich. German poet. Born at Düsseldorf, Dec. 13, 1797, he went into business at Hamburg, but afterwards left it to study at several universities. In 1825 he took a degree at Göttingen and for the next six years he lived a desultory life, writing, travelling and giving vent to advanced and unpopular opinions. In 1831 he settled in Paris, which was his home for the rest of his life. There he became a leader of the democratic movement and the centre of an admiring band of literary enthusiasts. After eight years as a complete invalid he died, Feb. 17, 1856. Heine was, by birth, a Jew, but in 1825 he became a Christian.

Heine's fame rests chiefly upon his lyrics, songs of unsurpassed beauty, but he also wrote a great deal of prose. His books on his journeys in the Harz Mountains and by the North Sea were followed by volumes on Corsica and Italy. His *Book of Songs* (*Lieder*) appeared in 1827, five years after the appearance of his first poems. He wrote on art and literature, especially French, and some short stories. His last works were further volumes of poems, including *Atta Troll* and the volume called *New Poems*.

Heinsius Name of two famous Dutchmen. The scholar, **Daniel Heinsius**, was born in Ghent, June 9, 1580, and studied under the younger Scaliger. He was Professor of Greek and Latin at Leyden for many years and was regarded as one of the greatest scholars of the age. He edited some of the Latin classics and wrote poems. He died in 1655. His son Nicholas (1620-81), was also a famous classical scholar.

Antonius Heinsius was a Dutch statesman. Born Nov. 22, 1641, he entered the public service and became a trusted servant of William of Orange. When William became King of England, Heinsius became Grand Pensionary of Holland. He was responsible for the conduct of foreign affairs in which he continued William's policy of hostility to France. He remained at the head of affairs in Holland after William's death and died Aug. 3, 1720.

Heir One who inherits anything. Heirs are usually created by will, but in English law the heir is one who succeeds to an estate, not by will, but by a settlement. Before the changes in English law made in 1925, the heir was one who succeeded to real estate by intestacy or entail.

The heir to a title is usually the eldest son of the holder, but, if such does not exist, it may be a daughter or a nephew, according to the patent creating the title or the custom, if it is a very old one. An heir is called an heir apparent; an heir presumptive is the heir provided a nearer heir is not born.

An heirloom is a piece of plate, jewellery, or furniture or something else that descends with an estate to the heir.

Hejaz District of Arabia, sometimes spelt Hedjaz. It is on the Red Sea and with Nejd, forms a kingdom. In it are Mecca, the capital, and Medina and the ports of Jedda and Yembo. It covers about 150,000 sq. m. Pop. 1,500,000.

Until 1914 Hejaz was part of the Turkish Empire. In 1916 Hussein, Grand Sherif of Mecca, was recognised as king and in return fought for Great Britain against Turkey. In 1919 he became involved in a struggle with his hereditary enemy, Ibn Sa'ud, the Chief of the Wahhabis. Defeated by the latter, Hussein abdicated in 1924. His son, Ali, did the same in 1925, as Ibn Sa'ud had by then captured Mecca. In 1927 Great Britain recognised Ibn Sa'ud as King of the united kingdom of Hejaz and Nejd (now known as the kingdom of Saudi Arabia). **The Hejaz Railway** runs from Medina to Ammon. *See* NEJD.

Hejira Arabic word meaning flight. It is used for the flight of Mahomet from Mecca to Medina, which took place in 622. From it the Mohammedans date their era and their year, which begins on July 16.

Hel Goddess of Norse mythology. The daughter of Loki and Angurboda, she dwelt below the roots of Yggdrasil, ruled nine worlds and received all the dead. Later myths assigned to her only those who died of age or sickness, and gave her the attributes of darkness, hunger, starvation and misery.

Helen Greek heroine, famous for her beauty. She is said to have been the daughter of Leda, her father being either Zeus or Tyndareus. Castor and Pollux were her brothers. She became the wife of Menelaus, King of Sparta, where she was visited by Paris. The pair fell in love with each other and Helen was carried off to Troy, the result being the Trojan War. When it was ended Helen returned to Sparta with Menelaus, where Homer refers to them as living together in perfect unity.

Helena Saint and Roman empress. Flavia Julia Helena was born in Nicomedia and became the wife of the Emperor Constantius Chlorus. Her son was Constantine the Great. Helena was a Christian and in her old age made a pilgrimage to Jerusalem. A legend says that whilst there, she discovered the Holy Sepulchre and the wood of the true cross. Churches are dedicated to her.

Helensburgh Burgh and watering place of Dumbartonshire. It stands on the Firth of Clyde, at the mouth of the Gareloch, 24 m. from Glasgow and 4 from Greenock, on the L.N.E. Rly. There is a harbour and from here steamers go to places on the west coast of Scotland. Pop. (1931) 8893.

Helenus In Greek legend one of the sons of Priam, King of Troy. He was a soothsayer and was taken prisoner by the Greeks during the siege of Troy. When it was over he went to Epirus with Pyrrhus, whom he succeeded as king.

Helicon Mountain range in Boeotia, Greece. Situated between the Corinthian Gulf and Lake Copais, now drained, its beauty made it the ancient home of the Muses, which had on it a temple and sacred grove. Culminating in Palaiovouni, 5740 ft. high and Zagora, 5010ft. high, spurs overlooking the valley of the Muses contain the fountains, Aganippe and Hippocrene.

Helicopter Type of heavier-than-air craft. It is assumed that it can ascend vertically by means of an air screw of large diameter mounted on a vertical axis. Although many attempts have been

made with various forms of helicopter, none have proved a complete success as no air screw yet designed will give a forward movement or maintain a balance in variations of the wind. In the nearly related autogiro a forward movement is needed to raise the craft.

Heligoland Island of the North Sea. It is 45 m. from the mouth of the Elbe, belongs to Prussia, and is about 130 acres in extent. At one time it is said to have been quite a large island, covering some hundreds of square miles. The name means Holy Island.

In 1807 the island was taken by Great Britain from Denmark. In 1890 it was ceded to Germany and was soon strongly fortified. The inhabitants were removed and works of enormous strength constructed, making it a base for both warships and aircraft. After the Great War the fortifications were all dismantled and the island became again a pleasure resort, noted for its sea bathing.

HELIGOLAND BIGHT. The waters between the island and the German coast form the **Bight of Heligoland.** On Aug. 28, 1914, this was entered by a British force of light cruisers and destroyers. These attacked the German ships and there was some hard fighting without decisive results. Later in the day five British battle cruisers under Sir D. Beatty arrived in the bight and, with their aid, three German cruisers were sunk and the rest driven into port. The British lost 31 killed and one ship, the *Arethusa*, badly damaged. The Germans had 712 killed and 37 taken prisoner.

Heliograph Instrument used for sending messages over long distances by reflecting the sun's rays or artificial light from a movable mirror. In this method of signalling long and short flashes in the Morse code are used. It was employed in the South African War in 1899.

Heliometer Instrument invented in the 18th century for the accurate measurement of heavenly bodies. It was later improved by Fraunhofer and Dollond. The object lens of the heliometer is in two separate halves, each forming a perfect image in the focus of the eyepiece, the images converging or diverging as the half-lenses are moved together or apart.

Heliopolis Ancient city of Egypt. It was the Biblical On (Gen. xli.), and the modern Matariya, a suburb of Cairo. It was devoted to the worship of the falcon-headed sun god Ra; its learned priestly schools attracted Plato and other philosophers. A XII.-Dynasty obelisk, 66 ft. high, erected by Senusret I., still stands.

Heliostat Astronomical instrument by means of which a beam of light is reflected by a mirror in a fixed direction. In the heliostat, a mirror is mounted upon an axis which is placed parallel to the earth's axis, and a clockwork mechanism causes the mirror to rotate following the sun, thus reflecting the sun's rays in an invariable direction.

Heliotherapy Treatment by sunlight. An ancient practice adopted by Finsen (1861-1904) who, however, used artificial light for treating lupus with beneficial results. Recognition of the value of sunlight is now general and sun-bathing is common. Exposure should be gradual and the head should be protected. The effect is that of a general tonic, valuable in children in cases of rickets, and to convalescents from debilitating diseases.

Heliotrope Large genus of herbs and shrubs of the borage order, (*Heliotropium*). Mostly natives of the warmer regions, they bear alternate leaves, and clusters of small, white or lilac salver-shaped flowers One species is a common European weed.

In Great Britain the heliotrope is an attractive garden plant. This plant is also known as cherry pie and was introduced into Europe in the 18th century.

Helipterum Everlasting flower including the rhodanthes and the acrodiniums. They grow in a light, rich soil and a warm, sheltered position.

Helium Colourless gaseous element resembling argon in its inert character. It is not inflammable and next to hydrogen is the lightest gas known; consequently helium is used for inflating the envelopes of airships. To a small extent it is soluble in water—hence its presence in thermal springs. It occurs also as natural gas in Texas, and in many radio-active minerals, especially those containing thorium and uranium. The radiations known as alpha-rays are electrically-charged helium atoms.

Helix Widely distributed genus of air-breathing, belly-footed molluscs of the land snail family. They can withdraw entirely into their spiral shells, which have no horny lids. Among 25 British species are the common garden snail, *H. hortensis*, and the edible snail, *H. pomatia*. Exotic forms are often strikingly variegated. One in Sicily bores into rocks.

Hell Place or state of retribution for impenitent sinners after death or the last judgment. The authorised version of the English Bible frequently uses the word for the Hebrew *Sheol* and the Greek *Hades*, denoting the abode of the departed, as well as for *Gehenna* and *Tartarus*. The doctrine of hell as a place of torment long figured in Christian theology, but has now been abandoned by most Christian people. It was based upon one or two passages in the New Testament, notably in the Parable of Dives and Lazarus and of the wise and foolish virgins.

Hellas Name used for Greece. It included all the districts occupied by Greeks, the Greek world of that day. In addition to Greece proper there were Greek cities in Asia Minor, Sicily and other parts of the Mediterranean coast. It was called Hellas because all were supposed to be descended from Hellen, the son of Deucalion.

Hellebore Genus of perennial herbs of the buttercup order possessing cathartic properties. They are natives of Europe and N. and W. Asia. The large, coloured sepals simulate petals, the true petals becoming honeyed tubes. The stinking hellebore, *H. foetidus*, and the bear's foot (*H. viridis*) grow wild in Britain. The Mediterranean black hellebore (*H. niger*) is the Christmas rose of English gardens.

Hellenism Term used for the culture of ancient Greece. It aims at reproducing in modern life the artistic and literary ideals of the best age of Greece, ideals which, in the opinion of many, represent the highest achievements of the human mind. In London there is a Society for the Promotion of Hellenic Studies. It was founded in 1879 and issues *The Journal of Hellenic Studies*. The address is 50 Bedford Square, London, W.C.1

Helles Cape on the peninsula of Gallipoli (*q.v.*) It is on the southern ex-

tremity of the peninsula and guards the entrance to the Dardanelles. Here, in April, 1915, British troops landed, in spite of fierce opposition.

Hellespont Old name for the Dardanelles (*q.v.*). The story goes that Helle, fleeing from her stepfather, Ino, fell into the sea and was drowned. Her name was then given to it.

Helm In a ship the wheel or tiller by which a vessel's course is directed. Orders about direction, called helm orders, are issued by those responsible for shipping, but a certain amount of inconvenience is caused by these being different in different countries. The matter was discussed at international conferences in 1912-14 and 1929, but no decision was reached. In 1931, however, it was announced that Great Britain was willing to co-operate with other countries in establishing a uniform international system of helm orders.

Helmholtz **Hermann Ludwig Ferdinand von.** German scientist. Born at Potsdam, Aug. 31, 1821, he became a doctor and as such served in the Prussian Army. In 1849 he was made Professor of Physiology at Königsberg; in 1855 he moved to Bonn and in 1858 to Heidelberg. In 1871 he was appointed Professor of Physics at Berlin and in 1887 became Director of the Physico-Technical Institute at Charlottenburg. He died there, Sept. 8, 1894.

Helmholtz ranks as one of the great scientists of the 19th century. He was responsible for the invention of the ophthalmoscope. He wrote valuable books on optics and acoustics and his researches into the problem of sight were of the highest importance. He was also an authority on the nervous system. As a physicist he developed the idea of the conservation of energy, and was a pioneer in examining some of the problems connected with electricity.

Helmsley Market town of Yorkshire. It is 32 m. from York, on the L.N.E. Rly. Near is a ruined castle, and also Duncombe Park, once the seat of the Earl of Feversham, whose eldest son is called Viscount Helmsley; it is now a school for girls. Pop. 1400.

Héloise French abbess. She is known for her love for Abélard, her tutor, to whom she wrote the now famous love letters, *See* ABELARD.

Helot Class of bondmen in Sparta. They were a Greek people who were enslaved by the Spartans. They worked on the landed estates, paying a fixed portion of the produce, but remaining state property. Sometimes they were employed as light-armed infantry, or as rowers in the fleet. Their cruel treatment occasioned a revolt in 464 B.C. The system disappeared in the 3rd century B.C.

Helsingfors Capital and seaport of Finland, also called Helsinki. It stands on the Gulf of Finland, 250 m. from Leningrad. The harbour is a good one fitted with docks and wharves and there is a considerable shipping trade. In the harbour is a free port. Other industries include sugar refining and tobacco preparing. Pop. (1931) 241,115.

Helston Borough and market town of Cornwall. It stands on the Cober, 11 m. from Falmouth and 303 from London and is reached by the G.W. Rly. There are some small industries, but the mines near are less prosperous than formerly. An old place, Helston is noted for its annual festival on May 8. On that date the Flora Dance is danced in the streets. Pop. (1931) 2544.

Helvellyn Mountain of England. The second highest in the country, being 3118 ft. high, it is on the border of Cumberland and Westmorland and overlooks Ullswater. The ascent, which is not difficult, is best made from Patterdale.

Helvetii Name of a Teutonic tribe. They lived in the district now called Switzerland and around Avranches. In 58 B.C. they invaded Gaul, but were defeated by Julius Caesar. The republic set up in Switzerland by the French in 1798 was called the **Helvetic Republic** Its capital was Lucerne, but it only lasted until 1803.

Hemans **Felicia Dorothea.** English poetess. She was born Sept. 25, 1793. Some of her poems were extremely popular, for, although never great poetry, they were written with feeling and a sense of harmony and dealt with subjects which everyone could understand. *The Better Land* was, perhaps, the best known. Mrs. Hemans died in Dublin, May 16, 1835.

Hemel Hempstead Borough and market town of Hertfordshire. It stands on the little River Gade, 32 m. from London, on the L.M.S. Rly. The industries include paper making, brewing and tanning. The name is due to the fact that hemp was once grown in the neighbourhood. Pop. (1931) 15,122.

Hemisphere Term literally meaning a half-sphere, but applied in geography to the two equal divisions of the earth's surface. These are separated by the equator and known as the northern and southern hemispheres. In the northern hemisphere there is a greater distribution of land surface than in the southern.

Hemlock Biennial umbelliferous herb. It is native in Europe, Asia, and N. Africa, and is common in Britain. Its stout, shining, furrowed, purple spotted stem bears triangular, much-divided leaves, and small white flowers in compound umbels. It is poisonous, and in Greece a decoction of it was given to those sentenced to death, *e.g.*, to Socrates. To-day the alkaloid prepared from it and called conine is used in medicine.

Also a name given in North America to coniferous trees of the pine family.

Hemp Name given to the fibre of a herb of the nettle order (*cannabis sativa*). The plant is cultivated for this fibre, which is used for making rope, belting and the like. It grows in a cool, moist climate, and the stems, when ripe, are pulled and subjected to much the same treatment as flax. The best is grown in Italy, and a little in England and Ireland. It also produces a resinous secretion, which is made into the drugs known as bhang and hashish, both being narcotics and hypnotics. It is also used in medicine. The oily seeds are used for bird food and cattle cake.

The name is also used for fibres of other plants, *e.g.*, Manilla hemp and sisal hemp, while other trees yield Indian hemp and African hemp, all being used for similar purposes.

Two other plants bearing the name are the **hemp agrimony** and the **hemp nettle.** Agrimony grows to a height of 4 ft. and bears clusters of purple flowers. It belongs to the

order *compositae*. The nettle bears white or ivory flowers. It belongs to the order *labiatae*.

Hemsworth Urban district of Yorkshire (W.R.). It is 8 m. from Wakefield and 168 from London, by the L.N.E. Rly. It is a coal mining centre. Pop. (1931) 13,001.

Henbane Herb of the nightshade order (*hyoscyamus niger*). It is a native in warm and temperate Europe, Asia and Africa, and is poisonous to domestic fowls. It is foetid and viscid, with a stout stem, large leaves and funnel-shaped, purple-veined yellow flowers. Besides this annual form a biennial one grows in the second season. Both leaves and seed yield alkaloid poisons, hyoscyamine and hyoscine, used as sedatives and anodynes; large doses cause paralysis. The plant grows wild in England and Ireland.

Henderson **Arthur.** British politician. Born in Glasgow, Sept. 15, 1863, he was apprenticed to an engineering firm in Newcastle-on-Tyne and soon became a leading trade unionist and a member of the city council and in 1895 was suggested as a candidate for parliament. Soon he moved to Darlington where he was equally active, being mayor in 1903. From 1903 till 1918 he was M.P. for the Barnard Castle Division. In 1919 he was elected for Widnes; in 1923 for Newcastle East, and in 1924 for Burnley, where he was defeated in 1931.

Henderson began his career as a minister when in 1915 he was made President of the Board of Education in the coalition ministry. In Dec. 1916, he became minister without definite office, but in Aug. 1917, after a visit to Russia, he resigned. In 1924 he was Home Secretary in the first Labour Ministry and in 1929 he became Foreign Minister, a post he filled with considerable success. He was Chairman of the Parliamentary Labour Party, 1908-10 and 1914-17 and its chief whip, 1921-24 and 1925-27. In the second MacDonald ministry (1929-31) he was Secretary of State for Foreign Affairs, but in 1931 he resigned with the ministry and was defeated in the General Election. In 1932, 1933 and 1934 he presided at the disarmament conference at Geneva. He was awarded the Waterlor prize in 1933 and the Nobel prize in 1934 for his services to peace. He died in Oct. 1935. A biography by E. Jenkins was published in 1933. In 1923-24 two of his sons sat in parliament: Arthur for Cardiff South, and William Watson for Enfield. They were re-elected in 1929, but lost their seats in 1931.

Hendon Urban district of Middlesex. It is 8 m. to the north-west of the city and is served by the L.M.S., L.N.E. and Tube Railways. Hendon has become a great flying centre. Here is a large air park, as well as aircraft works, and in June an annual air pageant is held. Pop. (1931) 115,682.

Hendon is also the centre of a rural district and in 1929 the council of this bought Headstone Manor House, once a residence of the archbishops of Canterbury, for public purposes.

Hengist Anglo-Saxon leader. All that is known about him is that in A.D. 449, with his brother, Horsa, he landed at the head of some Angles at Ebbsfleet in Kent. He defeated the Britons and settled in Kent, where he reigned over a small kingdom until his death in 488. He is said to have been invited by the British king Vortigern, and is regarded as the founder of the Anglo-Saxon rule in England.

Hengistbury Head Headland on the coast of Hampshire. It is about 2 m. to the south of Christchurch and from it magnificent views are obtained. In 1930 it became the property of the Borough of Bournemouth.

Hengoed District of Glamorganshire. It is 31 m. from Neath and 160 from London, on the G.W. Rly. It is a populous coal mining district.

Henley **William Ernest.** English writer. Born at Gloucester, Aug. 23, 1849, he was educated at the grammar school there. After being in a hospital in Edinburgh, where he was treated for tuberculosis, he settled in London, where he soon made a position for himself. As editor of *The National Observer* he gathered round him a band of young writers, to whom he imparted something of his own virile personality and maintained, until broken, a close friendship with R. L. Stevenson; the two wrote four plays together. Henley's literary work was chiefly essays and criticisms in *The National Observer* and other papers and volumes of verse, *A Book of Verses*, *The Song of the Sword* and *For England's Sake*. He died at Woking, July 11, 1903.

Henley-on-Thames Borough and market town of Oxfordshire. It stands on the north side of the Thames, 36 m. from London, on the G.W. Rly. Henley is chiefly known for its boating facilities and the annual Henley Royal Regatta (*q.v.*). The headquarters of the Leander Club and the Phyllis Court Club are here. Brewing is an industry. Pop. (1931) 6618.

Henley-in-Arden is a little town in Warwickshire. It is 100 m. from London and 17 from Birmingham, on the G.W. Rly.

Henley Regatta Principal rowing event in England. It is held every July and attracts the best oarsmen from all over the world. The first meeting was held in 1839. The chief races are the Grand Challenge Cup, the Ladies' Challenge Plate and the Thames Challenge Cup for crews of eight. For crews of four there are the Stewards' and the Visitors' Challenge Cups. The Silver Goblets are for the best pair of oarsmen and the Diamond Sculls for single scullers. The Amateur Rowing Association controls the meeting.

Henna Cosmetic used for staining nails, eyelids and hair. It contains the powdered leaves of the Egyptian privet, *lawsonia inermis*, a tropical loosestrife.

Henrietta Maria English queen, wife of Charles I. A daughter of the French king, Henry IV., she was born in Paris, Nov. 25, 1609. In 1624 a marriage was arranged between her and the English prince, Charles, and in May, 1625, they were married by proxy in Paris, Charles being then king. The young queen then came to England and for 20 years the pair lived together, on the whole quite happily.

A strong Roman Catholic, Henrietta took part in public affairs and her actions, especially in favouring members of her own faith, undoubtedly added to the many difficulties of her husband. At the outbreak of the Civil War, she got a little help for Charles in France and the Netherlands, but in 1642 she left England and the pair never met again. In spite of poverty and insecurity generally, she worked for his cause and later for that of her sons, but without any great success. After the

restoration of Charles II., she visited England, but she lived mainly in France, dying at Colombes, Aug. 31, 1666.

Henry Electrical unit. It is named after the American physicist, Joseph Henry (1799-1878) and is the practical unit of self inductance.

Henry I. King of England. The third son of William I., he was born at Selby in 1068. In 1100, after his brother, William II.'s, death and when Robert was on crusade, he ascended the throne. He reigned for 35 years on the whole successfully and is regarded as the founder, or at least the able developer, of the English system of justice.

He carried on a war with Robert, whom he defeated at Tinchebrai in 1106, afterwards keeping him in prison for the rest of his life. Then he secured Normandy, but further fighting was necessary in order to keep it. He also quarrelled with the church, represented by Anselm, over the question of investitures.

Henry married Matilda, daughter of Malcolm, King of Scotland, and a descendant of the earlier English kings. His only legitimate son, William, was drowned in the White Ship in 1120; consequently he left the throne to his daughter, Matilda or Maud. Henry died, Dec. 1, 1135.

Henry II. King of England. He was born at Le Mans, March 25, 1133, his father being Geoffrey, Count of Anjou, and his mother, Matilda, daughter of Henry I. of England. In 1153 a treaty was made by which Henry was recognised as Stephen's successor on the throne. He became King of England in 1154, two years after he had married Eleanor, Duchess of Aquitaine, the divorced wife of Louis VII. of France.

Henry reigned over England and his considerable inheritance in France for the next 35 years. In England he restored order after the anarchy under Stephen and, taking up some of the ideas of his grandfather, Henry I., gave the country a number of legal reforms which made for good government. This led him into his famous quarrel with the church and Thomas à Becket, whose murder, one of the central facts of his reign, led to the king's humiliation and to the thwarting of his plans for making the clergy amenable to civil law.

In France Henry was chiefly occupied in fighting Louis of France and his own rebellious nobles. In 1173 he had to face a rebellion in England, in which his eldest son, Henry, took part. His other three sons, Richard I., John and Geoffrey, at one time or another rebelled against him. He brought Ireland under the rule of England and was one of our greatest kings. He died at Chinon, July 6, 1189.

Henry III. King of England. Born at Winchester, Oct. 1, 1207, he was the son of King John and his wife, Isabella of Angoulême. He was only 9 years old when, in 1216, he became king, and he reigned for the long period of 56 years. Until 1227 he was a minor, the land being ruled meanwhile by William Marshal, Earl of Pembroke, and Hubert de Burgh. His personal rule, on the whole, was disastrous. He was influenced by favourites and his marriage in 1236 with Eleanor of Provence led to the arrival of many needy foreigners who were soon filling the chief positions in the land. Already restive at these proceedings, the barons, in 1258, compelled Henry to hand over the government to themselves, with Simon de Montfort as their leader. A little later war broke out. Henry was defeated and made prisoner at Lewes in 1264, but in 1265 his son, Edward, turned the tables on the barons at Evesham. Henry lived on until Nov. 16, 1272, with Edward as the real ruler of the country.

Henry IV. King of England. The eldest son of John of Gaunt, Duke of Lancaster, he was born at Bolingbroke in Lincolnshire, April 3, 1367. He became Earl of Derby, and, as a cousin of the king, Richard II., began to take part in public life, being one of the group called the lords appellant, who put a curb on the king's power.

In 1398, the year before he succeeded his father as Duke of Lancaster, he was sent into exile by Richard II. and on Gaunt's death the king seized his lands. Henry, therefore, returned, collected a small army in Yorkshire, and, Richard being in Ireland, he had no difficulty in securing the throne. His title to it was admitted by parliament and, as the first of the three Lancastrian kings, he began to reign in 1399.

Henry's reign lasted for 13 years It was marked by rebellions, one quite serious, and the persecution of the Lollards. He died at Westminster, March 20, 1413. Shakespeare wrote two plays on Henry IV.

Henry V. King of England. Born at Monmouth, Aug. 9, 1387, he was the eldest son of Henry IV. He was made Prince of Wales in 1399 and soon began to take part in public affairs, including wars in Wales. In 1413 he became king and, having put down a rising of the Lollards, he claimed the throne of France and went with an army to make good his imaginary right. In Oct., 1415, he won the great victory of Agincourt, on which his fame as a soldier rests, and between then and 1420 he conquered the whole of Normandy, his task being made easy by the civil war in France. In 1420 the French king agreed to the Treaty of Troyes, by which Henry was made regent or recognised as the next king. On Aug. 3, 1422, he died at Vincennes. He married Catherine, a daughter of the King of France, and left an only son, Henry VI.

Henry VI. King of England. He was born at Windsor, Dec. 6, 1421, the only son of Henry V., and became King of England and France in 1422. These lands were ruled for him by his uncles, the Dukes of Beaufort and Gloucester, as regents, but after a long and costly warfare, his French realm was completely lost. In 1445 he married Margaret of Anjou, but before then the faction fights which led to the Wars of the Roses had begun. Henry was quite unable to keep order between the factions, especially after 1453, when he became insane. Richard, Duke of York, was named protector and in 1455 the civil war began. The cause of Henry was bravely championed by his wife, but in 1460 he was made a prisoner. York then claimed the throne, but it was decided that Henry should rule during his lifetime, his rival and not his son succeeding when that event occurred.

Under these conditions the war was quickly renewed. York was killed at Wakefield and his son made himself king in 1461 as Edward IV. In 1465 Henry, who had been deposed, was again taken prisoner, but in 1470, by a sudden reversal of fortune due to Warwick, he was restored but only for a few months. Edward IV. returned from his exile, crushed the Lancastrians and put the Prince of Wales and later his father, Henry VI, to death, May 21, 1471.

Henry is chiefly regarded as the founder of King's College, Cambridge, and of Eton College. It has been proposed to canonise him. On him Shakespeare based three of his plays,

Henry VII. King of England. Born at Pembroke, Jan. 28, 1457, his father was Edmund Tudor and his mother Margaret Beaufort, a descendant of John of Gaunt, Duke of Lancaster. He inherited from his father the earldom of Richmond and in 1485 claimed the throne. He collected an army, defeated Richard III. at Bosworth and was crowned. Parliament accepted him and he married Elizabeth, daughter of Edward IV.

Henry, the first of the Tudor kings, reigned for 24 years. He crushed two pretenders to the throne, but his great work was to lay the foundation of the Tudor monarchy, which he did by husbanding carefully his revenues, keeping the peace, encouraging trade with the Netherlands and crushing the last remnants of baronial independence. He died at Richmond, April 22, 1509. His sons were Arthur and Henry VIII. His daughter, Margaret, married James IV. of Scotland and so brought about the union of the crowns in 1603.

Henry VIII. King of England. The second son of Henry VII. he was born at Greenwich, June 28, 1491, and became heir to the throne when his brother, Arthur, died in 1502. Well educated, with abilities above the average, possessing an engaging and vigorous personality and wide human interests, he was destined to make his mark upon the history of England and the world. Moreover, these same qualities made him popular with his people and enabled him to carry out his autocratic ideas. He became king in 1509 and at once married Catherine, daughter of Ferdinand and Isabella of Spain, the widow of his brother, Arthur.

The first period of Henry's reign was occupied largely with foreign affairs. The emperor, Charles V. and Francis I. of France both sought his aid, which he gave first to one and then to the other, but the wars in which he took part were not very serious matter, except, perhaps, for the defeat of the Scots at Flodden in 1513. At this time Henry had for his adviser Thomas Wolsey, archbishop and cardinal. In 1521 the king showed his interest in church matters by writing a book on the sacraments. This controverted the views of Luther and won for its author the title of Defender of the Faith.

The second period of his reign began about 1526, when Henry fell in love with a lady at court, Anne Boleyn. To marry her he decided to get a divorce from Catherine. This led to the rupture between the Church of England and Rome and to the fall of Wolsey. In 1529 a parliament met, which, at the behest of the king, carried out the necessary changes. Henry was made supreme head of the Church and the power of the pope in England was destroyed. Bishops were in future appointed by the king and payments to Rome were forbidden. The work of reform was completed by the dissolution of the monasteries, which provided money for the lavish expenditure of the sovereign. The dissolution of the monasteries led to the rising called the Pilgrimage of Grace, but this was soon suppressed. Meanwhile, in 1533, Henry had married Anne Boleyn, the earlier marriage being declared invalid by parliament.

In 1536 Anne Boleyn, charged with crimes against the king, was executed and Henry married Jane Seymour. She died very soon, and now anxious to ally himself with the German Protestants, he took for his fourth wife Anne, a princess of Cleves. She did not please him and was soon put away, this leading to the execution of the king's adviser, Thomas Cromwell, in 1540. Henry's fifth wife was Catherine Howard, a niece of the Duke of Norfolk, who was beheaded for infidelity. The sixth was Catherine Parr, who survived him.

Henry died Jan. 28, 1547. He left three children, each by a different wife, each of whom succeeded to the throne. They were Edward VI., Mary and Elizabeth.

Henry Name of four kings of France. **Henry I.** was a son of Robert I. and a grandson of Hugh Capet. He ruled from 1031 to 1060, spending time and energy fighting William, Duke of Normandy, and other of his vassals.

Henry II., a son of Francis I., reigned from 1547 to 1559. He is known as the husband of Catherine de Medici and the father of three kings, Francis II., Charles IX. and Henry III. His daughter married Philip of Spain and Henry IV. of France. He was also the lover of Diane de Poitiers. Wounded in a tournament, Henry died July 10, 1559.

Henry III., the third son of Henry II., was chosen King of Poland in 1573, but he soon left that country and in 1574 became King of France. His reign was one of civil war and on Aug. 1, 1589, he was murdered.

Henry IV. King of France. Born at Pau, Dec. 14, 1553, he was a son of Anthony, a member of the Bourbon family and his wife Jeanne d'Albret, Queen of Navarre. Although a Protestant he was educated at the court in Paris and in 1572, just before the Massacre of S. Bartholomew, he married Margaret, daughter of Henry II., King of France. In 1572, also, he became King of Navarre, but his time was chiefly spent in fighting for the Huguenot cause in France. In 1589, when Henry III. was murdered, he was crowned King of France, but his kingdom remained to be conquered. He defeated his Roman Catholic enemies in battle at Ivry and Arques, took Paris and then declared himself a Roman Catholic. In 1598 he granted the Protestants toleration by the Edict of Nantes, and his position remained unshaken until he was murdered, May 14, 1610.

Henry Name of seven German kings. **Henry I.**, called the Fowler, was Duke of Saxony before he was chosen German King in A.D. 919. He reigned until his death in 936 and was succeeded by his son, Otto the Great. **Henry II.** was a duke of Bavaria who was chosen king in 1002. He was crowned Emperor in Rome in 1014 and died in 1024, being canonised in 1146. **Henry III.** succeeded his father, Conrad II., as emperor in 1039 and reigned until his death in 1056.

Henry IV., a son of Henry III., became king in 1056, when he was only six years of age. In 1069 he began to rule as well as reign, and he passed a long life mainly in a quarrel with the Church about investitures (*q.v.*). In 1074 he submitted to Gregory VII. at Canossa, but the struggle was soon renewed and Henry was fighting his old enemies, which included his own sons, when he died, Aug. 7, 1106.

Henry V., a son of Henry IV., continued the struggle about investitures until 1122, when he came to terms with the pope. He died in 1125. **Henry VI** was a member of the Hohenstaufen family, the son of Frederick I. and the

father of Frederick II. He reigned from 1190 to 1197, his time being chiefly occupied in Sicily, which kingdom came to him through his wife, Constance. **Henry VII.**, a count of Luxembourg, was king from 1308 to 1313.

Henry Prince of Portugal, called the Navigator. A son of John I. and, through his mother, a grandson of John of Gaunt, Duke of Lancaster, he was born in Oporto, March 4, 1394. He had a little experience of war, but most of his life was spent at Sagres. There he built an observatory and in other ways aided the infant science of navigation, as well as finding money for a succession of voyages of exploration to the Asian and African coasts. Some very important discoveries resulted from the voyages organised by him. He died Nov. 13, 1460.

Henry **Joseph.** American scientist. Born at Albany, Dec. 17, 1797, he was educated there and became a teacher. He devoted a good deal of time to experiments with electricity, and in this way discovered the use of the electric current in telegraphy and for other purposes, whilst wireless telegraphy also owes something to him. In 1846 he was made secretary to the Smithsonan Institution at Washington. He died May 13, 1878.

Henry **Matthew.** English divine. A son of Rev. Philip Henry, (1631-96), one of those who were rejected from their livings by the Act of Uniformity in 1662, he was born in Flintshire, Oct. 8, 1662. He became a Nonconformist minister at Chester in 1687, and in 1712 moved to London to a church in Mare Street, Hackney. He wrote a popular *Exposition of the Old and New Testaments*, and died June 22, 1714.

Henry **O.** Name taken by an American writer. Born in N. Carolina. Sept. 11, 1862, William Sydney Porter lived a varied life. He was editor of a humorous paper, *The Rolling Stone*, at Austin, Texas, and after a spell as a bank official returned to journalism at Houston. He was there sentenced to a term of imprisonment on a charge of embezzlement. By then he had begun to write, and during the next few years he made a name by his short stories. These have been published in a number of volumes; many consider him one of the greatest of short story writers. His works include *The Four Million*, *Heart of the West*, *The Trimmed Lamp* and *The Gentle Grafter*. He died in New York, June 5, 1910.

Henry **Patrick.** American statesman. Born in Virginia, May 29, 1736, he became a lawyer after having tried storekeeping and farming. His eloquence made him a success in his profession, and, as a member of the legislature of Virginia, he advocated taking up the struggle against Great Britain. He took part in the events that led to the union of the Colonies and the Declaration of Independence. In 1788 he was chosen Governor of his state (Virginia). In 1791 he retired from public life and on June 6, 1799, he died.

Henson **Herbert Hensley.** English prelate. Born in London, Nov. 8, 1863, he was educated at Oxford, where he won a fellowship at All Souls College. He was ordained in the Church of England and in 1887-88 was head of Oxford House, Bethnal Green. From 1888 to 1895 he was vicar of Barking; from 1895-1900, incumbent of St. Mary's Hospital, Ilford; and from 1900 to 1912, canon of Westminster and rector of St. Margaret's. In 1912 he was made Dean of Durham; in 1918, Bishop of Hereford; and in 1920, Bishop of Durham.

A broad churchman, deeply read in church history, a fearless thinker and a powerful controversialist, the bishop occupies a unique position in the Church of England. He has written a great deal, both books and articles, and has set forward clearly and incisively his ideas of the creeds in modern life, the relations between church and state and other matters. His powers were seen at their best during the debates on the revised prayer-book in 1926-27. After its rejection by the House of Commons he came forward as an advocate of disestablishment.

Henty **George Alfred.** English writer. Born at Trumpington, near Cambridge, Dec. 8, 1832, he went to school at Westminster, and then to Caius College, Cambridge. He was in the Crimea during the war in connection with the supply of food. Having become a correspondent for *The Standard*, he saw fighting in Italy with Garibaldi in 1859-60; in the Franco-German War, 1870-71; and in Serbia in 1876. He made his name, however, by his stories for boys, which were long the most popular of their kind. Most of them deal with adventures in one or the other of England's many wars. They include *The Lion of the North*, *The Cat of Bubastes*, *The Young Carthaginians*, *Out on the Pampas* and about 70 others. He died at Weymouth, Nov. 16, 1902.

Hepatica Genus of ranunculus plants, related to the anemone. They are natives of Europe and grow easily in Britain. They resemble a buttercup and flower in early spring, in several shades of colour, *viz.*, white, blue and red. The leaves are thick, divided into thin oval lobes and often persist through the winter.

Hephaestus In Greek legend the god of fire and metal working. He thus corresponds to the Roman Vulcan. He was the son of Zeus and Hera, and is always represented as being lame. The story is that his mother, disliking him, threw him off Olympus and so damaged his feet. The making of famous suits of armour, such as that worn by Achilles, is attributed to Hephaestus, who had his workshops in Lemnos or in Sicily.

Hepplewhite **George.** English cabinet maker. He was apprenticed to George Gillow, and afterwards set up in business for himself in London. His work is characterised by delicacy, grace and lightness of workmanship, and some of his effects were obtained more by inlaying than by carving. The Hepplewhite style of furniture was generally curvilinear, except in cabinets; in chairs the shield back was very common. He died in 1786.

Heptarchy Word meaning seven kingdoms, from the Greek *hepta*. It is used for the seven kingdoms into which England was at one time divided and also for the period between the arrival of the Anglo-Saxons in 449, and the 9th century. The seven were Kent, Essex, Wessex, Sussex, Mercia, E. Anglia and Northumbria.

Hera Greek goddess. A daughter of Cronos and Rhea, she was both sister and wife of Jupiter. She thus ranks as the queen of the gods. Her children included Mars (Ares), Hephaestus (Vulcan), and Hebe.

Many other legends have gathered around her name. She was one of the three beauties who appeared before Paris, and her vengeful disposition, at the affront then put upon her by him, caused her to side with the Greeks against the Trojans. Hera, who is the Roman Juno, was the goddess of childbirth.

Heraclitus Greek philosopher. The founder of metaphysics, he pronounced the theory that fire, the first principle, is a rational element governing the universe, from which all things evolve and to which they ultimately return. He contended that change is the only stable thing and that not even the gods would escape destruction.

Heraclius Roman emperor. Born in Cappadocia about 575, the son of a high official, he was renowned as a soldier. In 610 he defeated the Emperor Phocas and made himself his successor at Byzantium. His reign was passed in warfare, first with the Avars and then with the Persians, in both of which he was successful; his greatest victory being over the Persians near Nineveh in 627. He then turned against the Arabs, but there he was less successful, and much of the empire in the west had been lost when he died in 642.

Herald Officer entrusted in time of war with messages to the enemy, challenges, peace offers and the like. Such existed in Greek and Roman times, and there are many references to their duties in classical literature. They were allowed to come and go unharmed, and to facilitate their work wore a distinctive mark of some kind.

Heralds were employed in the wars of the Middle Ages, and in the days when knighthood flourished were given new duties, these being connected with the bearing of arms. All matters of this kind were settled by heralds, and in this capacity they exist to-day.

COLLEGE OF HERALDS. In England, Richard III., in 1483, made the heralds into a college, also called the College of Arms. This still exists, and to it belong the six heralds, Windsor, Lancaster, York, Somerset, Chester and Richmond. There was a college of heralds in Ireland, and in other European countries, all being concerned with the bearing of arms.

To-day the word is used as the name of a newspaper, *e.g.*, the *Glasgow Herald* and the *Daily Herald*.

Heraldry Term denoting generally all the business of heralds, specifically the art and science of genealogy, precedence, honorary distinctions and armorial bearings. In the Middle Ages, after knights assumed them, personal devices extended rapidly. The marshalling of badges, crests, coat armour, pennons, helmets and other distinctive devices became important.

Armorial insignia are traced upon a shield or escutcheon, in a tincture chosen from two metals, five colours and eight furs. The signs charged on the shield include various simple forms called ordinaries, *e.g.*, bends, chevrons, together with subordinaries, *e.g.*, orles, lozenges. Used at first to distinguish knights in the field, heraldic insignia came to appear on personal apparel, books, seals, signet rings, windows, furniture and tapestry hangings. Ten degrees of coats of arms are recognised: sovereign states, claims of dominion over another, communities, certain offices, *e.g.*, bishops, succession, assumption, paternal inheritance, matrimonial alliance, adoption and concession. *See* COAT OF ARMS.

Herat City of Afghanistan. It stands in the mountains, being about 2500 ft. above sea-level and at the junction of important trading routes between India, Russia and Persia, 400 m. W. of Kabul. Carpets and silks are made. Pop. 30,000.

Herb Plant whose stem, lacking permanent woody tissue like shrubs and trees, dies down annually. The stem grows from the root annually, biennially or perennially. Pot herbs are boiled, wholly or partly, in pots, *e.g.*, the carrot and turnip.

In cooking and pharmacy the word denotes any plant, sometimes shrubby, used for flavouring, *e.g.*, mint, parsley, or in domestic remedies, *e.g.*, tansy, horehound. These are dealt in by herbalists, who are, however, a diminishing class.

Herbals are books describing the qualities and uses of these plants.

Herbarium Collection of preserved plants mounted on loose sheets of paper and systematically arranged, also called *hortus siccus*. The herbarium at Kew is unrivalled. The British Museum (Natural History Department), and many universities have one. After drying in absorbent paper, specimens are gummed to stout sheets and stored in shelved cabinets.

Herbart **Johann Friedrich.** German philosopher. Born at Oldenburg, May 4, 1776, he was educated there. In 1805 he lectured in philosophy at Göttingen, and in 1809 at Königsberg, where he succeeded Kant. He remained there until 1833, and died at Gottingen, Aug. 14, 1841.

Herbart's philosophy was based on that of Kant. He is better known, however, for his influence on education. He imbibed the ideas of Pestalozzi, his friend, and did a good deal to make education and educational methods a science. His book has been translated into English as *Education and Science*.

Herbert English family. It came into prominence in the 15th century, when a Herbert became the owner of the great castle at Raglan. In 1468 **Sir William Herbert** became Earl of Pembroke, a title which soon became extinct. The existing Herberts are descended from him through an illegitimate son, Richard, whose descendants obtained at least five earldoms in addition to other titles. Of these the earldom of Torrington is extinct. The family still holds the united earldoms of Pembroke and Montgomery, the earldom of Carnarvon and the earldom of Powis. *See* PEMBROKE, Earl of.

Herbert **Alan Patrick.** English author. Born Sept. 24, 1890, the son of a civil servant, he was educated at Winchester and New College, Oxford, and became a barrister. He served during the Great War in Gallipoli and France with the Royal Naval Division, and when it was over made a name by his contributions to *Punch*. In 1924 he joined the regular staff of that paper. Herbert's books include *Sea Shanties, Plain Jane, Misleading Cases, The Trials of Topsy* and *The Water Gipsies*. In 1931, with T. F. Dunhill, he produced a successful musical comedy, *Tantivy Towers*.

Herbert **George.** English poet. Born in Montgomery, April 3, 1593, he belonged to the famous border family. He went to Westminster School and Trinity College, Cambridge, and was public orator at the university, 1619-27. Ordained, he held a living in Huntingdonshire, but in 1630

he went to Bemerton near Salisbury, with which place his name is always associated. He died there and was buried in the church, March 3, 1633. Herbert's poems are in a volume called *The Temple*, first printed in 1633. It had an extraordinary popularity; some of the verses are religious poetry at its best. He also wrote a manual, *A Priest to the Temple*, or *The County Parson: His Character and Rule of Holy Life*. Herbert won a great reputation by his saintly life. John Donne was among his friends.

Herbert of Cherbury Lord. English philosopher. Born March 3, 1583, Edward Herbert belonged to the famous border family and was a brother of George Herbert. He studied at Oxford, saw military service in Germany and was much abroad. Later he was sent by James I. as ambassador to France. He was made a baron in 1629, and in 1642 took the side of the king, but later joined the parliamentarians. He died Aug. 20, 1648. Herbert was a considerable scholar and put forward the system of natural religion, which caused him to be regarded as the first of the English deists. This is contained in his *De Religione Gentilium*. He also wrote an account of the reign of Henry VIII., an *Autobiography*, some poems and a treatise (*De Veritate*) on truth.

Herbert of Lea Baron. English politician. Born Sept. 16, 1810. Sidney Herbert was a younger son of the 11th Earl of Pembroke. He went from Harrow to Oriel College, Oxford, and in 1832 became M.P. for S. Wiltshire. In 1834, as a follower of Sir Robert Peel, he was made Secretary to the Board of Control, and from 1841-45 was Secretary to the Admiralty. In 1845-46, and again 1852-55, he was Secretary for War, and as such was held responsible for the mismanagement of the campaign in the Crimea. From 1859-61 he was again Secretary for War, when he carried through some important administrative reforms. He died Aug. 2, 1861, having just been made a baron. Two of his sons became earls of Pembroke, and his own barony is now merged in that title.

Herb Paris Herb of the lily family (*Paris quadrifolia.*) It is indigenous to Europe and Asia, and is found in woodlands in Great Britain. Its round smooth stem bears a whorl of four acutely oval leaves, surmounted by a single malodorous flower with green sepals and awl-shaped yellow petals, forming a black berry. It grows to a height of 12 ft.

Herb Robert Annual herb of the geranium order (*geranium robertianum*). It is indigenous to temperate and Arctic Europe and Asia, and N. Africa, and is abundant on British waysides. Sometimes called stinking crane's bill, it is hairy, often reddish, with much-divided leaves and dark-streaked light red flowers. The name comes traditionally from Robert, Duke of Normandy.

Herculaneum Ancient town of Italy. Situated on the coast between Naples and Pompeii beneath Vesuvius, it was damaged by earthquake, A.D. 63, and buried under mud and lava during the eruption which also destroyed Pompeii in 79. Subsequent eruptions deepened the deposit beneath which it lies. Discovered in 1719, it was examined in the 18th and 19th centuries. Excavations recovered a theatre, villa and other buildings, with a wealth of bronzes, portrait busts, wall paintings, mosaics, instruments, papyrus rolls and other objects. These are mostly in Naples Museum. The excavations were renewed in 1930.

Hercules Latinised name of the mythical Heracles, the chief national hero of Greece. Son of Zeus and Alcmene, he displayed prowess from his cradle. After he had slain his own children in mad fury, the Delphian oracle bade him serve King Eurystheus of Tiryns for twelve years, during which he performed his famous twelve labours. He is frequently represented in classical art with a club and a lion skin mantle. Hercules is sometimes identified, as a sun god, with the Babylonian Baal, whose worship the Phoenicians introduced into Greece.

Hercules Pillars of. Ancient name for Calpe (Gibraltar), and Abyla (Ceuta), the rocky headlands guarding the Mediterranean outlet into the Atlantic. Legend is uncertain whether Hercules joined them or tore them asunder.

Herd Group or collection of anything, especially of cattle, sheep and pigs. A **herd-book** is a book in which the record of pedigree stock is kept for the use of breeders and others. Societies of breeders issue such books, usually every year.

Herder Johann Gottfried Von. German writer. He was born Aug. 25, 1744, and was educated at the University of Konigsberg. He became a teacher at Riga and then a Lutheran minister at Buckeburg and later at Weimar. At Weimar he remained until his death, Dec. 18, 1803.

Influenced by Kant and Goethe, Herder first made a reputation as a critic, but subsequently turned to philosophy. In his greatest work, *Ideas on the History of Mankind*, he puts forward, in a tentative manner, the theory of evolution. He was a collector of folk songs, and also wrote poems.

Hereditament Really a piece of real property that can pass to an heir. It is now rarely used except by lawyers when property is sold.

Heredity The organic relation between one generation and another, especially between parents and children. It deals with the transmission of qualities from parents and remoter ancestors to their progeny.

Scientists have long accepted the main facts of heredity, and all breeders of animals make use of their knowledge of heredity in mating one with another. Their object is to transmit those qualities which are most useful, whether it is the milking qualities of a cow, the speed qualities of a racehorse, the fighting qualities of a gamecock, or the flesh producing qualities of a pig.

In man the transmission of hereditary qualities cannot be arranged in such simple fashion for obvious reasons. These, however, are transmitted and eugenists and others have given a good deal of time to studying the value of such transmission. Although it is generally admitted that heredity is of great importance in the development of mental and physical characteristics, it is equally certain that these can be modified by the counteracting influence of environment. *See* EUGENICS.

Hereford City, market and county town of Herefordshire. It stands on the Wye, 144 m. from London,

and is reached by the G.W. Rly. The principal building is the cathedral, a magnificent example of Gothic architecture at various dates. It has a library of chained books, which was re-opened after renovation in 1931. Other buildings are Coningsby Hospital and S. Ethelbert's Hospital, the churches of All Saints and S. Peter, the college of the vicars choral and the episcopal palace. Every three years a musical festival is held here; it is given by the choirs of Hereford, Gloucester and Worcester. These counties also hold an agricultural show, which comes to Hereford every third year. There is a racecourse. The industries include the making of beer and cider and the tanneries are important.

Hereford, owing to its position, was an important place in the Middle Ages, when it became a prosperous centre of the woollen industry. Its bishopric dates from 672. Pop. (1931) 24,159.

The important **earldom of Hereford** was long held by the great family of Bohun. Before their day it was held by several Norman barons, one of whom left a daughter who married Humphrey Bohun. Their son was made earl in 1199, and the title remained in the family until 1373. In 1397 Henry, afterwards Henry IV., was made Duke of Hereford.

The existing title of **Viscount Hereford** dates from 1550, when it was given to Walter Devereux. For a time it was held by the earls of Essex, but later again became an independent title and is still held by the Devereux family. It ranks as the premier viscounty in the English peerage.

Herefordshire County of England. In the west of the country, it is on the borders of Wales. Its area is 842 sq. m. Hereford is the county town; other places are Leominster, Ross and Ledbury. The Wye flows through it and the scenery is very beautiful. Other rivers are the Lugg, Terne, Arrow and Frome. In the east are the Malvern Hills; in the south the Black Mountains. The county is almost entirely given up to agriculture, and is specially famous for its cider and its cattle. Sheep are reared and hops are grown. Its historic interest centres round the border castles, now mainly ruins, such as those at Goodrich and Wigmore. Pop. (1931) 111,755.

The Herefordshire Regiment was founded in 1907 as a territorial or volunteer unit only. It served in the Great War, and was afterwards incorporated in the Shropshire Light Infantry.

Heresy Opinion or doctrine at variance with recognised standards, specifically of theological belief and procedure. It is distinct from schism. Heresy has appeared in Christendom since New Testament times (Tit. iii.). The first heresies were largely of Gnostic origin, *e.g.*, Arian, Manichaean and Pelagian, and were vigorously contested in early church councils. Later the Albigenses, Lollards and others were treated as heretics, and many persons were put to death for holding heretical opinions. Nowadays heresy is a purely ecclesiastical offence. Any clergyman or minister proved guilty of heresy is deprived of his office. Notable heresy hunts were those of Bishop Colenso in S. Africa, and of W. Robertson Smith in Scotland.

Hereward English soldier called the Wake. He was a holder of land in Lincolnshire in 1066. He rebelled against the Normans and made his headquarters in the Isle of Ely, where he gathered a number of followers. In 1071 William I. broke up his camp and ended the rising. Nothing more is known of Hereward. Charles Kingsley wrote a novel on his exploits.

Hergesheimer **Joseph.** American novelist. He was born in Philadelphia, Feb. 15, 1880, and for a time studied art. In 1915 he made a name with his novel, *Mountain Blood*, and rose to the front rank with *The Three Black Pennys*, 1917; *The Bright Shawl*, 1922; *The Presbyterian Child*, 1923; *Tampico*, 1926; *Swords and Roses*, 1929, and *The Limestone Tree*, 1931.

Heriot **George.** Scottish goldsmith. Born in Edinburgh in June, 1563, he served James I. and his wife, presumably by buying jewels for them. He died in 1624. He figures as "Jingling Geordie" in *The Fortunes of Nigel*.

Heriot's name is commemorated in Edinburgh by **Heriot's Hospital**, a school erected in the 17th century, and the Heriot Watt College, a modern technical college. The estates left by Heriot are controlled by the Heriot Trust, and the income is used to finance the college and for bursaries.

Herkomer **Sir Hubert.** English painter. Born in Bavaria, May 26, 1849, he was brought to England by his father, a wood carver, and educated at Southampton. About 1869 he made a name with some sketches and later with his paintings, "The Last Muster" and "Found." In 1879 he was elected A.R.A. and in 1890 R.A.; in 1907 he was knighted. Herkomer is best known for the school of art he founded and conducted at Bushey. He was Slade Professor of Fine Art at Oxford, 1885-94, and died in 1914.

Herm Small island of the Channel Islands. After the Great War it was bought by an English company for development as a holiday resort, and can be visited in the summer from Guernsey, 3 m. distant. Pop. 33.

Hermaphrodite Individual capable of producing both spermatozoa and ova, and therefore possessing the function of both sexes. The condition is normal in plants whose flowers contain stamens and pistils, although self-fertilization is less usual than cross-fertilization. Some invertebrates are normally self-fertilizing, *e.g.*, the oyster and the clam. Earthworms are both hermaphroditic and copulative, two individuals simultaneously impregnating each other.

Hermes In Greek mythology one of the gods, a son of Zeus and the counterpart of the Latin Mercury. His early exploits included the theft of the girdle of Aphrodite and the trident of Poseidon. He became the messenger of the gods, and conducted the souls of the dead to the lower world. He was the god of eloquence and of luck, the patron of travellers and traders.

Hermitage Cell or home of a hermit. One survives at Warkworth and another on an island in Derwentwater. **Hermitage Castle**, now a ruin in Roxburghshire, was a famous border stronghold, held first by the Comyns and later by the Douglases.

A palace at Baireuth is called the **Hermitage**, but more famous is the one at Leningrad, built by Catherine II. in 1765 and long a residence of the tsars. In the 19th century it was converted into a museum and art gallery. A famous French wine called **Hermitage** is produced at Valence, on the Rhône.

Hermon Mountain of Syria. At the end of the Anti-Lebanon range, 9400 ft. high, it has remains of a temple built in honour of Baal. Its modern name is Jebel-es-Sheikh.

Herne Bay Seaside resort and urban district of Kent, 7 m. from Canterbury and 62 m. from London, on the S. Rly. Pop. (1931), 11,244. **Herne** is a village, 1 m. inland.

Herne Hill District of London, about 5 m. from the City, on the S. Rly. Brockwell Park is in the district, which also has a running track.

Hernia (or **Rupture**). Escape from the abdominal cavity of some part of the intestine or its appendages, especially in the groin region, often the result of strain in predisposed persons. In children, and adults who wish to live an active life, operation is generally advisable. In elderly people the wearing of a truss to reduce the hernia is the more common treatment, though in special cases an operation becomes absolutely essential.

Hero In classical legend a superior being or demigod, intermediate between gods and men. They appeared in the Heroic Age, an era preceding the Historic Age, *e.g.*, Hercules, Theseus. The name includes also the principal personages in national epics, *e.g.*, Achilles, Hector, Ulysses and Aeneas.

A **Hero Fund**, founded by Andrew Carnegie, exists to assist cases where loss of life or earning power has resulted from acts of heroism in saving human life under peace conditions in the British Isles.

Hero Figure in Greek legend, a priestess of Aphrodite at Sestos on the Hellespont. *See* LEANDER.

Herod Name borne by princes of a Judaean dynasty of Idumaean origin. **Herod the Great**, born 74 B.C., was for a time ruler of Galilee. On his father's death he was recognised by the Romans as King of the Jews in 40 B.C., and he was ruling when Jesus was born. He founded cities and rebuilt the temple at Jerusalem. The New Testament tells how he ordered the Massacre of the Innocents, and of his dreadful death in 4 B.C. (Matt. ii.).

Other Herods were **Herod the Tetrarch**, who beheaded John the Baptist (Matt. iv.); **Herod Agrippa I.**, who executed S. James (Acts xii.), and **Herod Agrippa II.**, before whom S. Paul appeared (Acts xxiii.).

Herodians Political party, not a religious sect, which actively supported Herod the Great's Idumaean dynasty (Matt. xxii., Mark iii.). They shared the antagonism of the Pharisees to Christ, and were condemned by Him.

Herodotus Greek historian, born at Cappadocia in Asia Minor about 484 B.C. He travelled extensively, and died probably in 424.

The history of Herodotus is in nine books, written in the Ionic dialect. It deals with the early history of Persia, Lydia and Egypt, but its main theme is the struggle between the Greeks and the Persians. It ends in 478. From it we gain much of our knowledge about Marathon, Thermopylae and Salamis.

Heroin Drug obtained from morphine by the employment of acetic acid. It is used in medicine as a sedative and narcotic, but can be bought or sold only by licence.

Heron Large subfamily of birds allied to the bitterns. The common grey species, *Ardea cinerea*, with long legs and neck, great wings and pointed bill, is the only one now breeding in Britain. It is about 3 ft. long and its large, flat, moss-lined nests shelter pale-green eggs. Occasional visitants to Britain are the great and little white heron, or egrets, and the night heron, *nycticorax*.

Herons live together in heronries, and there are still a number of these in England, *e.g.*, at Parham, in Sussex.

Herpes Inflammation of the skin. Vesicles are formed which later dry into a crust. Two forms are common, around the nose and lips, and on the body (shingles). The former accompanies or follows certain fevers, the latter chiefly affects elderly people.

Herrick **Robert.** English poet. Born in London in 1591, he was the son of a goldsmith, and apprenticed to that trade, but went to Cambridge and was ordained. In 1629 he became Vicar of Dean Prior in Devonshire, and there he remained until the Puritans turned him out in 1647. After the Restoration he went back to his Devonshire living and there he died, Oct. 15, 1674. He is buried at Dean Prior.

Herrick wrote many poems, including the collections called *Noble Numbers* and *The Hesperides*. Among them are the lyrics, perfect of their kind, that have made his fame, such as "Bid me to live," "Cherry Ripe," and "Gather ye Rosebuds."

Herries **Lord.** Scottish title. First held by Herbert Herries in 1490, it passed by marriage to the Maxwell family, whose descendants, earls of Nithsdale, forfeited their titles in 1715. In 1858 it was successfully claimed by William Constable Maxwell, whose granddaughter, Baroness Herries, married the Duke of Norfolk.

Herring Fish allied to the pilchard. It is abundant in northern waters, especially in the North Sea. The fish, which is extraordinarily prolific, spawns twice a year, summer and autumn. The eggs are laid on weeds, etc., in comparatively shallow water, and hatch out in two or three weeks. The fish takes two or three years to become mature.

Herrings move in shoals near the surface of the water, and are caught mainly in drift nets. An enormous quantity is taken into the ports on the E. coast of Great Britain. Some of these are sold fresh, but the greater part are salted and dried to become bloaters, or smoked to become red herrings or kippers, giving rise to a large industry, especially in Yarmouth, where, during the season, thousands of women are employed. The catch of herrings in Great Britain in 1930 worth £1,998,842, was represented by 276,274 tons of fish. Norway has also valuable herring fisheries.

Herring Bone Phrase used in architecture. It describes the design of courses of stone wherein obliqueness to the right in one alternates with obliqueness to the left in the other, so that the formation of a herring's backbone is imitated. There is also a herring-bone stitch in needlework.

Herrings **Battle of the.** Fight between the English and the French, Feb. 12, 1429. The English were trying to take Orleans, and a little force set out to bring provisions, chiefly herrings for eating in Lent. The French and their Scottish allies met them at Rouvray and a battle took place in which the English were victorious.

Herriot **Edouard.** French statesman. Born July 5, 1872, at Troyes, he became a brilliant classical scholar. In 1897 he wrote *Philon le Juif*, which was crowned by the Academy, and later *Madame Recamier et Ses Amis* and other books showing scholarship of a high order.

In 1912 Herriot entered public life as a member of the Senate. He was later chosen leader of the Radical party; in 1924 he became premier, but events compelled his resignation in 1925. He again became premier in May, 1932, and in July signed the Lausanne agreement for France. Later he held cabinet rank and was engaged upon questions of reparation, war-debts and economic peace.

Herschel **Sir Frederick William.** English astronomer. Born in Hanover, Nov. 15, 1738, he went to England in 1757 and after much hard work on making and improving telescopes, he discovered the planet Uranus. His other discoveries included the planet's satellites, many double stars, and numerous nebulae. In 1782 he was made astronomer to George III. and in 1816 a knight. He died at Slough, Aug. 25, 1822.

Herschel's sister, **Carolina Lucretia Herschel** (1750-1848), did valuable work as an astronomer, and also compiled a star catalogue.

Herschel left an only son, **John Frederick William Herschel,** born March 7, 1792. At Cambridge he was senior wrangler and he there gave his time to studying astronomy. He mapped out all the stars in the Northern Hemisphere, and founded an observatory at the Cape of Good Hope to do the same for the Southern Hemisphere. In 1838 he was made a baronet, and he was president of the Royal Society. From 1850-55 he was master of the mint, and he died May 12, 1871. His writings include *The Outline of Astronomy.*

Herschell **Baron.** English lawyer. Born Nov. 2, 1837, Farrer Herschell, the son of a Nonconformist minister, became a Q.C. in 1874, and was elected M.P. for Durham. From 1880-85 he was Solicitor-General in the Liberal ministry, and in 1886 Lord Chancellor and a peer. He died in Washington, March 1, 1899, when engaged on the arbitration about the boundaries of Venezuela.

Hertford Borough and market town of Hertfordshire. It stands on the Lea, 24 m. from London. Its industries include brewing, printing and milling, and there is an agricultural trade. Pop. (1931) 11,376.

Hertford **Marquess of.** Title borne by the family of Seymour. In 1537, Edward Seymour, uncle of King Edward VI., was made Earl of Hertford. Later he became Duke of Somerset, and his grandson, William Seymour, was made Marquess of Hertford and Duke of Somerset, but the marquessate became extinct when the 4th duke died in 1675. In 1750, Francis Seymour, a descendant of the first Duke of Somerset, was made Earl of Hertford and in 1793, Marquess of Hertford. Francis Charles, the 3rd marquess (1777-1842), inherited much wealth from his mother, and was known for his gallantries and his extravagances. He figures as the Marquess of Steyne in *Vanity Fair.* The eldest son of the marquess is called the Earl of Yarmouth.

Hertford House House in London containing the Wallace Collection. It is in Manchester Square and was built late in the 18th century. The magnificent collection of pictures and works of art which it contained was left by the 4th Marquess of Hertford to Sir Richard Wallace, who added to it and bequeathed it to the nation. The Government then bought Hertford House, and it was opened to the public in 1900.

Hertfordshire County of England. One of the home counties, it covers 632 sq. m. and lies between the shires of Cambridge, Middlesex, Bedford, Buckingham and Essex. It is hilly in the west, where are spurs of the Chilterns. The chief rivers are the Lea and the Colne. The Grand Union canal and the New River pass through the county and the southern part is in the area of greater London. Hertford is the county town. Other places are St. Albans, Letchworth and Watford. Agriculture and market gardening are the chief industries. Pop. (1931) 401,159.

The Hertfordshire Regiment was raised as a territorial unit in 1907. It sent battalions to the Great War, and is now incorporated with the Bedfordshire Regiment.

Hertz **Heinrich Rudolf.** German scientist, born in Hamburg, Feb. 22, 1857. Following in the wake of Clerk Maxwell, he studied the experimental production of electromagnetic (or "Hertzian") waves. His discoveries were the first steps towards wireless communication. He died Jan. 1, 1894.

Hertzog **James Barry Munnik.** South African politician, born April 3, 1866, of Boer parents. In the war of 1899-1902 he held an important command, and after the annexation of the republic appeared as a champion of the Boer cause. In 1915 he was elected leader of the Nationalist party, and as such repeatedly claimed independence for South Africa. In 1924 he became premier and was still in office in 1936.

Hervey Name of an English family represented by the Marquess of Bristol. Its members were specially prominent in the 18th century, and its most famous member was John, Lord Hervey (1696-1743), son of the Earl of Bristol, who wrote *Memoirs of the Court of George II.*

Herzegovina District of Yugoslavia It covers 3560 sq. m., and Mostar is the chief town. For some centuries it was a Turkish possession, but in 1878 it was put under the protection of Austria. In 1908 it was annexed, along with Bosnia, by that empire, and in 1918 it was included in the new kingdom of Yugoslavia.

Hesione In Greek legend, daughter of Laomedon, King of Troy. Poseidon, having been employed to build the city walls by Laomedon, was refused payment. To avenge himself he sent a sea monster which could only be restrained by the sacrifice of a king's daughter, and Hesione was selected for the sacrifice. Hercules rescued her, but Laomedon refusing him the promised reward, Hercules slew him and gave Hesione as a bride to Telamon.

Hesperides In Greek mythology, maidens who guarded the golden apples which Earth gave Hera when she wedded Zeus. Usually numbering three, Aegle, Erytheia and Hesperus, their gardens bordered the ocean in the farthest west, and are sometimes located near Mt. Atlas. One of the twelve labours of Hercules was to procure the fruits after slaying their guardian, a dragon.

Hesse State of Germany, one of the members of the republic. In the west of the country, it covers 2968 sq. m., and is partly an agricultural region, cereals and vines being grown, while in some districts coal and iron are mined. It is governed by a small cabinet responsible to a diet or landtag. Pop. 1,347,300.

Hessian Anything belonging to Hesse. A cloth made of jute is called Hessian.

The Hessian fly is an insect that, in its larva stage, is harmful to wheat, barley, rye, and other cereals.

Hessle Market town and urban district of Yorkshire (E.R.). It is on the Humber, 4 m. from Hull and 192 m. from London. It has industries similar to those of Hull. Pop. (1931), 6430.

Heston District of Middlesex. It is 12 m. from London, on the District Rly. It is a flying station with an air park. With Isleworth it forms a borough. Pop. (1931) 75,446.

Heterodyne System of wireless reception. In it the incoming oscillations are combined with locally generated oscillations of slightly different frequency giving rise to a " beat " effect which is audible after rectification.

Hetton Urban district of Durham, 256 m. from London and 7 m. from Sunderland. Coal mining is the chief industry. Pop. (1931), 17,672.

Hever Village of Kent, on the Eden, near Edenbridge, 27 m. from London. Its castle, where Anne Boleyn lived, was restored by the 1st Viscount Astor. Pop. 700.

Hewart Lord. English lawyer. Gordon Hewart was born at Bury, Jan. 7, 1870, and was called to the Bar in 1902. In 1913 he was elected M.P. for Leicester as a Liberal; in 1916 he became Solicitor-General, and in 1919 Attorney-General in the coalition ministry. In 1922 he was made Lord Chief Justice and a baron. His book *The New Despotism* attracted a good deal of attention when published in 1929.

Hexameter Name given to a verse of six feet. In English poetry there are two kinds, the iambic, with the last syllable accented, and the trochaic, with the accent on the first syllable.

Hexateuch Greek term meaning six books, and coined by modern Bible scholars for the first six books of the Old Testament. It is analogous to Pentateuch, or five books.

Hexham Market town and urban district of Northumberland, famous for its abbey church, once belonging to an Augustinian priory. It is a magnificent edifice; the nave is modern. The industries are mainly connected with the agricultural interests of the district, in which there are also coal mines. Pop. (1931), 8888.

Outside Hexham, on May 15, 1464, a battle was fought between the Yorkists and the Lancastrians, in which the Lancastrians were defeated.

Heysham Seaport and watering place of Lancashire, on the south side of Morecambe Bay, 5 m. from Lancaster. From here steamers go regularly to Belfast, Douglas, Londonderry and elsewhere, and for these the L.M.S. Rly. Co. has built docks and enlarged the harbour. Pop. 3350.

Heywood Borough and market town of Lancashire, 9 m. from Manchester. Cotton, chemicals and machinery are made here. Pop. (1931), 25,967.

Heywood **Thomas.** English dramatist. A Lincolnshire man, he was born about 1570 and became an actor. His plays include *The Four Prentices of London*, *A Woman Killed with Kindness*, *The English Traveller* and *The Captives, or The Lost Recovered*. He also wrote poems and pageants, and was responsible for a *Life* of Queen Elizabeth. He died in 1641.

Hezekiah King of Judah, known for his activities in two directions. He put down idolatry and restored the worship of Jehovah, destroying the brazen serpent and repairing the temple at Jerusalem. He refused to pay tribute to Sennacherib, King of Assyria, who invaded his land twice, and whose army was utterly destroyed by a pestilence on the second occasion. Hezekiah reigned from 726 to 697 B.C. and his story is told in 2 Kings xviii.-xxvi. and 2 Chron. xxix.-xxxii. The prophet Isaiah also refers to him.

Hiawatha Name of a Red Indian chief of the Onondaga tribe. He lived about 1500 A.D. and reconciled warring tribes with his League of Six Nations. The name is also used for a miraculous legendary being who taught the arts of peace to the Red Indians, and his exploits are narrated in Longfellow's poem, *Hiawatha*.

Hibbert Trust Charitable foundation. In 1847 Robert Hibbert (1770-1849) gave money to found scholarships and fellowships for the study of religion, free from all sectarian and denominational considerations. This became the Hibbert Trust, which provides lectures, and since 1902 has supported *The Hibbert Journal*, a monthly review.

Hibernation Dormant condition or winter sleep characteristic of certain animals such as bears, dormice, and insects. A similar resting stage occurs among tropical forms during the dry season, and in Britain a summer sleep is met with in certain reptiles, amphibia, and worms. Hibernation is usually due to lack of food, and during this period the temperature of the body falls, the activity of the organs lessens, respiration is feeble, and the vitality is at a minimum.

Hibernia Latin name for Ireland, sometimes used to-day. *See* IRELAND.

Hibiscus Herbaceous plant of the genus *Malvaceae* (mallows). They consist of about 200 varieties of tropical and sub-tropical herbs and shrubs, and are prized as ornamental plants for their large and brilliantly-coloured blossoms. Some are cultivated for their mucilage.

Hiccough Involuntary spasmodic contractions of the diaphragm muscle, common in children, and very often the result of eating or drinking too quickly. Give a pinch of bicarbonate of soda in water, or 1 teaspoonful of milk of magnesia in water, sipped slowly. In the case of a baby, give 1 teaspoonful of dill-water and hold him firmly up against the shoulder while patting him on the back.

Hickory Genus of N. American trees of the walnut order (*Carya*). Cultivated for their elastic timber and edible nuts, they include the shellbark, yielding the best nuts, the pecan, the white-heart or mockernut, and the pig-nut. The timber serves for

axletrees, tool-handles, barrel-hoops and golf-clubs, and makes compact charcoal.

Hicks Sir Edward Seymour. English actor. Born at St. Helier, Jan. 31, 1871, he first appeared on the stage in 1887 and in 1905 opened his own theatre, The Aldwych. Hicks has written many plays including *The Man in Dress Clothes* and *The Beauty of Bath*, also several books, among them *Twenty-four Years of an Actor's Life*; *If I were your Father, Chestnuts Re-roasted* and *Hullo Australians*. He married, in 1902, the actress, Ellaline Terries. In 1931 he was made a Chevalier of the Legion of Honour and was knighted in June, 1935.

Hidalgo In Spain, a title used by the lesser nobility. It seldom denotes, nowadays, more than gentle birth and gives no official status.

Hierarchy Term denoting a body organised in ranks and orders for ruling over sacred things. The Jewish hierarchy comprised high priest, priests and Levites. The Council of Trent anathematised all who reject the divinely appointed hierarchy of bishops, priests and ministers. The celestial hierarchy comprises "angels, archangels and all the company of heaven."

Hiero Name of two rulers, or tyrants, of Syracuse. **Hiero I.** reigned from 478 to 467 B.C. His fleet won a victory over the Etruscans in 474, but he is better known for the hospitality he extended to Aeschylus, Pindar and other scholars.

Hiero II. was a soldier who lived from 270 to 216 B.C. He was made King of Syracuse and took part in the struggle between Rome and Carthage, first as the ally of Carthage and then of Rome.

Hieroglyph Pictorial character employed in Egyptian and other records, including those of the Hittites and the Mayas. This system began with pictographs outlining objects, *e.g.*, an eagle, but always with conventional meanings, which might become ideographic if interpreted literally, *e.g.*, a circle for the sun, or symbolically, *e.g.*, a musical instrument for gladness.

At first carved on stone or painted on wood this hieroglyphic or priestly writing was used for other materials, *e.g.*, papyrus. Egyptian writing passed by the 4th century A.D. into a Coptic alphabet.

Higgins Edward John. English preacher. Born at Highbridge and educated at Bridgewater, he joined the Salvation Army in 1882. He was chosen, in 1929, general in succession to W. Bramwell Booth.

Higham Ferrers Borough of Northamptonshire, on the Nen, 62 m. from London and 5 m. from Wellingborough. The staple industry is the making of boots and shoes. Pop. (1931), 2928.

High Blood Pressure Pressure of the blood unhealthily in excess of the normal (about 120 mm. of mercury). It is most often due to the hardening of the arteries which is apt to occur with advancing years, and the best prevention is healthy living during adult life.

People with high blood pressure should adopt a simple and moderate diet, avoiding rich foods, and alcohol except in strict moderation: plenty of water should be drunk between meals, moderate exercise taken and worry must be strictly avoided. *See* ARTERIO SCLEROSIS.

Highbridge Urban district of Somerset. It is 144 m. from London and 27 m. from Bristol, and is on the little River Brue. The G.W. Rly. has works here. Pop. (1931), 2584.

Highbury District of London, about 4 m. N. of the city, in the borough of Islington. Highbury Park is a pleasant residential district. Highbury Fields is an open space. At Highbury is the ground of the Arsenal Football Club.

High Commissioner Name given to one who represents his country in another country. From time to time men are sent out as high commissioners, an instance being Sir Alfred Milner who went to South Africa as high commissioner in 1897. The representatives of Canada, Australia, New Zealand, India, South Africa and the Irish Free State in London are Lord High Commissioners.

A high commissioner is appointed by the king each year to represent him at the annual Assembly of the Church of Scotland.

The **Court of High Commission** was organised in England in the reign of Elizabeth to see that the services of the Church of England were conducted according to the Act of Uniformity. It was abolished in 1641.

High Court of Justice English court of law. In 1873, when the judicial system was reformed, the high court was established. It is in three divisions, chancery; king's bench; probate, divorce, and admiralty. Each division has its quota of judges who are appointed on the advice of the Lord Chancellor. They are knighted and receive a salary of £4000 a year and a pension. The judges sit in London, at the law courts in the Strand, except those who are on circuit. Litigants can appeal against decisions of the high court to the court of appeal, which forms the higher branch of the supreme court of judicature.

Higher Criticism Term used for the criticism of the books of the Bible. It is directed rather against their historical accuracy than against their literary qualities or moral teaching, and so called to distinguish it from the lower criticism of the actual text.

Highgate District of London to the N. of the city. The S. part is divided between the boroughs of S. Pancras and Islington, with the N. part in the county of Middlesex. Highgate Hill is a landmark, whilst Highgate Woods is an open space of 69 acres. Whittington's Stone is here. Highgate School is a large public school with accommodation for nearly 700 boys.

Highlands Any elevated land, but especially that part of Scotland that lies N. of the Grampians, or N. of a line drawn from Ben Lomond to Aberdeen. It includes the counties of Argyll, Inverness, Ross and Cromarty, Sutherland, Caithness, Banff, Nairn, and Aberdeen, although the coastlands of the last three shires are usually excluded. It is mountainous, the scenery in parts being of extraordinary beauty, especially where lochs lie amidst the mountains. With a poor soil, the Highlands are thinly peopled and much of the land is devoted to deer forests and grouse moors. Inverness is usually regarded as the capital of the Highlands.

The Highlands have their own language and customs, and form a distinct part of Scotland, although this distinction is now less marked

than it was before 1745, when the clan system was dominant. The language is Gaelic. The **Highland dress** consists of kilt, plaid and bonnet. **Highland sports** are seen at the various Highland games held every year in different centres. The district has its own music, in which the bagpipes play an important part.

The **Highland regiments** of the British Army are those that wear the Highland dress. They are the Black Watch, Cameron, Seaforth, Gordon, and Argyll and Sutherland Highlanders. The Highland Light Infantry does not wear the kilt and is not, strictly speaking, a Highland regiment.

The Highlands have a famous breed of cattle, and their cattle shows are notable.

The Highland Rly. is now part of the L.M.S. system.

High Priest Chief priest, specifically in the ancient Jewish church. Josephus enumerates 83, from Aaron to Phannias, A.D. 67. He kept the anointing oil, wore vestments of special magnificence, and entered alone, in white linen, into the Holy of Holies on the Day of Atonement.

High Sheriff Name used to-day for the sheriff of a county in England and Wales. He is appointed for a year from among the landowners in the county, and discharges duties connected with the administration of justice. For the routine work he appoints a lawyer as under-sheriff. The sheriffs are named, or pricked, by the Chancellor of the Exchequer; three names from each county are submitted to him, but by custom he pricks the first. For Lancaster and Cornwall, they are chosen by the King as Duke of Lancaster, and the Prince of Wales as Duke of Cornwall.

High Tor Hill of Derbyshire. It overlooks the Derwent at Matlock, and is 400 ft. high. In it is a grotto, and opposite are the Heights of Abraham.

High Water Highest point to which a tide comes on the sea coast. It is usually every 12 hours, 25 min., and is therefore 50 min. later each day. There is similarly a high tide in tidal rivers.

Highway Main road. The care of the highways is in the hands of the various councils through whose territory they pass, their work being supervised to some extent by the Ministry of Transport. The **Highway Code** is the name given to the regulations for using the roads prepared under the important Road Traffic Act of 1930. *See* ROAD.

Highwayman Robber on the public way. Highwaymen flourished in the 17th and 18th centuries, and in the 19th until the building of railway lines. They were usually mounted and masked, and accosted travellers passing over heaths or any desolate area in the neighbourhood of London of other large centres. Hounslow Heath and Blackheath were noted haunts of highwaymen. Charles Duval (1643-70) excelled in daring and gallantry. John Nevison (1639-84), and Dick Turpin (1706-39) were heroes of a ride to York, probably apocryphal.

High Willhays Hill of Devonshire, the highest point on Dartmoor. It attains 2039 ft., and is reached from Okehampton, 4 m. to the north.

High Wycombe Borough and market town of Buckinghamshire, also known as Chipping Wycombe, 27 m. from London. The making of furniture, especially chairs, is the chief industry, and there is an agricultural trade. Pop. 22,000.

Near is the beautiful village of **West Wycombe**, which it has been proposed to preserve to show what an English village was like.

Hilary Saint and bishop. Born about the year 300, he became a Christian, and about 350 was appointed Bishop of Poitiers. He opposed the Arians and was banished to Phrygia by the Emperor Constantine, whence he governed his diocese as before. Later Hilary went to Constantiople, but again he attacked the Arians, and was sent back to Poitiers where he died in 368. He wrote various theological works, and his feast occurs on Jan. 13.

Hilary is a term at the Inns of Court and the University of Oxford. It begins about Jan. 13, and lasts for three or four weeks.

Hilda English saint and abbess. Born in 614, she was a relation of Edwin, King of Northumbria. She was baptized and became a nun. In 649 she was appointed abbess of a house at Hartlepool, and later she founded one at Whitby which became very famous and where the abbess received Cædmon. She died at Whitby, Nov. 17, 680.

Hill **Sir Rowland.** English reformer. Born at Kidderminster, Dec. 3, 1795, he is known for his services to postal reform, as it was mainly through his efforts that the penny post was introduced in 1840. He was knighted in 1860, and died Aug. 27, 1879.

Another **Rowland Hill** was a famous preacher, who, in 1783, built the Surrey Chapel, now a boxing centre, in the Blackfriars Rd., London.

Hill **Viscount.** English soldier. Born in Shropshire, Aug. 11, 1772, Rowland Hill held a high command in the Peninsular War, and also at Waterloo. From 1828 to 1842 he was Commander-in-Chief. In 1814 he was made a baron, and in 1842 a viscount. He died Dec. 10, 1842.

Hill Fort Stronghold or fortified place on a natural elevation. Many examples exist in Great Britain. English and Irish are usually earthworks, Welsh and Scottish are usually of stone. Many were utilised in Roman, Saxon and Norman times. Some occupy promontories or mountain crags; natural defences were supplemented by artificial ramparts, sometimes concentric, and protected by ditches. Maiden Castle near Dorchester is a notable hill fort.

Hillsborough Town of Co. Down, Northern Ireland, 12 m. from Belfast. Hillsborough Castle is the seat of the Marquess of Downshire, the head of the family of Hill. Pop. 544.

Hilton **Harold Horsfall.** English golfer. Born Jan. 12, 1869, in 1892 he won the English open championship, a feat he repeated in 1897. He was amateur champion 1900, 1901, 1911 and 1913, and he also won the Irish championship on four occasions. In 1911 he won the Amateur Championship of the United States. Since 1913 Hilton has been editor of *Golf Illustrated*.

Hilversum Town and watering place of the Netherlands. It is on the coast, 18 m. from Amsterdam, and is a railway junction. There are various attractions for visitors, including a kursaal. There is also a powerful broadcasting station (296.1 M.; 20 (7) kW). Pop. (1932) 59,632.

Himalaya Range of mountains in Asia containing the highest peaks

in the world. They are between India and Tibet and stretch for nearly 1600 m. from Afghanistan to Burma. Their width is about 200 m. The system consists of several ranges. First are the foothills, perhaps 3000 ft. high; then comes the outer Himalayas, perhaps 9000 ft. high, and finally the Himalayas proper, with an average height of 18,000 or 20,000 ft. There are passes through the mountains, but these are difficult, as they are all above the snowline, which is 15,000 ft.

The highest peak is Everest (*q.v.*); others are Kanchenjunga, Dhawalaghiri and Kamet. Most of the attempts to climb these peaks have failed, but in 1931 Kamet was conquered. The Ganges, Indus, Brahmaputra, Sutlej and other rivers rise in the range. Sometimes the Karakoram range is included in the Himalayan system. The word Himalaya means, in Sanscrit, "the abode of snow."

Hinchingbrooke Village of Huntingdonshire. It adjoins Huntingdon, and here is Hinchingbrooke House, the seat of the Earl of Sandwich. At one time the residence of Oliver Cromwell, it is a fine house dating from the 16th century.

Hinchingbrooke is also the name of an island off the coast of Queensland.

Hinckley Urban district and market town of Leicestershire, 14 m. from Leicester, on the L.M.S. Rly. The chief industries are the manufacture of hosiery, boots and shoes. Pop. (1931) 16,030.

Hindenburg Town of Silesia, Germany, formerly called Zabrze. It is 66 m. from Oppeln on the Silesian coalfield and is a railway junction as well as a manufacturing centre for machinery and chemicals. Pop. 106,900.

Hindenburg **Paul von.** German soldier. He was born at Posen, Oct. 1, 1847, and in 1865 entered the Prussian Army as an officer. He served in the war against Austria in 1866, and in the war of 1870-71 against France. During the years of peace he rose steadily in rank until he became a general at the head of an army corps. In 1911 he retired, but in 1914 he was recalled to active service and given command of the German forces in E. Prussia. He won the Battle of Tannenberg, and drove the Russians out of Germany. At this time he became the idol of the German people, a status he never wholly lost. He then led an army into Poland, where he gained the victory at Kovno and captured Warsaw. He became in Aug., 1916, head of all the German Armies, with Ludendorff as his Chief of Staff. He remained in command throughout 1917 and 1918, and after the Armistice until 1919, when he retired. In 1920 he published a volume of reminiscences translated into English under the title of *Out of my Life*. In 1925, the old marshal was elected President of the Republic, and re-elected on April 10, 1932, after a second ballot. When Hindenburg died in Aug., 1934, Herr Hitler combined the office of President with that of Chancellor in his own person.

Hindenburg Line Name given to defensive positions made by the Germans in 1916-17. It ran from Vimy, near Arras, protecting Cambrai, St. Quentin and other places, to Laon. It was very strong, but shorter than the one held previously by the Germans and called the Siegfried line. In Sept. and Oct., 1918, the line was broken by the British and French advance.

Hindhead District of Surrey, 2 m. from Haslemere and 39 from London. Its common is a famous beauty spot and near it many literary men, including Tennyson, have lived. The Devil's Punch Bowl, a glen below the Portsmouth Road, is notable. Near is Gibbet Hill. The common belongs to the National Trust.

Hindley Urban district of Lancashire, 2½ m. from Wigan, and 20½ m. from London by the L.M.S. and L.N.E. Rlys. There are collieries and cotton mills. Pop. (1931) 21,629.

Hindlip Village of Worcestershire, 4 m. from Droitwich. The chief building is Hindlip Hall, the seat of Lord Hindlip. In 1886 Sir Henry Allsopp, head of a firm of brewers, was made **Baron Hindlip.**

Hinduism Social and religious organisation in India. It is a development of Brahmanism and is divided into a number of groups. There were in 1931 altogether 239,195,140 Hindus in India, and they are thus the dominant people in the land. Early Brahmanism was affected by Buddhism and both existed down to about A.D. 800, when the latter disappeared from the peninsula, leaving a new Brahmanism, the product of both philosophies. This modern Hinduism, based on the Puranas, gives less prominence to Brahma than to his associates Vishnu, the preserver, and Siva, the destroyer and reproducer. They are worshipped in innumerable forms, both in their male and female aspects, the latter being emphasised by Saktiism, which derives its teaching from the Tantras.

Hindu Kush Mountain range of Central Asia, W. of the Himalayas, mainly in Afghanistan. Its length is 350 m. and its breadth about 200. The highest point, Tirach Mir, is 25,400 ft. high. There are many others over 20,000 ft.

Hinkler **Chick Bert.** Australian airman, born at Bundaberg in Queensland in 1894. He entered the flying service, and after the Great War made several notable flights. The longest was his flight from Croydon to Port Darwin, 10,340 m. in 15½ days, in Feb., 1927. In Nov., 1931, he crossed the Atlantic from Brazil to Africa. In January, 1933, he set out from Britain on a flight to Australia. He disappeared, and in April his body was found in the mountain wilds of Tuscany, where his machine had crashed.

Hip Projecting part of the human body, formed by the side of the pelvis and the top of the thigh bone, with the flesh covering them; in quadrupeds it is called the haunch. The human hip extends from the waist to the upper part of the thigh. The thigh bone's knobbed head forms with the cup-shaped hollow outside the pelvis a ball-and-socket hip joint, whose dislocation may be congenital or perhaps accidental. Chronic tuberculosis in the hip joint is not infrequent in young children. There are special hospitals in London and elsewhere for diseases of the hip.

Hipparchus Greek astronomer. Born at Nicaea, Bithynia, he worked mostly in Rhodes. He discovered the procession of the equinoxes, calculated closely the mean lunar month, improved astronomical instruments, catalogued many hundreds of stars, and first determined terrestrial positions in terms of latitude and longitude. He thus founded plane and spherical trigonometry, and

ranks as the greatest astronomer of antiquity. He wrote a good deal, but only one of his works survives.

Hippocrates Greek physician, born about 460 B.C. in the island of Cos. He belonged to a family of priests and doctors, and lived mainly at Cos and Cnidus practising his art. He died in 377.

Hippocrates is called the father of medicine and for centuries his oath was the one taken by medical graduates. He was much in advance of the ideas of his age, and in some ways anticipated the modern treatment of disease, his views on diet being equally sound. He believed in surgery and his mind was thoroughly scientific in its outlook. He left a number of writings which have been translated into English.

Hippodrome Oblong place, more or less embellished by art, for running chariot races and subsequently horse races in Greece. The word is now used for a place of amusement, whether music hall, theatre or cinema house. The London Hippodrome is in Cranbourn St., W.C.

Hippolyte Legendary queen of the Amazons and the daughter of Ares. One story is that she invaded Attica, but was defeated by Theseus, who married her. Better known is the story of the girdle she wore. This was the gift of her father, and one of the labours of Hercules was to obtain it. In so doing he killed the queen.

Hippolytus Greek hero. The son of Theseus and according to one story, of Hippolyte, he was loved by Phaedra, his stepmother. As he did not return this love Phaedra killed herself and left Theseus to regard her son as the offender. Theseus called Poseidon to destroy Hippolytus who was thrown by his frightened horses into the sea. Aesculapius restored him to life. His fate is the subject of a play by Euripides.

Hippophagy Practice of eating horseflesh. In France palaeolithic man hunted wild horses for food before domestication began. The ancient Greeks called some Scythian nomads Hippophagi, and horse eating survives in Central Asia. Horseflesh was consumed in Paris during the terror in 1793, and the siege in 1870-1. It is regularly sold in Belgium and Germany, and forms an ingredient in some French sausages. In Great Britain the law forbids the sale of horseflesh unless it is distinctly stated what it is.

Hippopotamus Large mammal now only found in tropical Africa. The ordinary kind, *H. amphibius*, is about 14 ft. long and may weigh 4 tons. It lives on land by the side of rivers, but can swim and remain under water for about 10 minutes. In colour its skin is brown or slate. It has even toes, short limbs and large tusks. Its skin and ivory are valuable. Fossil remains of the hippopotamus have been found in England.

Hippo Regius Ancient city of N. Africa, on the coast, 220 m. W. of Carthage, near the modern seaport of Bona. It was founded by the Carthaginians and was the residence of the Numidian kings. Later it was one of the richest cities of the Roman Empire, and here for 35 years S. Augustine was bishop. In the 7th century it was taken by the Arabs, and soon fell into ruin.

Hire Purchase System by which goods are bought and paid for by a series of instalments. In the United States almost everything, except foodstuffs, is bought in this way. It is used in selling motor cars, furniture, and gramophones, and, to some extent, for clothing. Its prevalence is regarded by some as responsible for the serious depression in trade that began in 1930.

The system has spread to Great Britain, where many motor cars and much furniture are bought by hire purchase. Some firms trade almost entirely in this way, whilst all the large firms make arrangements for payment by instalments.

English law on the subject is somewhat complicated. Goods bought on the hire purchase system remain the property of the seller until the last instalment is paid. This is usually laid down in an agreement signed by the buyer. The seller retains the right to take back the goods if an instalment is in arrears, and the buyer cannot sell them until they become legally his. In practice, however, firms do not act up to the limits of their power, but make an allowance for the money already paid if they take back the goods, whilst the courts are very inclined to show leniency to buyers when cases are brought before them. A hire purchase agreement must bear a sixpenny stamp.

Hirohito Emperor of Japan. Son of the Emperor Taisho, he was born April 29, 1901. He succeeded his father in 1926, but had been virtual ruler since 1921, when his father retired from public life owing to ill-health. His great aim is peace and prosperity at home and abroad.

Hiroshima City and seaport of Japan. Overlooking a bay on the S. coast of the main island, it is 155 m. from Osaka. Ranking next to Kobe in commercial importance on the inland sea, it is a large cotton spinning centre and a depôt for artistic wares. Multitudes flock to the bay annually to visit the ancient Shinto temple, one of Japan's three chief wonders, on the Itskushima or Island of Light. Pop. (1930) ¥70,417.

Hirst **George Herbert.** English cricketer. Born at Kirkheaton, Yorkshire, Sept. 7, 1871, he became a professional cricketer and first played for his county in 1892. For nearly 30 years he was one of the mainstays of the team, both as a batsman and a bowler, and on many occasions played for England against Australia. As an all-round cricketer Hirst has probably only been surpassed by Grace and equalled by another Yorkshireman, Rhodes. From 1920 to 1930 he was cricket coach at Eton College.

Hispaniola Old name for the island of Haiti. It was given to it by Columbus and means "Little Spain."

Histon Village of Cambridgeshire, 4 m. from Cambridge, on the L.N.E. Rly. The village is a centre for jam making. Pop. 1400.

Historiographer Official historian. After the Renaissance kings sometimes appointed a scholar as historiographer royal, *e.g.*, Boileau and Racine by Louis XIV., Voltaire by Louis XV., and James Howell by Charles II. The old office of King's Historiographer in Scotland was revived in 1763.

History Record of events. It is derived from a Greek word meaning knowledge and in its widest sense is a knowledge of past events in all fields of human activity. The more general use of the word is for the past activities of nations.

History is divided into ancient and modern,

or ancient, mediaeval and modern, the period before ancient history begins being either archaeology or anthropology. Ancient history lasts until the fall of the Roman Empire in the west; mediaeval history dates from 400 to 1453 or 1492, and modern history from then onwards.

The first great historian was Herodotus (*q.v.*), the father of history. Other great names among the ancients were Thucydides, Livy and Tacitus. Although Thucydides and Tacitus have never been surpassed as philosophic historians, they did not adopt the scientific method of testing all their statements, a method which began in the 18th century and received a great impetus from the labours of Ranke, whose only rival as the greatest of modern historians is Gibbon.

At Oxford, Cambridge, London and elsewhere history is one of the subjects in which courses and examinations for an honours degree are held. In London there are the Historical Association and the Royal Historical Society at 22 Russell Square. The University of London has opened an Institute of Historical Research, under Professor A. F. Pollard, at Malet St., Bloomsbury. The *English Historical Review* is published monthly.

Hit Town of Iraq, on the Euphrates, 33 m. N. of Ramadie and 85 from Bagdad. It may be the Ahava mentioned in the Old Testament (Ezra viii.). The Euphrates is navigable up to this point and from Hit caravans cross the desert on the way to Damascus. It is noted for its gardens, and near are rich supplies of bitumen. The town was occupied by the British in March, 1918.

Hitchin Market town and urban district of Hertfordshire, 32 m. from London, on the L.N.E. Rly. Girton College was founded here in 1869. The chief industries are malting and dealing in agricultural produce. Pop. (1931) 14,382.

Hitler **Adolf.** German politician. Born in Austria, April 20, 1889, he was first an architect. Having settled in Germany he became prominent by raising a body of volunteers to oppose the social democrats. In 1923 his followers engineered a rising in Bavaria, but this was suppressed and Hitler was sent to prison for five years. Soon released, he joined the National Socialist Party and quickly came to the front. He organised the party, which was known as the Nazis, and this soon became a power in the land. In 1930 100 of its members were returned to the Reichstag, and in 1932 Hitler, having become a German citizen, stood at the presidential election against Hindenburg and polled several million votes. His party won great successes at the elections in Prussia and other parts of Germany. From that time the Nazis gradually gained ascendency, and after becoming Chancellor in 1933 Hitler was virtual dictator. He confiscated the funds of the Communists, put down the Socialists, and drove the Jews from key positions in Germany. In Oct. he announced Germany's withdrawal from the Disarmament Conference, and in Aug., 1934, he succeeded to the Presidency on the death of Hindenburg, thus holding the chief offices of the state. He visited Saarbruecken after the transference of the Saar to Germany by plebiscite vote and made a famous declaration in May, 1935, on German armament policy. Four months later he invited the League of Nations to examine the Memel position. Hitler has written a book, *Mein Kampf* (*My Battle*), and has put forward various schemes for reform, some of a very drastic kind.

Hittites Ancient people in Asia Minor. The Biblical names Heth and Hittite indicate a people almost unknown until modern exploration revealed, from 1870 onwards, various distinctive monuments. Prof. Sayce announced in 1880 the discovery of a forgotten Hittite empire, once flourishing in Asia Minor. The people apparently used horsed chariots and pictographic characters of Indo-European affinity, which are still undeciphered. Established in Cappadocia, their federation took place about 1400 B.C., and their kings reduced the kingdom of Mitanni, fought and made treaties with Egypt, and maintained relations with Mesopotamia. They disappeared about 1200 B.C. Reviving subsequently at Carchemish, they were finally overthrown about 800 B.C.

Hoar Frost Term applied to the small crystals of ice formed on the surface of exposed objects when the dew-point or temperature of saturation of water vapour falls below 32° F. Hoar frost is seen especially on nights when the sky is clear and the atmosphere calm. A typical example is the ice pattern formed on a window.

Hobart Capital and seaport of Tasmania, on the S. side of the island. It has a fine harbour on the River Derwent and docks, wharves and warehouses. It is the commercial centre of the island and has fine university and parliament buildings. The industries are shipping, flour milling, fruit preserving and brewing. Pop. (1932) 58,270.

Hobbema **Meindert.** Dutch artist, born in Amsterdam in 1638 and died there Dec. 7, 1709. After his death he was recognised as one of the greatest of the painters of Dutch life. He is represented in the National Gallery, London, by "The Avenue of Middelharnis," "Showery Weather," and other works.

Hobbes **John Oliver.** Pen name of the English novelist, Pearl Mary Teresa Craigie. The daughter of John Morgan Richards, an American business man who settled in London, she was born in Boston, Nov. 3, 1867. She made a reputation with *Some Emotions and a Moral*, 1891, and other novels. *The School for Saints*, 1897, and *Robert Orange*, 1900, are her best books. Her plays include *The Ambassador*. She died Aug. 13, 1906.

Hobbes **Thomas.** English philosopher. Born at Malmesbury, April 5, 1588, the son of a clergyman, he was educated at Oxford. He spent some years as tutor with the Cavendish family, and travelled with his pupils. He associated with Bacon, Ben Jonson and other men of note, and passed a good deal of time in study, especially of mathematics and philosophy. In 1640 he went abroad and was for a short time tutor to Prince Charles, later Charles II. He returned to England in 1651, and lived quietly under the Commonwealth and then under Charles II., who gave him a pension. He died at Hardwicke Hall, Dec. 4, 1679.

The fame of Hobbes rests upon *The Leviathan*, published in 1651. It is a cogent argument for absolute sovereignty, Leviathan being the state, and it has had enormous influence on political thought. In 1640 he wrote a treatise in defence of the royal prerogative.

Hobbs **John Berry.** English cricketer. Born in Cambridge, Dec. 16, 1882, Hobbs became a professional cricketer and

played first for his native shire. In 1905 he joined the Surrey county eleven, for which he played for over 25 years. In 1925 he beat W. G. Grace's record of 126 centuries. Hobbs was for years one of the opening batsmen in all test matches and the captain of the Players against the Gentlemen. He played in the test matches for the last time in 1930. Hobbs has written several books on cricket, including *Playing for England*, 1931.

Hoboken City and river port of New Jersey, U.S.A., on the Hudson River, opposite New York, the two cities being linked by ferry boats and railway tunnels. Shipping is an important industry and there are some manufactures. Pop. (1930) 59,261.

Hobson **Thomas.** Carrier at Cambridge. He kept a livery stable and attained notoriety by his stubborn refusal to let out his horses except in their proper order, hence the phrase "Hobson's choice," which means no choice at all.

Hoche **Lazare.** French soldier. Born at Montreuil, June 25, 1768, in 1793 he was made a general. He defeated the Austrians and the Russians, but he is better known as the man who put down the Royalist rising in La Vendée, and as the leader of the force that landed in Ireland in 1796. He was made Minister of War, but died Sept. 18, 1797.

Hock German white wine, especially Rhenish. The name is really Hochheimer, a still or sparkling wine produced at Hochheim, near Mainz. Similar Australian and Californian wines, from the Riesling, or hock grape, are less acid.

Hockey Outdoor game played by men and women. The implements are a hard ball and a stick with a curved end, the object being to drive the ball through the goal, which resembles the one used in association football. A side consists of eleven players, five being forwards, three half-backs, two backs and a goalkeeper. The ground should be 100 yds. long and 55 or 60 yds. wide. In front of each goal is a striking circle, and to score a goal the ball must have been hit from this. The ball must not be played with any part of the body, but only with the stick which must not be raised above the shoulder.

There is a Hockey Association founded in 1886, and international matches are played.

The game is also played on ice, where the number of players is seven or eight a side.

Hocking **Joseph.** English author. Born in 1855, he became a minister of the United Methodist Free Church and, like his brother, Silas Hocking, made a name as a novelist. His first book was *Jabez Easterbrook*, 1891, followed by others in quick succession. *The Eternal Choice* appeared in 1932.

Hocking **Silas Kitts.** English writer. Born in Cornwall, March 24, 1850, he was educated for the ministry of the United Methodist Free Church. From 1870 to 1896 he served as a minister. In 1878 he made a reputation with a story, *Her Benny*, and many others followed, most of them being very popular. In 1923 he published *My Book of Memory*. He died in Sept., 1935.

Hocktide Mediaeval English festival kept on the second Monday and Tuesday after Easter day. Hock Tuesday and Michaelmas were rent days in rural England. A favourite diversion was for women on Hock Monday and men on Hock Tuesday to bind passers by of the opposite sex, the toll for release being devoted to church or parish expenses.

Hodson **William Stephen Raikes.** English soldier. Born March 19, 1821, he became an officer in the Indian Army, and as a leader of the Guides saw a good deal of service on the frontier. He is best known as the leader of Hodson's Horse, irregular cavalry that did fine work during the Mutiny. After the fall of Delhi, he pursued the fugitive princes and shot them with his own hand. He was wounded at Lucknow, and died March 12, 1858.

Hoenir God of Norse mythology. He is described as the Lord of the Ooze, and is represented with long legs like a stork. He is said to have given speech to man and woman when they were made, and to have first used the divining rod.

Hofer **Andreas.** Tirolese patriot. Born Nov. 22, 1767, he was an innkeeper when the French invaded the Tirol in 1797. He collected a body of his countrymen and led them in an irregular warfare until about 1805. In 1809 he took the side of Austria against France and won some victories for his beloved land, which for a few weeks he ruled. Peace, however, was soon made, Austria giving up the country, but he continued to fight the French until his forces were beaten. He was then betrayed, and, after a trial, was shot at Mantua, Feb. 20, 1810.

Hoffmann **August Heinrich.** German poet. Born April 2, 1798, at Fallersleben in Luneburg, he became librarian at the University of Breslau, and in 1835 was made Professor of German Literature there, but he lost his post in 1842, when he published a volume called *Unpolitical Songs*. In 1860 he became librarian at Corvei and there he died, Jan. 19, 1874.

Hoffmann is one of Germany's national poets and his songs became very popular, especially in 1848, because they expressed the national sentiment. He was the author of *Deutschland, Deutschland uber Alles*.

Hoffmann **Ernest Theodor Wilhelm.** German writer. Born at Königsberg, Jan. 24, 1776, he became a lawyer, but had also interests in literature, art and music. He held official positions in the public service from 1796 to 1806, after which he spent ten years as a wanderer. In 1816 he received an official post in Berlin, which he held until his death, June 25, 1822. Hoffmann is famous for his fairy stories which have been translated into English. He also wrote short stories and novels in the romantic vein.

Hofmann **Josef Casimir.** Polish musician. Born at Cracow, Jan. 20, 1876. the son of a professor of music, he studied at Warsaw and appeared in public as a pianist when a boy. He gave recitals in London, New York and other capitals, composed concertos and sonatas and wrote on piano playing. In 1927 Hofmann was made director of the Curtis Institute of Music in Philadelphia.

Hogarth **William.** English painter and engraver. He was born in London, Nov. 10, 1697, and was apprenticed to an engraver in silver, but turned later to engraving for book illustration. Under Sir James Thornhill he studied painting, and his numerous portraits show remarkable technical skill, sympathetic treatment and power of expression. His most famous pictures are those in which he satirised the life of his time, as seen in "The Rake's Progress" in the Soane

Museum, London, and " Marriage à la Mode " in the Tate Gallery. He died Oct. 26, 1764.

Hogarth's house in Hogarth Lane, Chiswick, is now a museum, where a number of his works can be seen.

Hogg **James.** Scottish poet. Called the Ettrick Shepherd, he was born in 1770, and, although without education, soon began to write verse. In 1801 he became known to Sir Walter Scott, who included in his *Border Minstrelsy* several ballads supplied by Hogg. In 1803 his first volume of verse, *The Mountain Bard*, was published, and he wrote a book on sheep. About 1810 he left the country and settled in Edinburgh, where he issued a second volume, *The Forest Minstrel*, and started a paper called *The Spy*. In 1813 he published *The Queen's Wake*, his greatest poem, and then settled on a farm in Dumfriesshire. As a farmer he was a failure, but he wrote a great deal, both in prose and verse, including articles in *Blackwood's Magazine*. He died Nov. 21, 1835.

Hoghton Village of Lancashire, between Preston and Blackburn, 213 m. from London, on the L.M.S. Rly. Hoghton Towers, a 16th century house, is associated with the story of James I., when visiting there, knighting the loin of beef.

Hogmanay Word used in Scotland for New Year's Eve. It is a time of merry making, and is marked by the giving of presents.

Hog's Back Elevation in Surrey, part of the North Downs. It is about 10 m. long and 500 ft. high, and stretches from Guildford to Farnham, with a road along the top.

Hogshead Term applied to a large cask of varying capacity for holding sugar, tobacco, molasses, etc. A hogshead of tobacco weighs from 12 to 18 cwt., of W. Indian sugar 13 to 16 cwt. As a measure of liquid capacity a hogshead of wine equals 63 gallons of ale, and beer 54 gallons.

Hohenlinden Village of Bavaria, 20 m. from Munich. Here, on Dec. 3, 1800, the French under Moreau gained a great victory over the Austrians. A popular poem by Thomas Campbell describes the battle.

Hohenstaufen Famous German family. It took its name from a castle in Württemberg. Before 1100 a member of this family was made Duke of Swabia. In 1138 Conrad of Hohenstaufen was made German King, and the family kept this office until 1254. Its most famous members were the great emperors Frederick I. and Frederick II. The family became extinct when Conradin was executed in 1268.

Hohenzollern German family, members of which were kings of Prussia, 1700-1918, and German emperors, 1871-1918. The name is taken from a hill called Zollern in Württemberg, about 30 m. from Stuttgart. From the 11th century the Counts of Zollern gradually became more powerful until they held an important place among the German princes.

In 1415 Frederick of Hohenzollern was made Margrave, or Elector, of Brandenburg, and his successors, especially Frederick William, called the Great Elector, made this into an important state. In 1700 the Elector became King of Prussia, and his successors, the greatest being Frederick II., were kings until 1918. In 1871 King William I. was made head of the new German Empire and the Hohenzollerns played a great part in European history until William II. abdicated in 1918. A branch of the Hohenzollerns ruled until 1848 over a little principality in S. Germany. One of them, Charles, was made King of Rumania in 1918, and the Hohenzollerns are still rulers of that country.

Hokkaido Name used for the N. part of the Empire of Japan. It includes the island of Yezo, the S. part of Sakhalin and the Kurile Islands.

Hokusai **(Katsushuka).** Japanese painter. Born in 1760, he became the most famous artist of the popular school. Of a very independent character, he followed no other painter closely, and his work is of unusual delicacy. His independence also caused him to cling to his peasant ancestry, and he died in poverty in 1849.

Holbeach Market town and urban district of Lincolnshire, 8 m. from Spalding and 100 from London. Near the town is a stretch of reclaimed land known as Holbeach Marsh. Pop. (1931) 6111.

Holbein **Hans.** German painter. Born about 1460, he is known as Holbein the Elder to distinguish him from his famous son of the same name. His works show the beginning of Italian influence on German painting. The best are in the cathedral at Augsburg and in other German cities. He died in 1524.

Holbein **Hans.** German painter and engraver. Born at Augsburg in 1497, he was the son of Hans Holbein the Elder. At an early age he showed great promise in art, especially in engraving, designing of stained glass and decorative work. In 1516 he removed to Basle and later visited England where Sir Thomas More commissioned him to paint portraits, and in 1536 he was appointed court painter to Henry VIII. He died of the plague in London in Oct. or Nov., 1543.

Holbein is one of the world's great portrait painters. He painted Henry VIII., Anne of Cleves, Jane Seymour, the Duke of Norfolk, Erasmus, Melanchthon, and many others equally famous. He was also responsible for several religious pictures and some woodcuts. Some of his paintings are at Windsor, others in the National Gallery, London, the Louvre, Paris, and in Vienna. His wonderful painting of Morett the jeweller is at Dresden, and " The Ambassadors " is in Longford Castle, Salisbury.

Holborn Borough of the county of London. Covering only 400 acres, it lies between the city and Westminster. The district includes Bloomsbury, Lincoln's Inn and Gray's Inn. **Holborn Viaduct** was built in 1867-69 to carry the road over the valley where the River Holbourne once flowed. It is 1400 ft. long, and on it is the City Temple. Pop. (1931) 38,816.

Holbrooke **Joseph Charles.** English musician. Born at Croydon, July 6, 1878, the son of a musician, he was a pianist and conductor, but his reputation rests mainly upon his compositions. In 1901 he produced *The Raven*, his first orchestral work. A number of others include *Queen Mab*, *The Bells*, *Auld Lang Syne*. He also wrote operas and ballets, as well as a comic opera, *The Snob*, and gave concerts of modern English chamber music in London and in the provinces. Holbrooke has also written a great number of songs.

Holda Figure in German folklore. She is a kindly goddess and appears much

in fairy stories. When it snows it is said that Holda is making her bed and the feathers are flying about. She is represented as driving in a cart and is regarded as the goddess of domestic life and agriculture.

Holden **Sir Edward Hopkinson.** English banker. Born in Manchester, May 11, 1848, he became a clerk in the Manchester County Bank in 1866. He moved to Birmingham where he became manager of the Birmingham and Midland Bank. About this time the era of banking amalgamations began, and in this he took a leading part. In 1898, his bank, having taken over others, became the London, City and Midland Bank, and of this he was managing director. In 1918 it took over the London Joint Stock Bank and later became known as the Midland Bank. Of this, the largest in the country, Holden was chairman and managing director until his death, July 23, 1919. From 1906-10 he was a Liberal M.P., and in 1909 he was made a baronet.

Holden **Sir Isaac.** English manufacturer. Born at Hurlet near Paisley, May 7, 1807, the son of a Cumberland miner, he became a teacher in Paisley, but soon moved to Leeds and from there to Reading. In 1830 he gave up teaching and took a position as a bookkeeper to a firm in the woollen industry at Cullingworth. Holden invented a wool combing machine that proved a success and started in business with Samuel C. Lister, afterwards Lord Masham. A little later he opened mills at Bradford with his sons, and this concern became very prosperous. He was a Liberal M.P., 1865-68 and 1880-85, and in 1893 was made a baronet. As a Liberal Unionist he represented the Keighley division, 1885-95. He died Aug. 13, 1897. His son Angus was made a baron in 1908.

Holderness District of Yorkshire, E.R., formerly called a wapentake, extending from the Humber to Spurn Head.

The title **Earl of Holderness** was held by the old Yorkshire family of Darcy from 1682 to 1778. Robert, the 4th earl, was Secretary of State from 1751 to 1761. His estates passed to his son-in-law, the Duke of Leeds.

Hole **Samuel Reynolds.** English clergyman. He was born Dec. 5, 1819, his father being a brewer and landowner at Caunton near Newark. He became curate and then vicar of Caunton, where he was also squire. In 1887 he was chosen Dean of Rochester. He died Aug. 27, 1904. Hole was a man of many interests; a humorist who counted John Leech and Thackeray among his friends, and an athlete who hunted and shot. He is best known, perhaps, as a grower of roses and a writer on this and other subjects. His books include *A Book about Roses*, *Memories* and *More Memories*.

Holford **Sir George Lindsay.** English collector. Born June 2, 1860, he was the son of Robert S. Holford, who built Dorchester House, Park Lane, London, and was a great collector of works of art. His collections were left to his son, Sir George, who in 1923 sold some of his possessions. After his death on Sept. 11, 1926, the pictures and books were all sold, the pictures fetching over £530,000 and the books £200,000. Dorchester House (*q.v.*) was pulled down.

Holinshed **Raphael.** English chronicler. He lived in the 16th century and was a translator in the employ of Reginald Wolfe, a printer. With several assistants he compiled a book in two volumes called *The Chronicles of England, Scotland and Ireland*, 1577, which was one of the sources used by Shakespeare. He was a Cheshire man by birth and died about 1580.

Holkham Village of Norfolk, 2 m. from Wells. The estate has been in the family of Coke since 1659 and here the Earl of Leicester, known as Coke of Norfolk, carried out experiments of great benefit to agriculture.

Holland District of Lincolnshire. *See* LINCOLNSHIRE.

Holland District of the Netherlands. The name means the low-lying land. In the 15th century it became part of the duchy of Burgundy which belonged to the great empire of Charles V. It passed to Charles' son, Philip II., and was one of the provinces that revolted to form the Dutch Republic. Since then the word has been loosely used for the republic and for the kingdom that succeeded it.

North Holland and **South Holland** are two provinces in the kingdom of the Netherlands. The former contains Amsterdam, but Haarlem is its chief town. The Hague is the capital of the latter. *See* NETHERLANDS.

Holland **Baron.** English title borne by the family of Fox. Henry Fox was born at Chiswick Sept. 28, 1705, and in 1763 was made a peer. He bought the London residence called Holland House. Charles James Fox was his younger son.

The 4th baron edited his father's *Memoirs of the Whig Party*. When he died in 1859 the title became extinct.

Holland **Sir Thomas Henry,** English scientist. He was born Nov. 22, 1868 of Canadian parentage. He was Director of Geological Survey in India, 1903-1909; Professor of Geology in Manchester University, 1909-1918; and Rector of the Imperial College of Science, 1922-1929. In 1929 he was president of the British Association, and he has done a great deal of work on scientific matters on commissions and committees. In 1929 he became Principal of Edinburgh University.

Holland House Residence in London. It stands in a park between Kensington Road and Uxbridge Road, and is the property of the Earl of Ilchester, the heir of the Fox family. In the Jacobean style, the house was built by Sir Walter Cope about 1610. It was a social, literary, and political centre of the Whig Party during the time of the 3rd Lord Holland (1800-1845). The Holland House circle included Fox, Macaulay, and Sidney Smith.

Holland Park District of London. It is between Kensington and Notting Hill, adjacent to the park in which stands Holland House.

Hollander **Bernard.** British physician. Born in Vienna, 1864, he settled in London in 1883. In 1899 he was naturalised, and soon made a reputation as a specialist on nervous and mental disorders. He helped to found the Ethnological Society, and put forward a scientific system of phrenology. He collected a great number of facts about the working of the brain, and wrote much for scientific journals about its functions. He died Feb., 1934.

Hollar **Wenceslaus.** Bohemian artist. Born in Prague, July 13, 1607, he worked in Antwerp and elsewhere. In 1637 he settled in England, where he was drawing master to Prince Charles, later Charles II.

Hollar made drawings of several English and German towns, and engraved a map of London in 1666, showing the area of the great fire. He died March 28, 1677.

Holloway District of London, in the Borough of Islington, about 3 m. N. of the city. Here are the Northern Polytechnic Institution, the prisons of Pentonville and Holloway, and the Caledonian Market.

Holloway College College for the education of women. Thomas Holloway, a Plymouth man, made a large fortune by the sale of pills and ointments, chiefly by advertising at a time when few traders spent money in this way. He died Dec. 26, 1883, and left £600,000 to found the college, as well as money for a sanatorium. The college, opened in 1886, is at Englefield Green in Surrey, accommodates about 350 pupils, and has a fine collection of pictures, left by the founder. It is a college of the University of London.

Holly Large genus of shrubs and trees of the holly order (*Ilex*). They are native in every continent, but are mostly found in Central and S. America. The common British and European *I. aquifolium* is an evergreen with ashy bark, wavy, spiny, glossy, smooth leaves, and small white flowers bearing scarlet berries. The greenish white wood furnishes walking sticks and teapot handles; the sap from the bark formerly provided bird lime. The leaves and berries are largely used as a decoration at Christmas time. It grows to a height of 30 or 40 ft and. specimens of 80 ft. have been noted. Cultivated forms, including Japanese, have yellow berries, variegated leaves and drooping branches.

Hollyhock Hardy perennial herb of the mallow order (*Althaea rosea*). It is a tall plant with lobed leaves and a spike 8 or 10 ft. high of single purple, pink, yellow, or white flowers. It came to England in the 16th century, and is a favourite in cottage gardens. Cultivated varieties include many double blooms, some displaying darker shades such as crimson and almost black.

Hollywood Centre of the American film industry. It is in California, W. of Los Angeles, and has a beautiful climate and surroundings. *See* Los Angeles.

Holme Lacy Village of Herefordshire, on the Wye, 5 m. from Hereford. Here is Holme Lacy House, long the seat of the Scudamore and Stanhope families, represented by the Earl of Chesterfield. Built in the 17th century it is now the property of the county council of Herefordshire.

Holmes **Oliver Wendell.** American writer. He was born at Cambridge, now part of Boston, Aug. 29, 1809. After a period of study in Paris, he became a doctor, but ten years later gave up the profession for a literary life. He died Oct. 7, 1894.

One of the most charming and quietly thoughtful of American writers, Holmes made his reputation with *The Autocrat of the Breakfast Table*, 1858, which appeared first in the *Atlantic Monthly*. Later came *The Professor at the Breakfast Table*, and *The Poet at the Breakfast Table*. *Over the Teacups*, one of his later books, is in a similar vein. He wrote a powerful novel, *Elsie Venner*; two others called *The Guardian Angel* and *A Mortal Antipathy*; also a book of travel, *One Hundred Days in Europe*; lives of R. W. Emerson and J. L. Motley, and much verse.

Holmfirth Market town and urban district of Yorkshire (W.R.). It is 6 m. from Huddersfield, and a centre of the woollen industry. Pop. (1931) 10,407.

Holmium Rare metallic element having the symbol Ho, and atomic weight 163·5. It occurs along with other rare earths in the minerals gadolinite in Sweden, and samarskite in N. Carolina. Holmium was isolated in 1879 from the earth, erbium oxide, obtained from gadolinite.

Holm Oak Evergreen species of oak tree (*Quercus ilex*). Native in the Mediterranean region, it is also called holly-oak. It has glossy dark-green leaves, more or less prickly edged, but sometimes without prickles; its acorns are short-stalked. It sometimes reaches a height of 90 ft. The dark-brown wood is used for furniture, and in Spain for fuel.

Holocene Term sometimes used in geology for the period corresponding to the quaternary epoch of some authorities. It follows the pleistocene period and extends down to the present day.

Holofernes Commander of Nebuchadnezzar's army. The story, told in the Book of Judith, part of the Apocrypha, is that with an army he came to besiege Jerusalem, but a maiden named Judith made her way into his camp, gave him wine until he fell into a drunken sleep, and then cut off his head, so saving the city.

Holograph Term applied to a document written entirely by the one who signs it, as in the case of a will in the handwriting of the testator. By Scots law a holograph will is valid even if the signature is not witnessed.

Holst **Gustav.** English composer, born at Cheltenham, 1874. His compositions include *The Planets*, *Ode to Death*, *The Cloud*, *Egdon Heath*, *The Perfect Fool*, and others for voices, strings and organ. He died May, 1934.

Holstein District of Germany. It lies between the Eider and the Elbe, and has Kiel for its chief town. It is an agricultural area and has some large lakes. In the Middle Ages Holstein was part of Saxony; it then became a county and with Schleswig in the N. was ruled by the King of Denmark who, in 1864, after a short war, surrendered the duchies to Prussia and Austria. In 1866 Prussia obtained both, and retained Holstein at the peace of 1919.

Holsworthy Market town and urban district of Devonshire, 46 m. from Exeter. A horse fair is held here in July. In 1819-26 a canal was made from Holsworthy to Bude, but it is not now used. Pop. (1931) 1403.

Holt Town of Norfolk, 10 m. from Cromer. There is a grammar school founded in 1555 by Sir John Gresham, who was born here. It is now a large public school with fine modern buildings, and is controlled by the Fishmongers' Company. Pop. (1931) 2249.

There are other Holts in England. One in Wiltshire, 94 m. from London. Pop. 1000.

Holy Alliance Treaty signed in 1815 in Paris between Alexander I. of Russia, Francis II. of Austria, and Frederick William III. of Prussia. By it they undertook to apply the principles of Christianity to the countries over which they ruled, and to other countries with which they

had dealings. Other European sovereigns signed the treaty later. It helped to keep the peace in Europe for some years after the overthrow of Napoleon.

Holycross Ruined abbey in Tipperary, Irish Free State. It is on the Suir, 4 m. from Thurles, and was founded in 1182.

Holyhead Market town, seaport and urban district of Anglesea. It is on Holy Island on the L.M.S. Rly. and is chiefly known as the port of embarkation for Ireland. The older harbour is used for fishing. Pop. (1931) 10,707.

Holy Island Name of several islands. One is off the coast of Anglesea. It covers 15 sq. m., and on it stands Holyhead.

Another Holy Island is off the coast of Northumberland, also called Lindisfarne.

Holy Land Name used by Christians, especially in the Middle Ages, for Palestine.

Holyoake **George Jacob.** English politician. Born in Birmingham, April 13, 1817, he became a chartist, and in 1843 was imprisoned for blasphemy. In 1854 he issued *Secularism, the Practical Philosophy of the People.* He wrote also *A History of Co-operation in England, The Limits of Atheism, Sixty Years of an Agitator's Life* and *Bygones Worth Remembering.* He died in 1906.

Holy of Holies Inner chamber of the Jewish tabernacle and temple. It was "the most holy place," with ark and mercy seat, and was separated by a veil from the outer chamber, "the holy place."

Holy Orders Term denoting the status or degree of persons admitted to the Christian ministry by the laying on of hands of a bishop lawfully ordained. The Anglican Church recognises three grades, bishops, priests, and deacons. In the Roman Catholic Church the major or sacred orders included also subdeacons.

Holy Places Localities in and near Jerusalem associated with Christ's life. They include the Holy Sepulchre, Gethsemane, Olivet, Bethlehem and other sacred sites. The Pope entrusted their custody to the Franciscans in 1230 and later this authority passed to France, but the subject was complicated by the fact that the Turks were in possession. Difficulties over the custody of the Holy Places between France and Russia, representing western and eastern Christianity, helped to bring about the Crimean War.

Holyrood Royal palace in Edinburgh. It was originally an abbey founded in 1128 by King David I., and was so named because it possessed a piece of the true cross. It belonged to the Augustinian Canons and was destroyed in the 16th century.

Near the abbey James IV. built a palace and this was a residence of the Scottish kings. Here Mary was married to Darnley, and Rizzio was murdered; here Charles I. was crowned, and Charles Edward held a short but splendid court. The house was rebuilt by Charles II., and the palace is still used for State purposes. Here the Lord High Commissioner to the Church of Scotland has his headquarters, and here the Scottish representative peers are elected. Of interest are the abbey ruins and the apartments occupied by Mary. Until 1880 the abbey was a place of sanctuary.

Holy Spirit Third person of the Trinity. Gen. i. mentions the Spirit of God; the Psalms and Isaiah use the epithet Holy. Gradually the spirit was differentiated as an aspect of God's being separable from His wisdom, and recognised as a separate person. The New Testament, witnessing to Christ's advent as God's incarnate Son, also emphasised the function of the Holy Spirit, described as the Spirit of Truth and, especially by S. John, as the Paraclete or Comforter. The early Church believed that the Holy Spirit proceeded from the Father; the insertion of *filioque,* "and the Son," in the Nicene creed caused the Great Schism between eastern and western Christendom.

Holytown Town of Lanarkshire. It is 11 m. from Glasgow, and 389 m. from London by the L.M.S. Rly. Here are iron mines and collieries, also iron and steel works. Pop. 9976.

Holy Week In the Christian year, the week before Easter. The ancient name, the Great Week, survives in the orthodox Eastern Church. It is distinct from Passion Week, which properly begins on Passion Sunday. From the 3rd century onwards abstinence from flesh, wine and public business was enjoined on Christians. The Church of England and the Roman Catholic Church hold special services during Holy Week and there is a certain, but decreasing, amount of abstinence from pleasure.

Holywell Market town and urban district of Flintshire. It stands on the estuary of the Dee, on the L.M.S. Rly. It is famous for its well, the waters of which are said to work miracles. Called Winifred's Well, it is inside a chapel built in the 15th century. Near the station of Holywell Junction are the ruins of a Cistercian Abbey. Pop. (1931) 3423.

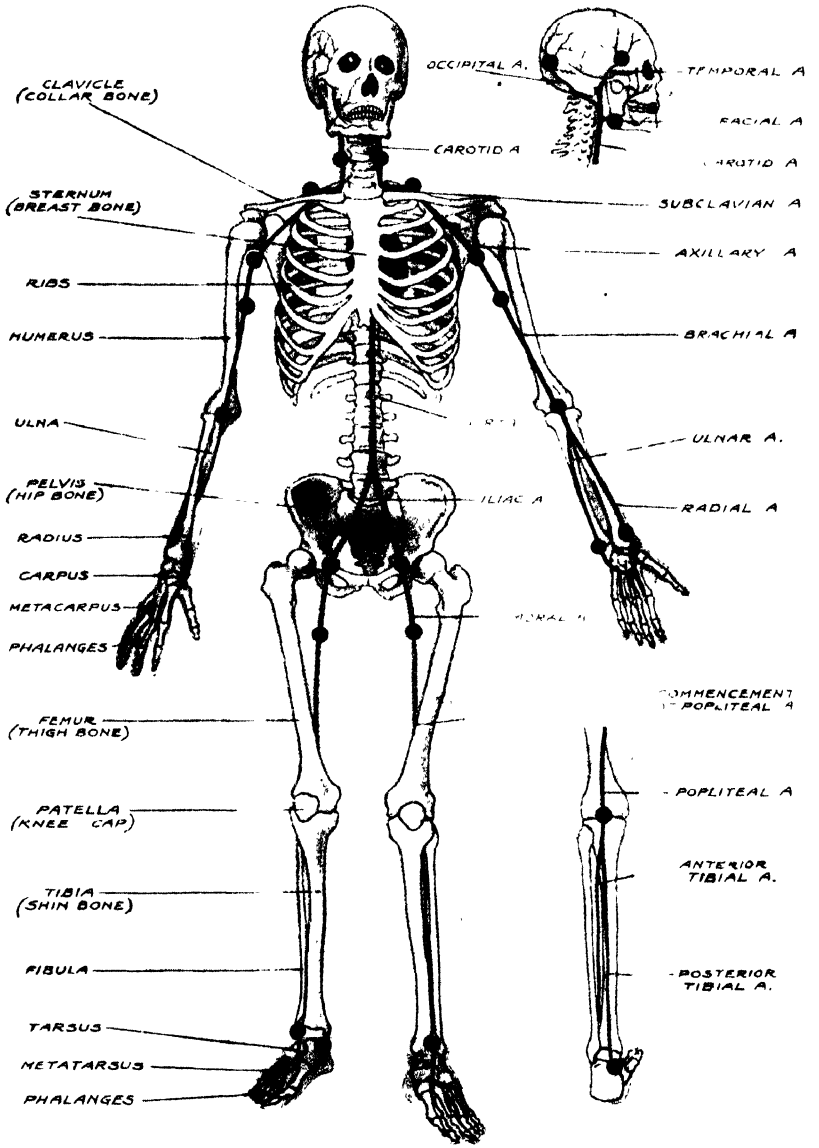
Holywood Watering place and urban district of Co. Down, N. Ireland. It is 4 m. from Belfast, on Belfast Lough, and has the usual seaside attractions for visitors. Pop. 4000.

Homage Service due from a knight or other vassal to his lord and, therefore, the act of fealty itself. This was done by the vassal kneeling before the lord, and saying, "I become your man for the lands I hold of you and will be faithful to you against all men, saving only the fealty which I owe to my lord the king." As a ceremonial act homage is paid to-day to the sovereign by the peers at his coronation, and by bishops on appointment.

Homburg Inland watering place of Germany, 9 m. from Frankfort on the little River Hohe. It is famed for its waters, which, being chalybeate and saline, are good for certain complaints. There is a castle here, once the residence of the landgraves of Hesse-Homburg. Homburg was at one time a noted gambling centre. A soft felt hat worn by men is named after it. Pop. 14,000.

Home **Earl of.** Scottish title held by the family of Home. In 1473 Sir Alexander Home was made a Lord of Parliament, in 1605 Alexander, the 6th lord, was made an earl by James I. Cospatrick, the 11th earl, married the heiress of the Douglas family and thus obtained estates in Lanarkshire, including Douglas Castle. The old seat of the Homes is Home Castle in Berwickshire where are the family estates. The earl's eldest son is called Lord Dunglass.

Home Counties Term applied to the counties of Kent, Surrey, Middlesex, Berkshire, Buckingham-



THE HUMAN BODY—A FIRST-AID CHART

Points at which pressure should be applied to arrest bleeding are shown in black.

shire, Hertfordshire and Essex. They are so called because they are the counties nearest to the metropolis.

Home Office Department of the British Government. Its head is a Secretary of State, and he ranks as the senior secretary. On this account he is in special touch with the sovereign, and must be in attendance when a possible heir to the throne is born. Through him the sovereign issues proclamations and pardons. The office was created in 1782. At one time all the administration of the country was looked after by the Home Office, but as other departments were created its sphere of activity was contracted; at the same time, however, new duties were imposed upon it. This department is responsible for the administration of justice and the control of the police. By its officials, factories and mines are inspected and all matters affecting licensing and burials are supervised. Prisons and aliens are other subjects under the control of this department. The secretary is assisted by an under-secretary, who is a politician, a permanent under-secretary and a large staff of civil servants. The building is in Whitehall, London, S.W.

Homer Greek poet. Little is known of his life; indeed, some think that he never existed, being merely a legendary figure to whom poems written by a number of singers were attributed. The better opinion is, however, that he actually lived between 1200 and 850 B.C. Seven cities claimed to be his birthplace: Chios, Smyrna, Rhodes, Argos, Athens, Colophon and Salamis in Cyprus. He is believed to have been blind and to have travelled about singing his poems.

Homer wrote two of the world's greatest epics. One called the *Iliad* describes events in the concluding weeks of the Siege of Troy by the Greeks. The other called the *Odyssey* describes the wanderings of Ulysses (Odysseus) after the fall of that city. They are written in the Ionic dialect, and each is divided into 24 books. There are many English translations of both poems, notable ones being by Andrew Lang, S. H. Butcher and Walter Leaf, and older ones by Chapman and Pope. The authorship of the poems is the subject of much literature, including writings by W. E. Gladstone.

Homer Breed of domestic pigeon, used for long-distance racing and message carrying. Crossing with Antwerp carriers produced show homers, whose crossing with working homers produced exhibition flying homers.

Home Rule Name given to the movement for granting Ireland a measure of self-government. It began about 1870 and was from the first a constitutional, not a revolutionary, one. About that date members pledged to secure some measure of self-government were sent to Parliament by the Irish constituencies and soon these formed a distinct party, some 80 strong. Called Nationalists they were led in turn by Isaac Butt, C. S. Parnell and J. Redmond.

In 1885 Gladstone decided to grant home rule to Ireland and in 1886, in spite of the defection from his party of an influential group called Liberal Unionists, he introduced the first Home Rule Bill. This provided Ireland with a parliament of two houses, but it was defeated in the House of Commons. In 1893, Gladstone, again in office, introduced the second Home Rule Bill. This differed in some respects from the earlier one; it gave Ireland its parliament, but left 80 Irish members at Westminster. This bill passed the Commons, but was defeated in the House of Lords. Its defeat was due in part to the vigorous resistance offered to it by the Ulstermen.

The third Home Rule Bill was introduced by the Liberal ministry under H. H. Asquith in 1912. Twice it was rejected by the House of Lords, but, under the terms of the Parliament Act, it became law in Sept., 1914, although serious opposition was offered to it in Ulster. By then, however, the Great War had begun, so its operation was postponed. Before more could be done the position had been entirely changed by the rise of the Sinn Fein Party, and the disappearance of the bulk of the Nationalists from Parliament in 1918. A settlement was made in 1921, by which the Irish Free State was formed as a self-governing dominion of the British Empire, and Northern Ireland remained part of the United Kingdom.

Homicide The taking of human life. It may be justifiable, when done under State sanction; excusable, when due to accident or in self-defence; or felonious, whether murder, manslaughter or suicide.

Homildon Hill One of the hills of the Cheviot range, near Wooler. Here on Sept. 14, 1402, a fight took place between the English and the Scots. The Scots under the Earl of Douglas were returning from an invasion of England when they were met by an army led by the Percies. The fight was decided by the skill of the English archers who killed some hundreds of Scots as they were moving down the hill.

Homily Familiar religious address expounding a scriptural passage. The early Christians continued this practice of the Jewish synagogues as when S. Paul "talked" throughout the night at Troas (Acts xxii.). Two books of homilies, 12 and 21, published in 1547 and 1563, are mentioned in the 36th article of religion in the Book of Common Prayer.

The branch of theological practice which concerns the method of preparing and delivering sermons and other religious discourses is called **homiletics**. It forms part of the normal training of students for the ministry in all Christian churches.

Hominy Maize that is hulled and crushed to make meal. It is used for porridge, puddings and in other ways.

Homoeopathy System of medicine based upon the principle that like cures like (*similia similibus curantur*). It was introduced in 1796 by Samuel Hahnemann, a German physician. In homoeopathy minute quantities of a drug are administered to produce symptoms similar to those of a disease. Many of the remedies have been adopted by allopaths, such as aconite in inflammatory complaints, and homoeopathy has had a strong influence on ordinary practice in stimulating the study of the physiological action of drugs.

There is a homoeopathic hospital in London, and societies for the promotion of homoeopathic practice. The hospital, founded in 1849, is in Great Ormond St., London, W.C.

Homology Term in biology referring to the common origin of organs or parts of a plant or animal organism. Thus the arm of a man, the wing of a bird, and the foreleg of a dog are homologous structures, although in each case the function is different.

Homonym Word having the same sound as another, but a different meaning. Examples are, hair and hare, break and brake.

Honan Province of China. In the centre of the country, it is divided into two parts by the Yellow River. It covers 68,000 sq. m. The soil is fertile, especially in the south. In the north are coal mines. Kaifeng is the capital.

Honduras Republic of Central America. It lies between the Caribbean Sea and the Pacific Ocean and has Nicaragua to the south and Guatemala to the north-west. There are many mountains, some of considerable height, and a number of rivers. Tegucigalpa is the capital. The ports are Puerto Cortez, Omoa, Trujillo and Puerto Castilla on the east or Atlantic side and Amapala on the Pacific side. There were in 1932 1,149 miles of railway and some good roads. The area is 44,275 sq. m. Pop. (1930) 859,761.

Honduras grows bananas, coffee, cocoanuts, tobacco and other tropical products. There is some mining and a few manufacturing industries. The country became an independent republic in 1821. The government is in the hands of a president elected for four years and a council of ministers, who are responsible to a congress of 43 deputies. In religion the people are chiefly Roman Catholics. The gold *lempira* (= 50 cents, U.S.) became the monetary unit in 1931. The metric system of weights and measures is used.

Honduras **British.** Colony of Central America, it has a coast line on the Caribbean Sea and covers 8600 sq. m. The capital is Belize, which is also the name of the chief river. The country produces mahogany and other timbers, coffee, bananas and other tropical fruits. A crown colony, it is under a governor who is assisted by an executive council and a legislative one. The unit of currency is the dollar, and the chief bank is the Royal Bank of Canada. In Sept., 1931, great damage was done by a hurricane. Pop. (1931) 51,347.

Hone **William.** English author. Born in Bath, June 3, 1780, he failed as a London bookseller, but soon made a name by his writings, especially some political satires. For a parody on the Prayer Book he was prosecuted in 1817, but the only result was to increase his popularity, and the public subscribed £3000 for him. After a period in prison for debt he started a coffee house in London, but failed again. Hone became converted to Christianity and appeared as a preacher. He died at Tottenham, Nov. 6, 1842.

In 1817 Hone started *The Reformist's Register*, and he wrote many books, but to-day he is best remembered by his *Everyday Book* and his *Table Book*, both full of strange and interesting information.

Honesty Annual or biennial cruciferous herb (*Lunaria annua*). A native of Central and W. Asia, it has toothed, heart-shaped leaves, and stems bearing flowers which are usually purple but sometimes white. It grows in English gardens and the silvery partitions of the ripened seed pods are useful winter decorations. The perennial form has smaller flowers and seed pods.

Honey Sweet substance prepared by bees. The bees obtain the honey from flowers and store it in honeycombs, where it serves as food for the young. Bees are kept for the honey they produce and the combs are taken from the hive at suitable times.

Honey consists mainly of sugar in the form of levulose and dextrose. The best, called virgin honey, is taken from the hive before the bees swarm. Other forms are clover honey and heather honey. Honey is imported from California, New Zealand and other countries. In medicine it is used as a laxative.

The honeycomb is a mass of hexagonal cells of wax in which the hive bees store their honey and pollen as well as the young brood. In modern beekeeping the use of wax foundations and the wooden frame or section for the comb renders easier the handling of the bees and gives increased honey production.

Honeyberry Fruit of the nettle tree. It is blackish in colour, very sweet, and ripens in winter. A native of the countries around the Mediterranean Sea, it belongs to the natural order *Urticaceae*.

Honey Dew Sticky, sugary, dew-like exudation from leaves and stems of various plants, especially in warm, dry weather. It may exude from punctures made in the plants by plant lice and scale insects, or appear as a natural secretion exuded through water pores or broken tissues. Ants feed upon it; gardeners syringe it away. It sometimes drops in showers of manna.

Honey Eater Family of slender-billed singing birds related to the sun bird. The brush-like tips of their long tongues extract insects and nectar from flowers. Many are handsomely plumaged, mostly in greens and yellows, and in size they are about equal to the thrush. They are found in Australasia, and the New Zealand tui, or parson bird, is a favourite cage bird locally.

Honeysuckle Genus of erect or climbing shrubs of the elderberry order (*Lonicera*). They are found in warm and temperate parts of the northern hemisphere and the flowers give out a fragrant odour. The plant is found wild, but it will grow in any garden provided the soil is moderately dry, but a shady position is best.

Honfleur Seaport of Normandy, France. It stands on the estuary of the Seine, opposite Havre. There is a small harbour. The chief buildings are the pilgrim chapel of Notre Dame de Grace and the church of S. Catherine. Honfleur was once an important port and was taken by Henry V. in 1415. Pop. 8700.

Hong Kong British possession in China. It consists of an island at the mouth of the Canton River, about 90 m. from Canton, a piece of land on the mainland called Kowloon, and an area around that settlement. Properly speaking, Hong Kong is the island only, but the name is used for the colony as a whole. The island covers 32 sq. m., and the colony 390. The island has a magnificent harbour, which is a free port and one of the greatest trading centres in the East. It is also a military and naval station. The capital, Victoria, stretches along the south side of the harbour. Hong Kong was handed over to Great Britain in 1842, and Kowloon in 1860. The extension became British in 1898. The governor is assisted by an executive and a legislative council. The colony has a university and several schools. Hong Kong has some industries, including sugar refining and rope making. It is the headquarters of the Hong Kong and Shanghai Banking Corporation. Pop. (civil) 840,473; (Chinese) 821,104 (1931).

Honiton Borough and market town of Devonshire. It is on the Otter.

16 m. from Exeter and 155 from London, on the S. Rly. The parish church has a 15th century screen. Lace has been made here for 300 years. There is an agricultural trade and beer is brewed. The town has a Fair dating back to 1221. Pop. (1931) 3008.

Honley Urban district of Yorkshire (W.R.). Near Huddersfield; it is 185 m. from London by the L.N.E. Rly. Woollen goods are manufactured. Pop. (1931) 4611.

Honolulu City and seaport, also, since 1820, the capital of the Hawaiian Islands. It stands on Oahu Island, and is built on American lines. It is lighted by electricity and has electric tramways. The place has a good harbour and does a considerable shipping trade. Pop. (1930) 137,582.

Honorius Name of four Popes. **Honorius I.** was Pope from 625 to 638, and **Honorius II.** from 1124 to 1130. **Honorius III.**, Pope from 1216 to 1227, had a good deal to do with the foundation of the Franciscan and Dominican orders. **Honorius IV.** was Pope from 1285 to 1287.

Honorius Roman emperor. He was a son of Theodosius the Great and in 395 was made Emperor of the West, his elder brother, Arcadius, ruling the East. During his reign the barbarians invaded the empire and in 410 Alaric, King of the Visigoths, captured and looted Rome. The Roman soldiers were called away from Britain and other possessions were also lost. The emperor, whose full name was Honorius Flavius, could or would do nothing to arrest this decay. He died at Ravenna, Aug. 27, 423.

Honour Distinction of any kind. One kind of honour is a title or distinction bestowed by the King, *e.g.*, Companion of Honour (C.H.). Other honours are fellowships of learned societies, honorary degrees at the universities and the freedom of cities.

The bestowal of hereditary titles in Great Britain was in 1922 the subject of inquiry by a royal commission. As a result a permanent committee was set up to examine and report upon the claims of those recommended by the Prime Minister for any dignity or honour on account of political service before their names are submitted to the King.

Honour In feudal times an estate of two or more manors held by one lord. Each manor retained its separate organisation, but one court baron served for all. Two of the greatest honours in England were those of Clare and Richmond.

Honourable Title of honour. In Great Britain it is borne by the younger sons of earls and by all the sons and daughters of viscounts and barons. Judges of the high court and the sons of life peers are also honourables. The word is usually abbreviated in writing to Hon. In Australia, Canada and New Zealand all members of the legislature bear the title, as do the judges.

The higher title of right honourable is given to earls, viscounts and barons; to members of the Privy Council; to the lords justices and lords of appeal and to the lord mayors of London and York, and the lord provosts of Edinburgh and Glasgow. The title of most honourable is used for marquesses.

Honourable Artillery Co. Territorial regiment of the British Army. It dates from 1537 and was formed to enable Londoners to practise with cross-bows and hand guns. In 1641 the ground in Finsbury was given to it as a training ground, and here, in City Rd., London, E.C., are its headquarters called Armoury House. It consists of infantry and artillery, and forms part of the Royal Regiment of Artillery. The regiment did splendid service in the Great War. In 1638 an Ancient and Honourable Artillery Company which still exists, was founded at Boston, U.S.A.

Honthorst **Gerard van.** Dutch painter. Born at Utrecht, Nov. 4, 1590, he was a pupil of Bloemart, but was influenced greatly by the realism of Carvaggio. His paintings cover a variety of subjects such as sacred and profane history, genre, and especially night scenes, hence he is sometimes called *Gherardo della Notte*: in later life he specialised in portraiture. His masterpiece, "Christ before Pilate," is in the National Gallery, London, and specimens of his work are in most large collections. He died in Utrecht, April 27, 1656.

Hooch **Pieter de.** Dutch painter. Born at Rotterdam in 1629, he attained little contemporary fame. He has left about 300 canvases, all of which display great art and finish. He was essentially a painter of interiors, delighting in the subtle variations of light diffused through windows and doors. He died about 1683.

Hood Battle cruiser. Successor to several earlier vessels of this name, she is 860 ft. long and displaces 41,200 tons, carries eight 15 in. guns and has a speed of 31 knots. She was finished in 1919.

Hood Flexible covering for the head. It was much worn in England in the Middle Ages, especially by women, children and priests. Very often it was part of the cloak, as in the case of little Red Riding Hood.

The use of the hood by monks led to its use at the universities. Each university degree has a distinctive colour for its hood. For instance, at Oxford the M.A. wears a hood lined with crimson silk, and the B.A. one lined with white fur.

Hood **Thomas.** English poet and humorist. Born in London, May 23, 1799, the son of a bookseller, he became a clerk, then an engraver. In 1821 he joined the staff of the *London Magazine*. In 1826 and 1827 he published *Whims and Oddities*, and then came *National Tales*. He was editor of the *Gem*, and from 1830 to 1839 issued yearly a *Comic Annual*. From 1835-40 he lived abroad. In 1840, after paying his creditors in full, he returned to become editor of the *New Monthly Magazine*. His last work was as editor of *Hood's Monthly Magazine*. He died in London, May 3, 1845.

Hood's work is characterised by its unique combination of pathos and humour, as in *Faithless Nelly Gray* and *Miss Kilmansegg*, and he is specially remembered for his *Song of the Shirt*, *The Bridge of Sighs*, and *Eugene Aram*. He wrote *Up the Rhine* and a novel *Tylney Hall*.

Hood **Tom.** English humorist. A son of Thomas Hood, he was born at Wanstead, Jan. 19, 1835, and was educated at Pembroke College, Oxford. He was for a time a clerk in the War Office, but later took to journalism. In 1865 he was made editor of *Fun*, and he died Nov. 20, 1874.

Hood **Viscount.** English sailor. The son of a clergyman, Samuel Hood was born in Dorset, Dec. 12, 1724, and entered the navy in 1741. He served in the war of 1756-63 and from 1767-1771 was commander-in-chief

in N. America. After a second spell of service in American waters he was made commander-in-chief in the Mediterranean, and took part in the blockade of Toulon. He was an M.P. for a few years, defeating Charles J. Fox at the Westminster election of 1784. In 1782 he was made an Irish baron, and in 1796 a viscount. In Jan. 27, 1816, he died. The title is still held by his descendants.

Hood's brother **Alexander** saw much service in the navy and was made Viscount Bridport in 1800. A kinsman, **Samuel Hood,** entered the navy in 1776, was at the Battle of the Nile and rose to high command. He was made a baronet and died Dec. 24, 1814.

Horace Lambert Alexander Hood, a son of the 4th Viscount Hood, became head of the naval college at Osborne in 1910. In 1914 he took command of a ship and in the Battle of Jutland he went down in the *Invincible* when in command of a squadron of battle cruisers, May 31, 1916.

Hooge Village of Belgium. It is 3 m. from Ypres and around it there was much fighting during the Great War. In May, 1915, the Germans delivered here one of their earliest gas attacks, and here on July 30 they used liquid fire from flame throwers for the first time The village, or what remained of it, was retaken by the British on July 31, 1917, and the Germans driven away in Sept., 1918. Hooge has been rebuilt, and in it is a memorial to the Gloucestershire Regiment.

Hoogly Branch of the Ganges. One of the branches by which that river flows into the sea in the Bay of Bengal, it is 120 m. long. Calcutta stands on it. Owing to quicksands the navigation is dangerous. In 1931 a tunnel under the river was opened.

Hoogly is also the name of a town of Bengal, founded in 1537 by the Portuguese. Pop. 30,000.

Hook **Theodore Edward.** English writer. Born in London, Sept. 22, 1788, a son of James Hook, the composer, he was educated at Harrow. His extraordinary gifts as an improviser soon won for him a great reputation. In 1820 he started a Tory paper called *John Bull* and wrote a number of novels, including *Maxwell and Jack Brag*, but is better known as the author of innumerable practical jokes. He died at Fulham, Aug. 24, 1841.

Hookah Tobacco pipe used in India, Persia and other Eastern countries. It consists of a tobacco bowl from which the smoke passes through into a water bottle of glass, porcelain or metal, and thence by a long flexible tube to the mouth. In this way the smoke is cooled.

Hooker **Sir Joseph Dalton.** English botanist. Born at Halesworth, Suffolk, June 30, 1817, he was the son of Sir William Jackson Hooker, who was Professor of Botany at Glasgow and then Director of the Botanic Gardens at Kew. He studied medicine in Glasgow, but never practised. Instead, he went with Sir James Ross to the Antarctic in 1839, and in 1845, as botanist to the Geological Survey, did much research work in the Himalayas. In 1855 he was made assistant director at Kew, and in 1865 he succeeded his father as director. He retired in 1885 and died Dec. 10, 1911. Hooker was president of the Royal Society, 1872-77, and was given the O.M. in 1907. He wrote books on the results of his journeys and a valuable *Genera Plantorum*.

Hooker **Richard.** English divine. Born in March, 1554, he was sent to Corpus Christi College, Oxford, and became a clergyman in 1581. In 1584 he was given a living in Buckinghamshire, and in 1585 was made Master of the Temple. He left London in 1591 to become Vicar of Boscombe in Wiltshire. His last living was at Bishopbourne, Kent, where he died Nov. 24, 1600.

Hooker is famous as the author of a unique *Treatise on the Laws of Ecclesiastical Polity*, which sets out the fundamental principles of Protestantism and especially of the Church of England. Equally remarkable for its stately prose and for its irresistible logic, it won for its author the epithet "judicious." Izaak Walton wrote a *Life* of Hooker.

Hook of Holland Steamer and railway terminus of the Netherlands. It is 17 m. from Rotterdam and stands at the mouth of the channel called the New Waterway. There is a regular steamer service with Harwich, 120 m. away.

Hookworm Parasite causing ankylostomiasis in man. It is common in many tropical countries where the larva, entering the system by piercing the skin, commonly the foot, matures in the small intestine. Ova volded in the excreta infect the soil. Effective treatment can only be carried out on a large scale, and includes proper sanitation and the use of vermifuges.

Hooley **Ernest Terah.** English financier. Born in Nottingham, Feb. 5, 1859, he became a stockbroker's clerk, then a stockbroker, and was concerned in floating companies at a time when this kind of business was in its infancy. He placed some very large undertakings on the market, and for a time was remarkably successful, but a sensational crash came with his bankruptcy in 1898.

Hooper **John.** English prelate. Born in Somerset about 1495, he went to Oxford and became a Cistercian monk. Later he joined the religious reformers and in 1539 went to Switzerland. Returning about the time of the accession of Edward VI., he was made chaplain to the Protector, the Duke of Somerset, and in 1550 was elected Bishop of Gloucester. He held also the bishopric of Worcester from 1552 until 1553, when Mary had him put into prison. On Feb. 9, 1555, having been condemned for heresy, he was burned at Gloucester.

Hoopoe Genus of birds allied to the hornbills (*Upupa*). It visits Europe and Siberia in summer and winters in Africa and India. Occasionally it breeds in England. Its golden-buff head and neck bear a semi-circular crest of erect plumes with white-bordered black tips.

Hoover **Herbert Clark.** American president. Born, Aug. 10, 1874, at West Branch, Iowa, the son of a Quaker, he was educated at the Leland Stanford University. He became an engineer and was for a time engaged in mining work in Australia, China and elsewhere. He attained a high standing in his profession and became a public figure during the war period. In 1914 he was in charge of the American relief work in Europe; later, he organised relief measures on a much greater scale in the countries threatened with famine. This work occupied him until 1921, when he was a member of the Supreme Economic Council. A Republican, Hoover was Secretary of Commerce, 1921-25, and in 1928 was elected President, defeating the Democrat, Al Smith. In July, 1931, he launched his scheme for a year's moratorium for all inter-

national war debts. He stood for re-election as Republican candidate in 1932, but was defeated by Franklin D. Roosevelt.

Hope **Anthony.** Pen-name of the English novelist, Sir Anthony Hope Hawkins. A son of Rev. E. C. Hawkins, he was born in London, Feb. 9, 1863, and was educated at Marlborough and Balliol College, Oxford. He became a barrister, but devoted his time to writing. In 1894 he made his name with *The Prisoner of Zenda*, a novel of the romantic type, which called forth many imitations. The sequel, *Rupert of Hentzau*, and many others in the same vein followed, these including *Quisanté*, *Tristram of Blent*, *Sophy of Kravonia*, *The Intrusions of Peggy* and *Captain Dieppe*. Hope secured another success with his *Dolly Dialogues*, full of delicate wit. He also wrote plays, among them *The Adventures of Lady Ursula* and *Pilkerton's Peerage*. In 1918 he was knighted.

Hope **Sir John.** British soldier. Born Aug. 17, 1765, he was a son of the 2nd Earl of Hopetoun. In 1790 he entered the army and about 1795 embarked on a long career of active service. He was in the Netherlands and Egypt with Sir Ralph Abercrombie, and in Sweden and Portugal with Sir John Moore, taking command at Corunna when his leader was killed. He commanded a division in the Walcheren expedition and in 1813 went to Spain as chief lieutenant to Wellington. There he led a division until wounded and made prisoner in April, 1814. In 1815 Hope was made a baron and in 1816 he became Earl of Hopetoun. He died Aug. 27, 1823.

Hope Town of Flintshire. On the River Allen, it is connected with Chester by the L.M.S. Rly., and is 188 m. from London. Offa's Dyke passes near and Roman remains have been unearthed. Pop. 4800.

Hopetoun **Earl of.** Scottish title now merged in that of Marquess of Linlithgow. Thomas Hope, a lawyer, was made a baronet in 1628 and one of his descendants, Charles, was made an earl in 1703, taking his title from his residence, Hopetoun House, Linlithgowshire. James, the 3rd earl, inherited the estates of the Marquess of Annandale. He was succeeded in 1816 by his half-brother, Sir John Hope (*q.v.*). In 1902 the 7th earl was made Marquess of Linlithgow. Hopetoun House stands near the Forth.

Hopper Funnel-shaped wooden or metal vessel, through which loose material is discharged into a receptacle. The lower aperture is often provided with a trap door.

The term is applied also to the vat used in making an infusion of hops in a brewery.

Several insects are called **hoppers.** One of these is the hop flea which is very destructive to hops; another is the larva of the cheese fly.

Hoppner **John.** English portrait painter. Born in Whitechapel, London, April 4, 1758, of German parentage, he studied at the Royal Academy Schools and became a fashionable portrait painter. His portraits of women and children have a certain charm. The "Countess of Oxford" and "William Smith" are good examples of his work in the National Gallery, London, but his best works are in private collections. In 1792 he was elected A.R.A. and in 1795 R.A. He died in London, Jan. 23, 1810.

Hops Cone-like catkins of female flowers of the hop plant *Humulus lupulus*. They are used chiefly for giving the characteristic flavour to beer. The plant is a perennial climbing herb with rough twining stems bearing either male flowers in drooping clusters or female flowers in green scaly cones. After flowering the female catkins, or hops, increase in size and develop at the bases of the scales small yellowish glands which contain the special principle of hops. Hops are used to some extent in medicine. The plant was introduced into England from Flanders in 1525.

In England hops are grown chiefly in Kent, but also in the counties of Hereford, Sussex, Worcester and Hampshire. A considerable outlay and much skilled labour are necessary before the hops are ready for **picking.** The chief English market is the Hop Exchange in Southwark, London, S.E.

Hor Mountain near Edom's border whereon Aaron died (Nu. xx.). It has been associated since Josephus with Jebel Harun, a truncated cone, 4580 ft. high, between the Dead Sea and the Gulf of Akabah

Horace Latin poet. Quintus Horatius Flaccus was born at Venusia, Dec. 8, 65 B.C., the son of a freedman who had acquired some wealth. He was educated at Rome and in Athens, and fought on the side of Brutus in the war that followed the murder of Caesar. He then entered the public service. About 38 B.C. Virgil introduced him to Maecenas, who gave him a farm on the Sabine Hills and there, or in Rome, the rest of his days were passed in writing. He died in Rome, Nov. 27, 8 B.C.

The first works of Horace were two volumes of *Satires*. These were followed by some *Epodes* and then came, in three books, his immortal *Odes*, the most perfect of their kind, yielding almost as many quotations as *Hamlet*. A fourth book followed. He also wrote some *Epistles* and the *Carmen Seculare*. There are many English translations of his works, especially of the *Odes*.

Horae Greek word meaning hours and used for the goddesses of the seasons. The daughters of Zeus and Themis, they were responsible for controlling the weather and were represented in art as beautiful maidens and temples in their honour were built at Athens and elsewhere.

Horatii Name given to three Roman heroes. They were triplets and were selected to fight three brothers from Alba. The fight took place and all were killed except one of the Horatii. On his return, his sister, whose lover had been among the slain, cursed him and he killed her.

Horatius Cocles, another Roman hero, belonged to this family. He defended, with two others, the bridge across the Tiber when the city was attacked by Lars Porsena, as related in Macaulay's *Lays of Ancient Rome*.

Horder **Lord, K.C.V.O., M.D.** English physician. Born Jan. 7, 1871, he received his medical training at S. Bartholomew's Hospital, London. He joined the staff there and soon became known as a consultant, his patients including members of the royal family. He served at the front in the Great War, was knighted in 1918, made a baronet in 1923 and raised to peerage in 1933 as Lord Horder of Ashford.

Horeb In the Pentateuch an alternative name for Sinai (Ex. iii.). It was the scene of Moses' experience of the burning bush, the giving of the Law, and Elijah's vision.

Horehound Name of two plants found in Great Britain and elsewhere in the temperate zones. The white

horehound has stems and leaves covered with down and bears whorls of white flowers in the summer. The black horehound has also downy and wrinkled leaves, but its flowers are purple. The white horehound has an aromatic flavour and a decoction from its leaves is used as a medicine, chiefly as a cure for coughs.

Horley Market town of Surrey. It is on the Mole, 25 m. from London and 5 m. from Reigate, on the S. Rly. Pop. 6100.

Hormones "Chemical messengers," substances formed in the organs of internal secretion, such as the thyroid and pituitary glands, and passed on into the blood circulation. These substances stimulate the metabolism of other organs, generally by increasing secretion. The activity of the thyroid has an affect upon physical and mental growth, and the pituitary upon growth in stature.

Horn Hard, pointed sheath formed over a bony core on the frontal bone of the skull of oxen, sheep and antelopes. In the case of the rhinoceros the horn consists of an agglutinated mass of horny fibres derived from the skin. The antlers of deer are not true horns, but bony outgrowths of the skull.

Horn is used for making handles of knives and forks, sticks and umbrellas, also combs, buttons, etc. It is exported from India, South Africa and South America.

Formerly many implements made of horn were called horns. These included drinking-horns, hunting-horns and powder-horns; later came ink-horns. There exist some fine old specimens of these horns.

Horn Cape of South America. On Tierra del Fuego, it is the most southerly part of the continent. It belongs to Chile and is about 1400 ft. high. It was seen by Drake in 1578, but was named by a Dutch sailor who called it Hoorn, from his birthplace.

Horn Brass musical wind instrument. At one time horns were much used for military and hunting purposes, only the wald-horn surviving as an orchestral instrument. About 1835 this was superseded by the valve horn in F, which is now universally employed. Its practical compass is about three octaves.

The player blows into a conical, coiled tube, twelve feet long, producing tenor tone quality. Pistons effect a change of key. Music for valve horns in F is written a perfect fifth higher than actually sounded.

Hornbeam Tree of the birch order (*Carpinus betulus*). It is indigenous to Europe and W. Asia and grows in Great Britain. Its dull, doubly-toothed leaves, hairy underneath, and winged fruit, distinguish it from the beech. Its heavy, close-grained wood is difficult to split and serves for mallets, handles, lasts, bench screws and cog wheels. In Great Britain it sometimes grows to a height of 70 ft.

Hornbill Family of fruit-eating birds allied to the hoopoes. They inhabit Africa, India and Malaya and have horn-like helmets, hollow or solid, surmounting large bills. There are ground hornbills, trumpeters and wedge-tailed forms. They may be as much as 15 in. in length.

Hornblende Rock-forming mineral of the amphibole group. It consists of the silicates of magnesia, lime, iron and alumina, and is found as grains or crystals in syenites, diorites and schists in many parts of the world. Hornblende is black or greenish-black in colour and opaque except in the translucent variety, pargasite.

Hornbook Tablet used for teaching children, especially in England, from about 1450 till about the middle of the 18th century. Usually bearing the alphabet in capital and small letters, the nine numerals and the Lord's Prayer, it was covered with transparent horn and had a handle.

Horncastle Market town and urban district of Lincolnshire. It is 21 m. from Lincoln, on the L.M.S. Rly. The town is an agricultural centre and is famous for its horse fair held every August. Pop. (1931) 3496.

Hornchurch Urban district of Essex. It is 2 m. from Romford, on the L.M.S. Rly. The industries include the making of agricultural implements and brewing. Pop. (1931) 28,417.

Horne **Baron.** British soldier. Born in Caithness, Feb. 19, 1861, Henry Sinclair Horne was educated at Harrow and passed into the Royal Artillery. As an artillery officer he served in S. Africa, and in Aug., 1914, he went to France in command of a brigade of artillery; in 1915 he was given a division and in 1916 he took command of an army corps, which he led in the Battle of the Somme. In 1916 he was appointed to command the first army which he led throughout the advance of 1918. In 1919 he became Baron Horne of Stirkoke, Caithness. The title became extinct when he died, Aug. 14, 1929.

Horne **Sir Robert Stevenson.** British politician. The son of a minister of the Church of Scotland, he was born Feb. 28, 1871, and educated in Edinburgh and at Glasgow University. In 1895 he was made lecturer in philosophy at University College, Bangor, but later became an advocate in Edinburgh. In 1917 he was given an administrative position in connection with the transport of troops. He then went to the Admiralty as director of a department and later was made Third Civil Lord. In 1918, having been knighted, he entered Parliament as Conservative M.P. for the Hillhead division of Glasgow (which he still represented in 1936) and was made Minister of Labour. In 1920 he became President of the Local Government Board and in 1921 Chancellor of the Exchequer, leaving office when the coalition broke up in 1922. In business he became associated with several railway banking and other companies.

Horner One who sells horns of various kinds, a trade now extinct. The **Horners' Company,** however, one of the London livery companies, still exists. Its hall is in Cannon St., London, E.C.

Hornet British variety of wasp (*vespa crabro*). About an inch long and distinguished from the common wasp by its ruddier hue, it builds papery nests, chiefly of rotten wood, in hollow trees, or pendent from outhouse roofs. The hornet is found chiefly in the midland and southern counties of England.

Horning Term used in Scots law. It is a writ used in cases of debt and is so named because at one time debtors who did not pay were declared outlaws after three blasts had been blown on a horn at the market cross in Edinburgh.

Hornsea Urban district and watering place of Yorkshire (E.R.). It is about 16 m. from Hull, on the coast between Spurn Point and Flamborough Head, on the

L.N.E. Rly. Near is **Hornsea Mere,** a lake covering about 400 acres. Pop. (1931) 4450.

Hornsey Borough of Middlesex. It is 4 m. from London, but outside the county, and includes the districts of Harringay, Crouch End, Muswell Hill and Finsbury Park. It became a borough in 1903. In olden times there was a royal park which is mentioned by Shakespeare in *Henry VI.* Pop. (1931) 95,524.

Horns Reef Reef off the coast of Jutland. Near here the Battle of Jutland was fought, May 31, 1916. *See* JUTLAND.

Horology Science dealing with the principles and construction of timepieces. Wheel clocks came into use about the 12th century, portable clocks in the 14th, and watches with a coiled spring a century later. The introduction of the pendulum in the 17th century, followed by the first escapement, was an important step and since that time steady progress has been made.

Horse Hoofed mammal (*equus caballus*) of great value to man, especially the white races. It is distinguished by having only one toe on each foot, and is seen in shades of red, brown, black, white and piebald. Its height is measured in hands.

The horse was hunted for food by primitive man, was known to the Egyptians and Assyrians, and by the time it was mentioned in the Bible it had been domesticated. The Arabs showed what it was capable of in speed and beauty, and in these respects Arab horses have never been surpassed. The Roman chariot was drawn by horses and later the horse became an essential part of the knight's equipment. Until the Great War the horse played an important part in warfare.

When the roads were bad goods were conveyed on pack horses and, when they became better, horses were used to draw coaches and carts over them. In agricultural work horses replaced oxen in many countries, while every gentleman, as a matter of necessity, learned to ride and made his journeys on horseback.

The invention of the steam engine reduced somewhat the demand for horses, still more the advent of the motor-car. To-day, even on farms, much of the work formerly done by horses is done by motor.

The finest animal in existence is probably the English thoroughbred racehorse, in which there is an Arab strain. For hunting, horses are carefully bred and good specimens fetch high prices. For agricultural and draught purposes the chief breeds are the Shire, Clydesdale and Suffolk Punch, and for riding and driving, the Hackney and Cleveland.

In former days horse fairs were held in many centres, those of Ireland being especially famous, and these are not yet extinct; annually in August a great horse show is held in Dublin. For breeding horses there are stud farms, while the breeding of racehorses is conducted in special establishments.

Wild horses are still found in Asia. The mustang of South America is the wild descendant of the domesticated horse. The skin, hair and other parts of the horse are commercially valuable. There are restrictions on the export of old horses, and homes of rest are provided for them.

Horse Chestnut Genus of large trees of the soapwort order (*Aesculus*). They are natives of Europe, India and N. America. The common *A. hippocastanum* bears pyramidal spikes of showy blossoms. It grows to a height of 60 ft. The seeds produced much acetone and alcohol during the Great War. The Indian form (*A. indica*) furnishes timber. It grows to a height of 100 ft.

Horse Fly Name loosely indicating two-winged insects of various families, annoying to horses. (1) The large brownish-black *Tabanus bovinus*, and other blood-sucking species of the gadfly family. (2) The parasitic yellowish-brown *Hippobosca equina*, or horse tick, which is common in the New Forest, England. *See* BOT FLY.

Horse Guards Building in Whitehall, London; also the name of a cavalry regiment. The Whitehall structure was built in the 18th century and was at one time the headquarters of the army. It is still used for military purposes. Behind it is the Horse Guards Parade, where the trooping of the colours takes place.

The Royal Horse Guards is one of the regiments of household cavalry. It was formed in 1661 and saw much service in the 18th and 19th centuries; also in the Great War. It is stationed in London and at Windsor and attends the sovereign on ceremonial occasions.

Horsehair Tail and mane hair of the horse. Long tail hair is woven into haircloth and used for the seats of chairs. It is also plaited into fishing lines and used in violin bows. The mane and short tail hair serve as a stuffing for furniture, and for brushes.

Horse Latitudes Term used by sailors for regions about 30 deg. north and south of the equator. There the westerly winds blow towards the pole and the trade winds towards the equator.

Horse Leech Two aquatic species of blood-sucking leeches. (1) The *Haemopsis sanguisorba* is common in Europe and N. Africa. It sometimes clings to the pharynx of horses and cattle when drinking from pond or streams. (2) The *Aulastoma gulo* which is often confused with the leech. With three small teeth it normally feeds on earthworms, snails and other leeches.

Horse Mackerel Popular name for several unrelated marine fishes, particularly a spiny-finned genus (*Caranx*) abounding in almost all tropical and temperate seas. The British *C. trachurus* is also called the scad. Sometimes found in vast shoals, it is split, salted and dried for food.

Horse Power Standard or unit of work used to estimate the power of an engine. It is the force required to raise 33,000 lb. one foot in one minute, equivalent in electrical units to 746 watts. The French unit, "force de cheval," equals 736 watts or .9863 horse power.

Horse Racing Sport very popular in England, Ireland, Australia and France and to a lesser extent in other countries. It is an old sport and with it the English kings have been associated for some centuries. Race horses are specially bred and all are descended from Arab horses imported into England. Eclipse (1769-70) was the greatest racehorse on record and for good horses enormous prices are paid.

Racing in England is controlled by the Jockey Club and the chief centre is Newmarket. Other famous courses are Epsom and Doncaster, and there are many more all over the country.

Races are held at several parks around London, *e.g.*, Kempton, Sandown and Hurst. Ascot and Goodwood are race meetings especially famous as social functions. In Ireland the chief racing racing centres are the Curragh and Leopardstown. In France races are held at Auteuil and other places near Paris, and in Australia at Sydney and elsewhere.

Training stables are at Newmarket, Epsom, Doncaster and on the Berkshire Downs. The five classic races are the Derby and Oaks at Epsom, the St. Leger at Doncaster, the Two Thousand Guineas and the One Thousand Guineas at Newmarket. These are for three-year-old horses. The courses vary from half a mile to two miles or a little more. In most races the horses are handicapped.

In addition to flat racing, hurdle or obstacle races are held at various centres. The chief of these is the Grand National. A feature of all horse races is the betting, through bookmakers or by means of the totalisator, which has been made legal in Great Britain.

Horseradish Perennial herb of the cruciferous order (*Cochlearia armoracia*). Its pungent root serves grated as a condiment with beef and its oil is used as an antiscorbutic. It is propagated by planting pieces of the root in trenches and can be grown in Great Britain.

Horse Show Show of horses held in various cities and towns specially to promote the interests of the breeding industry. Prizes are given for the best animals. The **International Horse Show** is held every year at Olympia, London, but more famous is the one held at Dublin every August. Other shows are devoted to the interests of a single breed, *e.g.*, Clydesdales or Shires.

Horsham Market town and urban district of Sussex. It is 38 m. from London, on the S. Rly. Its centre is called Carfax and here are stocks and the ring once used for bull baiting. The town has an agricultural trade. Pop. (1931) 13,579.

At **West Horsham**, about 2 m. away, are the fine modern buildings of Christ's Hospital.

A building material much used in Sussex houses is called **Horsham stone.**

Horsham Town of Victoria, Australia. A railway junction, it is about 200 m. from Melbourne, and is the principal town of a sheep-farming area. It is on the Wimmera river and has irrigation works. Pop. 4700.

Horthy **Nicholas.** Hungarian leader. Born June 18, 1868, of a noble family, Nicholas Horthy de Nagybanya was educated for the navy, which he entered about 1884, and rose to command some cruisers during the Great War. He was given command of the Austro-Hungarian fleet in 1918 and made an admiral. During the troubles in Hungary that followed the War, he collected a force that drove the Bolshevist Bela Kun and his followers from the country and restored order. He was chosen regent in March, 1920, and held that position for the next 12 years.

Horticulture Scientific cultivation of fruit, vegetables, flowers and shrubs. In England it is fostered by the **Royal Horticultural Society**, which holds shows of flowers at its hall in Vincent Square, Westminster, has gardens at Wisley in Surrey and issues a *Journal*.

There are horticultural colleges at Swanley in Kent, Studley in Warwickshire, Ripley in Surrey, and elsewhere.

Horus Egyptian falcon-headed deity. Perhaps originally the totem of a falcon clan, he became a sun god, offspring of Osiris and Isis, equivalent to the Greek Apollo. He is sometimes represented as a human child the Greek Harpocrates, with finger on lips and seated on a lotus flower.

Horwich Urban district of Lancashire. It is 5 m. from Bolton, on the L.M.S. Rly. The industries include railway works, spinning mills, bleaching and dyeing works and coal mines. Pop. (1931) 15,680.

Hosanna Cry of adoration recorded in the account of Christ's entry into Jerusalem (Matthew xxi., 9) and later used in the Christian Church. It is also a Jewish liturgical term applied to the Hosanna branches used in the Feast of Tabernacles. The seventh day of the Feast of Tabernacles is Hosanna Day.

Hosea First of the twelve minor prophets in the Old Testament. A son of Beeri, a native of the northern kingdom of Israel, he prophesied under Jeroboam II. and his successors. The first part of the book he wrote (i.-iii.) professedly relates a personal experience and compares the nation's attitude towards Jehovah with that of a faithless spouse. The second (iv.-xiv.) exposes and censures Israel's idolatry and immorality. Our Lord cited Hosea's statement that God prefers mercy to sacrifice (Matthew ix.).

Hosiery Word derived from hose, a covering for the legs or feet and now used for knitted goods made of wool or partly of wool. It covers stockings, vests and other forms of underwear. In England the chief centres of the industry include Leicester, Nottingham and Ilkeston. In Scotland Hawick is a centre. Germany, the United States and other countries turn out large quantities of hosiery.

Hosiery is made by machinery. The first knitting machine, or frame, was invented by Rev. W. Lee of Calverton, near Nottingham.

Hospice Home of rest and refuge for travellers, maintained by religious houses. Such establishments were formed by monks on some Alpine passes for aiding pilgrims to and from Rome. That on the Great St. Bernard, founded in 962, is famed for its use of trained dogs to search for and rescue travellers overcome by the cold.

Hospital Building for the care of the sick and injured. In olden times it was used for almost any charitable institution. Some were homes for the aged, such as are still seen in Warwick, Hereford and other cities and towns: others were schools such as Christ's Hospital.

The Egyptians and the Greeks had hospitals in the modern sense, but their great development came with Christianity. In London, S. Bartholomew's dates from 1123. In the 19th century hospitals were built in all the large cities and towns. The largest are general hospitals, called in some places infirmaries; some are devoted to specific diseases. Other hospitals are for children or women, or for maternity cases; there are also dental hospitals and hospitals for incurables. Other hospitals such as those at Woolwich and Netley are maintained for the use of soldiers and sailors. In London the great hospitals, all with medical schools, are the London, S. Bartholomew's, S. Thomas's, Guy's, King's College, University College and S. George's.

In Great Britain the hospitals are supported by voluntary contributions. To assist those in London there is the King Edward VII.'s Hospital Fund and large sums are raised by the Hospital Saturday Fund and the Hospital Sunday Fund.

Hospitals have usually an indoor and outdoor department. No fees are charged in the majority of cases, although some have started the system of fees for those able to pay.

Hospitals for fever and other infectious diseases form a different class and are maintained by local authorities.

Hospitallers Name given to the knights of the Order of S. John of Jerusalem. It was founded in 1113 to manage a hospital, or hostel, for Christian pilgrims in Jerusalem. Some of its members took vows to defend the Holy Sepulchre, and soon it became the great rival of the other military order, the Knights Templars.

The order was strong and active during the crusading period, when it made Acre, called thereafter S. Jean d'Acre, its headquarters. In 1291 the knights made Cyprus their headquarters, and in 1530 they settled in Malta. As the Knights of Malta, they ruled over that island until 1798.

Host Wafer consecrated at the Mass in Roman Catholic worship. It is made of unleavened bread and after consecration is reverenced as the Blessed Sacrament.

Host In pathology a term applied to a plant or animal which is attacked by a parasite. In the case of endoparasites, the tapeworm and liver fluke, for example, there may be an alternation of hosts, the adult stage living in the primary host and the other stages of the life cycle in a secondary host.

Hostage Person retained as a pledge for the performance or non-performance of specific acts. The practice arose in connection with treaties and terms of surrender imposed on the vanquished. Rome took the sons of tributary princes as hostages and educated them. The last occasion between civilised states when a treaty was thus secured was at Aix-la-Chapelle in 1748.

Hostel Old name for an inn, surviving in the form of hostelry. It is used to-day for halls in connection with the newer English universities where students reside and also for residential institutions for nurses, social workers and young men and women in business life. The Hostel of God, at Clapham, houses the dying.

Hotbed Contrivance used by gardeners as an aid to the cultivation of plants. It consists of a heap of fermenting manure or other material, thus utilising the heat of fermentation for forcing plant growth.

Hotchkiss **Benjamin Berkeley.** American inventor. Born Oct. 1, 1826, he was employed in a gun factory when the Civil War was being fought. Among other inventions he was responsible for a machine-gun called after him, the Hotchkiss. It will fire automatically 400 rounds a minute, and is made in light and heavy forms. Hotchkiss died March 14, 1885.

Hotchpot Term used in English law. It means bringing property into a common fund to divide an estate at death. A man who has given money to one or two of his children during his lifetime may direct in his will that these sums are brought into hotchpot, *i.e.*, they are included in the share which those children will receive.

Hotel Word used for an inn or boarding-house that claims to be of superior character. A variant of hostel, it came into use in the 19th century with the advent of railways. The hotels in London, New York, Paris and other capitals are large and imposing buildings with every convenience and luxury.

In Great Britain most hotels sell intoxicating liquor and must therefore be licensed. Many have restaurants where others than residents can obtain meals. Some, called commercial hotels, cater chiefly for business men.

In London, to look after hotel interests, there is a paper, *The Hotel Review*, and an association, the Hotel and Restaurant Proprietors' Association.

The **Hôtel Dieu**, a French institution, is a home for the old or infirm.

Hotel de Ville French and Belgian equivalent for town hall, the German word being Rathaus. Some date from mediaeval times, as those at Orleans and Antwerp. That in Paris is modern.

Hothouse Glazed structure similar to a greenhouse, but provided with heating apparatus. In it may be grown tender plants naturally growing in warmer climates. Some plants like the palms require moist heat : cacti and other succulents require dry heat, while grapes, peaches, melons, etc., need a more temperate heat.

Hotspur Name given to Sir Henry Percy. A son of the 1st Earl of Northumberland, he led a revolt against Henry IV. and was killed in battle at Shrewsbury in 1403.

Hottentot Primitive people living in South Africa. With a negroid strain in them, they are also allied in blood to the Bantus and the Bushmen. They lived at one time in the north of the continent, but were driven south, where they settled. Their huts are shaped like beehives and they have their own religious rites in which the witch doctor figures. They number, perhaps, 60,000, but many of them, known as the Cape Hottentots, are half-breeds.

Houdin **Robert.** French conjurer. The son of a clockmaker, he was born Dec. 6, 1805, at Blois, and baptised Jean Eugène Robert, but on his marriage took his wife's name of Houdin. In 1845 he opened a theatre of magic in Paris and there he gave some remarkable performances, as he did later in England and Germany. In 1856 the French government sent him to Algiers to counteract the influence of the native sorcerers, which his skill enabled him to do successfully. He died at Blois in 1871. Houdin wrote books which have been translated into English as *The Secrets of Conjuring and Magic* and *Card Sharping Exposed.*

Houdini **Henry.** American entertainer. Born in Wisconsin, April 6, 1873, he became a locksmith. His extraordinary skill in freeing himself from handcuffs, locks and other impediments soon led him to give exhibitions on the variety stage in London, New York and elsewhere. He died Oct. 31, 1926. In 1931, a book, called *Houdini's Escapes*, explained how some of his feats were performed.

Houghton Village of Norfolk. It is famous for its hall and its associations with the Walpoles. Sir Robert

Walpole, who was born here, built the enormous hall. Houghton is now the seat of the Earl of Rocksavage, but the pictures collected by Walpole have been sold. In the park is the village church, which contains the tombs of Walpole and his famous son, Horace.

Houghton Baron. English scholar and politician. Born in London, June 19, 1809, Richard Monckton Milnes was a son of Robert Pemberton Milnes, a Yorkshire landowner. While still at Cambridge he displayed distinct talents as a scholar and a wit. In 1837, having travelled in Europe, he entered Parliament as M.P. for Pontefract and remained a member until 1863, when he was made a peer. He married Annabel, daughter and heiress of Baron Crewe, and later his only son became Marquess of Crewe. Houghton died Aug. 11, 1885.

Dicky Milnes, as he was called, was one of the most popular men of the day, a champion of liberal ideas, and a friend of Tennyson, Carlyle and most of the great literary men of his day. He was the Mr. Vavasour of Disraeli's novel *Tancred*, and himself wrote several volumes and some graceful verse.

Houghton William Stanley. English dramatist. He was born in Manchester in 1881 and educated at the local grammar school. He entered business life, but at the same time served as dramatic critic for *The Manchester Guardian*. Then he began to write plays and his *Hindle Wakes*, 1912, a powerful study of Lancashire life, made him widely known. Others of his plays are *The Younger Generation*, *The Master of the House*, *Trust the People* and *The Perfect Cure*. He died Dec. 13, 1913.

Houghton-le-Spring Urban district of Durham. It is 6 m. from Durham and is a centre of the coal and iron industries. Pop. (1931) 10,492.

Hougoumont Château on the battlefield of Waterloo. With its grounds it was occupied by the British when the French opened the battle. It was defended by the Guards, and, in spite of desperate efforts, the French failed to take it.

Houndsditch Street in the city of London. It extends from Bishopsgate to Aldgate. At each end is a church dedicated to St. Botolph. A Jewish centre since the 16th century it is famous for its second-hand clothes shops. The name refers to the fact that the city ditch was here.

Hounslow District of Middlesex. It is 12 m. from London, on the Southern Rly. It is in the Heston and Isleworth urban district. There are many market gardens. Hounslow Heath, now only a fragment of its former size, is famous for its associations with highwaymen.

Hour Measure of time equal to sixty minutes, or the twenty-fourth part of a day. Hours are counted from midnight to the following noon, and from noon to the following midnight, but in the astronomical day the hours are counted up to 24 hours from noon to noon.

A book containing prayers for the different hours is called a book of hours. Some of these, prepared for royal personages and wonderfully illuminated, are beautiful and costly works of art. There are examples in the British Museum and other collections.

Houri To Mohammedans a black-eyed damsel of fadeless youth, health and beauty. She is promised in the Koran to the devout Moslem when he enters paradise. He may expect the companionship of many such nymphs as well as of his earthly wives.

House Dwelling of a permanent kind. Houses were at first very primitive structures. To-day they usually contain one or more living rooms for meals and daily life, with sleeping rooms on the upper storey or storeys. In the western world brick or stone are the materials chiefly used, but timber, or half timber houses are occasionally seen.

The older houses were dark and ill-ventilated: to-day much more attention is given to the supply of light and air. Houses are known as halls, villas, cottages, and so on. The money paid for the hire of a house is called rent.

A family is known as a house, so we have the house of York and the house of Windsor. The word is also used for an assembly such as the **House of Commons** and the **House of Representatives.** Business firms are called houses and some of them have their own papers called house journals. Steamship lines have their own flags called house flags. At Oxford, Christ Church is called "the House."

A **houseboat** is a kind of barge fitted up as a river residence.

House Edward Mandell. American politician. Born at Houston, Texas, July 26, 1858, he was educated at Newhaven and at Cornell University. Known as Colonel House, he became an influential figure in the political life of Texas, but never held office. In 1914, as an intimate friend of President Wilson, he was sent to Europe to collect information and in 1917, when the United States entered the war, he represented his country in Paris. He attended the Peace Conference, but retired into private life after Wilson's death. In 1926-28 there appeared *The Intimate Papers of Colonel House.*

House Fly Two-winged insect of a subfamily including bluebottles or blowflies (*Musca domestica*). It has a sucking proboscis and walks on ceilings and windows by sucker-like feet. Its eggs produce in a day legless maggots which reach adult life in a month. It is a carrier of disease germs. The fly is found in all parts of the world.

Household Name used for all the inmates of a house. It is used in a special sense for the king's or royal household, which includes, in addition to the royal family and the servants, the officials of the court such as the Lord Chamberlain.

The Household Cavalry is the name given to the regiments that have a special connection with the royal household. Formerly there were three of these regiments, but since the Great War there have only been two, the Royal Horse Guards and the Life Guards, the 1st and 2nd Life Guards having been amalgamated. During the Great War an infantry battalion was formed from reserve regiments of the Household Cavalry. The kings of France had their household troops until 1789.

House Leek Genus of succulent herbs or undershrubs of the stonecrop order (*Sempervivum*). They are natives of Europe, Asia and North Africa. The British hardy perennial, *S. tectorum*, frequently forms rosettes of fleshy leaves on cottage roofs and walls. It has spread to

America. Several species are cultivated in rockeries and others in greenhouses.

Housemaid's Knee Painful swelling of the pad or sac over the lower part of the knee cap. It arises usually from much kneeling on hard substances, but sometimes from rheumatism or gout. It is a chronic inflammation caused by fluid collecting in the sac or by thickened sac-walls. Rest is essential, with fomentations, blistering or tapping as a remedy.

Housing Provision of houses, especially in populous areas. The question of providing houses became acute early in the 19th century owing to the rapid increase in the population and the growth of new industrial areas; the growing interest of the masses in economic and political matters; the demand for higher standards of life and, above all, the realisation that millions of men, women and children were living under conditions of filth, poverty and overcrowding.

In 1843 a royal commission inquired into the matter and laws were passed providing that new houses should be of a certain standard in respect of sanitation and the like, but private enterprise was regarded as equal to the task of providing them.

In 1884 another royal commission was appointed and as a result a measure passed in 1890 gave local authorities power to clear slum areas, to close insanitary dwellings and to erect new ones. But the housing of the people, as a whole, remained far from satisfactory. In 1909 another measure was passed which dealt also with town planning, but the Great War brought about a complete cessation of this work.

A new era in housing began in 1919 when an important Act was passed allowing the gift of public money to aid individuals to build houses, provided these came up to a certain standard and did not exceed a certain cost. In spite of the high cost of building materials a good deal was done. In 1923 another Act promised financial aid to local authorities undertaking housing schemes. Other measures followed, the amount of the housing grant being altered from time to time. Large housing estates were laid out by the London County Council and the corporations of Glasgow, Birmingham, Liverpool, Manchester and other large cities; slum areas were cleared and the standard of housing in Great Britain was raised. In 1931 a measure was introduced to aid the building of houses in rural areas, where the conditions, although different, were in some ways as bad as those of the towns.

Housman **Alfred Edward.** English scholar and poet. Born March 26, 1859, he was educated at Bromsgrove School and S. John's College, Oxford. Professor of Latin in University College, London, from 1892, he was in 1911 made Fellow of Trinity and Professor of Latin at Cambridge. He has published two volumes of unique poetry, *The Shropshire Lad* (1896), a series of 63 ballad-like poems on country life, and *Last Poems* (1922), both marked by their flawless style, economy of diction, melody and unflinching realism. He has also edited some volumes of classical works.

Housman **Laurence.** English author and artist. Born July 18, 1865, he studied art and won a reputation by his book illustrations. In 1893 he published a book on William Blake. A great number of volumes, both prose and verse, followed and he became known as a writer of graceful poetry and fanciful fiction. The best known of his books are *An Englishwoman's Love Letters*, published anonymously in 1900; *Bethlehem, a Nativity Play*; *Prunella, or Love in a Dutch Garden*; *Angels and Ministers*; *A Doorway in Fairyland*; *The New Child's Guide to Knowledge* and *The Heart of Peace*. Recent books are *Cornered Poets, War Letters of Fallen Englishmen* and *Turn-Again Tales*.

Houston City and port of Texas. It is in the S.E. of the state, 48 m. from Galveston, and is an important railway junction. There are many churches and schools, including the Rice Institute. Houston is a market for cotton, rice, sugar and other products and has engineering works and flour mills. By means of a ship canal, 50 m. long, the city has become a prosperous port, especially for cotton. Pop. (1930) 292,352.

Houston **Samuel.** American politician. Born in Virginia, March 2, 1793, he entered the army, but soon turned to politics, was elected to Congress and in 1827 was made Governor of Tennessee. Two years later he settled among the Cherokee Indians. In 1835, when Texas revolted against Mexico, he was chosen as the leader of the Texan army, and in April, 1836, he won a crushing victory. This made Texas independent and Houston was its president until 1845, when it was annexed by the United States, then represented it in the Senate. In 1859 he was appointed governor, but he was deposed in 1861 because he would not support the movement for secession. He died July 26, 1863.

Hova Name used for the inhabitants of Madagascar. They came probably from Malaya in the 15th century and in the 19th became the dominant people. They number (1931) 910,000, or about a quarter of the population, but their language is spoken by many more. The word means "freeman."

Hove Borough and watering place of Sussex. It is to the west of Brighton and 51 m. from London, on the S. Rly. The borough possesses a fine promenade and famous lawns, and here the Sussex Cricket Club has its grounds. The area of the borough was extended in 1928. Pop. (1931) 54,994.

Howard Noted English family. Its early members lived in Norfolk, where several became of importance. Sir Robert Howard married a daughter of Thomas Mowbray, Duke of Norfolk, and in 1483 his son, having inherited the Mowbray estates in Sussex and elsewhere, was made Duke of Norfolk. Since then this title has been held by the Howards; the Earl of Carlisle, Earl of Suffolk and Berkshire, Viscount Fitzalan, Lord Howard of Glossop and Lord Howard of Penrith, formerly Sir Esmé Howard, British ambassador in Washington, also are members of this family.

Howard **Catherine.** Wife of Henry VIII. A daughter of Lord Edmund Howard, who was a son of the 2nd Duke of Norfolk, she was born about 1522. On July 28, 1540, Henry married her secretly as his fifth wife. Almost at once she was accused of misconduct before her marriage, found guilty and on Feb. 13, 1542, beheaded.

Howard **John.** English philanthropist. Born in London, Sept. 2, 1726, he inherited an estate in Bedfordshire in 1742 and there lived the life of a country gentleman.

In 1773, when high sheriff, he noticed the terrible condition of the prisons and of the prisoners, many of whom were innocent of crime, and entered upon the work for which he is famous. He visited prisons, not only in England, but in France, Germany and elsewhere and wrote *The State of the Prisons*, which drew public attention to the matter and led to considerable reforms. He died at Kherson, Jan. 20, 1790. A **Howard Society** has been formed to carry on his work.

Howard de Walden **Baron.** English title dating from 1597. The 1st baron was Lord Thomas Howard, afterwards Earl of Suffolk, a son of the 4th Duke of Norfolk. From 1688 until 1784 the title remained in abeyance and in 1797 it passed to the Earl of Bristol, a descendant of the 1st lord, thence, in 1803, to Charles Augustus Ellis, a diplomat. Ellis married a daughter of the 3rd Duke of Portland, whose valuable London property, inherited from her brother. the 4th duke, passed to her son and then to her grandson. The latter, Thomas Evelyn Scott-Ellis, who succeeded in 1899, is known for his interest in art and music. He is also Baron Seaford and his London residence is Seaford House.

Howard **of Effingham, Baron.** English title borne by the family of Howard. The 1st baron was **William Howard**, a son of the Duke of Norfolk. He was born about 1510 and served Henry VIII. and his three children. He was Lord High Admiral, 1554-73, and Lord Chamberlain under Elizabeth. He died Jan. 12, 1573. His son, **Charles**, the 2nd baron, also Lord High Admiral, was born in 1536 and led the fleet that defeated the Spanish Armada. He was created Earl of Nottingham in 1596 and died Dec. 14, 1624.

Howden Market town of Yorkshire (E.R.). It is 21 m. from Hull, on the L.N.E. Rly. There is an aerodrome here. Roger of Hoveden, who wrote a chronicle of English history from 732 to 1201, was born here. Pop. 2050.

Howe **Earl.** English title borne in turn by the families of Howe and Curzon. The 1st earl was the famous seaman, Richard Howe, who was made an earl in 1788. He left no sons. A daughter married Assheton Curzon and their son inherited from his paternal grandfather the title of Viscount Curzon and in 1821 was made Earl Howe. Richard Curzon-Howe, the 4th earl (1861-1929), was succeeded by his son Francis. When Viscount Curzon, the latter was a Unionist M.P., 1918-29, and famous as a racing motorist. The earls owned land in Buckinghamshire and Leicestershire, but much has been sold. The earl's eldest son is known as Viscount Curzon.

Howe **Earl.** English sailor. Richard Howe, a younger son of the 2nd Viscount Howe, was born in London, March 8, 1726. Entering the navy he made a reputation during the Seven Years' War, notably in Quiberon Bay, and in 1778-80 he was in command of a fleet that operated against the French off the North American coast. In 1782 Howe relieved Gibralter and in 1794 he gained a great victory over the French on the Glorious First of June.

Between his spells of active service he was Treasurer of the Navy and First Lord of the Admiralty. In 1758, on his brother's death, he became an Irish viscount. In 1782 he was made an English viscount and in 1788 an earl. In 1797 he suppressed the mutiny at Spithead and he died Aug. 5, 1799.

Howells **William Dean.** American novelist. Born in Ohio, March 1, 1837, he was the son of a printer. While working in his father's office he began to write for the press and also published a *Life* of Lincoln. From 1861-65 he was consul in Venice; from 1872 to 1881, editor of *The Atlantic Monthly*; from 1886 to 1891, editor of *Harper's Magazine*. He died May 11, 1920.

Howells wrote a great number of novels dealing in a realistic way with American life. They include *Their Wedding Journey*, *The Undiscovered Country*, *An Indian Summer*, *The World of Chance* and *The Landlord of the Lion's Head*. He also wrote short stories, poems and a volume called *Venetian Life*.

Howitt **William.** English writer. The son of a farmer, he was born at Heanor, Derbyshire, Dec. 18, 1792, and educated at Ackworth, Yorkshire, in a Quaker school. He was apprenticed to a builder, then became a chemist. Later he spent some time in travelling, visiting Australia in 1852-54. He became a spiritualist and died in Rome, March 3, 1879. Howitt's works include *The Boy's Country Book*, *Rural Life in England* and *An Illustrated History of England*.

Howitt's wife, Mary Botham, a Quakeress from Uttoxeter, whom he married in 1831, also wrote a good deal, her *Tales for Children* being extremely popular. The two collaborated to write *The Book of the Seasons* and several others. Mary Howitt joined the Church of Rome and died in Rome, Jan. 30, 1888.

Howitzer Form of cannon adapted for discharging shells or heavy projectiles. It has a short barrel, a large bore, low muzzle velocity and high trajectory, and is used for firing over earthworks or other obstacles, and for the destruction of buildings.

Howth Watering place and urban district in Co. Dublin. It is to the north of Dublin, on Dublin Bay, with a station on the G.N. (Ireland) Rly. The **Hill of Howth**, over 550 ft. high, is a prominent landmark. Pop. 4000.

Hoxton District of London. In the N.-E. of the city, it is in the borough of Shoreditch. It includes De Beauvoir Town. The chief industry is cabinet making

Hoy One of the Orkney Islands. It covers 53 sq. m. There is a harbour on the south coast called Long Hope. Natural features are the pillar rock called the **Old Man of Hoy** and the Dwarfie Stone, mentioned by Scott in *The Pirate*. Ward Hill, 1560 ft. high, is of interest to botanists.

Hoylake Watering place of Cheshire. On the Irish Sea, 9 m. from Birkenhead, on the L.M.S. Rly., it is noted for its golf links. It forms part of the urban district of Hoylake and W. Kirby. Pop. (1931) 16,628.

Hubert Frankish saint, the patron of huntsmen. He was born in 652 of noble family. The story goes that when hunting he met a stag bearing a cross between its horns. This converted him and he became a monk. Later he was made a bishop and, having preached Christianity in the district of the Ardennes, he died in 727. His feast is observed on Nov. 3.

Huckleberry Fruit of several small shrubs indigenous to N. America. They resemble whortleberries and

cranberries. The most esteemed is the common black huckleberry, *Gaylussacia resinosa*.

Hucknall Torkard Urban district and market-town of Nottinghamshire. It is 132 m. from London by the L.M.S. and L.N.E. Rlys., and 8 m. from Nottingham. The chief building is the church of S. Mary Magdalene, containing the tomb of Lord Byron, who lived at Newstead Abbey. There are hosiery works and collieries. Here is an aerodrome. Pop. (1931) 17,338.

Huddersfield County, borough and market town of Yorkshire (W.R.). It stands on the Colne, 190 m. from London and 16 from Leeds, and is served by the L.M.S. Rly. and by canals. The making of woollen goods is the principal industry; there are also dyeworks, cotton mills and engineering works. Huddersfield has an important association football club, which won the Association Cup in 1922, and reached the final in 1928 and again in 1930. Pop. (1931) 113,467.

Hudson River of the United States. It rises in the Adirondack Mountains and flows through the state of New York to the Atlantic in New York Bay. The Mohawk is one of its tributaries, and Albany is the chief town. Towards its mouth the Hudson flows between New York and New Jersey, and on both sides are wharves and docks for steamers. It is crossed by tunnels and ferries which connect New York with Hoboken and other places in New Jersey.

The Hudson, which is navigable for 150 m., is connected by canal with Lake Erie and Lake Champlain. It is named after Henry Hudson, and its valley, now traversed by a main railway line, was the chief trading route between New York and Canada. It was important, too, during the War of American Independence.

Hudson Henry. English seaman. He was born in Queen Elizabeth's reign and made several voyages. On the third voyage he explored the Hudson River. In 1610, in the *Discoverie*, he reached Greenland and entered Hudson Bay. During the winter the crew mutinied owing to want of food; Hudson was put in a small boat with eight companions and set adrift (June 23, 1611), and nothing more was heard of him.

Hudson Bay Sea of Canada. It covers 567,000 sq. m. and is 1300 m. long and 600 broad. Several channels connect it with the Arctic Ocean and Hudson Strait with the Atlantic. Its southern part is called James Bay. It receives many Canadian rivers including the Churchill, Nelson, Rupert, Albany and Severn. During a good part of the year its navigation is impeded by ice. Churchill and Nelson are the chief ports.

Hudson Bay Company Trading company in Canada. It dates from 1670 when Charles II. gave a charter to Prince Rupert and others, bestowing upon them the lands around Hudson Strait and the sole trading rights therein. They formed the Hudson Bay Company which for 200 years owned vast tracts of land in the N.-W. of Canada. Posts or trading stations were built and a trade in furs was carried on with the Indians. In 1749 the company's land was defined as all that was watered by the streams flowing into Hudson Bay. In 1821 it was united with a rival company and received a new charter. By this the company secured the sole right of trading with the Indians in British Columbia. The area under its control was about 2,300,000 sq. m.

In 1869 the new Dominion of Canada decided to take over the vast area of land owned by the company. Terms were arranged and the company retained some 18,000,000 acres, and received a sum of money. It then became a limited liability company. Its business consists chiefly of collecting furs. Its headquarters are in London and it has large stores at Winnipeg and elsewhere.

Huggins Sir William. English astronomer. Born Feb. 7, 1824, in 1855 he built an observatory at Tulse Hill, London, and there did most valuable work. He was the founder of the science of astrophysics and his discoveries about the spectra and the physical qualities of the nebulae were of the highest importance. His wife, Margaret Lindsay Murray, helped in this work. Huggins, who died May 10, 1910, was President of the Royal Astronomical Society, 1876-78; of the British Association, 1891; and of the Royal Society, 1900-05. Made a K.C.B. in 1897, he was given the Order of Merit in 1902. Lady Huggins died March 24, 1915.

Hugglescote Town of Leicestershire. It is a mining centre, 6 m. from Ashby de la Zouche and 113 from London, on the L.M.S. Rly. Pop. 5600.

Hugh English saint. Born about 1135 at Avalon in France, he became a monk. He crossed over to England and was made head of a Carthusian monastery in Somerset. In 1186 he was made Bishop of Lincoln and he died Nov. 16, 1200. He was canonised in 1220 and his day is Nov. 17. Hugh is remembered in English history for his refusal to send knights to serve Richard I. abroad.

Hughenden Village of Buckinghamshire. It is 2 m. from High Wycombe. Disraeli lived and died here. He bought the estate in 1848 and on his death it passed to his nephew, Coningsby Disraeli.

Hughes Charles Evans. American politician. Born April 11, 1862, the son of a Baptist minister, he was educated for the Law and began to practise in New York. From 1891-93 he was Professor of Law at Cornell University. In 1907 he was chosen Governor of New York, and three years later was made a judge. A candidate for the Presidency in 1916, he was beaten by Wilson. From 1921-25 he was Secretary of State under Harding and presided over the Armaments Conference at Washington in 1921. He became Chief Justice in 1930.

Hughes David Edward. English inventor. Born in London, May 16, 1831, he went to the United States as a boy. Educated in Virginia he was for a few years Professor of Music and then of Natural Philosophy at a college in Kentucky. In 1855 he invented a type printing telegraph which was taken up in most of the countries of Europe. His later inventions included the microphone and the induction balance. He died Jan. 22, 1900, and in May, 1931, the centenary of his birth was celebrated.

Hughes Hugh Price. British preacher. Born at Carmarthen, Feb. 8, 1847, the son of a doctor, he took his M.A. degree at London University. Later he entered the Wesleyan ministry, where his almost boundless energy and preaching power quickly made him prominent. In 1887 he started the

W. London Mission in S. James's Hall, Piccadilly, where he preached to great audiences. He travelled over the country speaking on temperance and other causes. In 1885 he founded the *Methodist Times*, which he edited until his death, Nov. 17, 1902.

Hughes Richard. English writer, born in 1900. In 1922 his first play, *The Sisters' Tragedy*, was produced. He also wrote *A Comedy of Good and Evil*, several plays for broadcasting purposes, and many poems. In 1929 his successful novel, *A High Wind in Jamaica*, was published, and in 1931 *The Spider's Palace* (Stories for children).

Hughes Thomas. English writer. Born at Uffington, Berkshire, Oct. 20, 1822, he was educated at Rugby and Oriel College, Oxford. He became a barrister and in 1882 was made a county court judge. From 1865 to 1874 he was a Liberal M.P., and he was associated with Kingsley and Maurice in the Christian Socialist movement. He died March 22, 1896.

Hughes is immortal as the author of *Tom Brown's Schooldays*, published in 1857 and largely autobiographical of his own life at Rugby. He also wrote *Tom Brown at Oxford* and *The Scouring of the White Horse*.

Hughes William Morris. Australian politician. Born in Wales, Sept. 25, 1864, the son of a joiner, he became a teacher, but in 1884 emigrated to Australia. There he worked on a sheep farm before settling in Sydney, where he became associated with the waterside workers. Prominent during the great strike in 1890, he organised a trade union of which he became secretary and then president. In 1894 he was elected to the legislature of New South Wales. In 1901 he was elected a member of the first Commonwealth Parliament and in 1904 was made Minister for External Affairs in the Labour Government. In 1908, having been a barrister since 1903, he was made Attorney-General, a post he filled until 1909 and again from 1910-13, and from 1914-21.

In 1915 Hughes succeeded Fisher as Prime Minister, and he filled that post through the years of the war. He attended the Peace Conference in Paris, where he forcefully upheld Australia's case. In 1923 he resigned office, but retained his seat in Parliament. In 1929 he formed what was called the Australian Party, which came to an end in 1931, entered the reconstructed cabinet of Mr. Lyons, Oct., 1934, and retained his post in the Coalition Government until Nov., 1935, when he was obliged to resign on account of divergent views on sanctions. He rejoined the Federal Cabinet, however, in Feb., 1936, as Minister for Repatriation after indicating adherence to the government's policy. In 1929 he published his book *The Splendid Adventure*. In 1932 he visited England.

Hugo Victor Marie. French writer. Born at Besançon, Feb. 26, 1802, he was the son of a soldier who became a general. His childhood was passed in Paris and Madrid, and he soon began to write, his earliest published work being a volume of poems. This was followed by books of stories that laid the foundation of his fame, and then came several dramas, *Cromwell* being the first and *Hernani* the most notable. His high reputation was increased by *Notre Dame de Paris*, the first of the great romances which made him popular in England. Others are *Les Travailleurs de la Mer*, *Les Misérables* and *Quatre-Vingt-Treize*.

He wrote many plays, some of high value such as *Marion Delorme*, *Rigoletto* and *Ruy Blas*; volumes of verse were produced regularly, the best being *Les Voix Intérieures*; also books dealing with the events of his own time, such as *L'Historie d'un Crime* and *Napoleon le Petit*. Others were of an autobiographical nature; yet others were humanitarian in tone.

Apart from his writings Hugo lived an eventful life. He married in 1822, but his wife soon preferred the society of Sainte-Beuve, and he lived with an actress, Juliette Drouet. He took an active part in politics. First a royalist, he gave his support to Louis Napoleon until 1848. In that year and 1849 he was elected to the constituent and the legislative assemblies and in 1851, having opposed the designs of the future emperor, he fled the country. He went to Brussels, whence he was expelled, and then to Jersey, before making his home at Hauteville House, Guernsey, where he passed much of his later life. The life and scenery of Guernsey gave colour to his later books. In 1870-71 he was in Paris, and in 1876 he was chosen a member of the Senate. He died May 22, 1885.

Huguenots Name used for the French people who accepted the reformed religion. They came into existence in the 16th century and included many nobles. Until his conversion, Henry IV. was a Huguenot. The Huguenots were persecuted and their resistance led to religious wars. In 1598, by the Edict of Nantes, they were granted civil and religious liberty, but the Edict was revoked in 1685, and many Huguenots emigrated to England, the Netherlands and Germany. In 1789 the restrictions on their worship were removed.

Hull City and seaport of Yorkshire (E.R.), in full, Kingston-upon-Hull. It stands on the Humber, just where the River Hull falls into the estuary, and is 172 m. from London. It is on both the L.N.E. and L.M.S. Rlys., and a steam ferry connects it with New Holland in Lincolnshire.

Hull owes its prosperity to its position. The docks cover 250 acres and a large trade passes through the port. Much timber is imported and the fisheries are important. Steamers go from here to ports on the Continent. The city has large flour mills, cement works, chemical works, and seed crushing mills, and here Reckitt and Sons have their works. There is a university college, opened in 1928, and a technical college. It has an aerodrome at Hedon. The museums include one named after William Wilberforce, and there is a fine art gallery. Pop. (1931) 313,366.

Hull City of Quebec, Canada. On the Ottawa river, it is 119 m. from Montreal and is served by the C.P.R. and a system of electric railways. Bridges connect it with Ottawa. Hull is a centre of the lumber industry and its activities include the making of furniture. Pop. (1931) 29,133.

Hulse John. English divine. Born at Middlewich, Cheshire, March 15, 1708, he was educated at S. John's College, Cambridge, and was ordained. Most of his life, however, was passed on his estate in Cheshire. He died Dec. 14, 1790. Hulse left his wealth to the University of Cambridge, where his name is perpetuated by the **Hulsean Chair of Divinity**, the **Hulsean Lectures**, and the **Hulsean Prize and Scholarships** at S. John's College.

Hulton Name of three districts near Bolton, Lancashire. **Little Hulton** is an urban district, 192 m. from London by the L.M.S. Rly. and 4 m. from Bolton. Here are

collieries. Pop. (1931) 7878. The other two are Middle and Over Hulton.

Humanism Term used for learning, especially a knowledge of literature. It arose at the time of the Renaissance and the early humanists included Sir Thomas More and Erasmus.

Humanitarian Word used loosely for a philanthropist. It meant originally one who did not believe in the divinity of Christ.

The Royal Humane Society at 4 Trafalgar Square, London, W.C., is concerned with rewarding those who save life, especially at sea.

Humber Estuary of the east coast of England. It is formed by the rivers Trent and Ouse which unite near Goole. It is about 38 m. in length. There is a ferry between Hull and New Holland in Lincolnshire, and it is proposed to build a bridge.

Humbert I. King of Italy. Born in Turin, March 14, 1844, he was the eldest son of Victor Emmanuel, who became king of united Italy in 1870. He took part in some of the fighting of the period, and in 1878 became king, reigning until he was killed at Monza by an anarchist, July 29, 1900. He was succeeded by his son, Victor Emmanuel III.

Humble Bee Widespread genus of bees (*bombus*). Humble bees live in communities and are found in the warmer parts of the world. The females and the neuters help to construct the irregular nest, where honey is stored for the females, who alone survive in the winter. The common *B. terrestris* forms nests of carded moss; the stone humble bee, *B. lapidarius*, forms nests in cavities. They are sometimes called bumble bees.

Humboldt **Baron von.** German scientist. Born in Berlin, Sept. 14, 1769, Friedrich Heinrich Alexander Humboldt, the son of aristocratic parents, spent his early years in study and travel, afterwards becoming a mining official. In 1799 he went to S. America exploring and ascended 19,000 ft. up Chimborazo. In 1829 he explored in Asia. In 1845 he published the first volume of his influential *Cosmos*. Three other works followed and their appearance marks a stage in the history of the scientific knowledge of the earth. He also wrote 30 volumes on his travels in S. America, besides books on other subjects. His last years were passed in Berlin. He died May 6, 1859.

Humboldt's elder brother, **Karl Wilhelm von Humboldt**, became a diplomat and represented Prussia in Rome and Vienna. From 1808-10, he was Minister of Education and he was responsible for the foundation of the University of Berlin. A great student, especially of language and literature, he died April 8, 1835.

The Humboldt current is a current that flows from Valparaiso to Ecuador along the coast of S. America.

Hume **David.** Scottish writer and thinker. Born in Edinburgh, April 26, 1711, he was educated there and in France by the Jesuits. He was trained for the law, but turned to literature and in 1737 wrote *A Treatise of Human Nature*. *Essays Moral, Social and Political* followed, and in 1751 *Inquiry into the Principles of Morals*. In 1752 he was appointed librarian to the Advocates Library, Edinburgh, and wrote his famous *Political Discourses*, then, between 1754 and 1762, his *History of England*, which gave him a great reputation. He died in Edinburgh, Aug. 25, 1776.

Hume's writings exercised a great deal of influence, although they were suspect to many Christians. In philosophy he was a utilitarian and he put forward the doctrine of Free Trade which was taken up by Adam Smith.

Hume **Joseph.** British politician. Born in Montrose, Jan. 22, 1777, he became a doctor and served in the army. After a period as a surgeon under the East India Co., in which he made a fortune, he returned to England in 1808. In 1812 he was elected M.P. for Weymouth and he sat in the House of Commons for the remainder of his days, representing Montrose from 1842. He died Feb. 20, 1855. Hume was one of the first of the Radicals and advocated reform of almost every kind, financial, legal and economic.

Humerus Upper bone of the arm. It articulates with the scapula or shoulder blade, forming the shoulder joint, and with the radius and ulna at the elbow. The shoulder joint, held in a fibrous capsule, forms a ball and socket joint which, in man, allows a great swing of movement of the arm.

Humidity In meteorology the state of the atmosphere as regards the degree of moisture it contains. Low humidity is when the air is dry and high humidity when excessive water vapour is present. The humidity of the British Isles varies greatly between day and night, but seasonal variation is relatively small. The amount of water vapour in the atmosphere is measured by the hygrometer (*q.v.*), and expressed in inches of mercury as absolute humidity.

Humming Bird Large family of American birds allied to swifts. They make a humming sound when vibrating the wings in rapid flight. There are about 500 species, found in tropical regions. Many have brilliant plumage, but little or no song. They feed mostly on insects, which they collect from flowers by their long tongues.

Humogen Form of humus. It is prepared by the inoculation of peat by certain forms of aerobic bacteria causing decomposition of the peat into a material consisting largely of ammonium humate. When humogen is applied to soils, nitrogen-fixing bacteria are introduced and the soil is rendered more fertile by the action of these micro-organisms.

Humour Sense of fun; appreciation of anything that is comical or witty. Its early meaning was different. The ancients believed that in man there were four humours, blood, choler, phlegm and melancholy. A man was sanguine, or bilious, or phlegmatic, or melancholy, according as one or the other predominated in his constitution.

When the word began to be used in its modern sense the word humorist was given to a man of letters who was able by his writings to amuse. Rabelais and Dickens are among the world's greatest humorists. Tom Hood was another, and many have been associated with *Punch*. The word also came to be applied to artists who possessed the same power, prominent among whom was John Leech.

Thackeray in his *English Humorists* gave a somewhat wider meaning to the word. A humorist should be distinguished from a wit. Sydney Smith was a wit, but hardly a humorist.

Humperdinck **Engelbert.** German composer. Born at Siegburg, Sept. 1, 1854, he studied at Munich and in Italy, and helped Wagner to produce

Parsifal. He became professor of composition at Frankfort, moving to Berlin in 1900. His works are frequently based on peasant music, notably his delightful children's opera, *Hansel and Gretel*. He died Sept. 27, 1921.

Hunchback Deformity sometimes seen in men and women. It is due to a curvature of the spine, which in turn arises from tuberculosis. It is incurable, although treatment may prevent it from getting worse. There are many hunchbacks in legend and fairy lore; in real life Richard III. was notable.

A variant of the word is humpback. A kind of whale, black in colour and valued for its oil, is called the **hump-back whale** on account of its shape.

Hundred Name used for a division of many English counties. It goes back to Anglo-Saxon times when we hear of hundred courts and hundred men. These lasted until the end of the Middle Ages, but until 1886 the hundred was liable for damage done to property by rioters. The hundreds still exist and the word is occasionally used.

In Lincolnshire and other parts of England where Danish influence was strong the equivalent is wapentake. In Sussex and Kent it is rape or lathe, and in Northumberland and Cumberland it is ward. The name may have meant that 100 families lived in the district or that it contained 100 hides of land.

Hundred Days Name given to the period between Napoleon's escape from Elba and his surrender after Waterloo. It lasted from March 20, when he entered Paris, to June 28, 1815.

Hundred Years' War Struggle between England and France. It began in 1338 when Edward III. claimed the throne of France. The English won victories at Crecy and Poitiers, and in 1360 peace was made at Bretigny. By this Edward secured much of France, but not the crown. The war began again in 1369 and lasted, with intervening truces, until 1396. By the treaty of 1396 the English lost a good part of their possessions.

Another period of warfare began in 1403. In 1415 Henry V., claiming the throne of France, made it a more serious affair. He won the Battle of Agincourt, conquered Normandy, and in 1420, by the Treaty of Troyes, was recognised as Regent and future King of France. However, part of the nation objected to English rule and the war went on until 1429, when the tide turned on the arrival of Joan of Arc. The English then steadily lost ground and the struggle ended in 1453, all France, except Calais, being lost.

Hungary Kingdom of Europe. In its present form it dates from 1919, when it was separated from Austria. Its area is 35,875 sq. m. and it lies between Austria, Czechoslovakia, Rumania and Yugoslavia. The Danube, the chief river, flows from north to south. Balaton is the largest lake. The capital is Budapest. The next largest places are Szeged and Debreczen. About 90 per cent. of the people are Magyars.

The surface is almost uniformly level and with a fertile soil agriculture is the main industry. Wheat, maize, rye, barley and potatoes are grown in large quantities. Coal is mined and there are considerable forest areas. The country has a good system of railways. Its outlet to the sea is along the Danube, on which there are river ports.

The throne being regarded as vacant till the people shall be freed from external pressure, Hungary is governed by a regent, with a legislature of two houses. There is an army, limited by treaty to 35,000 men, but no navy or air force. Pop. (1930) 8,688,349.

HISTORY. Hungary became a kingdom about 1000, Stephen, who was made its patron saint, being the first king. For 500 years it was ruled by his successors, much of their time being passed in warfare with the Turks. In 1526 King Louis was killed in battle, and Ferdinand, Archduke of Austria, who had married his sister, became king. This united Hungary with Austria and from 1867 till 1918 the two formed the dual monarchy, or empire, of Austria-Hungary. In 1918, the Emperor Charles was deposed and a republic was proclaimed. The Bolsheviks became supreme, but were soon driven out, and after much trouble the present system, a monarchy without a monarch, was established.

In the 19th century Hungary covered 120,000 sq. m. The Treaty of Trianon, however, gave much of this to neighbouring states, leaving the new Hungary less than a third the size of the old one. The losses included a coast line. On the other hand Hungary was made a homogeneous state. Previously the rivalries between Magyars and Germans had been a source of trouble. The reduction of Hungary's area, however, has caused much unrest.

Hungerford Market town of Berkshire. It stands on the River Kennet, 26 m. from Reading, on the G.W. Rly. At Hocktide, the second Monday or Tuesday after Easter, an annual festival is held. The town has an agricultural trade and is a fishing centre. Pop. 2784.

Hungerford Name of a famous English family. Sir Walter Hungerford was made a baron in 1426. The title was held later by the earls of Huntingdon and the marquesses of Hastings. It fell into abeyance in 1868 and again in 1920. Since 1921 it has been held by Viscountess St. Davids.

The family had a house near Charing Cross and in the grounds a market was built in 1669. It was called **Hungerford Market** and lasted until 1862. The bridge across the Thames here is called Hungerford Bridge.

Huns Horde of Asiatics who invaded Europe in the 4th century, doing great damage. After a career of conquest under Attila they were defeated in 451 at Châlons by Theodoric, King of the Visigoths. Soon afterwards they disappeared. They gave their name to Hungary.

Hunstanton Watering place and urban district of Norfolk. It stands on the Wash, 112 m. from London, on the L.N.E. Rly. Near is the village of Old Hunstanton with a fine church. The hall has been for centuries the seat of the family of Le Strange. Pop. (1931) 3131.

Hunt Name used for a body of men, with accompanying dogs, that hunt wild animals. The chief are those that hunt the fox, but there are also hunts for stags and otters. The chief English hunts include the Quorn, Meynell, Cottesmore, Pytchley and Belvoir. Each has a master (M.F.H.), a chief whip and other whips and a pack of hounds. The expenses are usually met by subscriptions, but a few hunts are maintained by individual noblemen.

Hunt **James Henry Leigh.** English writer. Born at Southgate, London, Oct. 19,

1784, the son of Isaac Hunt, a clergyman from Barbados, he soon began to write, and in 1808 became editor of the *Examiner*, a paper started by his brother. In it he gave utterance to advanced views, and for a libel on the Prince Regent, whom he called "a corpulent Adonis of 50," he was sent to prison for two years in 1813. In 1821 he went to Italy to visit Shelley and Byron, and was there when Shelley was drowned. With Byron he started a quarterly magazine called the *Liberal*, but it soon died. With his wife and seven children he returned to London in 1825, and lived in poverty there until his death at Putney, Aug. 28, 1859.

Hunt was friendly with most of the great literary figures of his day. He himself wrote essays, poems and novels, as well as *Lord Byron and Some of his Contemporaries* and an *Autobiography. The Feast of the Poets, The Story of Rimini, Wit and Humour*, and *Imagination and Fancy*, contain some of his best work.

Hunt **William Holman.** English painter. Born in London, April 2, 1827, he was a clerk before entering the Royal Academy schools. Soon he began to exhibit and in 1848 he assisted D. G. Rossetti, John E. Millais and others to found the Pre-Raphaelite brotherhood, on which, many years afterwards, he wrote a book. In 1905 he was given the Order of Merit and he died in London, Sept. 7, 1910.

Holman Hunt's best picture, though perhaps over elaborate, is "The Hireling Shepherd" in Manchester. "The Light of the World" is in Keble College, Oxford, and a copy is in S. Paul's Cathedral. "The Triumph of the Innocents" is in Manchester, and "The Finding of Christ in the Temple" in Birmingham. Others are in the Tate Gallery, London.

Hunter **John.** Scottish surgeon. Born in Lanarkshire at Long Calderwood, Feb. 13, 1728, he was for a time in business in Glasgow. About 1745 he followed his brother, William, to London, where he studied at the hospitals and assisted in his brother's surgical work. He became a surgeon at S. George's Hospital and gained further experience as an army doctor between 1760 and 1763. In 1763 he began to practise in Golden Square, London, and was soon one of the leading surgeons of the day, being made surgeon extraordinary to George III., and deputy surgeon general of the army. He was elected an F.R.S. He died Oct. 16, 1793, and is buried in Westminster Abbey.

Few names stand higher in the medical profession than that of Hunter. His operation for aneurism made him known, but he was much more than a skilled surgeon. He made an anatomical collection and his 10,000 specimens, for which he built a museum in Leicester Square, London, were bought and given to the Royal College of Surgeons. He also wrote books on geology and other branches of science. In 1813, in his honour, the College of Surgeons founded the **Hunterian Oration**, which is still given annually. He is also remembered by the **Hunterian Society**.

William Hunter (1718-83) was physician to Queen Charlotte and Professor of Anatomy at the Royal Academy. He, too, formed a collection and built a museum, which became the property of the University of Glasgow.

Hunter **Sir Archibald.** British soldier. Born. Sept. 6, 1856, he was educated at Glasgow Academy, and entered the army. In 1884 he went to Egypt, where he became associated with Kitchener. In 1895 he was given command of the Frontier Field Force. In 1898 he led a division at the Battle of the Atbara and was in command of the British division at Omdurman, being then made Governor of that place. He was knighted in 1898. In 1900-01 he commanded a division in S. Africa; in 1901-03 he was commander-in-chief in Scotland; and from 1904-09 he was in India, first at the head of an army corps and then of the southern army. From 1910-13 Hunter was Governor of Gibraltar. During the Great War he held high command at home until he retired in 1918. From 1918-22 he was Unionist M.P. for the Lancaster division.

Hunter's Moon Month after the harvest moon, which is the full moon nearest the autumnal equinox. The hunting season succeeds harvest time.

Huntingdon Borough and market town of Huntingdonshire, also the county town. It stands on the Ouse, 60 m. from London on the L.N.E. Rly. Notable buildings are the George Inn with its gallery in the courtyard and Cromwell House, a reminder of the town's association with the Protector's family. Pop. (1931) 4108.

Huntingdon **Countess of.** **Selina,** daughter of Earl Ferrers, was born in 1707 and in 1728 married the Earl of Huntingdon. About 1739 she became a follower of John Wesley. She made George Whitefield her chaplain, and soon after her husband's death began to build chapels. Later she formed a separate denomination called the Countess of Huntingdon's Connexion, and founded a college for training ministers at Talgarth. When she died, June 17, 1791, there were 64 chapels in her Connexion. This is now part of the Congregational denomination.

Huntingdon **Earl of.** English title held by the family of Hastings. For a long time the earldom of Huntingdon was held by the kings of Scotland, but this arrangement ended about 1330. In 1529, George, Baron Hastings, was made earl and the title still remains with his descendants. The earl's eldest son is called Viscount Hastings.

Huntingdonshire County of England. After Rutland, it is the smallest in the east of the country. Its area is 366 sq. m. The land is flat and the soil fertile, wheat and barley being grown. Huntingdon is the county town; other towns are St. Neots, St. Ives and Godmanchester. The chief river is the Great Ouse; the Nen forms the northern boundary. The railways are the L.M.S. and L.N.E., and the county is traversed by the Great North Road. Pop. (1931) 56,204.

Huntingtower Village of Perthshire. It is on the River Almond, 3 m. from Perth, and is famous for its castle. This was originally Ruthven Castle, and from it James VI. was taken forcibly by the Earl of Gowrie and his associates in 1582. The name of the castle was then changed. Now partly a ruin it is open to visitors. Huntingtower gives its name to a novel by John Buchan. The village has bleaching yards.

Huntly Market town of Aberdeenshire. It is 41 m. from Aberdeen, at the union of the rivers Deveron and Bogie, on the L.N.E. Rly. The castle, once a seat of the Gordons, is in ruins. The district around Huntly is called Strathbogie. Huntly is an agricultural centre. Pop. 3750.

Huntly **Marquess of.** Scottish title held by the family of Gordon. In 1449

Alexander Seton, a grandson of Sir Adam Gordon, was made Earl of Huntly, and took the name of Gordon. The succeeding earls, who had extensive lands in Aberdeenshire and lived at Huntly Castle, were persons of note in Scottish history, two of them being Lord Chancellor. In 1599 George Gordon, the 6th earl, was made a marquess. George, the 2nd marquess, was executed in 1649 for his loyalty to Charles I. In 1661 George, the 4th marquess, was made Duke of Gordon. This title became extinct in 1836, when a distant kinsman, George Gordon, became Marquess of Huntly. The title still remains in his family. The seat of the marquess is Aboyne Castle in Aberdeenshire and his eldest son is called the Earl of Aboyne. The marquess ranks as the premier marquess of Scotland.

Hunyadi Janos. Hungarian statesman and general. Born about 1387, he won renown in the Hussite Wars, and for some time governed his country as regent. From 1441 onwards he won brilliant victories against the Turks, and was largely instrumental in saving Constantinople and maintaining Hungarian independence. He died in harness, Aug. 11, 1456.

Huonpine Evergreen tree of the natural order *coniferae*. Allied to the yew, it grows to a height of 100 ft. The wood is close grained and has an aromatic odour. It is found chiefly in Tasmania.

Hurdle Interlaced frame of twigs or sticks. Hurdles are used to make pens for sheep and for other such purposes or for games. Formerly prisoners were dragged to execution tied to a hurdle.

Races over hurdles are events at most athletic sports. The usual lengths are 120, 220 and 440 yds. Hurdle races for horses are also held.

Hurlford Town of Ayrshire. Near Kilmarnock, it is situated on the Irvine, and is 389 m. from London by the L.M.S. Rly. There are coal mines near, and worsted is made. Pop. 3825.

Hurlingham District of London. It is in the borough of Fulham adjoining the Thames. In 1867 the club called the Hurlingham Club was formed here. It bought Hurlingham House and grounds, and was for some time a centre of pigeon shooting. Later it took up polo and is now the recognised authority on this game.

Hurley Irish ball game often called hurling. It rather resembles hockey, which has developed from it. The implements are a ball and stick with ends much wider and flatter than those of a hockey stick. The game is played usually by 15 a side and a goal is scored when the ball is driven into the net, as at association football. A goal counts three points; if the ball is sent over the goal post but between the uprights one point is scored. The players may, in addition to hitting the ball, carry it on the blade of the stick.

Huron One of the five great lakes of N. America. It covers 23,200 sq. m. and is 207 m. long. Partly American and partly Canadian it includes Georgian Bay and Saginaw Bay. It is connected with Lake Superior by the Sault Ste. Marie Canal; to Lake Erie by the St. Clair and Detroit rivers; and to Lake Michigan by the Strait of Mackinac. The largest island in it is Grand Manitoulin, which is on the Canadian side. The ports include Bay City, Sarnia and Goderich. The name Huron is that of a group of Indian tribes once living in Ontario.

Hurricane Violent tropical storm accompanied by sudden changes of the wind. It is common in the W. Indies, chiefly during August and September. Hurricanes seldom occur in the S. Pacific and are unknown in the S. Atlantic. They are generated as small cyclones of slow motion with steep gradients along the polar margin of the Equatorial belt.

Hursley Village of Hampshire. It is 5 m. from Winchester. Hursley Park, long the seat of the Heathcote family, is the successor of the house in which Richard Cromwell lived.

Hurst Castle Building in Hampshire. It stands at the western end of the Solent, 4 m. from Lymington, and is the property of the Admiralty. It was built in the 16th century to guard the Solent. On the promontory is also a lighthouse and a signalling station. Charles I. was imprisoned here in 1648.

Hurstmonceaux Village of Sussex. It is 12 m. from Eastbourne. Its feudal castle, long a ruin, was restored in the 20th century. All Saints is an old church with memorials to the families of Flennes, Dacre and Hare.

Hurst Park Racecourse in Surrey. It is at Molesey Hurst on the Thames. Opposite to it, on the Middlesex side of the river, is Hampton.

Hurstpierpoint Village of Sussex. It is 8 m. from Brighton and 2 from Hassocks, its station on the S. Rly. Holy Trinity Church is a fine modern building. Here is S. John's College, a public school for boys.

Husband Married man. Until recent times husband and wife were in very different positions before the law of England, as they were, and to some extent are, in other countries. To-day they are in many respects equal. Since 1870 a married woman's property has been distinct from that of her husband. The grounds on which divorce can be obtained are now the same for both sexes. Until 1923 a wife could not obtain a divorce for adultery unless it was accompanied by cruelty.

A husband is responsible for his wife's debts, as far as they are for household necessaries, and for maintaining her in her station in life. Husbands can, however, rid themselves of this responsibility by making an announcement to tradesmen, usually through the Press, to that effect. A husband is responsible for damages if his wife libels or slanders any one.

The word husbandman is sometimes used for a farmer and farming is called husbandry. A ship's husband is a man who looks after the fittings, etc., of the ship.

Huskisson William. English statesman. Born in Worcestershire, March 11, 1770, he entered Parliament in 1796, and in 1804 Pitt made him Secretary to the Treasury. In 1814 he was made Commissioner of Woods and Forests; in 1823 President of the Board of Trade; and in 1827 Secretary for the Colonies. He left office in 1828 and was killed, Sept. 15, 1830, at the opening of the Liverpool and Manchester Rly. Although a Tory, Huskisson was something of a Free Trader. He brought about the removal of certain import duties and the relaxation of the navigation laws.

Huss John. Bohemian reformer. He was born about 1370, the son of a

peasant, and was named after his birthplace, Husinetz. He became a priest and in 1402 was made Rector of Prague University. His strong character made him a champion of the Czechs against the Germans, but he is better known for his reforming zeal. His preaching of Wycliffe's doctrines aroused the anger of the authorities, and he was charged with heresy. However, he had by now a numerous following and, in spite of a Papal interdict on the city and his own excommunication, he continued to preach. Gradually his position became more difficult and in 1412 he retired from Prague and wrote his chief work, *De Ecclesia*. In 1414 the Emperor Sigismund gave Huss a safe conduct to attend the Council of Constance. He went and was at once arrested as a heretic, was tried, condemned on July 5, 1415, and on the next day was burned. *See* HUSSITES.

Hussar Name given to certain kinds of cavalry. It is a Hungarian word meaning a freebooter and the first hussars were Hungarian soldiers. They wore a busby, which is still worn by the hussar regiments in the British, German and other armies.

Before the Great War there were 12 regiments of hussars in the British Army; now there are only nine. These are the 3rd, 4th, 7th, 8th, 10th, 11th, 13th and 18th, 14th and 20th, 15th and 19th, the last mentioned three being amalgamations.

Hussein King of the Hejaz. He was an Arab chief and as grand sheriff ruled the district around Mecca as a vassal of Turkey. In 1916, assisted by Great Britain, he declared himself independent. His troops, under his son, Feisul, entered the war against Turkey, and soon Hussein was recognised as King of the Hejaz. His rule lasted until 1924, when Messa was taken by the Wahabis and he abdicated. He died June 4, 1931.

Another **Hussein** was the first Sultan of Egypt. A son of Ismail Pasha, he was made sultan in 1914 when Egypt passed under British protection. His reign ended with his death, Oct. 9, 1917.

Hussites Followers of John Huss. After his martyrdom in 1415, his followers, already formidable, became important politically. Under John Zizka and other leaders they made war for several years on the Emperor Sigismund. In 1431 peace was made by the Calixtines, one of the two parties into which they were divided; the other, the Taborites, refused to come to terms until some years later. They are now known as the Bohemian Brethren.

Hustings Platform used in England at elections before the introduction of secret voting. It was erected in front of the town hall and from it the candidates delivered speeches when nominated. The scene before the hustings is described by Dickens in *The Pickwick Papers* and pictorially by Hogarth.

Hutchinson **John.** English soldier. A son of Sir Thomas Hutchinson of Owthorpe, Nottinghamshire, he was born in Sept. 1615. In 1642 after studying law, he joined the Parliamentary forces and was made Governor of Nottingham Castle, which he defended until the end of the struggle. He was M.P. for Nottingham in the Long Parliament, was one of the judges of Charles I., and a member of the first Council of State. He was less prominent during the Commonwealth period, but was a member of Parliament in 1659 and 1660. In 1663 he was arrested in connection with a plot against Charles II., and he died in prison, Sept. 11, 1664.

Hutchinson is known through the delightful *Memoirs of Colonel Hutchinson*, written by his wife, Lucy, daughter of Sir Allen Apsley. In this he is represented as the ideal Puritan gentleman.

Hut Circle Remains of a prehistoric round dwelling. Many British examples survive. At Glastonbury there are 90 with centre posts supporting thatched roofs. Grimspound, on Dartmoor, has 24. Carn Bree, Cornwall, has 100; Ty Mawr, Holyhead, includes more than 50. There are many in Anglesey.

Huth Library Collection of books formed by Henry Huth (1815-78), and augmented by his son Alfred Henry Huth (1850-1910), members of a firm of London bankers. It contained early printed English, Spanish and German Bibles, books of voyages and poetry, besides MSS. and prints. The son bequeathed to the British Museum a choice of 50 items. Alexander Cochrane purchased for the Yale University Elizabethan Club 43 Shakespearean folios and quartos, reputedly for £50,000. The remainder were auctioned in 1911-20, and realised large sums.

Huthwaite Urban district of Nottinghamshire. It is 3 m. from Mansfield and electric tramways link it with Sutton-in-Ashfield. It is a coal mining centre. Pop. (1931) 5092.

Hutten **Ulrich von.** German writer. Born April 21, 1488, and educated at the abbey of Fulda, he studied law at Bologna and was secretary to the Archbishop of Mainz. He began to write against the Roman Catholic Church and had to seek refuge with the Protestants. Hutten is best known by his *Epistolae Obscurorum Virorum* (Letters of Obscure Men), satires on the ignorance of the monks, and his *Dialogues*, attacks on the Pope and the Church. He died Aug. 28, 1523.

Hutton **Richard Holt.** English journalist. He was born in Leeds, June 2, 1826, and educated at University College, London, and abroad. In 1851 he became editor of the *Enquirer*; later he was joint editor of the *National Review*, and assistant editor of the *Economist*. At the same time (1856-1865) he was Professor of Mathematics at Bedford College, London. In 1860 began his long connection with the *Spectator*, which he helped to control until his death, Sept. 9, 1897.

He wrote on theological subjects and contributed to the *Spectator*.

Huxley **Aldous Leonard.** English novelist. Born July 26, 1894, he was a son of Leonard Huxley, editor of the *Cornwall Magazine* and grandson of T. H. Huxley. He was educated at Eton and Balliol College, Oxford, and soon began to write for the Press. In 1916 a novel, *The Burning Wheel*, appeared and others followed. Perhaps the best known are *The Defeat of Youth*, *Chrome Yellow*, *Little Mexican*, *Jesting Pilate* and *Point Counterpoint*, and his essays, *Music at Night*. In 1932 appeared *Brave New World*.

Huxley's elder brother, **Julian Sorell Huxley**, was born June 22, 1887, and educated at Eton and Oxford, becoming a scientist. He was in the United States 1912-16 and in 1919 was made Fellow and Lecturer at New College, Oxford. From 1925-27 he was Professor of Zoology at King's College, London, and in

1926 was made Fullerian Professor of Physiology at the Royal Institution. He succeeded Sir Peter Chalmers Mitchell as Secretary of the Zoological Society. Huxley has done extremely valuable work in biology.

Huxley Thomas Henry. English scientist. Born at Ealing, May 4, 1825, he became a medical student. In 1846 he secured an appointment as assistant surgeon on H.M.S. *Rattlesnake*, was engaged for three years on surveying work in Australian waters, and on his return published some papers recording his discoveries about ocean life. In 1851 he was made an F.R.S., and in 1854 Professor of Natural History at the Royal School of Mines. In 1863 he was made Professor at the College of Surgeons and the Royal Institution, and from 1881-85 he was Inspector of Salmon Fisheries. He was President of the British Association and other learned societies, and in 1892 was made a Privy Councillor. He died June 29, 1895.

Huxley wrote a number of scientific works, also some popular books on scientific subjects. These included *Lay Sermons* and *Essays on Controversial Questions*. An authority on animal life and a champion of evolution, Huxley was one of the foremost scientists of the 19th century.

Huysmans Joris Karl. French novelist of Dutch extraction. Born in Paris, Feb. 5, 1848, he was a stern realist, as is shown in his early works, notably *En Ménage* (1881), but his later works display a transition from Satanism towards religion, in Durtal, a character who appears in *Là-Bas* and *L'Oblat*. He was much influenced by the de Goncourts, who admitted him to their academy. He was converted to Catholicism and died a mystic, May 13 1907.

Huyton Urban district of Lancashire called Huyton with Roby. Huyton is 5 m. from Liverpool and is a junction on the L.M.S. Rly. Near is Knowsley, the seat of the Earl of Derby. Pop. (1931) 5198.

Hwang Ho River of China, sometimes called the Yellow River and the Hoang-Ho. It rises in Tibet and flows through China to the Pacific Ocean in the Gulf of Chih-li, where it enters the sea by a great delta. Its chief tributary is the Wei-ho. In many places the river is above the level of the surrounding country, its waters being confined by embankments. On several occasions the river has changed its course

Hyacinth Hardy bulbous herb of the lily order. It has been cultivated, especially in Holland, since the 16th century for its sweet scented flowers. It was derived from a Levantine plant, *Hyacinthus orientalis*. Growers have produced single and double blooms in red, blue, purple, yellow and white, both for indoor and bedding culture. Spanish and Roman forms also occur.

Hyacinth Transparent red variety of the mineral zircon, a silicate of zirconium. It is known also as jacynth, and is valued as a gem-stone, its colour probably being due to traces of iron oxide. It is found in sands and gravels in Ceylon and Central France as a decomposition product of granitic rocks.

Hyacinthus In Greek mythology the son of Amyclas, a Spartan king. He was very beautiful and was loved by Apollo. He met his death when the two were playing together, and the story goes that the flower called after him, the hyacinth, sprang from his blood. A festival called the **Hyacinthia** was held in his honour in Sparta.

Hyades Maidens in Greek mythology. Zeus entrusted them with the care of Dionysus and they were afterwards placed among the stars. The name is now that of seven stars. The word means rain.

Hyaena Family of carnivorous mammals allied to the civets. They are shaggy, with powerful jaws and short tails. The hind limbs are shorter than the fore limbs and all are four-toed. The striped, or laughing, hyaena is found in Asia and Africa; the brown and spotted in Africa. Hyaenas feed at night on carrion.

Hyalite Transparent, colourless and glassy variety of opal. It occurs as small botryoidal or mammillary incrustations in cavities in basalt. Fine specimens occur at Waltsch in Bohemia.

Hybrid Term applied to an animal or plant produced by crossing two different species or varieties. Usually among animals the hybrid is sterile, although the result of the first crossing of different breeds or races is commonly great sturdiness or "hybrid vigour" shown in greater strength, size, and often resistance to unfavourable conditions. In 1932 an experiment in hybridism was successfully carried out, an eland antelope being mated with a domestic cow.

Hydaspes Old name for the Indian river Sutlej. On its banks Alexander the Great won a famous victory.

Hyde Borough and market town of Cheshire. It is on the river Tame, 181 m. from London and 7½ from Manchester, on the L.M.S. Rly. Here are engineering works and also hat factories and cotton mills. Pop. (1931) 32,066.

Hyde Park Park in London. It lies between Park Lane, Knightsbridge, Kensington Gardens and Bayswater Road. In it are the Serpentine, an artificial lake used for bathing and boating; Rotten Row, used for riding; and a bird sanctuary. Another feature is the garden called the Dell. The flower beds are very beautiful. The park covers 360 acres and is entered at the eastern end by fine gateways, one at Hyde Park Corner and another called the Marble Arch. Near the Marble Arch open-air meetings of all kinds are held throughout the week and especially on Sundays.

The park was once part of the Manor of Hyde. Henry VIII. made it into a deer park, and it has since been crown property. At one time races were held here and in 1851 it was the scene of the great international exhibition for which the Crystal Palace was erected.

Hyderabad City of India and the capital of the state of Hyderabad, also spelled Haidarabad. Some beautiful buildings include the Nizam's palace, the Jama Mesjid Mosque and the Char Minar, built in 1591. The inner city is surrounded by walls 6 m. in circumference. Beyond is the outer city called Berun, the whole covering 50 sq. m. There is railway connection with Secunderabad and other places. Pop. (1931) 466,894.

Another **Hyderabad** is a town in Bombay. Pop. 82,000.

Hyderabad Native state of India. It is in the Deccan and consists of two parts, Marathwara and Telingana. Its area is 82,698 sq. m. and the ruler is the Nizam, who is entitled to a salute of 21 guns. Hyderabad is the capital. Having been part

of the Mogul Empire, Hyderabad became independent in 1724. In 1766 a treaty was made with the East India Company, and since then friendly relations with the British Empire have been the rule. Pop. (1931) 14,436,148.

Hydra In Greek legend, a nine-headed monster haunting the Lerna marshes. Its destruction formed one of the labours of Hercules. As each head was removed two others replaced it, the central one being immortal. Aided by Iolaus, Hercules burned their roots with firebrands, and then severed and buried the central head.

Hydra Small freshwater organism or "polyp." Belonging to the class *hydrozoa*, it is common in ponds and streams, where it attaches itself by a sticky secretion to weeds, etc. The hydra consists of a soft tubular body, ¼ to ½ inch in length, with a circlet of six to eight hollow tentacles round the mouth.

Hydrangea Genus of flowering shrubs of the saxifrage order. The flowers are white, blue or pink. Several are grown in Great Britain, notably *H. paniculata* and *H. hortensia*, the former being much the hardier of the two. They like a sheltered position in sandy loam and the soil should be well manured. They can be planted in March or October. The hydrangea is also suitable for pots and for forcing in a hothouse.

Hydrant Appliance for drawing water off from a main, usually in a street. The common fire hydrant consists of an upright hollow cylinder furnished with a nozzle for the attachment of a hose and with a valve and waste pipe near the main. When the valve is closed, the waste pipe opens to allow escape of water.

Hydrate Chemical compound in which water combines with other substances, salts, etc., without alteration of the arrangement of the atoms in the water. The presence of water affects the crystalline form of the compound and may cause change of colour. The combined water is readily removed by moderate heat.

Hydraulics Subdivision of engineering. It consists of the application of the laws of hydro-dynamics to the transmission of power by means of water pressure. A head of water, natural or artificial, may be used as a source of energy for driving machinery, such as presses, lifts, cranes, and also turbines.

Hydrocarbon Compound composed of carbon and hydrogen in various proportions. These compounds are numerous, and are obtained chiefly from petroleum, a complex mixture of hydrocarbons, and from the dry distillation of coal and similar substances. Unsaturated hydrocarbons are those which combine with other elements by addition, while saturated hydrocarbons only combine by substitution. Of the former type are the olefine series, while the saturated type are represented by the paraffins or fatty hydrocarbons.

Hydrocephalus Pathological condition popularly known as water on the brain. It is due to an inflammatory condition of the membranes surrounding the brain causing an accumulation of serous fluid in the brain cavities, or it may be congenital and developed during uterine life. It is characterised by enlargement of the head accompanied often by mental deficiency.

Hydrochloric Acid Aqueous solution of the gaseous compound hydrogen chloride (HCl). It was formerly called muriatic acid. It has long been known and at the present day enters into a number of industrial processes. It is prepared by heating common salt with sulphuric acid, the gas being collected in water, and on a commercial scale the acid forms a by-product of soda-ash manufacture. The crude impure acid is often termed spirits of salt and is used for cleaning metal work.

Hydrocyanic Acid Highly poisonous acid, also known as prussic acid. It is found in combination with other substances in bitter almonds and laurel leaves. Its chemical formula is HCN, and with bases it forms a series of salts known as cyanides. The acid is prepared by the distillation of potassium ferro-cyanide with sulphuric acid. It is very volatile and has a characteristic smell of bitter almonds. Its poisonous action is very rapid, causing death even in dilute solutions.

Hydrogen Lightest known gaseous element. It occurs in nature combined with oxygen, forming water, and uncombined in small quantities in volcanic gases. Its symbol is H, atomic weight 1.008, and boiling point, −252° C. Hydrogen is colourless, inodorous, tasteless and inflammable burning with a non-luminous flame. It is made commercially by the electrolytic decomposition of water or other methods, and is used for inflating airships, for the hardening of oils, and in the production of the oxy-hydrogen flame.

Hydrogenation Industrial term for adding hydrogen in certain chemical processes by the use of catalysts which enable hydrogen to enter certain compounds not already "saturated" as regards that element. It is used in the "hardening" of vegetable oils, producing solid fats which can be used as substitutes for animal fats, in the production of synthetic nitrogenous fertilisers and in the production of petrol from coal, etc.

Hydrography Section of physical science dealing with the study of the oceans and other surface waters of the earth. The charting of the oceans is essential for navigation and for this work a government department is responsible. Hydrographical research is concerned also with the sounding of the depths, the distribution of temperature, salinity and many other problems.

Hydrokinetics Branch of hydromechanics dealing with water or other liquids in motion, which in its practical application is known as hydraulics (*q.v.*). Theoretically the fluids are supposed to be devoid of viscosity or friction, and the laws based upon them are modified to a large extent when dealing with water, which possesses viscosity.

Hydrolysis Term used in chemistry for the change which takes place in a substance by the addition of the elements of water. An example is in the change from ethyl chloride to ethyl alcohol.

Hydromechanics Science dealing with the motion and equilibrium of fluids. It includes hydrostatics, hydrodynamics and hydraulics, the branch of engineering dealing with the motion of liquids.

Hydromel Drink made of honey and water. It was drunk by the Greeks and Romans, and resembled the mead

of the Anglo-Saxons. It was often fermented and flavoured with spices or hops.

Hydrometer Instrument used for determining the relative densities of liquids. The usual type consists of a glass or thin metal bulb attached at the top to a graduated stem and below to a small loaded bulb to maintain an upright position in the liquid. The hydrometer is floated in the liquid, and the depth to which it sinks is shown on the graduated scale. Several scales are in use, chiefly those of Beaumé and Twaddell.

Hydropathic Term applied to appliances and methods appertaining to hydropathy (*q.v.*). At hydropathic establishments various forms of baths are used in addition to the usual hot and cold ones, such as hot air and vapour baths for rheumatic and nervous disorders, also douches, medicated and shower baths.

Hydropathy System of treatment of disease by means of water applied externally or internally. Although some form of water cure was used by the Greeks and Romans, the systematic treatment of disease by this method did not gain ground until the 15th century in France and the 17th in England. Hot and cold baths, cold compresses and packs, and the douche bath are external applications in hydropathy, while internally hot or cold water are employed. Hydropathy forms a valuable adjunct to ordinary medical treatment, especially in the reduction of high fever, the alleviation of local pain, and general inflammatory conditions.

Hydrophobia Disease of bacterial origin, also known as rabies. It occurs in certain animals and is transmissible to man. While the dog is most liable to the disease, it may occur in cats, horses, pigs and cattle. In man the disease has been combated successfully by the Pasteur inoculation treatment, in which the bacterial poison is weakened by the introduction into the body of an attenuated virus, causing only a mild sickness. The success of this treatment depends upon the very long incubation period of rabies. It is carried out in Paris and at S. Thomas's Hospital, London.

Hydrophone Instrument devised to detect sounds beneath the surface at sea. It was invented during the Great War for use against submarines. The receiver of the instrument is placed in the water, and the sound waves are transmitted by a flex to earphones worn by the operator. A trained listener by this means was able to hear the sound of a submarine's propellers and to distinguish between a British and an enemy vessel.

Hydroplane Type of boat constructed to skim over the surface of water when driven at a high speed. The hull is lightly constructed and the bottom is somewhat flattened.

Hydroscope A simple form of water clock or clepsydra used formerly for measuring intervals of time by the flow of running water. It consisted of a cylindrical vessel with a conical base in which was a small opening. The vessel was filled with water which was allowed to trickle slowly through the aperture, the falling level being shown by graduations on the side of the cylinder which thus indicated the lapse of time.

Hydrostatics Branch of hydromechanics dealing with liquids at rest under the action of forces. Its fundamental law is that a liquid at rest transmits pressure equally in all directions, acting with the same intensity on all surfaces in contact with it and in a direction at right angles to those surfaces. This principle is applied in the action of the piston of a force pump or in the action of the hydraulic press. Hydrostatics also deals with pressure upon submerged surfaces, whether plane, curved or irregular, horizontal or otherwise, also with the problems of buoyancy of a body immersed in a liquid in relation to displacement.

Hyères Town and watering place of France. It is 15 m. from Toulon and about 3 from the Mediterranean. About 5 m. to the east is **Salins d'Hyères**, famous for its salt works. Pop. (1931) 22,955.

Hygieia Goddess of health in Greek legend. She was regarded as the daughter of Aesculapius and was worshipped by the Greeks and Romans. She is represented in art with a staff on which is the figure of a serpent. Our word hygiene comes from her name.

Hygiene Science dealing with the preservation of health, personal and public. It includes such matters as diet, exercise and other methods of maintaining the normal health of the body. Public hygiene is concerned with the problems of suitable water supply, efficient drainage and other matters of sanitation, the housing question, the prevention of infectious diseases, inspection of foods and many other questions relating to the health and welfare of the community.

There is an **Institute of Hygiene** at 28 Portland Place, London, W. 1. The subject is also studied at the London School of Hygiene and Tropical Medicines, Endsleigh Gardens, Euston, London, W. 1.

Hygrometer Instrument used for the measurement of water vapour in the atmosphere. The commonest form consists of two thermometers placed side by side, one having the bulb covered with muslin kept wet by a thread dipping into water, and, owing to evaporation, registering a lower temperature than the dry thermometer.

Hyksos Confederation of people, probably Syrian Bedouins, dominant in ancient Egypt about 1680-1580 B.C. Josephus states that these so-called shepherd kings ruled for 511 years. They were skilled archers and used horsed chariots. Their camps at Tell el-Yehudiya and elsewhere have been excavated.

Hylas Figure in Greek mythology. He was a beautiful youth who went with Hercules on the expedition of the Argonauts. He landed and was drawing water from a well when he was drawn into it by the Naiads, and was never seen again.

Hymans **Paul.** Belgian statesman. He was born in Brussels in 1865 and, having attained distinction as a lawyer, was for a time professor in the University of Berlin, and wrote several books. In 1900 he was elected to the Chamber of Representatives, and in 1915 was sent as ambassador to London. In 1918 he became Foreign Minister, and represented Belgium at the Peace Conference of 1919. In 1920 he was chosen President of the first assembly of the League of Nations. In 1924-25, 1927-29 and 1929-31 he served Belgium again as Foreign Minister.

Hymen Marriage song of the Greeks. From its subject matter arose Hymen personified, the god of fruitfulness. In mythology Hymen is variously conceived as the son of Bacchus and Venus, or of Apollo and a

muse. In art he is represented as a beautiful youth, a torch bearer at nuptials.

Hymenoptera Large order of insects. Possessing four membranous wings, and mouth parts adapted for biting and sucking, they are represented by the ants, bees, wasps and gall flies. The head is short and broad, and in most cases there is a deep constriction between the thorax and abdomen. In the female the abdomen is provided with an ovipositor or a sting.

Hymn Song of praise and thanksgiving to God. Hymns were introduced into Christian worship at an early date and developed from the Psalms. The earliest were in Latin and some of these, thanks largely to John Mason Neale, are found in translations in English hymn books, of which one of the best known is the collection known as *Hymns Ancient and Modern.*

Notable hymn writers include Bernard of Clairvaux, Martin Luther, Charles Wesley, Isaac Watts, George Herbert, Milton, Cowper, Newton, Keble, Toplady, Horatius Bonar, Lyte, Newman, Baring-Gould, and Rudyard Kipling. Useful works on the subject are Julian's *Dictionary of Hymnology*, and Moorsom's *Historical Companion to Hymns Ancient and Modern.*

Hyndman **Henry Mayers.** English socialist. He was born in London, March 7, 1842, the son of a wealthy barrister. Educated at Trinity College, Cambridge, he spent some years in journalism and in travel in Australia and America. In 1881 he helped to found the Social Democratic Federation and for the next 30 years was a prominent leader of the movement. Three times he stood for Parliament, but without success. He died Nov. 22, 1921. Hyndman wrote many books advocating his ideas, and also *The Record of an Adventurous Life*, 1911.

Hyogo Former capital of Japan. In 1886 it was absorbed by the port of Kobe (*q.v.*).

Hyoscyamine Poisonous alkaloid present in the henbane belladonna and other allied plants. It is an isomer of atropine and consists of minute snow-white odourless crystals, which have the power of dilating the pupil of the eye. It is used as a sedative in nervous diseases.

Hypatia Female philosopher, mathematician and astronomer. She was born in Alexandria about 370 and killed by the mob in 415 because she was thought to have incited the prefect of the city to persecute the Christians. Her story forms the subject of a romance by Charles Kingsley.

Hyperion Figure in Greek mythology. He was one of the Titans and father of Helios, Selene and Eos. Keats wrote an unfinished poem called *Hyperion.*

Hypermetropia Condition of the eye commonly called long sight. It is remedied by using convex lenses.

Hypersthene Rock-forming mineral composed of silicate of magnesium and iron. It is found in certain andesites, dolerites and basalts. With labradorite it forms a principal constituent of the rock norite, or hypersthenite, occurring in Scotland and North America. It is brownish-green, brown or black in colour and has a pearly or metalloid lustre.

Hypertrophy Excessive growth or enlargement of an organ of the body. This may be general, as in the case of persons of abnormal stature, or partial, when a part of the body is enlarged owing to increased use.

Hypnotics Drugs which induce sleep or relieve acute pain. Those in general use are opium and its derivatives such as morphine and codeine, chloral, sulphonal and its allies trional and tetronal, also the bromides.

Hypnotism Method of inducing a trance-like sleep. Usually the subject is asked to look fixedly at a bright object placed at a short distance above the level of the eyes, causing a fatigue of the nerves. While in the hypnotic state he responds to suggestions made by the operator, the effects of these suggestions usually remaining after a return to the normal state. The power of suggestion has been utilised successfully in the treatment of nervous disorders, especially insomnia, defects of speech, drug habits and alcoholism.

Hypocaust Device for heating baths and houses adopted by the Romans, especially in Britain. It consisted of a series of channels or earthenware pipes carried under the floors and in the thickness of the walls to convey hot air from a charcoal furnace. In many cases the hypocaust formed a large chamber beneath the floor of a room.

Hypochlorite Salt formed by the action of hypochlorous acid upon metallic hydroxides, or of chlorine upon cold solutions of alkalis. The most important hypochlorite is bleaching powder, or chloride of lime.

Hypochondriasis Morbid condition characterised by exaggerated and unfounded anxiety regarding one's state of health. Sometimes it accompanies trivial abdominal derangements. It may take the form of an anxiety, neurosis, or be a manifestation of melancholia. Treatment necessitates psychological investigation.

Hyposulphuric Acid Acid, also called hydrosulphurous acid, formed by the action of zinc upon dilute sulphurous acid. It is a very unstable yellow liquid having the formula H_2SO_2 and with greater bleaching power than sulphurous acid, a property shared by its salts, the hyposulphites. Ordinary hyposulphite of soda or "hypo" is, however, a thiosulphite.

Hypsipyle In Greek legend a daughter of Thoas, King of Lemnos. When the Lemnian women, who were neglected by their husbands for Thracian slaves, in revenge slew the Lemnian men, Hypsipyle saved her father. When the Argonauts arrived she bore twin sons to Jason, and one of these, Euneus, sent provisions to the Greeks in Troy.

Hypotenuse Side of a right angled triangle opposite the right angle. The square of the length of the hypotenuse is equal to the sum of the squares of the other two sides.

Hypsometer Instrument for measuring altitudes by determining the temperature of boiling water at a given height. It is used for checking the readings of an aneroid barometer. It consists of a cylindrical vessel in which water is boiled. Above this vessel is a jacketed cylinder to receive the steam, and in the centre is a thermometer.

Hyrax Order of tailless quadrupeds allied to the hoofed mammals. They

are about the size of a rabbit and have short fur. The toes are padded, not hoofed, and the upper lip, as in some rodents, is cleft. They are found in Africa and Asia. One species inhabits Arabia and Palestine. In the authorised version of the Bible this is called the coney; the revised version calls it, marginally, the rock badger (Lev. xi.).

Hyrcanus Johannes. Maccabean ruler of the Jews. He succeeded his father, Simon, as high priest and is mentioned in the first book of the Maccabees. He was besieged in Jerusalem by Antiochus VII., who conquered him. When his overlord died he overran Samaria, destroyed the rival temple on Gerizim, reduced and judaized the Idumaeans and consolidated his father's alliance with Rome. He then established the dynasty which preceded the Herodian. He died 105 B.C. His sons Aristobuius and Alexander and his grandson, Hyrcanus II., bore the title of king.

Hyrieus In Greek legend, the reputed King of Hyria, near Aulis in Boeotia. He employed Agamedes and Trophonius, sons of the neighbouring King of Orchomenos, to build him a treasure house, into which they introduced a secret opening to facilitate robbery. Hyrieus, however, proved too clever for them and the end of both was disastrous.

Hyssop Small perennial aromatic plant (*Hyssopus officinalis*) with bluish flowers and lance-like leaves. Though a native of the Mediterranean it is not the hyssop of the Bible, which was probably a species of thyme.

Hystaspes Persian prince. A son of Arsames and father of Darius I., he lived in the 6th century B.C. Relinquishing his claims to the Persian throne, he was provincial governor of Parthia under his son, as recorded at Behistun. He is sometimes confused with the earlier semi-legendary Bactrian King Vishtaspa, Zoroaster's patron, who figures as Kai Gushtasp in Firdausi's *Shah-Nameh* and other mediaeval romances.

Hysteria Functional nervous affection involving no recognisable diseased change. It may be marked by unrestrained desire for attention and sympathy, convulsive seizures, spasms and contractions, paralyses, partial losses of sensation and derangements simulating various organic diseases. It may result from mental or physical shock or be encouraged by hereditary predisposition. It is more prevalent in Latin than northern races, and occurs in women 20 times oftener than in men. Treatment by sympathetic firmness is more serviceable than drugs.

The condition known as **Hysterics** occurs in persons of a highly nervous temperament, who are sometimes subject to fits of hysterical weeping, rage or laughter, or the fit may simulate fainting, though the face does not usually become pale nor the pulse feeble. The patient should receive as little encouragement as possible, and may usually be left to recover by herself, though sometimes a sharp reprimand may be sufficient to restore balance. Radical treatment is by psycho-analysis.

Hythe Borough and watering place in Kent. It is 67 m. from London and 4 from Folkestone on the S. Rly. S. Leonard's church has a raised chancel and a crypt containing a huge collection of human skulls. There are two old hospitals, S. John's and S. Bartholomew's. Hythe, in the Middle Ages, was one of the Cinque Ports. The harbour has become partially blocked. The British army school of musketry, which was here for many years, is now the School of Small Arms. A canal built for military purposes flows through the town. Pop. (1931) 8397.

Another **Hythe** is in Essex. It is 3 m. from Colchester and serves as its port. A third Hythe is a Hampshire village, 6 m. from Southampton.

IACCHUS Another name of Bacchus, the god of wine. It is derived from the cry of rejoicing used by his worshippers.

Iambic Verse form based upon metrical feet, each containing a short or unaccented and a long or accented syllable. Characterising the hexameters of Greek tragedy, it occupies a high place in English poetry. Notable examples include Pope's five-syllabled rhymed heroic verse, Shakespeare's unrhymed blank verse, and Tennyson's four-syllabled measure in *In Memoriam*.

Iapetus In Greek legend one of the Titans. With the others he was defeated by Zeus and imprisoned in Tartarus. Iapetus is also the name of one of Saturn's moons. It was discovered in 1671, and takes 79 days to travel round the planet.

Iberia Greek name for the peninsula of Europe, now comprising Spain and Portugal, and still designated the Iberian peninsula. A range of mountains in Spain is called the **Iberian Mountains.**

Ibex Wild goat of the Alps, also called the steinbok or bouquetin. It has long, curved horns and its average measurement is about 4½ ft. Naturalists recognise allied forms called Himalayan, Arabian and Abyssinian ibex; sportsmen extend the name loosely to Pyrenean, Nilgiri and other wild goats.

Ibis Family of slender-billed wading birds related to the spoonbills and storks. They have bald, black heads and necks and are found nearly all over Africa. Allied species live in Japan and Australia. There is a European form which sometimes strays to Britain. The bird is about 30 in. long. It was sacred to the Egyptians.

Ibn Sa'ud Arabian monarch. Born about 1880, Abdul Aziz Ibn Sa'ud, having recovered Riyadh, the capital of the Nejd, from the Turks in 1901, developed the Bedouins from wandering tribes into settled agricultural communities. By 1914 he had taken further territory from the Turks, and the balance of the country fell to him as leader of the Wahhabis during and after the Great War. He now rules the kingdom of Saudi Arabia (the Hejaz and Nejd). In 1935 an attempt was made to assassinate Ibn Sa'ud and his son, the Crown Prince, at Mecca.

Ibrahim Pasha Egyptian general. Son of Mahommed Ali Pasha, ruler of Egypt, he was born in 1798. Accorded a triumphal entry into Cairo in 1809 on returning from a successful campaign in Arabia against the Wahhabis, he was successful against the Greeks in 1825 and against the Turks in Syria in 1832, where he remained as governor until European powers intervened. He died Nov. 10, 1848.

Ibsen Henrik. Norwegian author. Born March 20, 1828, he was a son of Knud Ibsen, a merchant. His father fell on evil days and the son was apprenticed to a chemist. Soon he began to write, and in 1850 his first play, *Catilina*, was published. By then he was living in Christiania and he was soon earning a livelihood by his pen. In 1851, having taken a keen interest in the theatre, he was made director of one at Bergen, and in 1857 he was chosen to direct the national theatre just opened at Christiania. For these he wrote his early plays. After a few years there he was in a position, state help being now given to him, to travel, and he passed some years abroad, chiefly in Germany. In 1891 he returned to Norway and he lived there, mainly at Christiania, until his death, May 23, 1906.

As a dramatist Ibsen ranks with the greatest. Bernard Shaw did much to make him known in England, and his plays have been translated into English by William Archer. The best of these are *The Warriors in Helgeland, Brand, Peer Gynt, The Pillars of Society, A Doll's House, Ghosts, An Enemy of the People, The Wild Duck, Rosmesholm, Hedda Gabler, The Master Builder*, and *When We Dead Awaken.*

Icarus Figure in Greek legend. He was a son of Daedalus who took him with him on his flight from Crete. As they were passing over the sea Icarus fell and was drowned.

Ice Solid state of water. It is a colourless substance crystallising in the hexagonal system, of which hoar-frost, snow and hail are forms. The temperature 0° C. (32° F.) is defined as the temperature of melting ice; when saline impurities are present the melting point is lower. Water expands when freezing, and ice floats on cold water. Artifically prepared ice is largely used industrially. *See* REFRIGERATION.

Ice Age Period of intense cold occurring after the deposition of the Tertiary beds. It was marked by the prevalence of great ice sheets and glaciers over the greater part of Britain and north-west Europe. Glaciation spread also to parts of Southern Europe and over the northern area of North America. The deposits of this period are boulder clays and tills, including stones and boulders polished and scratched by ice-action. There are indications that man was contemporary with the later part of the ice age.

Iceberg Mass of ice which has become detached from the ends of great glaciers in the Polar regions. Although icebergs in the Arctic are usually of great height, only one-ninth of the volume of ice floats above water.

Ice Breaker Special type of steamer used for opening a passage for navigation of ice-bound waters. It is employed particularly in the Baltic Sea, Lake Baikal, and parts of the Arctic Ocean. The steel-clad bows slope upwards so as to slide over and crush the ice by the weight of the vessel.

Iceland Island in the Atlantic Ocean. It lies about 200 m. south-east of Greenland and covers 39,709 sq. m. Much of it is mountainous and a good proportion is covered with snowfields. The highest mountain is over 6000 ft. high, and there are some active volcanoes, notable Hekla. Iceland is also famous for its hot springs, or geysers. In the north-west is a peninsula and on the south are the Vestmanna Islands.

Iceland is a sovereign state under the King of Denmark. A union with Denmark grants certain privileges to citizens of both countries, but this is only temporary. The parliament is called the Althing and is divided into two houses. Members of the lower house are elected by all men and women who are over 25 years

old. A ministry of three under a president forms the executive. For local government purposes the country is divided into 16 provinces and there are eight municipalities. Iceland has a judicial system with a court of appeal in the capital. The people are Lutherans. There is a university at Reykjavik, the capital. There is neither army nor navy.

The inhabitants are chiefly engaged in agriculture and fishing. The chief crop is hay and the fisheries are mainly cod and herring. Sheep and horses are kept. There are no railways, but some good roads. Iceland has a national bank. The money, weights and measures are the same as in Denmark. Pop. (1930) 108,870.

From 930 to 1264 Iceland was an independent republic. In 1263 it came under the rule of the king of Norway and the two passed together to Denmark in 1381. In 1918, after a long agitation, it was granted its present position of independence.

Iceland Moss Lichen (*cetraria islandica*), growing abundantly in Arctic and Antarctic climates and in the higher mountain regions of Britain. It is a brownish or greyish moss-like plant and grows about 3 in. high. It forms a starch used for sizing. When boiled to a jelly and deprived of its bitter purgative principle, it is an agreeable foodstuff.

Iceni Tribe living in Britain when it was invaded by the Romans. Their homes were in Norfolk and Suffolk: they revolted with Boadicea.

Ice Pack Mass of broken fragments of ice derived from the disintegration of icebergs or floes in the Arctic and Antarctic Oceans. The pack ice in the Arctic is dense enough to prevent navigation except in the Greenland, White and Barents Seas, and near the northern coastline.

Ice Plant Annual herb of the fig-marigold order. It is indigenous to the Mediterranean region, the Canary Islands and S. Africa. It is a half-hardy dwarf trailer whose fleshy stem and leaves are sprinkled with pellucid watery vesicles simulating ice granules. In Great Britain it is grown chiefly in greenhouses. The Canaries export its ash for glassmaking.

Ichabod Son of Phinehas and grandson of Eli (1 Sam. iv.). His mother, hearing that her husband and father-in-law were dead, Israel defeated and the ark taken, exclaimed, as she was giving birth to the child at the cost of her own life, *Ichabod, the glory is departed from Israel.* Whittier's poem *Ichabod* was inspired by the anti-slavery agitation.

Ichang River and treaty port of China. It stands on the Yang-tse-Kiang, nearly 1000 m. from its mouth, and is 270 m. from Hankow. Pop. (1930) 107,940.

Ich Dien Motto on the arms of the Prince of Wales. It means, *I serve*, and is placed beneath the device of three ostrich feathers. It has been borne by the Princes of Wales for some 600 years.

Ichneumon Small carnivorous mammal common in the valley of the Nile. It preys on snakes and has a partiality for crocodile's eggs.

The **ichneumon fly**, a small insect belonging to the hymenoptera, is parasitic in its larval stage upon caterpillars. The eggs are deposited in the body of the host by the adult insect.

Ichor Word used by the Greeks for the fluid that ran in the veins of gods, the equivalent of blood in human beings. In medicine it describes a watery discharge from a wound or ulcer.

Ichthyology Branch of the science of zoology, dealing with the study of fishes. It is concerned especially with the classification, distribution and habits of living species. *See* FISH.

Ichthyosauria Order of extinct reptiles found in strata ranging from the Upper Trias to the Upper Cretaceous in many parts of the world. Some were small; others up to 40 ft. in length. The ichthyosaurius had a fish-like body, no neck, large head with teeth, long tail and paddle-like limbs.

Icknield Way Early English name for a prehistoric British trackway, over the Berkshire Downs and Chiltern Hills from Wantage to Dunstable. The supposition that it continued into Norfolk lacks evidence. Another road system, running from Stow-on-the-Wold through Lichfield, Alcester and Chesterfield towards Aldborough, was called by earlier antiquaries, Icknield Street.

Icon Painting or bas-relief used in the Greek Church. They depict sacred subjects. Icons are carried on the person or may be found on the iconostasis, or rood screen, of churches.

Iconoclast Image breaker. It refers specifically to one who was hostile to the use of pictures and images in Christian worship as tending to idolatry. Violent controversies on this subject arose after the 4th century. In 726 the eastern emperor, Leo III., began a campaign for overthrowing images which Constantine V. followed up with a decree. The Puritans who destroyed many of the ornaments of the churches in the 17th century are sometimes called iconoclasts.

Idaho State of the United States. In the north-west of the country, it covers 83,888 sq. m. The Rocky Mts. enter it. The chief river is the Snake. A good deal of the soil is devoted to crops and there is also much mining. Large irrigation works have been made to overcome the natural dryness. Boisé is the capital, but there are no large towns. The state legislature consists of two houses. Two senators and two representatives are sent to Congress. Pop. (1930) 445,032.

Iddesleigh **Earl of.** English politician. Stafford Henry Northcote was born Oct. 27, 1818, and educated at Eton and Oxford. He entered political life as private secretary to W. E. Gladstone. In 1851 he became a baronet; in 1855 an M.P., and in 1859 he was financial secretary to the treasury. In 1866 he was president of the board of trade, and in 1867-68 secretary for India. In 1874 he was made chancellor of the exchequer, and in 1876 he succeeded Disraeli as leader of the House of Commons. In 1880 he left office, but he continued to lead the party until 1885 when he was made an earl. He had represented North Devon since 1866. He was first lord of the treasury for a short time in 1885, and in 1886 foreign secretary. He resigned just before his death, which took place suddenly in Downing Street, Jan. 12, 1887.

Iddesleigh was succeeded by his eldest son, who died in 1927. As the latter's son, **Viscount S. Cyres**, the historian, had predeceased him, he was succeeded by a nephew as third earl. The family seat is Pynes, Exeter, and the earl's eldest son is called Viscount S. Cyres.

Idealism In metaphysics a doctrine that the only real existence

is the idea, the intellectual perception, and that the material substance is dependent upon the idea. The idea may be defined as the image of an external object formed by the mind. The theory was enunciated by Plato and elaborated by Descartes with his famous dictum, *I think, therefore I exist.* Adopting this central principle, a school of philosophers arose, among whom Berkeley and Hegel were prominent, and they gave the idealistic philosophy the dominance which it retained throughout the 19th century. Idealism is also used, generally, for a state of perfection.

Ides One of the divisions of the month in the Roman calendar. The ides begin on the 15th of the month in March, May, July and October, and on the 13th in the other months.

Idiot One deficient in intellect. The accepted difference between an idiot and a lunatic is that the idiot is feeble minded at birth, whilst the lunatic becomes so. Both, however, are dealt with under the lunacy laws. *See* LUNACY.

Idle River of Nottinghamshire. A tributary of the Trent, it rises in Sherwood Forest and flows across the county to West Stockwith on the Lincolnshire border. Its length is 40 m.

A district of Bradford is called **Idle.**

Idolatry Worship of images or other objects as representing superhuman personalities. More advanced than animism and nature worship, it is absent from some primitive cultures, *e.g.*, Eskimo. In the Old Testament the term denotes the worship of any representation, whether of Jehovah or of the false gods of the non-Jewish world. Modern Judaism, Christianity and Islam regard as idols all objects of worship, public, family or personal, in polytheistic systems, whether they are the abodes of subsidiary or departed spirits, *e.g.*, negro fetishes or Maori images or personalised deities, *e.g.*, Vishnu, Siva or religious leaders, *e.g.*, Buddha. *See* IMAGE WORSHIP.

Idomenéus In Greek legend, the son of Deucalion and king of Crete. Fighting for the Greeks in the Trojan war, he encountered a storm when returning home, and vowed to sacrifice to Poseidon, if saved, whatever he first met on landing. The victim was his own son, on whose death plague visited the island.

Idris Figure in Welsh tradition. He is believed to have been a king and to have had his seat or throne on the mountain called after him, Cader Idris, in Merionethshire.

Idyll Originally a short poem picturing pastoral life. It is now used for a poem written in simple graceful style and dealing with pastoral subjects.

Iffley Village of Oxfordshire. It is on the Thames, 2 m. from Oxford. It has a famous Norman church.

Igloo Primitive type of dwelling built by the Eskimos for residence during the winter. Usually dome-like in shape, the igloo is constructed with pieces of ice or frozen snow.

Ignatius Saint and father of the Church. He was born in the 1st century A.D., but little is known of his life. He may have been associated with S. John. He became Bishop of Antioch, but at some date between 107 and 138 he was taken as a prisoner to Rome. Tradition says he was thrown to the lions as a Christian.

Ignatius **Father.** Angelican monk and preacher. Born at Barking, Nov. 23, 1837, his name was Joseph Leycester Lyne. In 1860 he was ordained in the Church of England, and although remaining in that church he founded a house for Benedictine monks at Llanthony in South Wales. He won fame, however, by his preaching, which was extraordinarily powerful and attracted vast crowds. He denounced modern tendencies in theology and all departures from the old-fashioned orthodoxy. He died Oct. 16, 1908.

Ignis Fatuus Faintly luminous flame which hovers sometimes over marshy places or where decomposition of organic matter under water occurs. It is popularly called Jack o' Lantern or Will o' the Wisp.

Ignorantines Religious order in the Roman Catholic Church. It describes the Brothers of the Christian Schools, an order founded at Rheims in 1680. The Brothers take monastic vows, but are not priests. They devote themselves to the education of boys and many schools are under their control. Their headquarters are at Mountrath in Queen's County, Ireland, and one of their largest schools is at Norwood, London. They were called Ignorantines because no theologically educated priest could enter their order.

Iguana Large family of lizards, mainly American, but represented in Madagascar and Fiji. The tropical American *I. tuberculata*, with spiny crest along the back and large dewlap, is an herbivorous tree dweller. It is about 6 ft. long, and its flesh and eggs are edible. Other iguana-like reptiles are basilisks and horned lizards; the Galapagos Archipelago has marine forms.

Iguanodon Extinct reptile of the group of dinosaurs. Its remains are found in jurassic and Wealden strata. It ranged in length from 14 to 30 ft., and supported itself on its hind limbs and massive tail like a kangaroo. The jaws were provided with serrated teeth like those of the iguana.

Iguassu River of Brazil. It is chiefly in the State of Parana, and flows into the Atlantic Ocean. It is noted for its falls, among the finest in the world. They are used for generating electric power.

Ilchester Market town of Somerset. It stands on the Yeo, 5 m. from Yeovil, and was the birthplace of Roger Bacon (1214). Ilchester was made a chartered town in the Middle Ages and until 1832 sent two members to Parliament. For many years it was the county town of Somerset. Its corporation was dissolved in 1886. **Pop. 500.**

The title of **Earl of Ilchester** is borne by the family of Fox-Strangways. The 1st earl was Stephen Fox, M.P., a younger son of Sir Stephen Fox, who was created an earl in 1756 and took the additional name of Strangways. Henry Fox, Lord Holland, was his elder brother and a later earl inherited Holland House, Kensington. His seat is Melbury House, Dorchester, and his eldest son is called Lord Stavardale.

Ile de France Name used at one time for a district round Paris. It was so called because it was bounded by the Seine and other rivers. Later it became a province and so it remained until the Revolution. The French gave this name to the Mauritius when it was in French possession between 1715 and 1815.

Ile du Diable Island of French Guiana. Forming with two other

small ones the Safety Islands, it lies 27 m. off the coast near Cayenne. Part of the penal settlement, it is used for the more serious cases. Dreyfus was here for a time.

Ilex Large genus of shrubs and trees of the holly order. It is widely distributed in both hemispheres, especially in S. America. The most important economically is *I. paraguayiensis* which yields maté, or Paraguay tea, of which much is exported. The common holly is *I. aquifolium*; others in cultivation are the inkberry and winterberry of N. America, and several from Japan. *See* HOLM OAK.

Ilford Borough of Essex. Part of Greater London, it is 8 m. from the city. S. Mary's Hospital, founded as a leper house, was later an almshouse. Ilford was made a borough in 1926, and sends one member to Parliament. Photographic materials are manufactured here. Pop. (1931) 131,046.

Ilfracombe Watering place, market town and urban district of Devon. It is in the British Channel, 225 m. from London and 12 from Barnstaple, and is reached by the S. Rly. There is a harbour and a little shipping, but the place is chiefly visited for the beautiful scenery around. Capstone Hill and Lantern Hill overlook the town. Pop. (1931) 9174.

Iliad The. Poem by Homer. It deals with the events that occurred during the 10th and last year of the siege of Troy, or Ilium, by the Greeks. It begins with the wrath of Achilles, who refuses to take any further part in the fighting. Led by Hector, the Trojans are successful until Achilles changes his mind and again enters the field. The Iliad is in 24 books, and there are many English translations.

Ilkeston Borough of Derbyshire. It is situated on the Erewash, 9 m. from Derby, on the L.M.S. and L.N.E. Rlys. Lace and hosiery are manufactured, and there are coal mines. It was made a borough in 1887. Pop. (1931) 32,809.

Ilkley Urban district and watering place of Yorkshire. It is on the Wharf, 16 m. from Leeds, on the L.M.S. and L.N.E. Rlys. It is visited for its mineral springs, and also for the surrounding scenery. Beauty spots near include Wharfedale and Bolton Abbey. Pop. (1931) 9721.

Illampu Mountain of Bolivia. It is 60 m. from La Paz and overlooks Lake Titicaca. The highest point of the eastern Cordillera, the height of its chief peak is 21,490 ft. It has been climbed.

Illawarra District of New South Wales. It lies along the coast, about 40 m. to the south of Sydney, and is a fertile area given over largely to dairy farming. A railway runs along it to **Illawarra Lake**, a lagoon connected by a channel with the sea. In the district are two urban centres, **North Illawarra** (Pop. 7000) and **Central Illawarra** (Pop. 6000).

Illegitimacy Opposite of legitimacy. It is generally used for children born out of wedlock, and from time to time statistics of illegitimacy are issued. In England it is now possible, as has long been the case in Scotland, for children to be made legitimate by the subsequent marriage of the parents. *See* LEGITIMACY.

Illinois State and river of the United States. In the north of the country, the state lies to the west of Lake Michigan and is 56,000 sq. m. in area. Springfield is the capital, but Chicago is the largest place. Other cities are Peoria, East S. Louis and Rockford. Its rivers are the Mississippi, Ohio, Illinois and Wabash and the land is very fertile. Coal is the chief mineral produced. It sends two senators and 27 representatives to Congress. Illinois became a state of the union in 1818, and is sometimes called the prairie state. Pop. (1931) 7,630,654. The river after which the state is named is a tributary of the Mississippi.

Illiteracy Condition of ignorance, generally inability to read or write. The spread of education has almost abolished illiteracy in Great Britain, France, Germany and North America, but there is still a good deal in the southern and eastern countries of Europe; also in Asia, Africa, and South America. In 1931, for instance, it was stated that well over 50 per cent. of the inhabitants of Portugal were illiterate.

Illorin Town of Nigeria. It is 250 m. from Lagos and is a prosperous trading place; there are also manufactures. Pop. 73,000.

Illumination Term applied in art to the ornamentation of manuscripts or books by miniature paintings or designs. In the early Middle Ages, missals, gospels, and other manuscripts, were enriched by illuminated initials usually in gold, purple and red, in addition to designs or small groupings of figures of men or animals forming marginal scrolls to the page. The invention of printing with its mechanical multiplication of copies, however, brought the golden age of illumination to a close.

Illustration In rhetoric an illustration is a means of explaining or rendering clear a statement made.

In art the illustration of written or printed matter takes the form of pictures, diagrams, photographs, or in the older manuscripts by illumination.

Illustration of books by woodcuts dates from the end of the 14th century, and line engraving on copper and other metals followed in the first part of the next century. Steel engraving lasted until the middle of the 19th century, when this process, along with woodcuts, was superseded gradually by the modern and cheaper process methods of preparing illustrations for books and periodicals.

Illyria Province of the Roman Empire. In south-eastern Europe, it covers the district now known as Bosnia, Herzegovina, Dalmatia and Montenegro. It was inhabited by a warlike race, who, for a few years, were under the kings of Macedon. In 229 B.C. the Romans conquered them and in 168 included their land in the Empire, but the province of Illyria was not formed until A.D. 9. After the fall of the western empire the name was lost, but from 1815 to 1848, there was a province of Illyria in Austria.

Ilmenite Titaniferous iron mineral forming the principal ore of the metal titanium. It contains iron and titanium oxides in varying proportions and occurs as iron-black scales or in large veins in igneous rocks in Norway and Canada. As an alluvial black sand it is found in New Zealand.

Ilminster Urban district and market town of Somerset. It is 5 m. from Chard and 149 m. from London by the G.W. Rly., and is situated on the river Isle. Bricks are made, and it is a centre of the flax trade. Pop. (1931) 2232.

Image Term used in optics for the optical counterpart or picture of an object produced by reflection from a mirror or by refraction by a lens. An image may be either real or virtual. In the former case rays of light come from the points of the image, while in a virtual image they only appear to do so.

Image Worship Homage rendered in worship to graven, pictorial or other representations of sacred persons or things. The Roman Catholic Church permits the veneration of images of Christ, the Virgin Mary, and the saints. The Orthodox Eastern Church applies the same principle to icons and pictures. Protestants to-day are inclined to recognise representative art where no idolatrous intention is involved. The Jews and Mohammedans exclude it altogether. *See* ICONOCLAST.

Imago Final adult stage in the metamorphosis of an insect. The imago is provided usually with wings and its life is devoted to reproduction.

Imam Arabic word for guide. It was employed for various Mohammedan princes, such as the early caliphs, and is still used for the Imam of Yemen, the 12 leaders of the Shiah sect and the four great doctors of the orthodox sects. It applies also to the person who leads the Friday prayers in the mosque.

Imari Seaport of Japan. It is 35 m. from Nagasaki and is chiefly famous because it gives its name to a kind of porcelain. This was made in the 17th century and was taken by Dutch traders to Europe. On it were painted designs in blue, red and gold.

Imbros Island of Greece. It is in the Aegean Sea, near the entrance to the Dardanelles. It covers about 100 sq. m. and the chief town is Castro. The island was long a Turkish possession, but was assigned to Greece in 1920, and restored (demilitarised) to Turkey by the Treaty of Lausanne (1923). Pop. 10,000.

Immaculate Conception Dogma that the Virgin Mary was conceived without original sin. S. Bernard repudiated the sinless view in 1131, and Duns Scotus and the Franciscans maintained it, 1307. Aquinas and the Dominicans took the contrary view. The Council of Trent left it unsettled, but Pope Pius IX. declared it a dogma of faith in 1854. The Roman Catholic Church celebrates the feast of the Immaculate Conception on Dec. 8; the Eastern Church, rejecting the Western dogma, celebrates the Conception of S. Anne, the Virgin's mother, Dec. 9.

Immanence Pantheistic theory that the creative and intelligent power of the universe is indwelling within the universe itself and not above or beyond it.

Immanuel Hebrew proper name meaning *God is with us.* It was given to a child foretold in prophecy (Is. vii.), and was applied to the child Jesus (Matt. i.). A variant spelling is Emmanuel.

Immigration Entrance of people into another country for the purpose of settling there; it is thus the opposite of emigration. There was a great deal of immigration into the North American continent in the 19th century, but towards the end of that period steps were taken to restrict it. The restrictions were at first directed to keeping out the coloured races whose standard of living was lower than that of the white man. Australia, Canada and the United States took steps to restrict the number of coloured immigrants, these amounting in some cases to almost total exclusion.

The difficulty of finding employment was one of the reasons that led certain countries to restrict the immigration of the white races, and now almost every country takes measures to keep out all who are considered undesirable, either on grounds of poverty or disease. The restrictions in the different countries vary, but, in general, intending immigrants must possess a certain amount of money, pass a medical test and also prove literacy.

Since 1921 the United States has had a system of quotas in its immigration policy. Each year a quota, based on the number already in the country, is fixed for each nation. Provided they pass the tests immigrants up to that number are allowed to enter, but as soon as it is reached immigration from that particular country is stopped for the year. The number allowed varies. In 1929, for instance, it was 65,721 for Great Britain and 25,957 for Germany. The figures are, of course, exclusive of those who visit the country for business or pleasure.

In Great Britain there were practically no restrictions on immigration before 1905, and a great number of aliens, many of very low character, made their homes in the country and were responsible for reducing the standard of life in certain industries and areas. In 1905 restrictions were placed on their entry and there is now a branch of the Home Office charged with the duty of keeping out undesirable aliens. *See* EMIGRATION.

Immingham Seaport of Lincolnshire. It is 5 m. from Grimsby, and was made a port in the 20th century, when the Gt. Central Rly. built docks here. These cover 56 acres and belong to the L.N.E. line. Much coal is shipped. Pop. 2700.

Immortality Condition or quality of being exempt from death or annihilation. Confidence in the continuance of human existence beyond the grave is almost universal, and is traceable to primeval man. It is incapable of proof, but speculation has endeavoured throughout human history to pierce the veil. The pantheistic view of reabsorption in the universal life, as through the Buddhist nirvana, and the positivist view of corporate rather than individual survival, do not satisfy those who regard immortality as essentially involving perpetuation of the personal consciousness.

This idea of personal immortality finds support in the aspirations of the human mind in its capacity to project itself beyond the present life and time, and in the belief that the purpose of the created universe cannot be fulfilled without it. On the other hand science gives no credence whatever to the idea, although it does not rule out some kind of corporate immortality, of an absorption into an eternal and omnipresent mind. Spiritualism, it must be said, has not thrown much light on the question. The Christian doctrine looks for fellowship with the Eternal through the resurrection of Jesus Christ.

Immunity Term applied to the power of resistance in the bodies of animals to disease. This immunity is either natural or acquired. In natural immunity the blood develops anti-toxins which neutralise the bacterial toxin, immune bodies which

destroy microbes, and leucocytes which devour the germs. Vaccination and inoculation are methods adopted to acquire immunity.

Impaling In heraldry to place two coats of arms on one shield. They are usually placed, or marshalled, side by side. The chief occasions for impaling arms were marriages.

Impeachment In Great Britain a prosecution by the House of Commons before the House of Lords as the supreme court of law. It is now practically obsolete, but the power to impeach remains.

Impeachment was confined to persons of rank who had committed an offence against the state. The first recorded impeachment was that of Lord Latimer in 1376; the most famous that of Warren Hastings. The last case was in 1806 when Henry Dundas, Viscount Melville, was impeached. The United States has a similar form of procedure, the House of Representatives prosecuting before the Senate.

Imperial College of Science and Technology. Educational centre at South Kensington, London. It dates from 1907, and consists of the Royal College of Science, the Royal School of Mines, and the City Guilds (Engineering) College. It has a strong staff of professors and lecturers, and its equipment is of the most modern kind. It is a school of the university of London.

Imperial Conference Meeting of representatives of the various self-governing parts of the British Empire. The first was held in 1887, and for some time these were called Colonial Conferences. Since 1907, except for the war years, they have been held every four years, the last being in 1930. The conferences are held in London, the Secretary for the Dominions being chairman. They are attended usually by the premiers and other ministers of state. In addition to these meetings, conferences on particular subjects, *e.g.*, defence and economics, are held from time to time.

Imperial Economic Committee British government committee. First appointed in 1925 in accordance with proposals at the Imperial Economic Conference, 1923, and continuing from one conference until the next. its duties are to investigate the development and marketing of empire produce suitable for the British market. The Empire Marketing Board was founded as its executive body.

Imperial Defence Defence of the British Empire in time of war. The necessity of framing some joint policy for the defence of the British Empire led to the association of the Dominions with the mother country in consultation and action. The matter was discussed at Imperial conferences and a committee of imperial defence was set up in London. This is concerned with the activities of the three arms, army, navy and air force throughout the whole Empire. Its offices are in Whitehall Gardens, London, S.W.1.

Imperial Institute Building in South Kensington, London. A fine edifice in the Renaissance style, it was erected to mark the jubilee of Queen Victoria's reign in 1887. It was opened in 1893 and in 1900 became the property of the Government. It is controlled by an executive committee under the general direction of the Secretary of the Dominions and has a director and a staff. Since 1925 the Imperial Mineral Resources Bureau has been incorporated with it. The work of the institute is to make known the products of the various parts of the Empire, and to conduct researches into their respective uses and values. Part of the building is the temporary headquarters of the university of London.

Imperial Preference British politico-economic conception. The movement began in Canada, where in 1898 the administration of Sir W. Laurier (*q.v.*) abandoned general reciprocity in trade for a policy of British preference in the granting of tariff concessions. Development of this policy, which was implemented at the Imperial Conference of 1902, had been slow, pending the change (1931-32) in the British fiscal system from free trade to protection. Some progress was made, however, during the Great War, and British preferences were enlarged under the Safeguarding of Industries Act, 1921. Apart from primary foodstuffs, motor-cars of Canadian manufacture, for instance, enjoyed preferential rates, while under the Safeguarding Act of 1925 imperial preference was attached to such products as cutlery, silver and silk, the Dominions meanwhile continuing to enlarge the preferential range.

Imperial preference should not be confused with **Empire Free Trade**, a political slogan introduced in 1930, expressing an ultimate aim, but ignoring the immediate need of the Dominions to protect their growing industries —a consideration which tends to limit the indefinite expansion of imperial preference.

Imperialism Term used for the movement that aims at the strengthening of the British Empire. It was much used towards the close of the 19th century, its opposite being Little Englander. Lord Beaconsfield was regarded as a great imperialist. Sir J. R. Seeley helped the movement by writing *The Expansion of England*. Its opponents regard imperialism as involving aggression, and, perhaps, injustice towards weaker peoples.

Imperial Service Order British decoration given to members of the civil service. It was established in 1902 and enlarged in 1912. It is given to members of the administrative and clerical branches of the civil service. The number of members must not exceed 700. Of these, 250 are for the home services, 250 for the services of the Dominions, colonies and protectorates, and 200 for the Indian services; the 200 are divided into 100 for Europeans and 100 for Indians. The ribbon of the order is crimson with a blue centre.

Imperial War Museum London museum. It was opened at the Crystal Palace in 1920 and was removed to its present home in Imperial Institute Road, South Kensington, in 1924. The collection includes naval and military trophies and relics, ordnance, small arms and ammunition, ships and other models, works of art, photographs, prints, books and pamphlets. The aeronautical collection is in the Science Museum.

Imports Name given to the goods that come into a country by way of trade. They are thus the opposite of exports. In Great Britain and most other countries, the value of the imports is calculated by

officials at the ports of entry and figures are issued from time to time giving the totals. Most countries levy duties on imported goods.

Imports may be divided into manufactured goods, raw materials and foodstuffs. In Great Britain the value of the imports is always considerably greater than the value of the exports. The difference is the balance of trade as it is called. This is paid by invisible exports, such as shipping dues and insurance charges, whilst part of it consists of goods, which are in effect interest on money lent abroad.

Nearly all countries tax imports, Great Britain joining the number in 1932 with taxes on certain manufactured goods and foodstuffs. *See* BALANCE OF TRADE; TARIFF.

Imposition Something placed on a person or thing. It is most often used for a tax, especially a tax that is regarded as unjust. Duties on certain imports levied by James I. in 1606 were called impositions, and were resisted by a merchant called Bate and others. In 1610 Parliament declared impositions illegal.

The word is also used for a task given to a schoolboy, as a punishment, as well as in printing.

Impostor One who seeks to obtain something by pretending he is someone else. There are historical impostors such as Perkin Warbeck (died 1499) and those who pretended to be the son of Louis XVI. of France. More recent impostors are the German who called himself the captain of Koepenick and De Rougemont. Another class of impostor consists of those who pass off the writings of others as their own.

Impotence Lack of power. It is usually applied in cases where husband or wife is unable to consummate a marriage. In English law a marriage can be annulled if impotence is proved.

Impressionism Modern school of painting. It originated in France in the latter part of the 19th century, and is associated with the names of Edouard Manet and Claude Monet. Other painters of this school were Boudin, Degas, Renoir, Pissaro, Morisot, Cézanne and Sisley. The Impressionists claimed freedom from all artistic tradition with its conventional methods of lighting and composition, and they attempted to portray the truth of their impressions of nature by the use of pure colour and luminosity. They used pure primary colours and obtained their effects by placing small spots of colour side by side. Exhibitions of impressionist paintings were held in Paris in 1867, and in London in 1882 and 1889.

Imprisonment Detention in a gaol, or prison, for an offence against the law. In English law there are three kinds of imprisonment. Penal servitude is a punishment for serious offences and may be for life, which in practice is 20 years. Imprisonment with hard labour is for less serious offences; it cannot exceed 10 years. Ordinary imprisonment for minor offences is of three kinds. The person sentenced may be a first, second or third division prisoner. First and second division prisoners have an easier term than ordinary prisoners.

In-Breeding Method of breeding by mating nearly related subjects. It is contrasted with line breeding, in which individuals mated are within a single line of descent, and with out-breeding, or the mating of unrelated subjects. In-breeding is resorted to in order to establish or fix certain desired characters, although it involves ultimately certain disadvantages such as deterioration, diminished resistance to disease, and sterility.

Inca Name meaning a member of the ruling class in Peru in the 13-16th centuries, but applied more generally to their wonderful civilisation. The Incâ Empire, created about 1230, covered the modern Peru and part of Bolivia and Chile, an area 2000 m. long and some 500 wide. Its capital was Cuzco. It lasted until 1533 when Pizarro overthrew it. Its history has been recorded by a Spaniard, Garcilaso de la Vaga.

The remains of the Inca civilisation are very wonderful. They include the ruins of palaces and temples, as well as statues and sculptured decorations. The Incas made good roads and had considerable knowledge of agriculture. They irrigated and manured the soil; and their social and economic life was far from primitive. They worshipped the sun.

Incantation Form of words of supposedly supernatural power, chanted or intoned ceremonially. Incantations are common to all primitive beliefs. The earliest known examples are Babylonian; the best known survivals occur in folk song and jingles used as charms.

Incarnation (Latin *caro*, flesh.) Act of embodying in flesh, but specifically the assumption by the Godhead of human form and nature in the person of Jesus Christ. Our Lord's own claims, S. Paul's association of His grace with God's love and the Spirit's fellowship, and S. John's view that the Word co-existed with God eternally, led to the doctrine of the Trinity. The early church sought to define this mystery in the Nicene creed, and alternative views gave rise to heresies. Modernist thought urges that in becoming flesh the Incarnate Son accepted human limitations, and does not regard belief in that event as necessarily involving the acceptance of a miraculous birth.

Ince-in-Makerfield Urban district and market town of Lancashire. It is 204 m. from London by the L.M.S. Rly., and is near Wigan. There are coal mines, and cotton mills, and railway stock is manufactured. The county division of Ince returns a member to Parliament. Pop. (1931) 21,763.

There is another **Ince** in Cheshire. This is a village 7 m. from Chester. Pop. 330.

Incense Blend of sweet smelling spices burned in a thurible and symbolic of ascending prayer. It is generally used in the Roman Catholic Church, but only by a few high churchmen in the Church of England. It is chiefly made from frankincense, myrrh and benzoin.

Incest Intercourse between persons so closely related that they are debarred from contracting legal marriage. An Act of 1908 made it a misdemeanour for a male to have intercourse, or attempt to procure it, with his mother, sister, daughter or granddaughter. The terms "brother" and "sister" include also a half-brother or half-sister, whether in wedlock or not. The penalties are penal servitude for 3 to 7 years, or imprisonment up to 2 years. A female over 16 who, knowing the relationship, permits such intercourse, is liable to like penalties.

Inchcape Rock off the coast of Scotland, often called the Bell Rock. It is at the mouth of the Firth of Tay, and on it is a lighthouse. The rock which is submerged by high tide is 500 ft. long. On it, as Southey's poem relates, there was once a bell which was rung by the action of the waves to warn mariners.

Inchcape Earl of. British merchant and financier. Born at Arbroath, Sept. 11, 1852, James Lyle Mackay went to India in 1874. He became a partner in a firm of merchants there and was soon one of the most influential business men in the country. From 1891 to 1893 he was a member of the Viceroy's legislative council, and in 1902 he went to China, where he concluded a commercial treaty between that country and Great Britain. He was then knighted.

Having settled in Britain, Mackay was a member of the council of India, 1897-1911, and was associated with some great industrial concerns. He was chairman of the P. and O. line, the National Provincial Bank, and he was also a director of the Suez Canal Co., and the Anglo-Persian Oil Co. He served on a number of commissions and committees, including the one on national economy presided over by Sir E. Geddes, and was chairman of the India retrenchment committee. After the war he sold for the Government an immense amount of shipping. In 1911 Mackay was made a baron and in 1924 a viscount. In 1929 he was created an earl. His eldest son is called Viscount Glenapp. His daughter, the Hon. Elsie Mackay, lost her life while flying across the Atlantic in 1928 and her fortune of over £500,000 was devoted to reducing the national debt. Earl Inchcape died suddenly in his yacht, *Rover*, off Monte Carlo on May 23, 1932.

Inchcolm Island of Fifeshire. It is 4 m. from Burntisland, and is about ¼ m. long. On the island are the ruins of a monastery founded in 1123 by Alexander I. of Scotland.

Inchiquin Earl of. Irish title borne by the family of O'Brien. In 1543 Murrough O'Brien, said to be descended from the kings of Munster, was made baron of Inchiquin. In 1654 the 6th baron was made an earl, a reward for his services to Charles I. and Charles II. in Ireland. In 1801 the 5th earl was made Marquess of Thomond, but the two titles became extinct in 1855. The barony passed to a distant relative and still exists in the peerage of Ireland.

Inchkeith Island of Fifeshire. Formerly the property of the Duke of Buccleuch, it is in the Firth of Forth, and is 4 m. from Leith. It has a lighthouse.

Incline Slope on a road or railway. As on an inclined surface force has to be exerted to overcome friction, the steeper the slope the heavier the pull; hence the gradient in road making is seldom more than one in 20.

An **inclinometer** is an instrument used for determining the vertical component of the earth's magnetic force, and is known also as a dipping needle. The term is used also for any instrument for the measurement of angles of inclination in surveying.

Income Tax Tax on incomes levied for meeting the expenses of the country in the United Kingdom, the United States and many other countries. It was introduced in England in 1799, as a temporary measure, but since 1842 it has been permanent.

From the first the principle of the tax has been that small incomes are free from it. When it was introduced incomes under £60 were free; later incomes up to £160 were relieved. During most of the 19th century the tax was only a few pence in the pound, 4d or 6d., but at the end of the century it rose to 1s. 3d.

The changes that have made the income tax what it is to-day began in 1907. In that year a lower rate was introduced for earned incomes under £2000 a year. A little later the principle of making allowances for children and other dependents and for money paid on life insurance premiums was started. In 1909 a super tax, now called a surtax, was levied, in addition to the income tax proper on all incomes in excess of £5000 a year.

The outbreak of the Great War caused a great increase in the rate of income tax, and at one time it was raised to 6s. in the £, apart from the super tax. In 1920, after the end of the war, a royal commission inquired into the matter. According to the Finance Act of 1935, no tax is payable on an income of £125, or on £200 if it is the joint income of a married couple. In addition there are allowances for children, life insurance premiums, etc., so that a man with a large family may pay nothing, although his income is £400 or £500 a year. In addition, the first £135 of taxable income, as it is called, pays at a lower rate. Thus in 1935-36, when the rate was 4s. 6d. in the £, the first £135 of taxable income was only charged at 1s. 6d. in the £. The taxpayer is allowed to deduct one-fifth of his earned income and only pay on the balance, but he can only do this up to a minimum of £1500 a year. There are arrangements with Australia, Canada, the Irish Free State and other parts of the Empire to prevent a person from paying tax twice on the same income.

The tax is levied once a year. A form is sent to each taxpayer, who fills up the amount of his income during the previous twelve months. On this he is charged and the amount is paid in two instalments, except that manual workers can pay quarterly. One-half of the tax is paid in the first (Jan.) instalment, and one-half in the second. The Board of Inland Revenue looks after the collection of the tax, and there are collectors and inspectors all over the country. In 1933-34 the amount raised from income tax was £228,600,000.

Increasing Returns Law of. Law in economics. Enumerated by Alfred Marshall in *Principles of Economics*, it suggests that an increase of expenditure of capital and labour in industrial operations usually leads to an increase in output, contrasting with nature where the law of diminishing returns mainly operates.

Increment Increase of any kind. It is most generally used for an increase in the value of land due to the growth of the population and of business. For many years there was an agitation for the taxation of this increment and in 1911 an increment value duty was imposed in Great Britain. It proved less successful, however, than its advocates believed and in 1920 it was abolished. In 1931 another attempt, but in a different form, was made to tax land values.

Incubation In zoology, a term applied to the process by which birds stimulate the development of their eggs by the heat of the body of the parents, one or sometimes both sitting upon the eggs

until their young are hatched. In the Australian mound-birds the eggs are buried in decayng vegetable matter which forms a kind of hot-bed.

In pathology **incubation** is the period between the infection and the appearance of the symptoms of a disease.

Incubus A demon. Arising out of the belief in evil spirits, these nocturnal visitors were supposed in mediaeval times to visit women, as succubi did in the case of men. The term is now used for an encumbrance or an oppressive measure.

Incumbent Name used for a man who holds a benefice in the Church of England, or any other established church. The office is a freehold possession and its holder can only be deprived of it if guilty of a serious moral offence. *See* BENEFICE.

Incunabula Latin word used since 1688 to denote early printed books, specifically those printed before 1500. The British Museum and Bodleian Library possess about 10,000 incunables. The word means swaddling clothes.

Indecency In English law an offence which includes the publication or sale of indecent literature, photographs or prints, indecent assault, or exposure of the person. Prosecutions for sun bathing have been instituted in several cases as violating the law against indecency.

Indemnity Undertaking or promise to make good a loss; also a sum of money paid in case of such loss. The money paid by France to Prussia after the war of 1870-71 was called an indemnity, and the word is sometimes used for what is better known as reparations. Persons sometimes give an indemnity to those who are employed by them on a piece of business. A contract often contains clauses of this kind.

An **act of indemnity** is one passed to free persons from the consequences of illegal actions. In times of emergency persons in authority must sometimes act without waiting for legislative permission. This was the case during the Great War, so in 1920 an Act of Indemnity was passed freeing them from the consequences of their illegal actions.

Indenture Term for a legal document. It is so called because the edges of the early ones were indented. The terms were written in duplicate on the same piece of parchment, which was then divided in order that one part could be given to each party. When it was divided indentures were left so that forgery was almost impossible as no other piece of parchment would fit the indentures. This is no longer done, but the word is still used for deeds and the like.

Independence State of being free; able to act without the consent of someone else. The **Declaration of Independence** is the document by which the United States declared themselves independent of Great Britain. It was drawn up by Congress and accepted by the representatives of the 13 original states on July 4, 1776. The 13 states were Massachusetts, New York, New Jersey, Virginia, Pennsylvania, Maryland, North Carolina, South Carolina, New Hampshire, Rhode Island, Delaware, Connecticut and Georgia. Since then, July 4 (Independence Day), has been kept as a national holiday.

Independent Name sometimes used for the religious denomination more usually called Congregationalists (*q.v.*). They took this name in the 17th century because their members refused to recognise any external authority in religious matters, each church being quite independent. Cromwell and many of his followers were independents and they were strong in both England and the American colonies.

Independent Labour Party Political organisation in Great Britain. It was founded in 1893 by J. Keir Hardie, but is distinct from the Labour Party which controls the Labour movement in Parliament. Its offices are at 35 St. Bride Street, London, E.C. *See* LABOUR PARTY.

Index Latin word for a list. It is now used in several senses. To facilitate reference the contents of a book are often supplied with an index, the subjects being arranged therein in alphabetical order, with the page on which each will be found. Indexing is a work which calls for a high degree of intelligence and care, and good indexes are rare. An encyclopaedia with its contents arranged in alphabetical order does not require an index.

A **card index** is an index in which the information is kept on cards. The advantage is that new entries can be inserted at any time. These indexes are much used in business, chiefly for the names of customers.

In mathematics an **index** is a power to which a number has been raised. Thus in the expression x^3, 3 is the index, or power of x.

The first finger is sometimes called the **index finger** because it points.

The Roman Catholic Church has an *Index Librorum Prohibitorum*, a list of prohibited books. On this are put the names of all books which the church forbids its members to read. It is under the control of the Congregation of the Index in Rome.

Index Number Number compiled as an index to prices. The prices of certain commodities are taken, and from these, by rather elaborate calculations, index numbers are prepared. These show at certain periods the rise or fall in prices. The numbers known as Sauerbeck's are much used by merchants, but better known are those prepared every month by the Ministry of Labour. These show variations in the cost of living, and on them the bonuses paid to civil servants and others are based.

India Country and peninsula of Asia forming an empire under the sovereign of Great Britain. It covers 1,808,679 sq. m. and is bounded on the north by Afghanistan and the Himalayas and elsewhere by the sea, represented by the Bay of Bengal and the Arabian Sea, arms of the Pacific Ocean. The empire and the peninsula are not quite coterminous. The former includes Burma, but excludes some districts on the west coast, such as Goa and Pondicherri, that belong to Portugal and France. Ceylon is British, but is outside the Indian Empire.

In the north are the vast mountain systems containing the highest peaks in the world. Elsewhere are the fertile plains of the Ganges and the Indus, and still farther south is the plain called the Deccan and ranges of hills such as the Ghats and the Nilgiris. A third great river is the Brahmaputra. On the whole India is well watered, and the basins of the Ganges and Brahmaputra are liable to heavy floods, but in other areas, notably Bombay, a good deal of irrigation work has been necessary. The population, which, according to the census of 1931 was 352,837,778, belongs to

many races and speaks many languages. Two hundred and twenty-two of these have been recognised and they are grouped into seven families:—Western Hindi, Bengali, Telugu, Marathi, Tamil, Punjabi and Rajasthani. Hindustani is the literary language, and perhaps 3,000,000 people speak English. In religion the Hindus are the most numerous, about 239,195,140 (1931); the Mohammedans number about 77,677,545; and there are 12,786,806 Buddhists. Many of the inhabitants are gathered in the great cities, of which the largest are Calcutta and Bombay. Other populous centres are Madras, Hyderabad, Rangoon, Delhi, Lahore, Ahmedabad, Lucknow, Bangalore, Karachi, Amritsar, Cawnpore and Poona. The caste system prevails and is still strong.

The most convenient division of India is into British provinces and native states, which retain a certain amount of independence, but are under British protection. The former cover 1,318,346 sq. m. The largest province is Burma, which in some ways stands apart from India, and which it is proposed to separate from it. Next comes Madras, one of three old presidencies of British India, and the third is another presidency, Bombay. The United Provinces of Agra and Oudh, the Punjab, and the Central Provinces and Berar are all about the same size. Next in area are Bihar and Orissa, Bengal, Assam and Baluchistan, while much smaller are the North-West Frontier provinces, Ajmer-Merwara and Coorg. The Andaman and Nicobar Islands form a province and another is Delhi, the capital of the empire. Bombay, it may be said, includes Sind and Aden. The larger provinces are under governors, the smaller ones under chief commissioners.

The native states, of which there are some hundreds, cover 590,333 sq. m. Each with its own ruler, the largest are Hyderabad, Kashmir, Mysore, Gwalior and Baroda; the others are grouped together into agencies.

India is governed by a Governor-General, or Viceroy, who is responsible to the Secretary of State for India in London. He is assisted by a legislature of two houses. One of these is the Council of State and the other is an elected legislative assembly which was created in 1921. In addition, under the important scheme of 1919, there are legislative councils in the provinces, the members of these being partly elected and partly official, the former in a majority.

The actual work of the government is controlled by the viceroy's executive council and by executive councils in the various provinces. Each member of the central executive council has charge of a department of state, and its duties are discharged all over the land by members of the Indian Civil Service. To discuss the affairs of the native states there is a chamber of princes and residents representing the central government at their courts. In London there is a council of India to advise the Secretary of State. It consists of 12 members and two must be natives of India. There is also a high commissioner with offices at India House, Aldwych, a fine building opened in 1930.

Agriculture is the main industry of the Indian people, though many are employed in the ancient crafts and an increasing number in manufactures, especially of cotton. Rice, wheat and cotton are the chief crops; others are jute and sugar. Coal and oil are produced, as are moderate quantities of gold and silver. Vast areas are still under forest and to look after these there is an Indian Forest Service.

The country has a fairly good railway system and several large seaports. The unit of currency is the rupee worth about 1s. 6d. The chief bank is the Imperial Bank of India. For defence there is an Indian army largely officered by Britishers, and British regiments, about 70,000 strong, are stationed in the country. There is also an air force and a navy. A civil police of some 200,000 men keeps order.

HISTORY. India was conquered, in part at least, by the Greeks and the Scythians before the Mohammedans began a series of invasions about 1000. For about 300 years this continued and in time they reached the Deccan. In 1398 the land was wasted by Tamerlane, and in 1526 the great Mogul empire was founded. After a period of great glory, this declined in the 18th century when part of the land was conquered by Persia and the Mahratta kingdom became independent in the south.

At the end of the 15th century the Portuguese began to trade with India and soon had settlements there. The Dutch, French and English followed their example and each formed a company for this purpose, the English East India Company dating from 1600. The wars of the 18th century, and other causes, gave the supremacy to the English Company. The English made extensive conquests in India and before 1850 much of the peninsula was under their control.

After the Mutiny of 1857 (*q.v.*) the system of governing India which, with certain alterations, exists to-day, was established. The East India Company was abolished and its territories placed directly under the crown. In 1877 Queen Victoria was made Empress of India, and for many years the defence of the Indian frontier, which led to a war with Afghanistan, 1878-79, and to many smaller expeditions, was one of the main concerns of British policy. Indian troops fought for the Allies in the Great War, especially in Mesopotamia and East Africa.

In the 20th century a serious agitation for independence for India began. After the Great War there were some unpleasant incidents and Gandhi, the most prominent native, instituted a boycott of British goods, and took other steps to undermine British rule. But before this, to meet the Indian demands, the British government made certain changes. Indians were given a greater share in the government of their country, and in 1922 the Government of India Act established a representative body in the legislature. In 1927 a royal commission under Sir John Simon was appointed to report upon the whole question of the future government of India. In 1930 the recommendations of this body were published, one being the separation of Burma. Another proposal was the extension of the franchise to include 6,600,000 women.

The Round Table Conference met in London (1930-33) and decided upon a federal organisation for India, and a committee drafted a federal constitution. The Government proposals for constitutional reform were issued in a White Paper in March, 1933. In 1935 an Act was passed embodying these proposals, viz., an All-India Federation with provincial autonomy; the separation of Burma; and the dissociation of Aden from India.

Indiana State of the United States. In the centre of the country, it lies south of Lake Michigan and covers

36,350 sq. m. The chief rivers are the Wabash and the Ohio, and agriculture is the main industry. Indianapolis is the capital and the largest city. Others are Fort Wayne, Evansville, South Bend, Terre Haute and Gary. It sends two senators and 13 representatives to Congress. Pop. (1930) 3,238,503.

Indianapolis City and chief town of Indiana. It is 110 m. from Cincinnati and is an important railway centre. The industries are chiefly connected with the provision of food. Pop. (1930) 364,161.

Indian Civil Service Service that carries on the work of governing India. It is open to Britishers and Indians alike, and to enter it candidates must be successful in a competitive examination held every summer. For this the age limits are 21 and 24. The successful candidates must pass one or two years in study in England, and pass a further examination before they take up an appointment in India. The pay begins at about £540 a year and candidates can secure high positions as judges and administrators. After 25 years of service a pension of not less than £1000 a year is given. Full particulars of the examination can be obtained from the Civil Service Commission, Burlington Gardens, London, W.1.

Indian Ink Ink of an intense black colour used by artists and draughtsmen and sometimes called China ink when made in sticks or cakes. It is prepared from lampblack or carbon black mixed with weak glue or other ingredients. Ordinary Indian ink is not waterproof, but special waterproof preparations are now made.

Indian Millet Cereal grass yielding, after rice, the most extensively grown grain in the Old World. It is derived from *sorghum vulgare*, and innumerable varieties produce durra in Egypt and the Sudan, and Guinea and Kaffir corn in Africa. Other sorghums yield broom corns and Chinese sugar cane. It is indigenous to Asia, but is now grown in North America.

Indian Mutiny Revolt agianst British rule in India in 1857-58. It is usually attributed partly to an order stating that in future Bengali soldiers were liable to service overseas, but still more to the act of serving out to the native soldiers cartridges greased with the fat of pigs and cows, the one an unclean and the other a sacred animal.

There were, however, other causes of discontent, although those mentioned played their part. Western ideas were being introduced and native customs suppressed, thus giving rise to vague, but none the less real feelings of disaffection. After some sporadic outbreaks at Barrackpur and elsewhere, the mutiny proper began at Meerut on May 10. There some native regiments murdered their officers with their women and children, marched to Delhi, 40 m. away, and restored the old Mogul Empire in the person of Bahadur Shah. Other centres of revolt were Cawnpore and Lucknow, and at both places British garrisons, aided by some loyal sepoys, were besieged. On June 27, Cawnpore surrendered and, in spite of a safe conduct, all men, women and children were murdered by order of Nana Sahib. In the residency at Lucknow the British held out.

Sir Henry Havelock fought several battles on his way to Cawnpore, which he entered too late to save the garrison. From there he marched towards Lucknow which he reached on Sept. 23. By now his force was very much reduced in strength and he could only join the besiegers and wait with them for further aid. The mutiny at Delhi had meanwhile been crushed. On August 14 the city was stormed and heavy punishment dealt out to the rebels there.

By now Sir Colin Campbell had arrived with reinforcements from Britain. He reached Cawnpore, and then with 8000 men relieved the garrison at Lucknow. The worst was over, but much remained to be done. Campbell spent some time in putting down the revolt in Oudh, whilst Sir Hugh Rose dealt with the mutiny farther south, in both areas a tedious guerilla warfare being carried on. The capture of Jhansi and Gwalior by Rose in the summer of 1858 marked the end of the major operations. The revolt was confined to Bengal, Oudh and other parts of northern and central India, and, with one or two exceptions, the native rulers remained loyal to Britain.

Indian Ocean One of the five great oceans of the world. In the southern hemisphere, it stretches from Africa to the East Indies and Australia and in the other direction from Asia to the Antarctic. India divides the northern part into two portions.

Indian Summer American name for a period of fine weather in autumn. Known in England as S. Martin's Summer, it is characterised by calms and absence of rain.

Indiarubber Name given to *ficus elastica*, a tall evergreen tree growing in the damp forests of northern India, Assam and Burma. It is distinguished by its smooth oblong leathery leaves, a character which has brought it into favour in Great Britain as a decorative pot plant. In Assam large government plantations are established for supplying rubber, which, however, is of lower grade than that obtained from *hevea*, the source of most commercial rubber. *See* RUBBER.

India Office Department of the British Government. It dates from 1858, and is responsible for looking after the affairs of India. Its head is a secretary of state, who is assisted by an under-secretary and a staff of civil servants. There is also a consultative council. The expenses of the office are met from Indian funds. The office is in Whitehall, London, S.W.

Indictment In English law a written accusation against a person who is tried by a jury. Offences are divided into indictable and non-indictable, the latter being the minor ones. In indictable offences the accusation is put in writing and submitted with the evidence to the grand jury, for consideration. If they consider it proved they return a true bill, or indictment, and the accused goes to trial. In Scots law, an indictment is the form under which an accused person is put to trial at the instance of the Lord Advocate.

Indies Term used for two districts of the globe. The East Indies consists of India, the Malay Archipelago and the districts around them. The West Indies consists of Cuba, Jamaica and other islands off the coast of Central America. *See* INDIA; WEST INDIES.

Indigestion Inability to digest food arising from disorder of the digestive organs. *See* DYSPEPSIA.

Treatment should be mainly preventive—avoidance of foods which usually cause the condition, such as strong tea, fresh white bread, sweet cakes, heavy puddings, some root vegetables (*e.g.* turnips), twice-cooked meat, and rich dishes cooked with fat.

A simple, wholesome diet should be adopted with meat once a day at the most, and plenty of fresh, natural foods. Three meals are sufficient, and there should be no eating between meals, though plenty of water should be drunk. One or two tumblerfuls of hot water before breakfast and at bedtime will be beneficial. To relieve an attack a pinch of bicarbonate of soda in water or a dose of bismuth may be useful in some cases. It is essential that constipation should be relieved, if necessary, with daily doses of medicinal paraffin, and regular exercise in the open air will help to restore the general health.

If the condition persists, a doctor should be consulted in case there is some underlying cause. (*See also* FLATULENCE, HEARTBURN).

Indigo Important blue dyestuff. It is prepared from several leguminous plants of the genus *Indigofera*, chiefly *I. tinctoria* and *I. arrecta*, cultivated in India, Java and Natal. The sediment from a watery extract of the plant is dried and formed into small cubes of the dyestuff, which is of a deep blue colour with a coppery tinge. Natural indigo to a large extent is superseded by the synthetic product, a derivative of naphthalene. This gives greater ease in manipulation and less cost of production.

Indium Rare metallic element having the symbol In and atomic weight 114.8. It was discovered in 1863 in zinc blende and occurs also in other zinc ores and zinc flue dust. Indium is a soft white ductile metal which melts at 155° C., and when heated to redness in air burns with a violet flame.

Individualism Theory in politics and economics that opposes the interference of the state in the affairs of individuals. It is thus opposed to socialism, collectivism and communism. Individualism was advocated by Adam Smith. Bentham, John Stuart Mill and Herbert Spencer and was very strong in the 19th century. Towards the end of that century, however, it became less popular and to-day is almost discredited. Many reasons have contributed to this, one of the most powerful being the impotence of the individual in the face of the conditions of the modern world, where the tendency is to larger and larger units for production and distribution, with the individual becoming more and more a mere cog in the great machine.

Indo-China Name given to a region in Asia that lies between India and China. A French possession, it consists of Cochin China, Cambodia, Tongking, Annam and Laos. It covers 285,000 sq. m. and is under a governor general. The capital is Hanoi. The unit of currency is the piastre, and a bank of Indo-China has been established. Pop. (1931) 21,652,000.

Indonesia Ethnological term for groups of islands in the Indian and Pacific oceans. Included are the Java group, part of the Malay Peninsula, Borneo, Celebes, the Philippines and the Pacific groups. Modern investigations in the western groups have brought to light remains of former inhabitants who do not resemble the present races but are allied to those now inhabiting Australia and the Pacific groups, forming important evidence as to migration and the origin of the races in the latter.

Indore State of India; also the name of its capital city. The state is in the centre of the country and covers 9670 sq. m. It is ruled by a maharajah. Pop. 1,318,237.

The city of Indore stands on the River Saraswati near where it is joined by the Khan. It is the seat of the ruler and trades in cotton, corn and other commodities. Pop. 127,327.

Induction Process of thinking. In logic there are two methods of reasoning, the inductive and the deductive. In the former the argument is from a general principle to a particular case; in the latter it is the reverse. By induction a man, knowing that water will always run downhill, makes his pond at the bottom of a sloping garden. *See* DEDUCTION.

Induction In ecclesiastical law the formal act of placing a clergyman in possession of a living. It is usually done by the bishop, and until the ceremony is performed the clergyman is not legally entitled to the revenues of his office.

Induction Term used in electricity for the electrifying or magnetising of a neutral body by an electrified or magnetised body in the vicinity. In electro-magnetic induction a current is generated in a conductor by varying the surrounding magnetic field.

An **induction coil** consists essentially of a soft iron core surrounded by a primary coil of short thick wire and an outer coil of long thin wire. A magnetic field is formed in the core by a current passing through the primary coil, and by continuous interruptions or changes of direction of flow of this current induced currents are set up in the outer coil.

Indulgence Concession or power to do something. It is chiefly used in the Roman Catholic Church for a remission from punishment for sin. Indulgences were first used to free penitents from punishment in this life, but later they were given by the Pope to free them from punishment hereafter. The theory was that there was an inexhaustible fund of grace upon which the Pope could draw for the benefit of those in purgatory. Indulgences, which are either plenary or partial, are still given by the Pope. The selling of indulgences in Germany to obtain money to rebuild S. Peter's, Rome, was one of the reasons why Luther, in 1517, attacked the Church of Rome and started the Reformation. James II. of England caused irritation by issuing declarations of indulgence to relieve Roman Catholics and Nonconformists from the penalties attached to their religion.

Indus River of India. It rises in the Himalayas in Tibet, at a height of 18,000 ft. Flowing N.W. through the Kashmir gorges, it turns S.W. near Bunji, receives the Kabul River near Attock and collects the Punjabi streams at Mithankot, below which it traverses the plain of Sind to its delta on the Arabian Sea. The fall to Attock, 900 ft. about sea level, below which it is navigable, causes flooding, but the extent of this has been reduced by a dam and vast irrigation works. The length of the river is 1800 m. and its drainage area is 372,000 sq. m. Its waters are used for the world's largest irrigation system, consisting of the Lloyd Barrage at Sukkur and seven canals.

Industrial Court Department of the British Govern-

ment. It was set up in 1919 to deal with disputes between employers and employed. Its headquarters are at 5 Old Palace Yard, Westminster, S.W.1. Disputes referred to it are decided by a court which is composed of representatives of both classes with an independent chairman. To constitute these courts there are panels of employers, employed and neutrals, from which a court can be formed.

An **industrial council** is a council of employers and employed which exists to deal with trade disputes. They are found in many industries and are usually known as Whitley councils.

Industrial Disease In Great Britain a disease which arises from the condition of one's occupation. Miners and those who handle wool, hair and other commodities are among those subject to these diseases. Workers with lead, mercury, arsenic and other substances are sometimes poisoned and workers in certain chemicals are liable to injury of one kind or other. A list of industrial diseases has been drawn up by the Home Office, and those suffering from one of them can claim compensation under the Workmen's Compensation Acts.

Industrial Psychology

Branch of psychology which investigates the behaviour of workers. It deals with the special psychological problems involved in modern industrial employment. Among matters that come under review are hours and conditions of labour, pauses for rest, meal times, monotony, fatigue onset, etc. A section deals with vocational tests designed to aid the selection of suitable workers for particular tasks. There is a chair of Industrial Medical Psychology in London University.

Industrialism Word used for the system of industry in force to-day, the production of goods in factories and works on a large scale. It is the opposite of the older system by which goods were produced by men working in their own homes, or in small workshops. Many modern evils are put down to industrialism, and some of the charges brought against it are doubtless true, but it appears an inevitable development in the modern world. Indeed, it shows signs of spreading from the countries of the west, where it has been developed, to the countries of the east, where for centuries an entirely different system has prevailed.

Industrial Revolution

Phrase used for the change that came over industry in Great Britain in the 18th and early 19th century. It was marked by the substitution of steam for hand labour and by the building of factories for the manufacturing processes that were previously done in the homes. It is associated with the inventions of Arkwright, Hargreaves and others, and received a great impetus when the steam engine was invented. It may be said to have begun about 1750 and to have been completed by 1850.

Industrial School Institution for the training of children who are unruly. A boy or girl can be sent to one of these by a magistrate, but he or she must not remain therein after the age of 16. They are called industrial schools because the inmates are taught trades.

Inebriate Word used for a habitual drunkard. In Great Britain such persons can be put under control and there are institutions in which they are received. These must be licensed and are inspected by officials of the Home Office. To be put under restraint an inebriate must be certified by two medical men. There are associations for the care of inebriates, and one for the study of inebriety.

Inertia In physics, the inherent property of matter of retaining its state of rest or of uniform motion in a straight line unless acted upon externally. **Rotational inertia**, or moment of inertia, is the sum of the products obtained by multiplying each element of mass by its squared distance from the axis. The **centre of inertia** is the centre of gravity or mass. **Electric inertia** is that superinduced by an electric charge.

Infallibility Inability to do wrong. It is chiefly used in ecclesiastical matters. Many Christians have held, and some do hold, that the Bible, or the Church, or both, are infallible. This arises from the belief that both are of divine origin and that the Church is guided by the Holy Spirit. In 1870 the doctrine of papal infallibility was declared by a council of the Roman Catholic Church.

Infant Person under 21 years of age. In English law an infant is under certain disabilities. He or she cannot bring an action at law, but must sue, if and when it is necessary, through a next friend. A tradesman who supplies an infant with necessities can obtain payment, but he cannot do so if he supplies luxuries to an infant. The court will decide what are luxuries, having regard to the position of the infant. An infant cannot enter into a contract.

The murder of young children is known as **infanticide**. At one time, to deal with the surplus population, it was much practised in India. Certain primitive peoples, both in the ancient and the modern world, have resorted to it, either for the same reason, or to rid the community of weaklings.

Infant Mortality Term used for the death rate among children under one year old. At one time this was terribly high, but in the 19th century civilised countries took steps to reduce it and it has been enormously reduced. The steps taken include the provision of milk and nurses, the isolation of infectious cases, better housing, greater cleanliness, and in general all that makes for a higher standard of living. The rate varies very much between various districts, and it is still much too high where housing conditions are bad.

Infantry Word used for foot soldiers. Ever since organised warfare began the infantry have been the most numerous and the most important part of an army. It was so in the Persian, the Greek and the Roman armies and was equally so in the changed conditions of the Great War. Early armies consisted of infantry and cavalry, the latter a comparatively small body, and in the Middle Ages there were many struggles between the two, the advantage being sometimes with one and sometimes with the other. Later the artillery made a third arm, and later still came the airmen, but since about 1400 no major battle has been won without a stout body of infantry.

Infantry to-day are organised in battalions about 1000 strong and form something like three-quarters of the strength of the modern army. From early times they have been classified, usually according to their principal

weapon, and so we hear of slingers, archers, crossbowmen, pikemen, fusiliers, grenadiers, riflemen and others. **Mounted infantry** are infantry who use horses to aid their progress, not to fight on as do cavalry.

Infection Conveyance of disease through the entrance into the body of micro-organisms which generate toxins in the blood or tissues of the patient. Many infective disease germs are carried by persons apparently healthy as in the case of typhoid fever, and a number of animals and insects are responsible for the spreading of contagious diseases.

In Great Britain the more serious infectious diseases, scarlet fever and smallpox, for instance, are notifiable, *i.e.*, the medical officer of health must be informed, under penalty of a fine, when a case occurs. Other diseases, *e.g.*, measles, can be made notifiable if a local authority desires it.

Inferiority Complex In psychology, feeling of inferiority, manifested by lack of confidence, dissatisfaction with one's achievements, diffidence, etc. It often leads to a reaction or swing in the other direction, the subject assuming a bold, confident, self-satisfied or even pompous demeanour. Some Psycho-analysts derive the inferiority feeling from some actual physical drawback of the subject.

Infidel Word meaning without faith and denoting, more or less opprobriously, one who rejects Christianity, while accepting no other faith. It is not applicable to heathens, to those rejecting particular doctrines only, or to doubters prepared to be persuaded. Mohammedans designate Christians by similar words, *giaour*, *kafir*.

Inflammation Condition of a part of the body. It is characterised by a congestion of the blood-vessels causing redness, rise in temperature, swelling and pain, and is due to the presence of microbes, irritant bodies, burns, etc. The white blood corpuscles or leucocytes in the blood-vessels destroy the microbes and the remains of the dead microbes and leucocytes form pus or matter. Where chronic inflammation occurs, it may be caused by such complaints as rheumatism, gout or tuberculosis.

Inflation Condition of being puffed up with air, or gas. It is used when air is pumped into motor tyres and in other such cases.

It is also used financially for an increase in the amount of money, especially paper money, in circulation. There was a good deal of this in most European countries during the war period, and it was suggested as a remedy for the serious depression that prevailed in 1931-32. Its effect is to raise prices. The opposite process is called deflation (*q.v.*). *See* REFLATION.

Influenza Infectious feverish disorder of short duration. It is characterised by catarrh of the respiratory and intestinal tracts and more or less prostration. It usually occurs in epidemic waves. Apparently caused by a microbe, which usually operates within 48 hours, it may sweep rapidly round the world as it did in 1918-19. The disease has a low death-rate, as a rule, but has protracted effects upon the general health.

Treatment—To avoid risk of complications, rest in bed in a warm room is essential until the temperature is normal (98.4° F.). Aspirin will relieve pain and reduce temperature, and a light diet should be adopted. An aperient should also be taken.

Informer In English law a person who prosecutes another for breaking the law. In 1931 there were cases of this kind and common informers brought actions against the proprietors of cinema houses for keeping these open on Sunday. In one case at least of this kind, large damages were awarded to the informer.

Another kind of informer is a criminal who comes forward to give evidence against his fellow criminals. This is usually called turning king's evidence.

Ingatestone Town of Essex, 24 m. from London, on the L.N.E. Rly. Near is Ingatestone Hall, the seat of Lord Petre. Pop. 600.

Inge **William Ralph.** English divine. Born in Yorkshire, June 6, 1860, he was educated at Eton and King's College, Cambridge. From 1880-84 he was a master at Eton and from 1889-1904 was fellow and tutor of Hertford College, Oxford. In 1905 he became vicar of All Saints, Ennismore Gardens, London, and in 1907 Lady Margaret Professor of Divinity at Cambridge. In 1911 he was made Dean of S. Paul's. During his years at S. Paul's, Dean Inge became a very popular writer, dealing fearlessly with the problems of the modern world. His ideas are contained in *Outspoken Essays*, *The Idea of Progress*, *Lay Thoughts of a Dean*, *More Lay Thoughts of a Dean*, 1931, and other books. He has written standard books on mysticism and the philosophy of Plotinus. In religion Inge is a broad churchman with only scant sympathy with High Church ideas.

Ingelow **Jean.** English poetess. Born at Boston, March 17, 1820, in 1863 a volume of her verse attracted attention, and was followed in 1867 by a long poem, *A Story of Doom*. She then turned to novel writing, and published *Off the Skilligs*, *Don John* and other books. She died in London, July 20, 1897.

Ingersoll Town of Ontario, on the Thames, 19 m. from London, on the C.P. and C.N. Rlys. The town has some manufactures and there is an export trade in farm produce. Pop. 5150.

Ingersoll **Robert Green.** American writer. Born Aug. 11, 1833, the son of a minister, he became a lawyer. He served in the Civil War and was afterwards known as Colonel Ingersoll. In politics, having been a Democrat, he turned to the Republicans and was made Attorney-General of Illinois. He was better known for his attacks on Christianity. He died July 21, 1899.

Ingleborough Hill in Yorkshire, about 3 m. from Settle in the N.W. of the county, and 2370 ft. high. On it are remains of a fort and in it is Ingleborough Cave containing stalagmites and stalactites.

Ingleton Market town of Yorkshire (W.R.), 10 m. from Settle and 246 from London on the L.M.S. Rly. Pop. 2464.

Ingot Unwrought metal cast and moulded into portions of a convenient shape and size for further use. The term is applied particularly to gold, silver and steel.

Ingram **Rex.** Film producer. He was born in Dublin, Jan. 15, 1892. Going to the United States, he worked there as a sculptor and an actor, afterwards becoming connected with the film industry. His

productions include *The Garden of Allah* and *The Four Horsemen of the Apocalypse.*

Ingres Jean Auguste Dominique. French painter. Born Aug. 29, 1780, he was awarded the Grand Prix in 1801 after 4 years' study. Consisting chiefly of portraits and classical subjects, his work is represented in the Louvre and many European collections and at the Musée Ingres at Montauban opened in 1867. He died Jan. 14, 1867.

Inhabited House Duty

Tax levied until 1924 on all inhabited houses in Great Britain over a certain yearly value. It was introduced in 1851 and was on a graduated scale, 3d., 6d., or 9d., on houses worth more than £20 a year. On farmhouses, shops and public houses it was 2d., 4d. or 6d. It was abolished in 1924.

Inhibition Term meaning external restraint. In psychology it is applied to the repression of an impulse, etc., which, from its nature, is repugnant to the conscious mind. Many primitive urges are thus inhibited. Inhibition may not be complete, and the energy is then displaced on to some associated mental process not unacceptable to consciousness. *See* PSYCHO-ANALYSIS, REPRESSION.

Initiation Introduction or admission by preliminary instruction or ceremony into an office or society. In primitive culture ceremonial introductions, whether into adult privileges and duties, the status of leadership or secret guilds, sometimes meant the effusion of blood, as by circumcision, tattooing or other mutilations.

Injection Term used in medicine for the method by which a drug or food is introduced into the body by means of a syringe or similar apparatus. Hypodermic injection is a means of introducing drugs beneath the skin by a special form of graduated glass syringe attached to a sharp-pointed hollow needle. Another form of injection is the use of the enema for the washing out of the rectum with water in obstinate constipation or the introduction of drugs or foods into the intestinal tract.

Injector Apparatus used for causing a current of water to flow in a pipe by means of a jet of steam under high pressure. Various forms of injectors are used for feeding water to steam boilers, the earliest type being introduced by Henri Giffard in 1859. A form of the apparatus is used also for removing water from a boiler, and is termed an ejector, and another type maintains the vacuum in the cylinder of a vacuum brake.

Injunction Term used in English law. It means an order forbidding a defendant from doing something which he threatens to do. Thus, if there is an action about the ownership of some debentures, the plaintiff could apply to the court for an injunction forbidding the defendant to dispose of them until the action had been heard. Application for injunctions must be made to the High Court.

Ink Black or coloured liquid used in writing, printing, etc. Ordinary writing inks are made from ferrous sulphate and an infusion of gall-nuts with the addition of a little gum, but in blue-black inks aniline blue or indigo is added. Red ink is usually a solution of eosin dye. Copying ink is a writing ink containing glycerine to prevent drying, and typewriter inks usually consist of a solution of merhyl violet or other aniline dyes, with oil, glycerine, etc. Printing inks are oily compounds of lampblack, paraffin, resin, etc. Marking inks are preparations of silver nitrate or aniline dye-stuffs. *See* INDIAN INK.

Inkerman Ridge in the Crimea, the scene of a battle between the British and the Russians. The hill, which overlooks Sevastopol, was held by the British who were attacked on Oct. 25, 1854, by the Russians. On Nov. 5, during a dense fog, the Russians attacked again, and only after the arrival of British and French reinforcements were the Russians beaten off. The British lost about 2400 men, the Russians about 11,000.

Inkpen Village of Berkshire. In the neighbourhood is Inkpen Beacon, the highest point of the Berkshire Downs. It rises to a height of 959 ft. at Walbury Hill. The village is 4 m. from Hungerford. Pop. 660.

Inland Revenue Name used in Great Britain for the revenue obtained from income tax, death duties, stamp duties and licences of various kinds. The collection of these taxes is supervised by the Board of Inland Revenue at Somerset House, London, W.C.

Inlaying Method of ornamentation of wood or metal. It consists of the insertion of small thin pieces of some material into the surface to form geometrical or other forms of designs. The materials used may be wood, ivory, pearl, tortoiseshell or metal, and inlaying is used for furniture, chessboards, small boxes, etc. In wood inlaying, thin veneers of different coloured woods are generally used to give contrasts in colour, and these veneers are glued to the surface of the object.

Inman William. English shipowner. Born at Leicester, April 6, 1825, he was educated in Liverpool and entered business there. In 1849 he became a partner in a firm of merchants and in 1850 a shipowner. He founded the Inman line, and died July 3, 1881.

Inn House where travellers are accommodated. The larger inns are usually known as hotels, and all are in the eyes of the law public houses. If accommodation is available the proprietor must take in travellers who apply for accommodation. Every inn must be licensed if intoxicating liquors are sold, and for this purpose can only be open for certain hours each day.

Inns have a great historic interest. They existed in the time of the Romans. In England they are heard of in the 12th century, and from that time until the coming of the railways they played an important part in the life of the country. Some of them, such as The Mermaid in London and The Tabard at Southwark, are famous for their literary associations. Others, still standing, are famed for their age or picturesque appearance, or both. Such include The Feathers at Ludlow, the Luttrell Arms at Dunster, the Old George at Salisbury, the New Inn at Gloucester, The Maid's Head at Norwich, The Star at Alfriston and many others. The word means within, and a synonym is tavern. The Innholders' Company is one of the London livery companies. The hall is at 28 College Street, E.C. 4. *See* HOTEL.

Innerleithen Burgh of Peeblesshire, 6 m. from Peebles, on the L.N.E. Rly. The chief industry is the manufacture of woollen goods. The town has a mineral spring and pump room. The spring is the original of the one in Scott's *St. Ronan's Well*. Pop. 2500.

Inner Temple One of the four English inns of court. Its buildings are in the Temple, London, E.C., where it has a fine hall and library. The Society shares the Temple Church with the Middle Temple.

Innisfail Poetical name for Ireland. It means the island of destiny. Irish legends record that the Lia Fail, the stone on which Jacob slept when he saw the heavenly ladder, was brought to Ireland and placed at Tara, where it was used as a coronation stone.

Inniskilling Name formerly used for the Irish town of Enniskillen. It is borne by two regiments of the British Army. The **Royal Inniskilling Fusiliers** was raised in 1689 and ranks as the 28th regiment of the line; it has a fine record of service, including the Great War. The depôt is at Omagh.

The **Inniskilling Dragoons** was raised at the same time and under the same conditions, Enniskillen having just been defended against the forces of James II. and the French. After the Great War it was disbanded and the name taken by the 5th Dragoon Guards.

Innocent Name of 13 popes, the most important of whom was Innocent III. (see below). **Innocent I.** was pope from 402 to 417. He died March 12, 417, and was afterwards canonised. **Innocent II.** reigned from 1130 to 1143. **Innocent IV.**, who reigned from 1243 to 1254, was much occupied in the great quarrel with the Emperor Frederick II. **Innocent V.** only reigned for a few months. **Innocent VI.**, a Frenchman, reigned from 1352 to 1362, and **Innocent VII.** from 1404 to 1406. **Innocent VIII.** was pope from 1484 to 1492, and **Innocent IX.** for a few weeks in 1591. **Innocent X.** reigned 1644-55; **Innocent XI.**, 1676-89; and **Innocent XII.**, 1691-1700. **Innocent XIII.** was pope 1721-24.

Innocent III. Pope from 1198 to 1216. The son of an Italian count and the nephew of Pope Clement III., he was born at Anagni in 1160, his name being Lothaire Conti. He was educated in Paris and Bologna, and in 1181 became an official in the papal court. In 1191 he was made a cardinal, and in 1198 he was chosen pope. Innocent reigned for 18 years, a period during which the papacy was at the height of its power. In Germany his influence helped Otto IV. and then Frederick II. to secure the imperial throne; he forced John of England to a humiliating surrender, and his authority was also exercised in France, Norway and other lands. Innocent called the council of the Lateran, which in 1215 proclaimed a crusade, and he was responsible for the crusade against the Albigenses. He died at Perugia, July 16, 1216.

Innocents' Day The day commemorating Herod's massacre of the children of Bethlehem (Matthew ii.). The Greek Church observes it on Dec. 29, and Western Christianity on Dec. 28. In pre-Reformation days it was an occasion of public mourning in England.

Innsbruck Town of the Tirol and the capital of the district. It stands on the River Inn, 102 m. from Munich, high amid the mountains, and is a popular tourist resort. Among the buildings, the first from the point of view of interest is the Franciscan church, which contains the magnificent marble cenotaph of the Emperor Maximilian I. Another famous building is a house with a roof of gilt copper tiles and a notable balcony of the 15th century. Near the town was a Roman station and later an abbey, the church of which still stands. It has a broadcasting station (283 M.; 0.5 kW.). Pop. 56,400.

Inns of Court In England four societies that alone have the right of admitting men and women to practise as barristers. They are Lincoln's Inn, Gray's Inn, Inner Temple and Middle Temple. In Dublin there is an inn of court called the King's Inn and one has existed since 1922 for N. Ireland at Belfast. In Scotland a similar work is performed by the Faculty of Advocates.

Each inn is governed by barristers called benchers, one of whom is chosen each year to act as treasurer. Each of the four English inns has a hall, library, chapel and other buildings in London. At one time there were other inns of court in London, but these have now disappeared except that, in some cases, the name remains. Among these are Clement's Inn, Staple Inn, Serjeants' Inn, Thavies Inn and Clifford's Inn.

Inoculation Term applied to the introduction into the body by subcutaneous injection of an attenuated virus for the purpose of preventing a disease. The best known example of inoculation is that of vaccination for small-pox, but within recent years the use of anti-toxic sera and vaccines has extended the range of inoculation or vaccination to the prevention of many other diseases, such as tetanus, hydrophobia or rabies, diphtheria, typhoid and anthrax.

Inquest Inquiry of any kind. In England in mediaeval times inquests were used for a variety of purposes, but to-day the word is confined to inquiries held by a coroner. These usually concern persons who die suddenly, or by violence, in fact, every one for whom a doctor will not give a certificate stating the cause of death. The coroner also holds inquests on treasure trove. At one time a coroner had always to sit with a jury, but since 1927 he need only summon a jury if he thinks that the death was due to violence, such as murder or manslaughter, or to a street accident. *See* CORONER.

Inquisition Any inquiry, but chiefly the inquiry known in the Roman Catholic Church as the Holy Office. It was founded in 1248 by Pope Innocent IV., for the suppression of heresy, and was directed by the members of the order of St. Dominic. The first tribunal was set up at Toulouse, and it was introduced into Italy, Spain, the Netherlands, Portugal, and taken to the countries of the New World. It lasted until the 19th century, when it was suppressed in the various countries at different dates.

The great age of the Inquisition was the 15th century, and the country where it was most active was Spain. Under an Inquisitor-General, the most notorious of whom was Torquemada, it had an elaborate organisation. Before the tribunals any one suspected of heresy could be brought on the most fragile

evidence. The sittings were held in secret, and the accused knew nothing of his accuser. Torture was freely used by the officials, known as familiars, to extract confessions, and the condemned were usually burned with great ceremonial. Even allowing fully for exaggeration, the Inquisition was responsible for thousands of deaths and a vast amount of suffering.

Insanity State of having an unsound or disordered mind, being unable to control one's actions. Insanity is the result of disease of the mind, acquired or inherited, and if conduct is gravely affected, "certification" and detention in a mental hospital are necessary. The insane are protected by the Lunacy Laws, which are administered by a government department, called the Board of Control. *See* LUNACY.

Inscription Record of a durable character. It is inscribed upon various materials such as stone, burnt clay, wood, metal, etc., either in conventional writing, pictorial or hieroglyphic script. Our knowledge of the ancient races depends largely upon the decipherment of inscriptions upon buildings, tombs, pottery, etc. The famous Rosetta Stone with its three forms of script furnished the clue to the ancient Egyptian language, while the inscriptions on the Rock of Behistun in Persia gave the key to the cuneiform writing.

Insect Class of the arthropoda, a division of invertebrate animals. They have jointed appendages, and consist of a larger number of species than any other class of arthropods, at the same time possessing a general uniformity of structure. Insects are characterised by having the body divided into head, thorax and abdomen, with the head provided with antennæ, mandibles and other appendages. The thorax bears three pairs of legs and in most cases two pairs of wings, while the abdomen is limbless but may have an ovipositor or its modification. The exoskeleton is of uncalcified chitin, which may be of considerable thickness.

Insects are air-breathers and respiration is by means of branching tracheae or air-tubes communicating with the exterior. The sexes are separate, and development is usually by a metamorphosis consisting of a larva, chrysalis or pupa, and imago, but in some it is direct. For the most part insects are terrestrial, but a few are adapted for aquatic life.

Insecticide Term applied to various chemicals or chemical mixtures used in agriculture and horticulture to destroy noxious insects. These substances may be in liquid or powder form and are either stomach poisons or contact poisons. Insecticides of the first class destroy by being taken in with the food, and consist of arsenical salts, copper sulphate or sodium fluoride and fluosilicates. Contact insecticides enter by the respiratory pores on the insect's body causing suffocation. Examples are pyrethrum powder and tar oils.

Inskip **Sir Thomas Walker Hobart.** English politician. Born in Bristol, March 5, 1876, the son of a solicitor, he became a barrister and a K.C. In 1918 he was elected Unionist M.P. for Central Bristol, and in 1922 he was Solicitor-General, an office he again held in 1924-28. In 1928-29 he was Attorney-General, and in 1931 he was again Solicitor-General in the National Government, later becoming Attorney-General. In 1929 having lost his seat at Bristol, he was returned for the Fareham division.

Insolvency Condition of being unable to pay one's debts. It is thus the equivalent of bankruptcy, though many cases of insolvency are dealt with by a deed of arrangement. *See* DEED; BANKRUPTCY.

Insomnia Inability to sleep, especially when chronic. Distinguishable from the sleeplessness attending many illnesses and from the occasional wakefulness caused by indigestion, it is often due to worry or overwork, but sometimes succeeds a past illness, *e.g.*, influenza. It is believed to be due to a disturbance of the mechanism controlling the cerebral blood vessels. It is best remedied by simple dietetic measures, fresh air and avoidance of disturbing factors. Sedative drugs, except under medical advice, should be scrupulously shunned. *See* SLEEPLESSNESS.

Inspector One who overlooks or inspects. The Home Office has inspectors of factories and mines; the Board of Education has inspectors of schools; the Board of Inland Revenue has inspectors of income tax. Local authorities have inspectors of food and for other purposes.

Inspiration Act of drawing in breath, as opposed to expiration. Analogously the word denotes influences exerted upon the human mind and spirit, and specifically those which resulted in certain scriptures being inspired of God (2 Tim. iii., R.V.). The nature of this inspiration has been much discussed. The older view, that of verbal, plenary or mechanical inspiration, is mostly displaced nowadays by that described as dynamical, essential or vital. Under this it is held that the Bible *contains* the Word of God, and that the inspiration lies, not in the manner of the record, but in the value of the revelation.

Instinct Term which is defined in different ways according to the school of psychology. It may be expressed generally as an inherited or innate capacity for the performance of certain actions in response to a particular stimulus without previous inference or teaching, or it may be defined as the fulfilment of certain fundamental needs, such as the satisfying of the desire for food. Instinct is seen at its best in the activities of ants, bees and wasps.

Institute Word meaning something that is set up, a variant being institution. There are institutes and institutions of all kinds in Great Britain, *e.g.*, poor law institutions.

The **Institute of France**, established in 1795, was formed to group together the five great learned societies of that country; the French Academy, the Academy of Inscriptions and Belles Lettres, the Academy of Sciences, the Academy of Fine Arts and the Academy of Moral and Political Sciences. The number of its members is 228 and the headquarters are in Paris.

The **Institut Français** is an educational centre in London, its object being to promote a knowledge of France among English people. Its offices are 7 Cromwell Gardens, S.W. 11.

An **institutional church** is one that undertakes social and educational work of various kinds, as well as the ordinary religious activities. The first was established in Boston in 1894.

Insulation Term in electricity expressing the resistance to the

passage of an electric current by certain substances known as insulators. Dry air and gases are almost perfect insulators, while among solids, ebonite, rubber, paraffin wax, mica, porcelain and gutta percha are most used.

Insulin Extract obtained from the pancreatic glands of oxen. It is taken from islets in the pancreas, and is much used in the treatment of diabetes. It was discovered by F. G. Banting.

Insurance Method of providing by regular payments for an event, either certain, such as death, or possible, such as fire. To-day insurance is an enormous business conducted by companies with vast funds and wide ramifications. In Great Britain special legislation has been passed to protect insured persons, and the affairs of insurance companies are to some extent supervised by the state. Each policy, this being the name for the contract between the insurer and the insured, must conform to certain conditions and must be stamped.

Some companies deal in only one kind of insurance, but most of them conduct almost all classes of business. This may be divided into life, fire, marine and accident, but there are other branches; the insurance of machinery and boilers, of aircraft and of plate glass. Each has its own conditions and its own experts. Farmers can insure their crops and their cattle; holiday makers can insure against loss, owing to bad weather, and parents can insure against the failure of children, owing to illness, to attend school. In addition unusual risks, such as the failure to hold a seat at a general election, or the missing of a boat to America, can be insured against at Lloyds.

Policies of **life insurance** are taken out for a fixed sum, and the premiums paid at stated intervals. The sum insured for may be payable at a certain age, say 65, if the insured reaches that age, and some policies have bonuses added to them. The amount of the premium varies with the age, sex and health conditions of the insured. Practically all property is insured against fire, and many people find it convenient to take out a combined policy that covers their possible loss, not only in the event of fire, but also against burglary and accident to servants.

Marine insurance is a highly specialised branch. All vessels and their cargoes are insured, and any loss is borne on the principle of average, this being worked out by average adjusters. Insurance against accident is a newer branch and much of it is concerned with motor cars. Since 1930 every motorist must be insured against third party risks.

Two other forms of insurance are very popular in Great Britain. **Industrial insurance** is a special branch and is controlled by special laws. Much of it is done by the friendly societies, but large companies also exist for the purpose and some of these have accumulated very large reserves. The premiums are collected by paid agents every week, and the societies are thus called collecting societies. The policies are chiefly life policies, and a good many are to provide funds for burials. Life policies of this kind must not be for more than £300, and to prevent abuse no one can take out a policy on the life of a child for more than £15, and this can only be done by the parent or other near relative.

A form of insurance is conducted by some of the great national newspapers. By becoming a regular subscriber a person can be insured against accident. The terms are laid down in the newspaper itself. Very large sums are given in case of death in a railway accident, a comparatively rare occurrence, but smaller sums for road accidents. Quite apart from this insurance work are the state schemes for insurance against ill-health and unemployment, which affect over 17,000,000 workers. *See* HEALTH; UNEMPLOYMENT.

INSURANCE AS A CAREER. The possibilities offered by Insurance as a career are considerable for the man with some mathematical ability and keen commercial instincts. The four branches of insurance, fire, marine, accident and life are usually separated. Each has many departments, and ample scope for the able man.

Insurance is entered by the post of Junior Clerk for which a secondary education is essential, and matriculation is very generally called for. When university men are employed higher starting salaries are paid. As a rule the commencing salary is anything up to some £70 or £80 per annum.

The Chartered Insurance Institute, 11 Queen Street, London, E.C. 4, holds Insurance examinations, and through its local Insurance Institutes in various parts of the country arranges classes for all engaged in Insurance. An associateship is conferred on a candidate who shows proficiency in any one of the four branches of Insurance—fire, life, accident and marine, whilst a candidate for Fellowship must possess in addition a general knowledge of all the branches of Insurance and also of the subjects, Principles of Commerce, Banking and Finance, and Elements of Commercial and Company Law.

Intellect General term for the activities of the mind in reference to the power of understanding and reasoning, the power of perception and thought and of synthesising isolated sensations. The term intellect has been used by philosophers in many senses from Aristotle downwards. Pure intellect according to Kant is intellect as separate from sense.

Intelligence Term which, in the general sense, may be defined as the fundamental and inborn ability to learn by experience and to employ the means to obtain the end in view. It is used, however, with a variety of shades of meaning; some regard intelligence as equivalent to cognition, others as expressing the average mental ability indicated by various intelligence tests. Obviously there is a wide range in degree and intensity between the dawning intelligence of an ape and the matured mind of man.

Intelligence Department

Department of a navy, army, public department or business that exists to collect information. Every government keeps a secret service department which is sometimes called an intelligence department. In Great Britain this is under the Foreign Office and exists to keep the authorities acquainted with happenings in foreign countries.

The army has an intelligence department under the director of military operations and intelligence, and the air force has a similar department. In the navy there is a director of intelligence.

Intelligence Test Means of examining or measuring the amount of intelligence in an individual. Apart from ordinary examinations, several

systems of tests are in use. Generally an intelligence test consists of carefully framed questions, or a set of directions to be followed, or again tasks to be performed. In some systems, speed of response to the questions or work is important. These tests are of especial value in grading school children.

Interdict Ecclesiastical punishment pronounced by the pope or some other high official. It may be either general or local. The most famous general interdict was when Pope Innocent III. placed England under one. This meant that no religious services could be held, but it was impossible to enforce it completely.

In Scotland an interdict is a legal term corresponding to the injunction of the English courts of law. *See* INJUNCTION.

Interest Money paid for the use of money. It is paid at a fixed rate, usually yearly, or half-yearly, or quarterly, for the use of a loan. The money paid for a mortgage is interest, and when it is paid income tax must be deducted. The rate of interest is governed by the law of supply and demand, and also by the quality of the security offered. The bank rate is an indication of the interest charged on loans for short periods. Dividends are not, strictly speaking, interest on money lent, but profits on trading. Interest may be either simple or compound. Compound interest is interest on interest, and mounts up at an enormous rate. At compound interest of 5 per cent. a sum of money will double itself in about 14 years.

Interlaken Pleasure resort of Switzerland, on the Aar in the canton of Berne, 17 m. from Thun, it is the centre of the district called the Oberland. Near is Lake Brienz and overlooking the town is the Jungfrau. Pop. 3700.

Interlocutor Term used in law. Interlocutory proceedings are those which take place between the beginning of an action and the trial. Such include interrogatories and applications in chambers. In Scotland an interlocutor is an interim judgment.

Intermezzo Short burlesque or play of a light, amusing character. It is usually given in an interlude of a performance of grand opera or drama.

In music, a brief composition to be played in the interval of a longer work, or for ordinary rendering, is called an intermezzo.

International Socialist movement in which socialists from many countries are united. There have been three such movements or internationals, and each has held several congresses.

The first international accepted a programme drawn up by Karl Marx and lasted from 1866 to 1872. The second international, in which there was a trade union element, was organised in 1882. It sought to compass the aims of socialism by constitutional, not revolutionary, action, and it held several congresses between 1882 and 1930. The third international was organised in Moscow and was revolutionary in its aims. It declared in favour of establishing communism by force.

International Labour Organisation International body, associated with the League of Nations and established at Geneva. Its centre is the International Labour Office. Representatives of the principal industrial nations are included on the governing body. The office organises conferences, dealing with labour matters, at which governments, employers' and workers' organisations are represented, with the object of raising the standard of labour in less advanced states to the level of that in other countries.

International Law Body of law regulating the relations between nations, especially in time of war. It differs from other bodies of law in that there exists no power to enforce its decisions, but much is expected from the increasing force of public opinion.

The Romans recognised something like international law in what they called *jus gentium*, or the law of nations, and the idea never entirely died out though it had little practical value. In the Middle Ages and later certain customs were observed, and to give clarity to those, Hugo Grotius in 1625 wrote his *De Jure Belli et Pacis*, or the law of war and peace. This founded modern international law. It is contained in customs, treatises and declarations, such as the Convention of Geneva, and deals with such matters as the treatment of prisoners and wounded, contraband and blockade, the rights of neutrals and the special conditions of maritime and aerial warfare. The Hague Conferences have done something to strengthen and widen its authority. International law is administered by the prize courts and the court of international justice at the Hague, sometimes called the Hague Tribunal.

The Institute of International Law is a society founded in 1873 to study the subject. Some universities have professors, or lecturers, in this branch of law, on which a number of books have been written.

Internment Detention of soldiers and civilians of a hostile or neutral state during times of war. By international law all troops entering a neutral country must be interned or kept in that country until peace is made. The law also applies to ships which stay in a neutral port beyond the brief time allowed. There were cases of both kinds during the Great War. The British troops who escaped from Antwerp into the Netherlands were interned there, and the United States interned German ships that did not put to sea.

Interned soldiers and sailors are usually sent to a camp called an **internment camp**. This term therefore has come to be used for a camp in which prisoners of war are kept.

Interrogatory Term used in English law. In civil actions either party can, before the trial, seek information about the case from the other. This is put in the form of a question, or interrogatory, and must be answered on oath. The interrogatories must be relevant to the issue and the masters in chambers prevent the system from being abused.

Interregnum Time between two reigns, a period when a country has no emperor or king. There was an interregnum in Germany from 1254 to 1273. The period in Britain between 1649 and 1660 was an interregnum.

Intestate Person who dies without a will. In such cases English law provides that the property shall pass according to certain rules. If a married man or woman dies, leaving a widow or widower, and there

are no children, all the property passes to the surviving wife or husband. If there are children, the surviving husband or wife takes all the furniture and personal effects and £1000 free of death duties. The remainder is divided into two equal parts. One is put in trust and the income paid to the surviving husband or wife, passing on his, or her, death, to the children. The other half passes to the children, or to the child if there is only one. If a child of the intestate has died leaving children, such children inherit their parent's share.

If an unmarried person, or a widow or widower, without children, dies, the property passes to the parents. If they are dead it passes to the brothers and sisters in equal shares, and if there are none, to more distant relatives. If there are no relatives the estate passes to the crown.

These rules date from 1925. Before that time the real property of an intestate passed to the eldest son, and the personal property to the widow or widower or children, the widow or widower receiving one-third. In 1925 the distinction between real and personal property was abolished.

Intestine Lower part of the alimentary canal. It reaches from the pyloric end of the stomach to the anus and is called also the guts or bowels. Receiving the bile, pancreatic and intestinal juices, it completes the digestive process, nutritive matters entering the blood vessels and lacteals, and refuse matters being excreted. It averages in man 30 ft. in length and is lined throughout with mucous membrane. It includes the small intestine, 24 ft. long, comprising duodenum, jejunum and ileum, and the large intestine, 6 ft. long, comprising caecum, colon and rectum.

Intestinal Obstruction is usually caused by acute constipation or a diseased state of the bowel.

Symptoms.—Pain, and vomiting, first bilious and later "faecal" in nature. There may be diarrhœa at first until the part of the bowel below the obstruction is emptied, after which nothing will pass. The condition is very serious and a doctor should be called at once. In the meantime nothing should be given by the mouth.

Intimidation Act of causing a person to do something or to refrain from doing something by threats. In English law, intimidation of this kind is an offence and an M.P. or councillor can be unseated if intimidation is proved against him or his agent.

Intoxication Poisoning of the body by drugs or alcohol, etc. In common usage the term denotes the effects produced by alcohol (*q.v.*). **Auto-intoxication** is "self-poisoning," by the action of toxins produced within the body. These may arise from defective metabolism, or from the presence of a septic focus (*e.g.* in mouth, nose or bowel) and the consequent activity of harmful bacteria.

Intuition Power of perceiving a truth immediately without any kind of reasoning. Some moral philosophers hold that certain moral values are intuitive. Men have an intuitive knowledge of right and wrong; they have no need to reason about it. This was taught by Francis Hutcheson and later by James Martineau. The opposite doctrine is that moral values are simply the outcome of long centuries of human experience.

Invalides **Hotel des.** Building in Paris. It is on the Champ de Mars and was built in 1670 as a hospital for disabled soldiers. It now contains the tombs of Napoleon, Foch and other great French soldiers, as well as a collection of armour and relics of Napoleon.

Invar Alloy of steel and nickel. It is much used in the making of instruments used by scientists for measuring purposes. This is because it is less liable to contraction or expansion from heat than any other known alloy.

Invention Term applied to the discovery of some contrivance or device previously unknown. It would appear that an invention may arise either as the result of numerous experiments, exhausting all possibilities, or as a sudden inspiration. From a practical standpoint the utility and ability of the device to work is essential. To protect an invention it must be registered at the Patent Office in London.

Inventory Word meaning a list of goods or other property. Such are compiled when a furnished house is let, or the estate of a dead person is wound up. An inventory of the goods concerned is generally attached to a bill of sale.

A duty formerly paid in Scotland on the personal estate of deceased persons was called the **inventory duty.**

Inveraray Burgh and county town of Argyllshire. It stands at the mouth of the River Aray, just where it falls into Loch Fyne, 40 m. from Glasgow. Inveraray is best reached by steamer. Pop. 500.

Invercargill Town of New Zealand. in South Island, 140 m. from Dunedin, and standing on the estuary of the New River. It is the centre of an agricultural district and has some manufacturing industries. Bluff Harbour is its port. Pop. (1932) 24,350.

Inverclyde **Baron.** Scottish title borne by the family of Burns. Sir George Burns, one of the heads of the Cunard Line of steamers, left a son, John, who was made a baron in 1897. He died in 1905 and two of his sons succeeded in turn to the title. The younger, James Cleland Burns, died Aug. 16, 1919, when his son, John Alan Burns, became the 4th baron. The family seat is Castle Wemyss in Renfrewshire.

Inveresk Village of Midlothian, on the Esk, 6 m. from Edinburgh, by the L.N.E. Rly. Here are large paper mills.

Inverforth **Baron.** Scottish shipowner. Andrew Weir was born at Kirkcaldy, April 24, 1865, and became a clerk in a shipping office in Glasgow, where he founded the business of Andrew Weir & Co., which became a large and flourishing firm. In 1917 Weir was engaged at the War Office with the supply of munitions to the forces. From 1919 until 1921 he was Minister of Munitions.

Invergordon Burgh and seaport of Ross and Cromarty, on Cromarty Firth, 13 m. from Dingwall, by the L.M.S. Rly. The chief industry is shipping. During the Great War it became a naval base and is still used for that purpose. Pop. 1050.

Inverkeithing Burgh and seaport of Fifeshire, on the Firth of Forth, 13 m. from Edinburgh, on the L.N.E. Rly. During the Great War Inverkeithing was a busy naval base. Pop. 3356.

Inverlochy Village of Inverness-shire on the River Lochy, 1 m.

from Fort William. Here, on Feb. 2, 1645, Montrose gained one of his victories. Sir W. Scott describes the battle in *The Legend of Montrose.*

Inverness Burgh and market town of Inverness-shire; also the county town. The recognised capital of the Highlands, Inverness stands on the north side of the River Ness near where it falls into the Moray Firth. It is 160 m. from Edinburgh and 100 from Aberdeen, on the L.M.S. and L.N.E. Rlys. It is also on the Caledonian Canal. There are some historic houses and the Stone of the Tubs is the burgh's proudest possession. The industries are distilling and railway works, and there is a large agricultural trade. Inverness is a popular tourist resort. Pop. (1931) 22,300.

Inverness Seaport of Nova Scotia, on Cape Breton Island at the mouth of the Big River. The terminus of a railway line, it is 186 m. from Halifax. Its trade is chiefly the shipping of coal. Pop. 2963.

Inverness-shire County of Scotland; the largest in the land. It covers 4210 sq. m., has an indented coast line on the west and consists of two portions, one the mainland, the other consisting of Skye, Harris, North Uist, South Uist and many other islands of the Hebrides. The Caledonian Canal cuts the mainland area into two parts. Inverness is the capital. Other places are Fort William and Kingussie. The shire, with its many lochs and valleys between the mountains, contains wild and beautiful scenery. The soil is unfertile and most of it is devoted to deer forests and grouse moors, with only a small portion for sheep rearing. The chief rivers are the Spey, the Ness and the Beauly. In the county are Ben Nevis and other lofty mountains. It is served by the L.M.S. Rly. Pop. (1931) 82,082.

Inversnaid Village of Stirlingshire, on the east side of Loch Lomond, and a calling place for steamers which meet the coaches here. The scenery around is very beautiful.

Invertebrate General term for those animal types which are devoid of a backbone and other characters such as a dorsal tubular nerve cord, the possession of gill slits at some stage, a ventral heart, etc., seen in the vertebrate animals. The invertebrates include the molluscs, arthropods, worms and lower types.

Inverurie Burgh of Aberdeenshire, on the Urie and Don, at the point where the two rivers meet, 540 m. from London by the L.N.E. Rly., and 16 m. from Aberdeen. Cattle markets are held, and there are railway shops and paper mills. Pop. 4425.

Investiture In feudal times the ceremony by which a lord handed property to a vassal. It usually took the form of the vassal swearing an oath and then receiving something as a symbol of possession, for instance, a clod of earth.

The **investiture controversy**, as it was called, arose when the Church forbade bishops, abbots and other holders of land to receive investitures from laymen. The matter was complicated because the land went with an ecclesiastical position such as a bishopric, so that the kings and lords were investing clerics, not only with land, but with offices.

In 1075 Pope Gregory VII. (Hildebrand) ordered this practice to cease, and there was a bitter struggle between him and the Emperor Henry IV. Henry at length submitted, but the fight soon began again, and continued until 1122 when the Concordat of Worms was made between the Emperor Henry V. and the Pope. The Emperor gave up the right of investing with ring and staff, which he left to the Pope, but retained the right of investing the prelates with lands or temporalities. This became the law in the case of other rulers and lords. In England a similar struggle took place between Henry I. and Anselm. It was settled on the same lines in 1107.

Invincibles Irish secret society. It consisted of Fenians, and was responsible for a number of murders and other outrages between 1880 and 1885. The murderers of Lord F. Cavendish in Phoenix Park in 1882 belonged to this gang.

Several British battleships have been named the **Invincible.** One was a battle cruiser sunk in the Battle of Jutland in 1916. She carried eight 12 in. guns and was 555 ft. long.

Io In Greek mythology the daughter of the first King of Argos. She was beloved by Zeus, who turned her into a heifer to protect her from the jealousy of Hera, his wife. Hera obtained the heifer and set the hundred-eyed Argus to watch her. Zeus sent Hermes to kill Argus, but Hera put a gadfly on Io to torment her. Io wandered far till she reached Egypt where she regained her human form and her son Epaphus, was born. She is supposed to be identical with the moon goddess.

Iodine Non-metallic element widely distributed in nature. It occurs chiefly as iodides and iodates of sodium, potassium, calcium and magnesium. Its symbol is I and atomic number 53. When isolated from its compounds it is a lustrous, bluish-black solid, which volatilises at 107° C, forming a violet coloured vapour. The main supply is from the impure Chile saltpetre, or caliche, of South America, but large quantities are obtained from kelp or seaweed.

Iodoform Substance used as a mild, general surgical antiseptic. It is prepared by the action of iodine upon ethyl alcohol or acetone with heat in the presence of an alkali. It occurs as lemon-yellow hexagonal scales having a disagreeable smell resembling that of saffron, and it is soluble in alcohol, ether and oils.

Ion Term applied in electro-chemistry to electrically charged molecules or groups of molecules formed by the dissociation of an electrolyte. On electrolysis the kations and anions proceed to the cathode and anode respectively. The term is used also for the minute particles of a gas carrying electrical charges and produced under certain conditions, the gas becoming a conductor of electricity.

Ion In Greek legend the founder of the Ionian race. He was the son of Apollo, his mother being Creusa, the wife of Xuthus. By chance his mother nearly poisoned him when he reached manhood. His fate is the subject of a play by Euripides called *Ion.*

Iona One of the Hebrides and part of the County of Argyll. It is about 3 sq. m. in area and has a few inhabitants who farm small plots of land, or are engaged in fishing. On the east side is the village of Iona.

Iona is chiefly famous for its connection with Christianity. About 563 S. Columba landed here and founded a monastery which became very famous. Later the island was made the seat of a bishop. The cathedral, which was

destroyed at the Reformation, is the property of the Church of Scotland. It was partly restored in the 20th century. There are other ecclesiastical ruins on the island, including two crosses, also a cemetery in which some of the early kings were buried. On it, too, is the chapel of S. Oran.

Ionian Name of one of the chief races that settled in Greece in ancient times. They may have arrived as early as 1500 B.C. About the 11th century, B.C., many of them settled on the coast of Asia Minor, where a district was named after them—Ionia. For some centuries the cities herein were very prosperous and homes of culture. Homer wrote in the Ionian dialect.

Ionian Islands Islands of Greece, off the west coast in the Ionian Sea. The chief are Corfu, Cephalonia, Zante and Ithaca, and altogether they cover 740 sq. m. Like Greece, the islands are mountainous, but in the valleys the soil is very fertile. The chief town is Corfu on the island of that name. For some time the islands belonged to Venice. From 1814 to 1864 they were under British protection, being then handed over to the new kingdom of Greece.

Ionic Order One of the three orders of Greek architecture. It is characterised by having more slender proportions than the Doric, with profusely ornamented mouldings. The frieze is usually plain, and the column has fine flutings with intervening fillets or flat spaces. The base is richly moulded and the cornice adorned with volutes at the corners.

Iowa State of the United States. It lies to the west of the Mississippi and is an agricultural district, maize being the chief crop. Coal is mined. Des Moines is the capital. Sioux City and Davenport are the next largest towns. The area is 56,147 sq. m. The Missouri and the Des Moines flow through the state. Iowa sends two senators and 9 representatives to Congress. For local affairs there is a legislature of two houses. Iowa became a state in 1846. Pop. (1930) 2,470,939.

Ipecacuanha Dried, knotted roots of *psychotria ipecacuanha*. It is a native of Brazil and is exported chiefly from Rio de Janeiro in the form of small pieces, having a beaded appearance. The drug has an acrid, bitter taste and faint odour, and is used as a powerful emetic and expectorant, its properties being due to an alkaloid emetine.

Iphigenia In Greek legend, the daughter of Agamemnon and Clytaemnestra. Artemis, provoked by the slaying of her favourite hart, becalmed the Greek fleet, destined for Troy, at Aulis. To propitiate her the soothsayer, Calchas, ordered the sacrifice of the princess, but this was averted by the goddess substituting another victim, and transporting Iphigenia to the Tauric Chersonese. There, although as a priestess she was bound to sacrifice shipwrecked mariners, she saved her brother, Orestes, and his friend, Pylades. The story inspired two plays by Euripides.

Ipswich Town of Suffolk; also a county borough and a river port on the Orwell, 69 m. from London, and is served by the L.N.E. Rly. The gateway built by Wolsey still stands. The Great White Horse Inn is mentioned in *The Pickwick Papers*. With Bury St. Edmunds, Ipswich gives its name to a diocese created in 1914. The industries include engineering works, tobacco factories, and chemical works. Clothing and agricultural implements are made. There are docks for the shipping. Pop. (1931) 87,557.

Ipswich Town of Queensland, 24 m. from Brisbane by rly., it is an agricultural centre, and there are woollen manufactures and railway works. There are coal mines near. Pop. (1931) 26,253.

Iquique City and seaport of Chile. It is 150 m. to the south of Arica. The centre of the city is the Plaza Prat. There are manufactures, but the chief industry is the shipping of nitrate, guano, silver, and other metals. Pop. (1932) 46,458.

Iran Old name for Persia. Iranian is the name of a language group which includes the Persian and Zend languages, and is allied to the Baluchi, Kurd, and other languages.

Iraq Country of Asia. It lies between Persia and Arabia and stretches from Syria to the head of the Persian Gulf. Its area is 177,148 sq. m. The chief rivers are the Tigris and the Euphrates. The capital is Bagdad; other places are Basra, the chief seaport, and Mosul. The country is rich in oil and exports cotton, wool, barley, and other forms of agricultural produce. There is a railway system and some good roads. The unit of currency is the gold dinar, worth £1 and divided into 1000 fils. The country is governed by a king and a cabinet. There is a parliament of two houses—a senate and an elected assembly. A system of justice has been established with a supreme court at Bagdad. Great Britain has an air force in the country, and there are some British officials. The chief languages spoken are Arabic and Kurdish.

Formerly part of Mesopotamia and included in the Turkish Empire, Iraq was made a state in 1919. It was ruled by Great Britain, under mandate from the League of Nations, and in 1921, Feisal, a son of the King of Hejaz, was chosen king. In 1927 Great Britain, by treaty, agreed to recognise Iraq as an independent state, and to support its entrance to the League of Nations. In 1933 King Feisal died and was succeeded by his son, the Emir Ghazi. The chief British representative is the high commissioner. Pop. 2,850,000.

Irawadi River of Asia. It rises in Assam, but most of its course is in Burma, and it falls into the Bay of Bengal near Rangoon, where its several mouths form a delta 20,000 sq. m. in area. It is 900 m. long, most of its course being navigable, and its main tributary is the Chindwin. Mandalay is on the Irawadi, which is sometimes spelt Irrawaddy, a name meaning great river. It is much used for the carriage of timber from the interior of Burma.

Ireland Country of Europe. Since 1922 it has been divided into the Irish Free State and Northern Ireland, each with its own government. The area of the whole country is 32,586 sq. m. and it is divided into four provinces and 32 counties. The provinces are Leinster, Munster and Connaught in the Free State, and Ulster mainly in Northern Ireland.

Ireland has a wonderful coastline, and its bays form some of the finest harbours in the world. Notable are Cork and Waterford on the south coast. Others include Belfast, Carlingford, and Strangford Loughs, Galway Bay, Dingle Bay, Bantry Bay, Donegal Bay and Dublin Bay, the mouth of the Shannon

and many others. The chief river is the Shannon, which is used to generate electric power. The other rivers include the Suir, Barrow, Nore and Slaney, forming one group, the Blackwater, Lee and Bandon in the south-west, and the Boyne and Foyle in the north. Others are the Liffey, on which Dublin stands, and the Erne. There are many lakes of which Lough Neagh is the largest. The few islands, chiefly off the west coast, include the Aran and Achill groups, Rathlin, Tory and Valentia.

There are several mountain ranges, but the centre of the country is a large plain. In Kerry are Macgillicuddy's Reeks, one of which is Carrantuohill or Carntual, the highest peak in the land. The mountains of Wicklow on the east side, and of Connemara on the west, are remarkably picturesque. In the north are the Mourne Mountains on one side of the land and the hills of Donegal on the other. In the centre is a good deal of bog, the bog of Allen being the largest stretch, but elsewhere the soil is fertile, and the herbage specially suitable for horses. Cereals and potatoes are grown; cattle and a large number of pigs are reared. The island has a good railway system and several canals. Dublin, Belfast, Cork and Galway are the capitals of the four provinces. The three towns next in size are Limerick, Londonderry and Waterford.

In early times Ireland was a centre of Christianity and learning, and there are still many remains of its religious houses. It was ruled by a number of kings and chiefs, who were more or less subject to a high king at Tara, and it had its own system of law, the Brehon. In the 8th century and later it suffered a good deal from the inroads of Scandinavian pirates, and their defeat at Clontarf by Brian Boru in 1014 is regarded as a decisive event.

In the reign of Henry II. Ireland became definitely associated with England, and henceforward it was, in a sense, an English possession. John called himself Lord of Ireland, and until Henry VIII. took the title of king, Lord was the rank of the English sovereigns there. Much land was taken from the natives and given to English settlers, and there grew up side by side two distinct races, one dominant and land-holding, the other servile and landless. Later, when the Reformation had done its work, the antagonism between the two was made much worse by religious antagonism, as the Irish were Roman Catholics while the English were mainly Protestants. As in England the monasteries were dissolved at this time.

The English lived within the district around Dublin called the Pale, and there filled the offices of state and controlled the parliament that had been formed on the model of the one in England. The English king was represented by a lord deputy.

The antagonism between the two races and creeds, as may be expected, grew steadily worse, and in the time of Elizabeth it came to a head. During her reign there were constant and terrible wars in Ireland, the struggle being conducted as if the combatants were wild beasts and not men. In the end the English prevailed and Ireland sullenly accepted the alien rule. In the 17th century James I. settled, or planted, Scotchmen in Ulster, and Strafford, as lord deputy, did a good deal for Irish trade and commerce. The former step, however, led to a rising, and in 1642 there was another orgy of massacre and ruin, this time in the north. This was put down, and at the end of the civil war came the conquest of Ireland by Cromwell, another period of terror leading to still more bitter memories. For a short time Ireland sent representatives to the parliament in London.

The struggle between William III. and James II. was fought out in Ireland, and when it was over a new period of Protestant ascendancy began. Roman Catholics could hold no offices whatever, nor even possess land in their own country. Equally rigorous were the restrictions on commerce, which forbade anything that might possibly compete with English traders. This state of affairs lasted for a good part of the 18th century, but after 1750 there was some relaxation. The laws against Roman Catholics were made less severe, and the trading restrictions removed. In 1782 Ireland was given legislative independence, but the right to vote and sit in Parliament was still confined to Protestants. From the intellectual and artistic point of view this age (1750-1800) was perhaps the most brilliant in Irish history.

In 1798, with Britain at war with France, there was a rising in Ireland, but this was quickly crushed at Vinegar Hill. In 1800 the parliament was abolished and the United Kingdom of Great Britain and Ireland came into being. Roman Catholic emancipation did not, however, as was promised, accompany this union, but was delayed until 1829. Conditions seemed somewhat better when the terrible potato famine broke out in 1845. The population, which had grown very rapidly, was reduced by starvation and emigration to about half its former figure.

For the rest of the century the history of Ireland was one of agitation against English rule, except in Ulster, where the English connection was fiercely valued. One set of agitators—Whiteboys, Fenians, and the rest—succeeded another, and murder and outrage were common. Members, called nationalists, were elected to Parliament to work for some degree of independence for their country and, sympathising with them, Gladstone three times tried to give Ireland home rule. He failed, however, to convince the English people of the wisdom of this policy, which was opposed bitterly by the Protestants of Ulster.

In 1914 a measure of home rule was granted, but the outbreak of war prevented its operation. When the struggle ended, a new party (called Sinn Fein) dominated the country. They refused to have any connection with England, and set up an Irish Republic, a step which was followed by two or three years of terrorism, as bad as anything even in the history of Ireland.

In the end a treaty was made in Dec., 1921. By this the Irish Free State was created, and the six counties that refused to be separated from Britain were formed into a separate state known as Northern Ireland.

The bulk of the Irish people are Roman Catholics. The Irish Church is under the archbishop of Armagh, three other archbishops and a number of bishops. The Protestant Church (the established church until 1869, when it was disestablished and its archbishops and bishops ceased to sit in Parliament) has two archbishops, Armagh and Dublin. Another strong church, especially in Ulster, is the Presbyterian Church of Ireland.

Irene Empress of Byzantium. Born in Athens about 752, she married the Emperor Leo IV. in 769. In 780 she became regent for her son, Constantine VI. When he became old enough to rule for himself, his mother had him blinded and imprisoned and she herself reigned as empress until 802. In

that year her enemies united against her and she was banished to Lesbos. In 803 she died. Irene's influence at the Council of Nicaea was directed towards the restoration of image worship. For this the Greek Church regarded her as a saint.

Ireton Henry. English soldier. Born at Attenborough, near Nottingham, he went to Trinity College, Oxford, and studied law in London. In 1642 he joined the parliamentary army, and was one of its leaders at Naseby. He was closely associated with Cromwell, whose daughter, Bridget, he married in 1646. In 1645 he was elected an M.P., and he was one of those who tried to arrange peace between the king and his foes, and later was one of the judges of Charles, signing the death warrant. In 1649 he went to Ireland and had just succeeded Cromwell as lord deputy when he died at Limerick, Nov. 26, 1651. In 1660 his body was disinterred and hanged at Tyburn.

Iridium Metallic element having the symbol Ir and atomic weight 193·1. It is found in nature associated with platinum, also as a natural alloy (osmiridium) with osmium. Iridium is a white, extremely hard metal which strongly resists corrosion. It is used in alloy form for tips of gold nibs of fountain pens, and for electrical contacts.

Iris Character in Greek mythology. She was the daughter of Thaumas and Electra, and the messenger of Hera and the gods. One story makes her the mother of Eros. The word in Greek means rainbow.

Iris Circular, coloured membranous curtain in front of the crystalline lens of the eye and having a central aperture known as the pupil. It is provided with radial and circular muscle fibres, which enable the iris to contract and enlarge, thus regulating the amount of light entering the eye.

Iris Genus of hardy flowering plants. They are of two classes, bulbous and non-bulbous. There are many varieties of each, these being known as Spanish, Japanese, English and Dutch irises. For the bulbous iris, sandy loam with peat or leaf mould is most suitable. Marshy soil is good for the Japanese iris. The Dutch and Spanish varieties prefer a warm, light soil.

Irish Free State Dominion of the British Empire. It includes all Ireland except six counties in the north-east. Its capital is Dublin, and the next most important cities are Cork and Galway. The area is 26,600 sq. m. and the population 2,972,000. Erse is the national language, but English is recognised. The Free State is a member of the League of Nations.

The Free State came into existence in 1922. It has a governor-general, representing the king, and a parliament of two houses—the Senate and the Dail Eireann—with a council of ministers as the executive. It is represented in London by a high commissioner and in Washington and elsewhere by ambassadors.

The system of administering justice is largely based on the English model, as is the system of local government with county, town and urban district councils. Dublin and Cork have a paid official called the manager, as well as an elected council. There is a defence force, but naval defence is undertaken by Great Britain. Agriculture and fishing are the main industries, and there are some manufactures.

The railways have been united into a single system, the Great Southern Railways. There are several canals, and electric power is obtained from extensive works on the Shannon.

With Arthur Griffith at its head a provisional government got to work in the Free State early in 1922. Steps were taken to crush those who would not accept the new order, and in the midst of the trouble Griffith died. His successor was W. T. Cosgrave, who for ten years remained president of the executive, and in spite of certain difficulties the country made great progress. The elected members of the republican party refused at first to take the oath of allegiance, but after a time they changed their attitude and under Eamon de Valera (*q.v.*) took their seats and became the official opposition. Each general election, however, returned a majority for the party that supported the treaty of 1921. Various reforms were carried out and in 1925 a treaty with Great Britain relieved the Free State of its share of the national debt.

In Feb., 1932, there was another general election and a change. The republican party, by uniting with Labour and the independent members, secured a majority in the Dail and de Valera took Cosgrave's place as president. His ministry decided to abolish the oath of allegiance and then refused to remit to Great Britain the interest due on the money borrowed for the purchase of land. Efforts at a settlement failed, and Great Britain in July took measures to collect the money due by taxing imports from Ireland. In return the Free State decided to tax imports from Great Britain. Mr. de Valera and his party, *Fianna Fail*, were returned to power at the General Election of 1933. In 1935 they succeeded in passing a Bill for the abolition of the Senate. Their aim is independence and the development of domestic self-sufficiency in political and economic matters alike.

Irish Guards Regiment of the British Army. It was raised in 1900, and its first spell of active service was in 1914. During the next four years the regiment was in much hard fighting with the other regiments of the Brigade of Guards.

Irish Sea Arm of the sea between Great Britain and Ireland. It is connected with the Atlantic Ocean by the North, or S. Patrick's, Channel, and the South, or S. George's Channel. Its breadth varies from 30 m. to 150 m.

Irish Terrier Breed of terrier derived from a cross between the fox terrier and a rough coated breed, and introduced about sixty years ago. The formation of an **Irish Terrier Club** in 1879 established a standard of points for this class of dog. It weighs from 18 to 24 lb., and has a rough, wiry coat of a red-brown colour.

Irkutsk City of Siberia, Soviet Russia. It is 40 m. from Lake Baikal, on the Trans-Siberian Rly. Its trade is concerned chiefly with the smelting of metals. Pop. 98,960.

Irlam Urban district of Lancashire. It stands where the Irwell falls into the Mersey, 8 m. from Manchester. Pop. 12,898.

Iron Metallic element having the symbol Fe and atomic weight 55·84 with a melting point of 1505°C. It is the most widely-distributed of the metals, but rarely occurs in the metallic state, being chiefly found as oxides not only as ores but also as the colouring matter of rocks, and as a constituent of the blood of animals.

The principal ores are haematite or ses-

quioxide of iron, magnetite or black magnetic oxide, and limonite or hydrated sesquioxide, also chalybite, the carbonate, which forms, when impure, clay ironstone. Iron pyrites, the sulphide, is a source of iron sulphate and sulphuric acid.

Pure iron is greyish-white in colour, soft, malleable, and easily magnetised. Pig or cast iron is hard, brittle and moderately fusible, while wrought iron is malleable and has a higher tensile strength than cast iron.

The manufacture of iron from ore is an old, widespread industry, and was in England in the time of the Romans, or perhaps earlier, charcoal being used to smelt the ore. To-day pig or cast iron is made by mixing the ore with coal, coke and limestone, and passing it through a blast furnace. It comes from the furnace and is run into moulds to form pigs, as they are called, which are graded according to quality. The furnace is heated to 1200°, or even 1400° F., and about two tons of coal are required to produce a ton of pig iron.

This pig iron is much too brittle to be used for most purposes, so it undergoes further treatment in order to convert it into wrought iron or steel. Wrought iron is made by subjecting pig iron to a process called puddling. This is done in a reverbatory furnace, by a process which gets rid of most of the carbon in the pig iron. As the carbon escapes, the fluid iron becomes pasty and is then brought away in large lumps. It is afterwards hammered into rude slabs called blooms, and rolled out to form bars or sheets.

This method of producing iron by the use of coal and furnaces was greatly developed in England in the 19th century. The furnaces were established where coal or iron ore, or both, were easily accessible, such as the Black Country in Staffordshire, the district around Middlesborough, South Wales, and Lanarkshire. In the United States great ironworks were established at Pittsburg, and many were erected in Belgium, France and Germany.

Great Britain, once the world's greatest producer of iron, has lost that position, and for years after the Great War the industry, except for brief spells, was in a very depressed condition. In 1931 the world's output of pig iron was 55,000,000 tons. The greatest producer was the United States, with 18,500,000 tons. Germany and France produced 9,700,000 tons and 6,000,000 tons respectively, and Great Britain only 3,750,000 tons. In the three years before the war (1911-13) the production in Great Britain averaged 9,700,000 tons. The decline is due to the tariffs imposed by foreign buyers, as well as to the partial exhaustion of the reserves of iron ore, making the industry dependent upon supplies from abroad.

The world's production of iron ore is about 60,000,000 tons. The greatest known reserves are in Sweden.

The **Iron and Steel Exchange**, King William St., London, E.C., is the centre for all business transactions in the iron and steel trades in Great Britain. *See* STEEL.

Iron Age In archaeology a cultural phase marked by the use of iron, especially for edged tools and weapons. In Europe and W. Asia it usually followed the copper-using or bronze-using phase or age; in Africa it directly succeeded the stone age. In Europe ironworking became general in the Mediterranean region about 1000 B.C.; subsequently two pre-Christian periods occurred, each of about 500 years. These are characterised especially by finds at Hallstadt and La Tène respectively. As far as is known there was no iron age in America.

Ironclad Name used for a battleship which had a protection of iron. The first ironclad was the *Warrior*, built in 1860. The ironclads succeeded the wooden ships, and were in turn succeeded by steel-clad vessels. *See* DREADNOUGHT.

Iron Cross Prussian order. It was founded in 1813, and is divided into a civil and military division. There are three grades.

Belgium has an order of the same name. It was founded in 1830, and is for civilians only.

Iron Gates Name given to a part of the Danube's course. It is near Orsova in Rumania, where for about 2 m. the river narrows. This causes great rapids, and to avoid these a channel for vessels was made between 1890 and 1900 at considerable cost.

Iron Mask **Man in the.** Unknown French prisoner in the 17th century. He was put in the Bastile in Sept., 1698, and died there, Nov. 19, 1703. He wore a mask, probably of black velvet, during his imprisonment, and apparently no one saw his face. Many persons have tried to find out who he was, and a large literature has grown up on the subject. Dumas treats it in the *Vicomte de Bragelonne*, and in *The Man in the Iron Mask*. He may have been an illegitimate son of Anne of Austria, the widow of Louis XIII., or the Duke of Buckingham, or Nicolas Fouquet (*q.v.*). More probably he was an Italian, Count Ercole Mattioli, but there is no certainty.

Ironmould Name given to reddish stains on cotton or linen fabrics. It is due to the action of soluble salts of iron, as in the case of ink which usually contains ferrous sulphate. The red colour is due to the presence of ferric oxide, and the stain may be removed by the use of oxalic acid.

Ironside Name given to the soldiers led by Oliver Cromwell. It dates from 1649 or thereabouts, and was given to them because of their steadiness in battle.

Ironside **Sir William Edmund.** British soldier. Born May 6, 1880, he saw active service in South Africa, and in 1914 was a staff officer. In 1918-19 Ironside became prominent as Commander of the British forces at Archangel, and later he was in Persia. He was commander of the Meerut district of India, 1928-31.

Ironstone Name given to iron ores occurring as beds, nodules in clayey deposits, or as masses filling fissures and cavities in rocks. Of these ores, haematite limonite, and magnetite may form ironstones. Impure chalybite, or iron carbonate, in the form of clay-ironstone is common in carboniferous strata, and is a valuable source of iron.

Iroquois Confederacy of N. American Indian tribes. They included Mohawks, Cayugas, Oneidas, Onondagas and Senecas, and when they were joined by the Tuscaroras were known as the six nations. They sided with Britain in the War of Independence. To-day these tribes number about 60,000 in the United States, and 12,000 in Canada.

Irradiation Exposure to light rays. Both the luminous and the ultra-violet rays of sunlight are employed in therapeutics, and artificial sunlight is produced

by the use of the carbon arc or mercury vapour lamp. By the irradiation of inactive ergosterol (*q.v.*) this substance becomes a powerful source of the anti-rachitic vitamin D. *See* HELIOTHERAPY, VITAMIN.

Irrigation Means by which water is conveyed to arid areas from rivers or wells to increase the fertility of the land. Where rivers are the sources of the water supply, weirs (or, on a large scale, barrages) are used to raise the level of the water to that of the irrigation canals. In many instances, to conserve the supply and regulate the flood waters of a river, huge reservoirs are built, as in North America, Egypt, the Sudan, India and Australia. In Arizona, India and Australia, artesian wells are used for transforming barren tracts into fertile areas. Examples are the use that has been made of the Murray River in Australia and the huge dams built in Bombay and at Sukkur on the Indus.

The value of irrigation as a means of making land more fertile was recognised in ancient times, and there remain evidences of its use in Mesopotamia, Egypt, Italy, Spain and other countries. Then as now the water of a great river was diverted into canals, which were cut across the unfertile areas.

Irthlingborough Urban district of Northamptonshire. It stands on the Nen, and is 82 m. from London. Boot-making is the chief industry. Pop. (1931), 1609.

Irvine Burgh, market town and seaport of Ayrshire, on the river of the same name, 30 m. from Glasgow. The chief industry is the export of coal, for which there is a good harbour. There are some manufactures. Pop. (1931) 12,032.

Irving **Edward.** Scottish divine. Born at Annan, Aug. 4, 1792, he went to London in 1822 and, as minister of a church in Caledonian Road, and later in Regent Square, became a very popular preacher. Soon he began to preach the nearness of the second advent and in other ways gave expression to heterodox opinions. His church found him guilty of heresy, and he was deprived of his ministerial status. He then joined the group of men who founded the Catholic Apostolic Church (*q.v.*), sometimes called after him Irvingites. He died Dec. 8, 1834. Irving is known, too, for his association with the Carlyles. Jane Welsh was his pupil at Haddington, and he introduced her to Carlyle.

Irving **Sir Henry.** English actor. John Henry Brodribb was born in a Somerset village, Feb. 6, 1838. He took the name of Irving, and soon became known as an actor of unusual gifts. In 1878 he began to play in Shakespearean and other plays with Ellen Terry, the two soon becoming the acknowledged leaders of the London stage at the Lyceum Theatre. His successes were numerous, but perhaps the outstanding ones were in *The Bells, Hamlet, The Merchant of Venice, Macbeth, Faust* and *Becket*. In 1895 he was knighted, at that time an unusual honour for an actor. He died at Bradford when on tour, Oct. 20, 1905, and is buried in Westminster Abbey.

Irving had two sons, both actors. **Henry Brodribb Irving** was born in London, Aug. 5, 1870 and educated at Marlborough and New College, Oxford. He was a successful actor, something in his father's style, and was, for a time, a manager. He also made himself an expert in criminology, on which he wrote several books. He died Oct. 27, 1919.

The younger son, Laurence Sydney Brodribb Irving, wrote several plays and appeared regularly on the stage. He was drowned when the Empress of Ireland sank in the St. Lawrence, May 29, 1914.

Irving Washington. American writer. Born in New York, April 3, 1783, he lived rather a desultory life, chiefly because his health was poor. He read a good deal and soon began to write. From 1829 to 1831 he was secretary in the American Legation in London, and from 1843 to 1846 he represented his country in Spain. He died at Sunnyside, near Tarrytown, Nov. 28, 1859.

Irving's writings include *Diedrich Knickerbocker's History of New York, The Life and Voyages of Columbus, The Alhambra, Legends of the Conquest of Spain, A Life of Goldsmith, A Life of Washington* and many others. More popular, however, at least to English readers, are *The Sketch Book of Geoffrey Crayon, Gent*—with its pictures of English life, and of Rip van Winkle and Sleepy Hollow—and *Bracebridge Hall*. He also wrote *Tales of a Traveller*, an account of his visit to Abbotsford and Newstead.

Irwell River of Lancashire. It rises near Burnley, and flows past Manchester to the Mersey. It is 30 m. long. The lower course of the river has been converted into the Manchester Ship Canal (*q.v.*).

Irwin **Baron.** English politician. Edward Frederick Lindley Wood was born April 16, 1881, being the son and heir of Viscount Halifax. In 1910 he was elected Unionist M.P. for the Ripon Division, and in 1922 he was made President of the Board of Education. Later he went to the Ministry of Agriculture. In 1926 he was made Viceroy of India, and he remained there for five eventful years, returning home in 1931. He was made a baron in 1926. In July, 1932, he joined the National Government as Minister for Education.

Isaac Hebrew patriarch. Abraham's only son by his wife, Sarah, he was born in their old age (Gen. xxi.). He married his cousin Rebekah when he was 40 years old. Their twin sons, Esau and Jacob, were born 20 years afterwards.

Isaac Name of two Byzantine emperors. **Isaac I.** became emperor in 1057, on the abdication of Michael VI., and was the first ruler of the Comnenus family. He reigned until his death in 1061, although after 1059 he lived in retirement. **Isaac II.**, called Angelus, was declared emperor in 1185. His reign was troubled by wars and risings, and in 1195 his brother, Alexius, blinded him and put him in prison. He was restored for a few months in 1203, and died in 1204.

Isaacs **Sir Isaac Alfred.** Australian lawyer, born in Melbourne, Aug. 6, 1855. In 1880 he became a barrister, and from 1892-1901 he sat in the Legislature of Victoria, serving also as solicitor-general and attorney-general. In 1901 he was elected to the House of Representatives of the Commonwealth, and in 1905-06 he was its attorney-general. In 1906 Isaacs left politics to become a judge of the high court. In 1930 he was promoted to be Chief Justice of the Commonwealth, and in 1931 he was appointed Governor-General.

Isabella Queen of Edward II. of England. A daughter of Philip IV., King of France, she was born about 1292 and married to Edward in 1308, just after he had become king. The union was not happy, and about

1324, having become the lover of Roger Mortimer, she escaped to France. In 1326 they returned and secured the throne for her son, Edward III., Edward II. being murdered. Until 1330 Isabella ruled the country, but in that year her son asserted himself. Isabella was sent to Castle Rising, and there she lived for many years. She died Aug. 23, 1358.

Isabella Name of two queens of Spain. **Isabella I.** was a daughter of John of Castile, and was born in 1451. In 1469 she married Ferdinand, who later became King of Aragon. The two conquered the Moors and united Spain into a single monarchy. Isabella died Nov. 26, 1504.

Isabella II. was a daughter of King Ferdinand VII. She was born in Madrid, Oct. 10, 1830, and became queen on her father's death in 1833. In 1843 she began to reign and in 1846 married, for reasons of state, a cousin, Francis. The union was most unhappy and, after a series of insurrections, the queen was deposed in 1870, her son, Alphonso XII., becoming king. Isabella died April 10, 1904.

Isaiah Greatest of the Old Testament prophets. A son of Amoz and of high social rank, he lived in Jerusalem. According to tradition he was sawn asunder under Manasseh (Heb. xi.).

The **Book of Isaiah** contains long passages of incomparable beauty. It is in two parts, of which chapters i.-xxxix. were apparently rearranged to bring together the prophecies against foreign nations. Certain portions (*e.g.* Chapters xiii.-xiv., xxiv.-xxvii.), together with the second part (chapter lxvi.) show post-exilic influence and therefore some modern scholars believe they were written by another hand.

Isandula Settlement in Natal, near the Tugela River, 105 m. from Durban. Here, on Jan. 22, 1879, a small British force, consisting of 800 men of the South Wales Borderers and a few natives, was attacked by 10,000 Zulus. After a hard fight the British force and camp were destroyed.

Isatin Basic dyestuff. It is prepared by the oxidation of indigo with nitric acid. It crystallises in reddish-yellow prismatic crystals, which dissolve slightly in cold water but more readily in hot water and in alcohol, the solution being brownish-red in colour. Isatin is the source of a number of important dyes.

Isfahan City of Persia and the former capital. It is 200 m. to the south of Teheran, standing about 5000 ft. above the sea. It has a considerable trade and some manufactures and there are remains of its former size and greatness. In 1917 the city was occupied by a British force. The name is sometimes spelt Ispahan and its old name was Aspadana. Pop. 100,000.

Ishmael Son of Abraham and Hagar. He was exiled with his mother to the wilderness on account of Sarah's jealousy of him. He married an Egyptian, was famed as an archer and was buried in Mecca. Mahomet claimed him as an ancestor.

Ishtar Babylonian goddess, probably the same as Astarte. She was the mother of all life and the Goddess of Love and War. She was worshipped at Babylon, where there was an Ishtar gate, Ninevah and elsewhere. There is a reference to her in Jer. xliv.

Isinglass Whitish, gelatinous substance. It is derived from air bladders of the sturgeon and other fish, and is used in cookery and in the clarifying of intoxicating liquors.

Isis Egyptian goddess. She was the wife of Osiris and the mother of **Horus**. Originally she was the earth goddess and afterwards became the moon goddess. She was also worshipped in Italy and Greece.

Isis Name given to that part of the Thames that flows past Oxford. *See* THAMES.

Islam Word used for the Mohammedan world. It means in Arabic *maker of peace*, and appears in the Koran as a term for the religion of Mahomet.

Islands **Bay of.** Name of two bays. One is in Newfoundland, being an opening on the west coast. The other is on the east side of North Island, New Zealand.

Islay One of the Hebrides, part of the county of Argyll. It is 25 m. long, covers 235 sq. m., and is almost cut in half by two lochs. Bowmore is the chief town; other places are **Bridgend** and Port Ellen. The people are chiefly engaged in agriculture. The island is best reached by steamer from Glasgow. Islay was the headquarters of the Macdonalds, Lords of the Isles. On its most southern point is a memorial to 400 American soldiers and seamen who were drowned when the *Tuscania* was torpedoed in Feb., 1918. Pop. 6300.

The **Sound of Islay**, about 13 m. long, separates the island from Jura.

Isleham Village of Cambridgeshire, 17 m. from Cambridge and 6 from Newmarket, on the L.N.E. Rly. Near is Isleham Fen, which was partly drained by prisoners of war in 1918-19. Pop. 1650.

Isleworth Town of Middlesex. It stands on the Thames, 12 m. from London, on the S. Rly. There are some manufactures. With Heston, Isleworth forms a borough (cr. in 1933). *See* HESTON.

Islington One of the 28 boroughs of the county of London. To the north of the city, it is reached by tube railways, tramways and motor omnibuses. Holloway forms the north of the borough, which is the second largest in London. Aberdeen Park is a residential district and Finsbury Park a great traffic centre. Pentonville, with its prison, is also in the borough. The name *Merrie Islington* was given to the district because of the pleasure gardens that existed here in the 18th century. Pop. (1931) 321,712.

Ismail Khedive of Egypt. A son of Ibrahim Pasha, he was born Dec. 31, 1830 and educated in Paris. In 1867 he was made khedive. Ismail is known as the khedive who had much to do with the building of the Suez Canal. He was, however, very extravagant and this led to his abdication in 1879. He died in Constantinople, March 2, 1895.

Ismailia Town of lower Egypt. Situated on Lake Timsch, it is about halfway between Port Said and Suez, and 93 m. by rail from Cairo. Established during the construction of the canal, it was, during the War, an important headquarters of the Allies. It is also famous as the scene of the first scientific assault on malaria.

Ismay Thomas Henry. English shipowner. Born at Maryport, Jan. 7, 1837, his father was a shipbuilder and he himself entered a shipping office in Liverpool. In 1867 he bought the ships which formed the nucleus of the White Star Line, and with his

partner, William Imrie, developed this line enormously. He died Nov. 23, 1899.

Ismet Pasha Turkish statesman. Born in 1884, he entered the army in 1903 and took part in the Young Turk revolution in 1908 and served in the Great War. Joining the national party he reorganised its forces. In 1922 he was foreign minister and since 1924, as prime minister of the new republic, he has taken a leading part in the reorganisation of the country.

Isobar Term used in meteorology for a line upon a map running through places where the atmospheric pressure is the same at a stated time. Isobars are shown especially on weather maps, drawn usually for every tenth of an inch, the pressure being reduced to sea-level and indicated in inches of mercury and millibars. The barometric gradient is shown by the nearness or distance between the isobars, thus where close together cyclonic weather is indicated, and where far apart anticyclonic conditions prevail.

Isocline Term used in geology for the arrangement of strata where all the beds appear to dip at a high angle in the same direction. Such beds occur in the south of Scotland.

Isocrates Greek orator. Born in 436, he was a pupil of Socrates, and founded a school of oratory in Athens. Of his speeches 21 are extant. Isocrates exercised great influence on writing and oratory, both in Greece and Rome. He is said to have committed suicide after Philip of Macedon had defeated the Athenians at Chæronea.

Isolation Medical term for the segregation of persons suffering from infectious complaints so as to prevent the spread of the disease. For this purpose special isolation hospitals away from a town or city are provided for cases of small-pox and certain kinds of fever and other contagious diseases.

Isomerism Term used in chemistry for compounds which have the same number and kind of atoms, but the arrangement is different in each case. Many instances of isomerism occur among the carbon compounds, thus among the paraffins the formula $C_4 H_{10}$ represents two isomeric substances, butane and isobutane, each having different physical properties.

Isomorphism Term used in chemistry, applied when various compounds have the same crystalline form. In some cases the compounds have the same number of atoms and are similarly combined, as with the two isomorphous sulphates of zinc and magnesium; in others the number of atoms differs, but the compounds have chemical analogies to each other, as with ammonium and potassium chlorides.

Isonzo River of Italy. It rises in the Alps and flows southwards into the Gulf of Trieste. Gorizia and Tolmino are on its banks and its length is 80 m. There was a good deal of fighting along this river between the Austrians and the Italians in 1915-1916 and 1917, and five battles of the Isonzo have been recognised by historians of the war.

The first battle took place in June, 1915, and on the whole victory remained with the Italians. The same may be said about the second battle, which took place in July. The third battle, a long struggle in Oct., Nov. and Dec. of 1915, was indecisive.

The fourth battle was a distinct victory for the Italians. It began on Aug. 1, 1916, and on the 9th, Gorizia, their main objective in previous battles, was entered. The fifth and last battle took place in May, 1917, and was an Italian success. The gains, however, were lost before the end of the year, owing to the Italian defeat at Caporetto.

Isostasy Term used in physics for a state where pressure is equal on all sides of a body. An example is the case of a submerged body at rest in a liquid in a state of hydrostatic equilibrium.

In geology the term is applied to the theory of the general equilibrium in the earth's crust.

Isotherm Line drawn upon a map passing through places where the temperature of the air is the same at a stated time. The temperatures indicated by the isotherms are corrected so as to refer to the temperature value of sea-level. If these lines be regarded as the edges of isothermal surfaces meeting the earth's surface, then where the isotherms are far apart over a cold area the isothermal surface will be flat or saucer-shaped, and where close together over a hot area the surfaces will be dome shaped.

Isotope Element which, chemically, is identified with another element, but which has a different atomic weight.

Isotropy Term used in crystallography for the condition met with in crystals of the cubic system. In this a ray of light entering the crystal is only refracted just as occurs with glass, such crystals being termed singly refracting or isotropic. Between the polarisers of a microscope, cubic crystals remain quite dark during rotation.

Israel Collective name for the Jews. Meaning "he that striveth with God," the name was given to Jacob on his way to the chosen land, and was later applied to his descendants, the twelve tribes.

Issachar Son of Jacob, and an Israelitish tribe. He was the ninth son of Jacob, the fifth by Leah. The tribe occupied land in Palestine bounded on the east by the Jordan and including the plain of Esdraelon, the scene of many decisive battles in the subsequent history of the race.

Issus Former seaport of Asia Minor, on the Gulf of Alexandretta. It is notable because here, in 333 B.C., Alexander the Great defeated the Persians in one of the memorable battles of the ancient world.

Istanbul City and seaport of Turkey, formerly known as Constantinople and the capital of the country. It stands on the Sea of Marmora and the Bosporus. Its harbour is formed by the Golden Horn, an arm of the sea which divides the city into two parts. On the south is the old Turkish city and on the north Galata and Pera, the former being the business and the latter the foreign quarter. The Greeks, Jews and Armenians have also their particular districts and the city also includes Scutari on the other side of the Bosporus. It is on the main railway line to Asia Minor, on the air route to the East, and has a broadcasting station (1200 M.; 5 kW.). At one time the population was about 1,350,000, but it has now shrunk to some 600,000. In 1931 it was decided to replace the city.

Istanbul is full of interesting buildings. The most notable are the Mosque of S. Sophia, once a Christian church, and the palaces once occupied by the sultans, one being the Yildiz Kiosk. There are many other mosques; the Christians have a number of churches and the Jews have their synagogues. There is a uni-

versity and several colleges. Walls and gates still surround the original city. A bridge and a bridge of boats cross the Golden Horn. The city has many manufactures and a large trade both by land and sea, but it is less prosperous than it was when it was the capital of the empire.

Istanbul, also called Stambul, stands where the Greeks built the city of Byzantium. It owes its existence and its early name to the Emperor Constantine the Great who founded it in 330. On the division of the Roman Empire it became the capital of the eastern part, and from 1204-61 was the capital of a Latin kingdom founded by the Crusaders. With the exception of this period it remained under the successors of Constantine until 1453 when it was taken by the Turks. It was the Turkish capital until after the Great War, being then replaced by Angora. It was occupied by allied troops from 1918 to 1923, when it was restored to Turkey.

Isthmian Games Festival of Greece. It was held every second year near Corinth in honour of Poseidon. It consisted not only of races and other athletic contests, but of literary competitions.

Isthmus Narrow neck of land connecting two larger land areas, or by which a peninsula is united to the mainland. The Isthmus of Suez unites the continents of Asia and Africa.

Istria District of Italy. It is at the head of the Adriatic Sea and covers 1900 sq. m., its area including certain islands. Pola is the largest town and the Quieto the chief river. Until 1919 Istria was part of Austria.

Italic Form of printed type and handwriting which slopes to the right. It was first used in 1501 for an edition of Virgil by the Italian printer, Aldus Manutius, who sought to regularise the cursive script of his time. Italic type is used nowadays for expressing emphasis, words of importance, foreign words, etc.

Italy Kingdom of Europe. In the south of the continent, it forms in the main a peninsula almost surrounded by arms of the Mediterranean Sea. It includes the islands of Sicily and Sardinia, and a district in the N.E. around Trieste and Fiume that, before the Great War, was part of Austria. Its total area is 119,713 sq. m., and it has a population of 41,176,671 (1931). There are about 9,600,000 Italians in other countries. Within its borders, but outside its authority, are two little states, the Vatican and the republic of San Marino.

The country is divided into departments, but the older names for the various districts are still in use. Such are Piedmont and Lombardy in the N., Tuscany and Umbria in the centre, and Calabria and Apulia in the S. Rome is the capital. Other places with over 500,000 inhabitants are Naples, Genoa, Milan and Turin. Next in size are Palermo, Florence, Venice, Trieste, Bologna, Catania, Messina and Verona. From the historic and artistic point of view, some of these are among the most famous cities of the world, and there are many others, smaller but only a little less famous, such as Ravenna, Pisa, Parma, Modena and Mantua.

On the whole Italy is a mountainous country. In the north are the Alps and in the centre the Apennines. The rivers, although of great historic interest, such as the Adige, Tiber, Po, Arno and Piave, are short. There is a long coastline on which are many seaports and pleasure resorts, but the harbours are not particularly good. The seaports include Genoa, Naples, Venice, Trieste, Catania, Palermo, Leghorn, Messina, Taranto, Brindisi and Fiume. Some of these are naval stations, as are Pola and Spezia.

With much rich soil in the valleys, Italy is an agricultural country. It produces large quantities of fruit, as well as wheat, maize and potatoes. The fisheries are valuable, and many of the inhabitants are fishermen. The mineral wealth is not great, but the manufactures, especially in the north, have become important, and Turin and Milan are centres of industrial activity, with textile factories, engineering works and the like. The country has a good railway system and its air services are very efficient. There was an earthquake in Central Italy in 1933.

Italy is governed by a king and a council of ministers. To represent the people there is a chamber of deputies and a senate, but since the establishment of the system known as Fascism, the real power has been with the council of that organisation, and its head, Mussolini, occupies the position of a dictator.

The country has a large army, recruited on the principle of universal service, a navy and an air force. The people are mainly Roman Catholics, but there is no state church, and the relations between the government and the Pope are usually rather strained. There is a system of education for all, controlled by the state. Under this schools and colleges are everywhere. Some of the Italian universities are among the most renowned in the world. There is a system of justice at the head of which is the Court of Cassation in Rome. The unit of currency is the lira which in 1927 was stabilised at 92.46 to the £ sterling.

Italy has a large colonial empire, chiefly in Africa. It includes Eritrea, Somaliland, Tripolitania and Cyrenaica. In Europe it has the Aegean Islands.

HISTORY. Until modern times Italy was merely a geographical expression. Rome was the heart of the great Roman empire, and when Rome fell Italy was overrun by barbarians. In 800 it became part of the empire founded by Charlemagne, and it was nominally included in the Holy Roman, or Mediaeval, Empire until its dissolution in 1806. In reality, however, it was divided into a number of independent, or practically independent states. Some of these were republics such as Venice and Genoa. Naples was a kingdom. In others such as Florence and Milan, members of a rich family, or soldiers of fortune, established themselves as hereditary rulers. The Papal States stretched across the Peninsula from Rome to the Adriatic.

Among the less important rulers in Italy was the Count of Savoy, who in 1416 was made a duke. In 1418 he obtained Piedmont and in 1713 his successor secured Sicily, which in 1720 he exchanged for Sardinia. At this time he took the title of king, and in 1815 the reigning king secured further territory in Italy.

In the 19th century the King of Sardinia was the centre of the movement for the union of Italy, and gradually the various districts came under his rule. Lombardy was secured in 1859, Tuscany and other areas in 1860. In 1861 Victor Emmanuel, King of Sardinia, was declared King of Italy. In 1866 he secured Venice and in 1870 the papal states,

except the Vatican itself. The difficulty with the Vatican, which remained outside the kingdom, was not adjusted until 1928. In 1900 Victor Emmanuel III. became king.

In 1915, Italy, having broken away from the Triple Alliance, entered the war on the side of great Britain and France, and carried on campaigns against Austria. After several defeats her armies were in the end victorious, and certain parts of Austria were secured at the peace treaty. The period after the war was one of great economic and social unrest which led to the march on Rome in Oct., 1922, and the establishment of a Fascist government there. Under this régime considerable economic progress was made. The Fascist government grew in power. Mussolini became dictator and assumed an ever larger degree of executive authority. Several attempts were made on his life. In 1932 he launched a scheme to rebuild Rome, and in 1934 entered diplomatic relations with Austria and Hungary.

In Dec., 1934, the "Wal Wal Incident"—a clash between Italian and Abyssinian troops at Wal Wal in Italian Somaliland—caused friction which led to the Italo-Abyssinian War. Italy refused League arbitration and started to mobolise. In Oct., 1935, Italian troops invaded Abyssinia, bombed Adowa and captured Adigrat. A few days later war was officially declared. On 28th Oct. began the long and arduous advance on Makale, and Jan., 1936, saw a 3-days battle in the Tembien Heights. In Feby., 1936, the Italians claimed an important victory in the battle of Enderta. Meanwhile sanctions relating to oil, coal, iron and other key products were imposed against Italy by the League of Nations, and an embargo placed on arms and ammunition, and on financial dealings with Italy.

Itchen River of Hampshire. It rises near Alresford and flows into Southampton Water, which it enters by a tidal estuary. Winchester stands on its banks, and it is famous for its trout and for its associations with Isaak Walton.

Another Itchen is a tributary of the Warwickshire Avon.

Itchen is the name of a suburb of Southampton. Before 1920 it was a separate urban district.

Ithaca One of the Ionian Islands, 45 sq. m. in extent and almost divided into two parts by a gulf. Vatky is its capital. The people are chiefly employed in agriculture and fishing. Ithaca is famous as the home of Odysseus, being the sea-girt land so often mentioned by Homer.

Ivan Name of four rulers of Russia. The first two were Grand Dukes of Moscow who lived in the 14th century. Ivan III., called the Great, reigned from 1462 to 1505. He made his territory an independent state, extended its area, issued laws, made treaties with western rulers and took as his emblem the Roman Eagle.

Ivan IV., called the Terrible, who reigned from 1547 to 1584 was the first to take the title of tsar. He carried on the work of Ivan III., but later earned the epithet of terrible by his cruelties. In 1580 he murdered his son, Ivan. He died in 1584.

Iveagh Earl of. Born Nov. 10, 1847, he was a son of Sir B. L. Guinness, Bart., and was educated at Trinity College, Dublin. He entered the firm of Arthur Guinness, Sons & Co., and was for many years its chairman. In 1885 he was made a baronet, in 1891 a baron, in 1905 a viscount, and in 1919 an earl. He died Oct. 7, 1927, being succeeded by his son. His wife succeeded him as M.P. for Southend.

Lord Iveagh was known for his great wealth and munificent charities. He established, in 1889, the Guinness Trust, later known as the **Iveagh Trust**, for providing houses in Dublin and London, and gave large sums to hospitals and the like. He left one of his seats, Ken Wood, Hampstead, and some valuable pictures, to the nation.

Ivory Hard white dentine of the upper incisors or tusks of the elephant. The term is also used to include a similar but inferior substance from the hippopotamus, walrus and narwhal. It is fine-grained, translucent, uniform in texture and white or yellowish in colour. African ivory is the best for most purposes, the Asiatic variety being coarser and tending to become yellow on exposure. Ivory is used for piano keys, and also for carving into ornaments.

Ivory Coast District of W. Africa. It lies between Liberia and the Gold Coast Colony of Great Britain, and belongs to France. Part of Upper Volta was added in 1933. Total area, 180,802 sq. m. The capital, which was formerly at Bingerville is now at Abidjan. Ports include Grand Bassam, Assinie and Sassandra. Inland towns are Abidjan, Aboisso and Bouaké. There is a railway line and many good roads. Maize, rice and rubber are grown, mahogany is cut, and palm oil and kernels are exported. Pop. (1933) 3,743,382.

Ivry Name of two places in France. One of them is on the Eure, 42 m. from Paris. Here on March 13, 1590, Henry IV. gained a great victory over his enemies, the Guises and their friends. Macaulay's ballad on the fight is well known.

The other Ivry is a suburb of Paris. It is on the Seine about 5 m. to the south of the city.

Ivy Evergreen shrub of the order *araliaceae*. It is found in Europe, Asia and N. Africa. It climbs by means of aerial roots, and bears two kinds of leaves, the ordinary five-lobed leathery leaves on the climbing shoots, and simple oval leaves on the flowering stems. The yellow-green flowers are succeeded by small black berries.

Ivybridge Urban district of Devonshire. It is 215 m. from London on the G.W. Rly. The River Erme flows past the town, where are the kennels of the Dartmoor Foxhounds. Pop. (1931) 4715.

Ixion In Greek story the king of a tribe in Thessaly. He murdered his father-in-law, so in order to purify him, Zeus carried him off to Olympus. There he tried to seduce Hera, so was sentenced to the nether world where he was tied to an ever-moving wheel.

JABESH-GILEAD Ancient city of Palestine. Its inhabitants rescued the bodies of Saul and his sons from the Philistines, earning David's gratitude (1 Sam. xxxi.). It was in Gilead, E. of the Jordan, but the exact spot has not been identified.

Jaborandi Plant growing in Brazil and used in medicine. From it the drug pilocarpine is prepared. It is used as a hair tonic, and internally to cause perspiration.

Jaborosa Flowering plant, growing in any warm sheltered position, and bearing white, fragrant flowers. It is propagated by separating the long, creeping stems. When this is done the plant is believed to make a shrieking noise.

Jacamar Name of a family of S. American birds. With long, straight bills, they bore nesting holes in river banks, and there lay their eggs. They are expert in catching flies, keeping long, motionless watches on tree branches. Their plumage, often brilliantly bronze-green, resembles that of humming birds.

Jack Word in its primary meaning a familiar or diminutive form of the name John. From its use as a general name for a boy or servant, it was applied to devices which supplied the place of a helper, as, for example, a boot-jack, a contrivance for turning a spit, a miner's wedge, and a screw or other appliance for raising heavy weights. It is also the name of the small ball in the game of bowls, up to which the bigger, wooden balls have to be bowled.

Jackal Carnivorous mammal of the dog genus. It is found in south-east Europe, Africa, and Asia. Often hunting in packs, jackals feed on living prey, carrion, and fruits. They can be tamed, and will interbreed with domestic dogs. The common jackal (*Canis aureus*) is 2 or 2½ ft. long, and 15 in. high. The North African variety is larger, and the so-called Egyptian Wolf larger still.

Jackass Male of the domesticated donkey. Its alleged lack of intelligence led to the name being applied contemptuously to stupid persons. One of the Australian food fishes is called the **jackass fish.** The **jackass penguin** is a S. American braying species. Several N. American prairie hares are called **jackass rabbits.** *See* LAUGHING JACKASS.

Jack Boot Heavy riding boot, with long flap reaching above the knee, stoutly protected at the instep. Troopers wore them in England in the 17th century, and they became modified into the high knee-boots of the household cavalry. The name denotes also the similar footwear of postilions, and that of modern fishermen and sewermen.

Jackdaw Bird of the crow family. It is smaller than the rook, and may be distinguished by its white eyes, smaller beak, and grey neck. It can be easily tamed, but as a pet it is very troublesome and mischevious. It is common in Great Britain, and generally builds in holes in the masonry of church towers and other buildings. The food is mainly worms and insects.

Jacks **Lawrence Pearsall.** English theologian. He was born at Nottingham in 1860 and educated at Manchester College, Oxford, Göttingen and Harvard. He entered the Unitarian ministry in 1887 as assistant to Dr. Stopford Brooke. He became editor of the Hibbert Journal in 1902 and was Principal of Manchester College, Oxford, from 1915 to 1931. His writings include *Legends of Smokeover, The Faith of a Worker, Constructive Citizenship* and other books.

Jackson **Andrew.** American President. Born March 15, 1767, in 1796 he was elected a member of Congress and in 1798 was made a judge, but he made his reputation as a soldier. He led the American forces against the British in 1815, and in 1818 against an Indian tribe, in both cases successfully. In 1821-23 he was Governor of Florida, and in 1823-25 a member of the Senate. In 1828 he was elected President, and he was re-elected in 1832. He left office in 1836 and died June 8, 1845. To Jackson, who was a Democrat, is attributed the introduction of the spoils system into American politics.

Jackson **Sir Barry Vincent.** English actor manager. Born in Birmingham, Sept. 6, 1879, he founded a company of players in 1907. In 1913 he started the Birmingham Repertory Co., to the direction of which he returned after serving in the navy during the Great War. In 1925 he was knighted. Among his productions are *Abraham Lincoln, The Immortal Hour, Back to Methuselah, The Apple Cart,* and several Shakespearean plays in modern dress.

Jackson **Sir Francis Stanley.** English politician and cricketer. Born Nov. 22, 1870, he captained the Cambridge eleven in 1893, and for many years played for Yorkshire. In 1905 he was captain of England in the test matches against Australia, and he played for the Gentlemen and in other representative matches, proving himself one of the greatest all-round cricketers of his age. Jackson served in the Boer War and during the Great War commanded a battalion. In 1915 he was elected Unionist M.P. for Howdenshire, and in 1922 he was made Financial Secretary to the War Office. In 1923 he became chairman of the Unionist organisation, and in 1927 Governor of Bengal, relinquishing the latter office in 1932.

Jackson **John.** English pugilist. Born in London, Sept. 28, 1769, in 1795, after defeating David Mendoza at Hornchurch, he became champion of England, a title he kept until 1803. In 1795 he set up a school of boxing in Bond St., London, which became very fashionable. He was acquainted with the Prince Regent, afterwards George IV., and his courtesy won him the name of Gentleman Jackson. He died Oct. 7, 1845.

Jackson **Sir Thomas Graham.** English architect. Born in London, Dec. 21, 1835, during a long professional career, he designed buildings for several colleges at Oxford and Cambridge, and for some public schools, including Harrow and Winchester. His restoration work included Winchester Cathedral, and the great churches at Bath, Malvern, and Christchurch. Jackson was elected A.R.A. in 1892 and R.A. in 1896. In 1913 he was made a baronet, and he died Nov. 7, 1924. He wrote several books on Gothic architecture.

Jackson **Thomas Jonathan.** American soldier. Born in West Virginia, Jan. 21, 1824, he was, after Lee, the most renowned of the southern generals, during the Civil War, winning for himself the name of Stonewall Jackson. After the Battle of Chancellorsville, he was accidentally shot by his own men, and died May 10, 1863.

Jacksonville City and seaport of Florida, on the St. John's river, near its mouth in the Atlantic Ocean. There are large modern docks and a number of manufactures. Pop. (1930) 129,949.

Jacob Jewish patriarch. With Esau he was the twin son of Isaac and Rebekah. His deceit and his mother's won for him the birthright from Esau and the paternal blessing (Gen. xxvii.). He went to his uncle, Laban, whom he served for 14 years, receiving in return his daughters, Leah and Rachel, as his wives. His concluding days were passed in Goshen in Egypt, where his son, Joseph, held a high position. There he died at a great age. Jacob had twelve sons, from whom the twelve tribes of Israel were descended.

Jacobean Name given to anything associated with the name James, the Latin for which is Jacobus. The Jacobean style in furniture and architecture lasted from 1603 to 1688. Jacobean furniture is chiefly of oak, heavy in appearance, but sometimes very beautifully carved. Jacobean houses are plain in style, but are often very graceful in appearance, with fine panelling and plaster work. Charlton House, near London, and Bramshill House in Hampshire are good examples.

Jacobins French political society. It arose during the French Revolution, and consisted of men who wished for constitutional reform of a moderate kind. They were named Jacobins because they met in a building in the Rue St. Honoré, Paris, belonging to the Dominican order, called in France the Jacobin. Later its members became more extreme in their views, and carried out the reign of terror, but its power ended in 1794 with the execution of Robespierre, and attempts to revive it failed. The word Jacobin was much used in Britain and Europe for the holders of extreme opinions. It was to combat these that the paper called *The Anti-Jacobin* was founded in 1797.

Jacobite Church Christian communion named after Jacob Baradaeus, missionary Bishop of Edessa (d. 578). He reorganised the Syrian monophysite church, which became powerful in the Middle Ages in Asia Minor and Egypt. The church still exists, its head being the patriarch of Antioch.

Jacobites Name given to those who, after 1688, refused to acknowledge William and Mary (and afterwards the Georges) as rulers, believing that James II. and his descendants were the rightful kings. The Jacobites were strong in Scotland and Ireland and there were a number in England until well into the 19th century, but it ceased to be a serious movement after the rising of 1745 had been crushed.

The few remaining believers in the claim of the Stewarts to the throne call themselves Legitimists. To them Prince Rupprecht of Bavaria, descended from the daughter of Charles I., is the rightful king of Great Britain. They have associations and clubs, and remember Jan. 30, the day on which Charles I. was executed.

Jacobs **William Wymark.** English writer. Born in London, Sept. 8, 1863, he was for many years a clerk in the Post Office. He soon began to write short stories and made his name with a volume called *Many Cargoes*, 1896, followed by *Light Freights*, *Captains All*, *Ship's Company*, *Night Watches*, *Deep Waters*, and in 1926, *Sea Whispers*. He wrote longer stories in the same vein, *The Skipper's Wooing*, *Dialstone Lane*, *Salthaven* and *At Sunwich Port*. The stories deal mainly with the humorous adventures of seamen and bargemen. Jacobs has also shown himself a master of the occult type of story, and *The Monkey's Paw* and others are masterpieces of their kind.

Jacobus Gold coin. It was struck only during the reign of James I. (hence its name, Jacobus being the Latin for James), and its value was 25s.

Jacquard **Joseph Marie.** French inventor. Born July 7, 1752, at Lyons, he followed his father's trade of weaver, and after a time invented a loom, which was a great improvement on those then in use, as it enabled figured patterns to be woven. This was patented, and with improvements is still used for the weaving of silk and other textiles, as well as tapestries, carpets, and lace. Jacquard died Aug. 7, 1834.

Jacquerie Rising of the French peasantry. It occurred in 1358, when, as the result of the ravages of the English in the Hundred Years' War and other circumstances, the condition of the peasants was very bad indeed. It began in Normandy and spread to Paris, but was soon suppressed. The name is taken from Jacques Bonhomme, a term used for the French peasant.

Jactitation In English law the making of a false pretension of marriage. If a person pretends to be married to another, the latter may sue him, or her, for jactitation of marriage. Such suits are rare.

Jade Very hard compact variety of the mineral, tremolite. It consists essentially of silicate of magnesia and lime. Two varieties occur, white jade found in China, and green jade, or greenstone, in New Zealand. A similar soda-containing mineral, jadeite, is often confused with true jade. Both minerals are used as ornamental stones.

Jael Wife of Heber the Kenite (Judges iv.-v.) The Canaanites under Sisera, a general of the King of Huzor, attacked the Israelites, but were routed by Barak. Sisera took refuge in Jael's tent, and when sleeping was treacherously slain by her—an act lauded in the Song of Deborah.

Jaffa Seaport of Palestine. Anciently known as Joppa, it stands on the Mediterranean Sea, 50 m. from Jerusalem. It has a trade in wool, olive oil, and the oranges to which it gives its name. In 1917 it was captured from the Turks by Australian and New Zealand troops. Pop. (1931) 51,366.

Jagersfontein Town of South Africa, in the Orange Free State, 48 m. from Springfontein. It is the site of an important diamond mine, in which the most perfect diamond ever discovered was found in 1895. Pop. 4,000.

Jaguar Animal of the cat tribe, found in both North and South America. It corresponds to the leopard of the old world,

but its head is somewhat larger. It averages 4 ft. in length. The colouring is a rich tan with small black spots and black-spotted rosettes; black varieties occur. It preys upon monkeys, peccaries and turtles, as well as horses and cattle, and is an agile climber, resting on tree branches in the daytime.

Jain Member of a Hindu religious sect. This cult developed from Brahmanism in the 6th century, B.C., but gave up some of the main teachings of that faith, including the caste system and the Vedas. Its own religious books date from about 500 B.C. The Jains believe in the future life for almost all animate nature and refuse to kill anything. They are found in the N.W. parts of India and number about 1,000,000, chiefly prosperous traders. The Jains have built some remarkable temples, one of the finest being at Calcutta.

Jaipur State and city of Rajputana, India. It is ruled by a maharajah and came under British protection in 1818. It covers 15,579 sq. m. Pop. (1931) 2,631,775.

The city is an important railway centre. Near it is Amber, the former capital of the state.

Jaisalmir State of India. It lies to the west of Rajputana and is one of the Rajput states. Its capital is a town of the same name. The ruler is a maharajah and the people chiefly Hindus. The area is 18,060 sq. m. Pop. 76,255.

Jalalabad Afghan town. It is situated on the Kabul river, near the Khyber Pass, between Kabul and Peshawar. It was the scene of a heroic defence by a British force under Sir Robert Sale during the Afghan War of 1841-2.

Jalap Swift purgative drug. First imported from Jalapa in Mexico, it is obtained from resins in the tuberous roots of several convolvulaceous plants of the genus *ipomaea*. It is rich in glucosides and is used in cases of dropsy.

Jam Indian title. The word, which is of Tartar origin, like khan and cham, means chief. It was borne by the rulers of Las Bela, a state of Baluchistan, and of Nawanagar, the latter of whom was the famous cricketer, Ranjitsinhji.

Jamaica Largest island of the British West Indies. In the Caribbean Sea, 90 m. S. of Cuba, it belongs to the Greater Antilles group, and was discovered by Columbus in 1494. In 1655 the English took it from Spain. A mountainous isle, with peaks reaching 7360 ft. in height, it is very fertile; agriculture flourishes, and fruit, tobacco, sugar, coffee and cocoa are produced. The vegetation is rich and the climate agreeable, but the island is subject to earthquakes and hurricanes. With its dependent islands, which include the Turks and Caicos Islands and Cayman Islands, it is administered by a governor and a legislative council.

Kingston is the capital and the chief sea port. Spanish Town is the old capital. British and American currencies are used. The area is 4450 sq. m., and the island is 144 m. long. Pop. (1931) 1,050,667.

Jamboree Word of American-Indian origin meaning a festive gathering of the tribes. It has been adopted by the Boy Scouts for an international rally, held periodically. The first was held at Olympia, London, in 1920. *Jamboree* is also the name of a magazine for Boy Scouts, founded in 1921.

James River of Virginia, U.S.A. It is formed by the junction of the Cowpasture and Jackson rivers, and, after a course of some 450 m., empties into Chesapeake Bay through a large estuary. Richmond is at its head of navigation, which extends for 150 m.

Another **James River**, a tributary of the Missouri, flows through Dakota.

James Saint and apostle. Son of Zebedee and Salome, he and his brother John were Galilean fishermen whom Jesus called to be his disciples. He was one of the three especially honoured by Christ, and was an influential figure in the apostolic church. He was beheaded by Herod Agrippa. He is commemorated on July 25, and is the patron saint of Spain, where his shrine at Compostella was one of the most famous in Europe.

James Brother of Jesus Christ (Matt. xiii., Mk. vi.). Conflicting tradition made him a son of Joseph by a former wife or by Mary after Christ's nativity. After the Resurrection he became a pillar of the church at Jerusalem and its first bishop.

James **Epistle of.** Book of the New Testament. Its superscription ascribes it to our Lord's brother, Jerusalem's first bishop, whose regard for the Mosaic law was overlaid by the law of love. He addresses the infant church wherever dispersed, not Jewish Christians only, inculcating duties of practical morality, such as abstaining from sycophancy and unruliness of speech, evidencing faith by actual works, combining in prayer, especially in seasons of suffering and sickness, and recognising the importance of the individual soul.

James I. King of Great Britain. Born in Edinburgh, June 19, 1566, the son of Mary, Queen of Scots, and Lord Darnley, he was proclaimed King as James VI. in 1567. As a child he was delicate and throughout life remained ungainly, but he had considerable abilities and was very carefully educated. His minority, marked by struggles for his person between the nobles, ended in 1583, and for 20 years he ruled Scotland. His belief in episcopacy was disliked by many of his subjects, but he maintained this policy until bishops were established. He showed energy in dealing with risings of the nobles, and on the whole his reign was successful, if unpopular. His indifference to his mother's imprisonment, and especially to her death, is generally regarded as a blot on his memory.

In March, 1603, James became also King of England, and the rest of his life was passed in that country. Failing to understand the English character, he can hardly be called a popular or successful ruler. His partiality for certain worthless favourites disgusted many, and his religious ideas were heartily disliked by both Puritans and Roman Catholics. His foreign policy was neither consistent nor wise, and his quarrels with parliament had a bearing on the troubles of the next reign. He died at Theobalds, March 27, 1625.

James married, in 1589, Anne, daughter of the King of Denmark. His eldest son, Henry, died in 1612, and the second, Charles, succeeded him. From his daughter, Elizabeth, the present royal family is directly descended.

James was something of a thinker, and in his *Basilicon Doron* and *The True Law of Free Monarchies* he set out his ideas on government. He also wrote *Counterblaste to Tobacco*, and an attack on witchcraft.

James II. King of Great Britain. The second son of Charles I., he

was born in London, Oct. 14, 1633, and was educated by tutors in the royal palaces. His life falls into three periods. From 1633 to 1683 he was Duke of York; from 1685 to 1688 he was king, and from 1688 to 1701 an exiled and fallen monarch. In 1649 he went to the Netherlands and saw service in the French and Spanish armies. In 1660 he returned to England and as Lord High Admiral commanded the fleet in battles with the Dutch. Later he was in Scotland engaged in suppressing the Covenanters, and throughout the reign of his brother he was prominent in public life. His conversion to Roman Catholicism led to the formation of a strong party determined to exclude him from the throne, but in 1685 he became king.

The rebellion, led by Monmouth, having been crushed, James was able to carry out his ideas for making England a Roman Catholic country. Paying little heed to constitutional forms, he issued proclamations that soon raised up a host of enemies. Only three years after his succession, an invitation was sent to William of Orange to come and take the crown. So thoroughly had he alienated his people that James found himself unable to defend his throne and fled to France. In 1690 he was in Ireland, where, with French help, he made an effort to oust his rival, but the campaign failed. He then returned to France and passed the rest of his days at St. Germain. He died Sept. 6, 1701.

James married Anne Hyde, daughter of the Earl of Clarendon, who bore him two daughters, Mary and Anne, both queens. His second wife was Mary, daughter of the Duke of Modena, by whom he had a son, James Edward, known as the Old Pretender.

James Name of six kings of Scotland. **James I.,** a son of Robert III., was born in July, 1394. From 1406, the year in which he became king, until 1424, he was a prisoner in England, having been captured by some English sailors when on his way to France. He returned to Scotland in 1424 and married Jane Beaufort, a daughter of the Duke of Somerset. After much trouble with his nobles, he was murdered at Perth, Feb. 20, 1437. The king wrote poems, two of which still survive.

James II., the only son of James I., was born Oct. 6, 1430, and became king on his father's death. During his reign the Douglas family was very powerful and troublesome. He made war on England and was killed whilst besieging Roxburgh Castle, Aug. 3, 1460.

James III., the eldest son of James II., was born July 10, 1451, and reigned, at first with a regency, until 1488. In that year, urged on by the nobles, his young son rebelled against him, and after a fight near Stirling, the king was killed, June 11, 1488. He married a daughter of the King of Denmark.

James IV. was born March 17, 1473, and became king on his father's death, for which he was in a sense responsible. He married Margaret, daughter of Henry VII., and after a reign, comparatively peaceful, of 25 years, met his death at Flodden, Sept. 9, 1513.

James V., born April 10, 1512, became king when under two years old. In 1530 he began to rule for himself, but he left no mark upon his country. In 1542 the English defeated his troops at Solway Moss and on Dec. 14 of that year he died at Falkland. James married Mary, daughter of the Duke of Guise, and their only child was Mary, Queen of Scots. Her son was **James VI., afterwards James I. of Great Britain.**

James **Baron.** English lawyer. Born at Hereford, Oct. 30, 1828, Henry James was educated at Cheltenham and became a barrister. In 1868 he entered Parliament as M.P. for Taunton, and in 1873 he became Solicitor-General and then Attorney-General under Gladstone. He returned to office in 1880 and was Attorney-General until 1885, when he became a Liberal Unionist and M.P. for Bury. In 1895 he was made a peer, as Lord James of Hereford, and he was Chancellor of the Duchy, 1895-1902. He died unmarried, Aug. 18, 1911.

James **Henry.** Anglo-American novelist. Born in New York, April 15, 1843, he was educated for the law at Harvard. However, he began to write, and in 1875 his first successful novel, *Roderick Hudson*, appeared. This was followed by *The American*, *The Bostonians*, *The Tragic Muse*, *The Golden Bowl*, *What Maisie Knew*, *The Ivory Tower*, and many others. He also wrote criticisms of English and French literature of unusual value. In 1915 James became a naturalised Englishman, and he received the Order of Merit in 1916. He lived much at Rye, but died at Chelsea, Feb. 28, 1916.

James **William.** American philosopher. A brother of Henry James, he was born in New York, Jan. 11, 1842, and educated at Harvard. In 1881 he was made professor at that university, and he passed his life in the study of philosophy and the allied problems of psychology. He lectured in England and Scotland. He died Aug. 26, 1910.

James is regarded as one of the foremost of modern philosophers. He was the founder of the philosophy of pragmatism, and many of the problems of psychology owe a good deal to his thought which laid great stress on the results of experience. His books include *The Principles of Psychology*, *Human Immortality*, *Pragmatism*, *Varieties of Religious Experience*, *The Will to Believe*, and *The Meaning of Truth*.

James Bay Part of Hudson Bay, Canada. A south-easterly extension of the greater bay, it lies between Ontario and Quebec, and contains many islands. It is 350 m. long and 120 m. wide at its widest point, and receives the waters of several rivers, being, nevertheless, shallow and brackish.

James Edward British prince, known as the Old Pretender. He was born in London, June 10, 1688, being the son of James II., and his birth had important consequences for Britain. The news that James had a son decided his enemies to act against him, and the result was the loss of the crown by the Stewarts. The young prince was sent to France and was there when, in 1701, he became nominally King of Great Britain as James III. In 1708 and 1715 he went to Scotland to try to win the throne, but soon returned to France. In 1715, when peace was made between Britain and France, he was obliged to leave the latter country. He went to Bar-le-Duc in Lorraine and later to Rome where he died, Jan. 2, 1766. He was buried at S. Peter's. He married Clementina, daughter of John Sobieski, King of Poland, and had two sons, Charles Edward and Henry.

Jameson **Sir Leander Starr.** British administrator. Born in Edinburgh, Feb. 9, 1853, he became a medical man. In 1878 he went out to Kimberley where he practised, and there he made friends with Cecil Rhodes who soon began to employ him

on political work. In 1891 he was made administrator of Rhodesia, and in 1895 he led the raid on Johannesburg. For this he was tried and put in prison in England, but was soon released. In 1900 he became a member of the legislature of the Cape and from 1904-08 he was Prime Minister. In 1911 he was made a baronet, and in 1913 chairman of the British S. Africa Co. He died in London, Nov. 26, 1917.

Jameson's Raid Raid on Johannesburg in 1895-96. The Britishers in the Transvaal, badly treated by the Boers, planned a rising and obtained promises of help from Cecil Rhodes and his assistant, Dr. Jameson. The rising was postponed, but Jameson with about 500 men entered the Transvaal on Dec. 28, 1895. They were quickly forced to surrender and handed over to the British authorities. The leaders were tried and sentenced to imprisonment, and Parliament appointed a commission to inquire into the matter. Its report censured Rhodes, who lost his status as a privy councillor. The raid left a bad impression and so contributed to the war of 1899-1902.

Jamestown English settlement in the United States, the first of the kind. It is on the James River in Virginia, about 30 m. from its mouth, and dates from 1607. It was the first capital of Virginia and remained so until 1696, when, having been damaged by fire, it fell into decay. The peninsula on which it stood has been converted by the action of the river into an island, and the ruins of the buildings thereon are carefully preserved by the society that owns them. In 1907 the tercentenary of the foundation was celebrated.

Another **Jamestown** is the capital of St. Helena. Pop. 2500.

Jammu City of Kashmir and the winter capital of the state. It stands on a tributary of the River Chenab and has railway connection with India. At one time Jammu was the capital of an important state named after it; this is now part of Kashmir. In 1931 there was unrest in the city. Pop. 36,500.

Jamnagar City and seaport of India. It is the capital of the little state of Nawanagar and is 310 m. north-west of Bombay. Pop. 42,000.

Janissaries Corps of Turkish soldiers. Founded in the 14th century, the Janissaries were, until about 1600, mainly Christian boys taken as tribute, and brought up, under strict discipline, in the Mohammedan faith. They made very formidable soldiers and were long the backbone of the Turkish army. After a mutiny in 1825, the corps was abolished.

Jan Mayen Island Island in the Arctic Ocean. It lies between Greenland and Norway and covers 160 sq. m. It is visited by fishermen after seals and whales. Several explorers are said to have discovered the island, one being Jan Mayen, a Dutchman. In 1920 Norway acquired the island, and took possession of it in 1925. An observatory was erected in 1921.

Jannina Town of Greece. On the Lake of Jannina, it is near the frontier of Albania and is the chief town of a district named after it. It was from 1788 to 1816 the headquarters of the rebel chief, Ali Pasha, who was called the Lion of Jannina. The Turks fortified it and in 1913, during the first Balkan War, it was besieged and taken by the Greeks. During the Great War it was taken by the Allies. Pop. 25,000.

Jansenism Term used for the teaching of Cornelius Jansen. He was a Dutchman who, in 1619, became Professor of Theology at Louvain, and later Bishop of Ypres. He died May 6, 1638.

Jansen wrote a book called *Augustinus* in which he restated the teaching of S. Augustine on predestination, the fall of man and other matters. It was published in 1640, after his death, and was taken up by a group of religious thinkers, including Pascal, who lived at Port Royal. They called themselves Jansenists. They were then members of the Roman Church, but they incurred the hostility of the Jesuits, and after a time formed a church of their own, adhering to much of the Catholic faith, but rejecting the doctrines of the immaculate conception and papal infallibility. The church still exists in the Netherlands.

Janssen Cornelius. German painter. He was born in London, probably in 1593, of German parents, and studied art in the Netherlands. In 1616 he returned to London and, calling himself Johnson, worked there for some years. He painted Charles I. and other notables. When the Civil War began he went back to Holland, and died, probably at Utrecht, in 1664.

Januarius Saint and martyr. A bishop of Beneventum in the days of Diocletian, he was tortured and killed during that emperor's persecution of the Christians. His body is preserved in his native city of Naples, of which he is the patron saint. His day is Sept. 19.

Janus In Roman mythology an aboriginal spirit of the doorway. This was developed by the Latin people into a double-headed deity. His arch facing east and west in the Forum, commonly called the Temple of Janus, was only closed in time of peace. He gives his name to the first month of the year.

Japan Empire of Asia. It lies off the north-east coast of the continent, from which it is separated by the Sea of Japan. It is composed of five large islands, Honshiu, or Hondo, the mainland, Kiushiu, Shikoku, Hokkaido, or Yezo, and Formosa, or Taiwan, over a thousand smaller ones, the peninsula of Korea or Chosen, and the southern half of Sakhalin. The total area is 260,644 sq. m. and the population in 1930 was 90,396,043.

PHYSICAL FEATURES. The islands are volcanic and mountainous, Fujiyama (12,395 ft.) on Honshiu, being the most famous mountain. Two Formosan peaks are more lofty. The numerous rivers are all swift, of no great size and of little use for navigation. The climate is diverse, for the empire extends through many degrees of latitude, but is in general wet, with short, hot summers, and long, cold winters. Typhoons are of frequent occurrence and cause great damage, as do earthquakes and tidal waves.

The vegetation is rich and varied, and agriculture is the chief industry of the fertile country, wheat, barley, rye, tobacco and tea being the chief crops. Minerals and metals abound. Manufactures are of increasing importance; in 1932 Japan exported goods to the value of £143,936,683. The largest cities, in order of population, are Tokyo, the capital, Osaka, Nagoya, Kobe, Kyoto, and Yokohama, all on Honshiu. Kobe and Yokohama are the chief ports. There is a good railway system.

GOVERNMENT. Japan is ruled by an em-

peror, called sometimes the Mikado, and a cabinet of ministers. There is a parliament, or diet, of two houses, a house of peers and a house of representatives, the latter elected by all adult males. There is no state church, but Shintoism and Buddhism are the chief faiths of the people. Education is compulsory and there is a system of administering justice framed on European models. Japan maintains a large and efficient army recruited by compulsory service. It has a good navy.

The country possesses a good banking system set up in 1872. The standard of currency is the yen, worth 2s. 0¼d. The metric system of weights and measures is compulsory.

HISTORY. The Japanese empire dates from 660 B.C., and the present ruler claims to be the direct descendant of Jimmu Tenno, its founder. From the 12th to the 19th century it was ruled by Shoguns, but in 1871, after a civil war, the emperor regained his authority and a new era began. Since that time Japan, learning much from Europe, has made enormous advances in every direction and ranks as one of the great countries of the world.

In 1894 Japan was victorious in a struggle with China, and in 1904-05 her armies defeated the Russians in war. An alliance with Britain was concluded, and as an ally Japan entered the war against Germany. She secured a sphere of influence in Manchuria, which in 1931-32 led to trouble with China, and in Feb., 1932, the independent state of Manchukuo (Manchuria) was established under the protection of Japan. In 1933 the war broke out afresh. Japan would not accept the findings of the League of Nations on the Manchurian question and resigned from the League. During 1935 she strengthened her position in N. China and in Nov. her troops entered Pekin and Tientsin. At the beginning of 1936 there was a prospect of improved relations between the two countries. Japan's proposals included concerted (Sino-Japanese) action against Soviet influence in N. China. In Jan. 1936, after claiming equality with Britain and America, Japan decided to leave the Naval Conference. The growth of population presents a problem of increasing difficulty.

CULTURE. Japan has a literature of its own, but more notable is its art. A great amount of skill and taste is shown in the pottery produced by her people, whose gifts are also seen in their metal, lacquer and bronze work. For painting they have distinct gifts and the native architecture, in addition to being suited to the peculiar climate and other needs of the country, possesses considerable grace and beauty.

Japanning Process by which various articles of wood, metal and leather are coated with a kind of varnish and usually subjected to heat to harden the surface. In Japan a special lacquer prepared from the juices of certain trees is used. In Great Britain the black japan consists of asphaltum, copal and linseed oil. The articles treated in this way are known as japanned ware.

Japonica Name used for certain plants growing in Japan. In Britain gardeners use it for the Japanese quince, *cydonia japonica*, but it will equally well indicate other flowering shrubs, *e.g.*, *skimmia* or *kerria*. The quince, which grows quite easily, bears scarlet flowers. Commercially it denotes pale catechu, or gambier extract, formerly called terra japonica.

Jarnac Town of France, in the department of Charente, 7 m. from Cognac. It has a trade in wine and brandy. Pop. 4500.

At the **Battle of Jarnac**, March 13, 1569, the Huguenot army was defeated, and its leader, the Prince of Condé, killed.

Jarrah Reddish hardwood. It comes from the mahogany gum tree, *Eucalyptus marginata*, of Australia. Being very hard, it serves for gate posts, railings, piles and railway sleepers. The tree grows in the forests of Western Australia to a height of 150 ft.

Jarrow Borough and river port of Durham. It stands on the Tyne, 4 m. south-west of South Shields, on the L.N.E. Rly. In a mining district, the chief industries are shipbuilding yards and iron works. S. Paul's church, once the church of the monastery associated with the Venerable Bede, contains parts of the original building, and near it are some monastic ruins. Pop. (1931) 32,018.

Jasmine Large genus of shrubs of the olive order. They are natives of the warmer regions, especially Asia, but one is S. American. Two varieties grow in English gardens. One bears white flowers in summer and the other, called the **winter jasmine**, is an evergreen bearing yellow flowers. They do well against walls, trellises and pergolas.

Jason Hero of Greek mythology. The son of Aeson, King of Iolcus, he was educated by the centaur Chiron. To get rid of him and his claim to their father's inheritance, his half-brother, Pelias, sent him, at the head of the Argonauts, to find the Golden Fleece. When he returned with it, he and his wife, Medea, by a ruse, secured the death of Pelias and were expelled in consequence. Jason later deserted Medea for Creusa, who was killed by the wronged wife.

Jaspar **Henri.** Belgian politician. He was born July 28, 1870, and became a lawyer. In 1919 he took a prominent part in the work of restoring the country's industries and the same year he was elected a deputy. He took office as Minister of the Interior and then as Foreign Minister, a post he retained until 1925. Jasper was from the first a firm supporter of the League of Nations and was a member of the Court of International Justice at the Hague. In May, 1926, he became Prime Minister and Minister of the Interior, and he remained at the head of affairs until 1931.

Jasper Impure form of silica. It consists of an intimate mixture of quartz and red and yellow iron oxides or clay, thus rendering the mineral opaque. As an ornamental stone, jasper was known to the Greeks. One variety is deep red with concentric zones, and another has parallel bands of reddish-brown and green.

A ware, invented by Joseph Wedgwood, is known as **Jasper.** It is of uniform colour and is decorated with figures in the form of cameos.

Jassy City of Rumania, on a tributary of the Pruth in the department of Jassy, about 200 m. from Bucharest. It has a trade in cattle, corn, oil and other products. It was at one time the capital of Moldavia, and in 1917-18 was temporarily the capital of Rumania. Pop. (1930) 102,595.

Jats People of north-west India. They are tall, dark-skinned, regular-featured and bearded, and speak an Indo-Aryan tongue called Jatki. Found chiefly in the Punjab, Rajputana, United Provinces, Baluchistan and Sind, they number some 7,000,000 and are

mainly farmers and cattle breeders. They have a good reputation as soldiers.

Jaundice Yellow discoloration of the skin and mucous membranes. It is due to escaped bile elements in the blood and indicates a disturbance of the bile's normal flow into the intestine. It may arise from obstruction, usually denoted by darkened urine. Non-obstructive jaundice may arise from increased destruction of red blood corpuscles, as in pernicious anaemia, bacterial poisoning, as in yellow fever, phosphorus poisoning, or yellow atrophy of the liver. It is also called malignant jaundice. Any of them are indicated by the presence of bile in the stools.

Jaurès **Auguste Marie Joseph Jean.** French statesman. Born at Castres, Sept. 3, 1859, he showed himself a brilliant scholar there and in Paris. He became a lecturer at the University of Toulouse. In 1883 he was elected to the Chamber of Deputies, but in 1887 he was defeated and returned to his former post at Toulouse. From 1893-98 he was again a deputy and in 1902 he was once more elected to the Chamber. By this time he had definitely become a socialist, and his abilities soon made him the leader of that party and a figure in the international movement. In 1914 he worked and hoped for peace, but just as war broke out he was murdered, July 31, 1914. With Briand, Jaurès founded *L'Humanité*, a journal which he edited until his death.

Java Island of the Dutch East Indies, the third largest of the group. It lies between Borneo and Sumatra and covers some 50,000 sq. m. Its length is 630 m. It is mountainous and volcanic, save in the north-west. Sameru, 12,000 ft., is the highest point. The soil is fertile and there are extensive forests. The crops include coffee, rubber, rice, tea, sugar and various spices. The minerals are oil, tin, coal and salt. The capital is Batavia; Surabaya is the next place in importance, and these two are also the chief ports.

With the rest of the Dutch East Indies, Java is under a governor-general and a council, partly elected and partly nominated. The people are chiefly Mohammedans and Buddhists. The island is densely populated and commercially is the most important of the group. Remains of early man have been found in Java, one of the oldest known human skulls coming from the island. At a later date it had its own civilisation, a Hindu one. Early in the 16th century the Portuguese discovered the island, but it was soon taken by the Dutch. Pop. 37,433,000.

Javelin Kind of throwing and thrusting spear. It was usually about 6 ft. in length, and was used in ancient times by both infantry and cavalry. When thrown it had a range up to about 40 yds. The head of a javelin was either flat or thicker along the centre, and either long, diamond or leaf shaped.

Javelin throwing is an event in certain athletic sports. The record throw was made in 1932 by a Finn, M. Jarvinen.

Jaw Bony framework of the mouth in which the teeth are set. The two upper jaw bones lie beneath the cheeks, completing the eye orbits and the nose. The two lower jaw bones unite immovably in the child's second year into a single mandible. The alveolar margins of each jaw contain the tooth sockets.

Jay Family of perching birds related to the crows. The common jay of Great Britain and Europe (*garrulus glandarius*) is about 14½ ins. long and has blue barred wings and a black-and-white crest. It is a garrulous bird, much persecuted by gamekeepers. Another genus contains the Siberia and Canada jays, and still others the American blue jays.

Jay **John.** American statesman. Born in New York, Dec. 12, 1745, he became a lawyer there. In 1777 he was made chief justice of New York, and in 1779 he went to Spain as ambassador. Later he went to Paris where he helped to make the peace treaty with Britain in 1782-83. From 1784 to 1790 he was a secretary of foreign affairs, and from 1790-95 chief justice of the supreme court, and from then until 1801 governor of New York. In 1794 he went to London and arranged a convention (Jay's Treaty) with Great Britain. He died May 17, 1829.

Jazz Name applied to certain American dance music and certain dance types of negro origin. It is an onomatopoeic word aptly describing the noisy, percussive features of the fashionable dance bands. It also describes bizarre and inharmonious colour decoration.

Jeans **Sir James Hopwood.** English scientist. Born in London, Sept. 11, 1877, he went to Trinity College, Cambridge, and distinguished himself as a mathematician. He became a fellow of Trinity and lecturer in mathematics in the University. From 1905-09 he was professor at Princeton University, and in 1909 he returned to Cambridge as lecturer in applied mathematics. From 1919 to 1929 he was secretary of the Royal Society, and in 1928 he was knighted. Jeans has written books for students of mathematics, but he is best known for his popular expositions of recent scientific theories, as in *The Universe Around Us*; *The Mysterious Universe*; and *The Stars in their Courses*.

Jebb **Sir Richard Claverhouse.** British classical scholar. Born, Aug. 27, 1841, he was educated at Charterhouse School and Trinity College, Cambridge. He was senior classic in 1862 and, elected a fellow of Trinity, he devoted his time to tutorial work there. In 1869 he was made public orator to the university. In 1875 Jebb was chosen Professor of Greek at Glasgow, and in 1889 Regius Professor of Greek at Cambridge. In 1891 he was elected M.P. for the university. His honours were mainly academic, but in 1900 he was knighted and in 1905 was given the Order of Merit. He died Dec. 9, 1905. Jebb published editions of *Sophocles* and wrote *An Introduction to Homer* and *The Attic Orators*. He was also the author of a *Life* of Bentley and a *Primer of Greek Literature*.

Jedburgh Burgh and market town of Roxburghshire, also the county town. It is 56 m. from Edinburgh, on the L.M.S. Rly. The chief industries are the making of tweed and artificial silk.

Jedburgh was one of the most important of the border towns. The old name was Jethart, and the old town was about 4 m. from the present one. A certain kind of battle axe was called the Jethart axe, and Jethart justice was the custom of hanging a man first and trying him afterwards. Pop. 3057.

Jeddah Seaport and town of the Hejaz. Situated on the Red Sea it is 46 m. from Mecca of which it is the port. It exports hides, carpets, coffee and mother-of-pearl. Long a Turkish possession, it was taken by the Hejaz forces in 1916. Pop. 20,000.

Jefferies **Richard.** English writer. Born in Wiltshire, Nov. 6, 1848, he showed early a great love of nature. For a time he was a reporter, but he gave up this calling in 1867 owing to illness and passed the rest of his days in writing and studying nature. His books had considerable popularity. They include, *The Story of My Heart*, *Amaryllis at the Fair* and *Wild Life in a Southern County*. He died Aug. 14, 1887.

Jefferson **Thomas.** American statesman. Born in Virginia, April 13, 1743, he became a lawyer, and later was one of the leaders of the movement for independence. He helped to draw up the Declaration of Independence in 1776, and in 1779-81 was governor of Virginia. He went to Paris to help to make the peace treaty with Great Britain in 1784, and in 1789 became secretary of state under Washington. He was the leader of the party opposed to the Federalists and on this account lost his position in 1794. In 1797, however, he was elected vice-president and in 1801 president. He was again elected president in 1805, but he retired in 1809. Jefferson died July 4, 1826.

Jeffreys **Lord.** English judge. Born near Wrexham in 1648, George Jeffreys became a barrister. In 1677 he was made serjeant of the city of London, and in 1678 its recorder. He made himself notorious by his attitude towards those accused by Titus Oates and then against Oates himself, but more so by the severity with which he punished those implicated, or said to be implicated, in the rebellion of the Duke of Monmouth, when he sentenced over 300 persons to death in the "bloody assize." He was then Lord Chief Justice and a baron, but was soon made Lord Chancellor. During the reign of James II. he remained in an influential position, but when the king left the country he tried to follow his example. He was caught when disguised as a sailor at Wapping and died in the Tower of London, April 18, 1689.

Jehoiachin King of Judah. A son of Jehoiakim, he succeeded to the throne when 18 years old. He only reigned three months, when Nebuchadnezzar removed him to Babylon at the first captivity. After 37 years Nebuchadnezzar died; his successor released the captive, making him a daily allowance thereafter. He lived 600 B.C.

Jehoiada High priest at Jerusalem under Ahaziah, Athaliah and Joash (2 Kings xi., xii.). Ahaziah's mother, Athaliah, usurped the throne of Israel and sought the life of her grandson, Joash. His sister, Jehosheba, Jehoiada's wife, concealed her nephew, Joash, in the temple during Athaliah's reign. At the end of six years Jehoiada placed him on the throne and connived at Athaliah's death about 836 B.C.

Jehoiakim King of Judah. He was a son of Josiah and lived about 600 B.C. The Egyptian pharaoh, Necho, appointed him king, changing his name from Eliakim, and making him pay tribute. After Egypt's overthrow at Carchemish in 605 B.C., Judah became subject to Babylon, but three years later Jehoiakim revolted. He repelled various Chaldean and Syrian attacks, but died when Nebuchadnezzar was besieging Jerusalem.

Jehoshaphat King of Judah. A son of Asa, his alliance with Ahab, King of Israel, proved disastrous. He aided Ahab against Benhadad of Syria at Ramoth-Gilead, but barely escaped with his life. A joint trading venture to Ophir for gold resulted in the fleet's destruction at Ezion-Geber in the Akaba Gulf. His campaigns against Moab and Ammon were more successful, and he effected some internal reforms. He died in 851 B.C.

Jehovah Principal name for the God of Israel. It occurs nearly 7000 times in the Old Testament. The Hebrew word, containing four consonants, YHWH, hence called the tetragrammaton, was deemed too sacred for utterance. The vowels of another word, Adonai, Lord, usually inserted in the text as a hint to use that word, have been read into the tetragrammaton, giving the pronunciation Yahweh, which in English has become Jehovah. According to Ex. iii., the meaning is, *I am that I am*.

Jehu King of Israel. He was a son of Jehoshaphat and became famous as a soldier under Jehoram, or Joram. He was anointed king by order of the prophet Elisha, and ordered to put to death the members of the royal family. He drove his chariot furiously to Jezreel, hence the name Jehu for a driver, and there put to death, not only Joash, but also Ahaziah, King of Judah, and many other persons. He became king (842 B.C.) and reigned until 815. His story is told in 2 Kings, ix., x., and his name is on a tablet of Shalmaneser II., King of Assyria, now in the British Museum.

Jellicoe **Earl.** English admiral. Born Dec. 5, 1859, the son of a captain in the merchant service, John Rushworth Jellicoe entered the navy in 1872. He served in Egypt and China and commanded the naval brigade that took part in the relief of Pekin in 1900, when he was wounded. Previously, in 1893, he had escaped when the *Victoria* was sunk. From 1905-07 he was director of naval ordnance, and 1907-08 second in command of the Atlantic Fleet. He was then knighted and made an admiral. From 1908-10 he was a lord of the admiralty and in charge of naval construction, and in 1910-11 he commanded the Atlantic Fleet. In 1912 he was made second sea lord, a position he held when war broke out.

Jellicoe was then put in charge of the Grand Fleet and he led this at the battle of Jutland. In 1916 he left the Grand Fleet to become first sea lord and chief of the naval staff, a post he held until 1917. In 1918 he was created a viscount and in 1919 he was awarded £50,000 for his services. From 1920 to 1924 he was governor of New Zealand, and in 1925 he was made an earl. From 1928 to 1932 he was President of the British Legion. He died in 1935. Jellicoe wrote two books, *The Grand Fleet* and *The Crisis of the Naval War*. *See* JUTLAND.

Jelly Semi-solid, semi-transparent and elastic substance of the nature of a colloid. Most jellies contain gelatine, many food preparations being of this character. Seaweeds such as agar-agar and carrageen, or Irish moss, also yield jellies, and fruit jellies are made by boiling down fruit juices with sugar, the pectin present producing a gelatinous condition.

Jelly Fish Popular name given to the medusa stage of certain forms of the marine group of organisms. The common jelly fish, *aurelia*, *aurita* has a shallow umbrella-like body, whose soft translucent substance contains 95 to 96 per cent. of water. From the margin of the disc pro-

jects a fringe of short tentacles, interrupted by sense organs at intervals. At the centre of the under side of the disc is the projecting mouth bearing four large arms or tentacles. Locomotion in the medusae is by alternately contracting and expanding the disc. Many other forms of medusae exist, some of which are phosphorescent.

Jemappes Town of Belgium. It lies in the province of Hainault, 4 m. from Mons. Coal is found in the vicinity, and there are glass works. Pop. (1931) 14,573.

A battle was fought here in Nov. 6, 1792, between the French and the Austrians. Fighting also took place here during the Great War.

Jena Town of Thuringia, Germany. It stands on the River Saale, 56 m. from Leipzig. Optical and scientific instruments are made. Pop. 52,650.

The **university of Jena** founded in 1548 is one of the most famous in Germany.

The **battle of Jena**, one of Napoleon's greatest victories, was fought near here, Oct. 14, 1806.

Jenghiz Khan Mongol emperor. Born in 1162, the son of a petty chieftain, he was proclaimed khan, or emperor, of Mongolia in 1206. He led his armies into China, Turkestan, Persia, India and Russia and included the two first in his vast dominions. He died Aug. 24, 1227, and his empire soon fell to pieces.

Jenner Edward. English physician and discoverer of vaccination. Born at Berkeley, Gloucestershire, May 17, 1749, he was the son of a clergyman. He was apprenticed to a surgeon and later studied under John Hunter in London. He then set up in practice at Berkeley, where for 20 years he investigated the connection between cow pox and small pox. In 1796 he made his first practical experiment in inoculation. It was successful, and the practice spread rapidly in spite of violent opposition. In 1802 and 1806 Jenner was voted £10,000 and £20,000 by Parliament. He died Jan. 24, 1823.

Jephthah Chieftain and judge of Israel (Judges xi., xii.). Expelled by his Gileadite brethren, he led a band of robbers, but soon returned by invitation to Gilead to repel the Ammonites. He won a complete victory over them. Jephthah had made a vow that, if victorious, he would sacrifice the first thing from his house he met on his return. His own daughter met him and willingly consented to the sacrifice. He reigned for six years and gained victories over the Ephraimites.

Jerboa Sub-family of leaping rodents. They are found in N. Africa and in Russia and Asia. The Egyptian night-feeding, burrowing jerboa has a tufted tail, and is about 8 ins. long. It has short five-toed fore limbs, and three-toed hind limbs, six times as long, with which it makes kangaroo-like leaps.

Jeremiah Prophet of the Old Testament, and author of the book called after him. A son of Hilkiah, he was a priest of Anathoth near Jerusalem. His writings covered 40 years, from the time of Josiah to that of Hezekiah and the Exile. His prophecies, at first spoken, were afterwards dictated to his friend Baruch, but the roll was promptly burned by the king, Jehoiakim. A second dictation was supplemented by biographical passages from another hand, and was subsequently revised with an introductory chapter, the prophecies against foreign nations being rearranged, as in Isaiah. In this form it appears in the Old Testament, where Jeremiah is regarded as one of the four major prophets. It is a continued warning to the people against the teaching of false prophets.

Jericho Town of Palestine. Situated in the valley of the Jordan, 17 m. north-east of Jerusalem and 5 m. north of the Dead Sea, it was the first Canaanite settlement reduced by the Israelites when they entered Palestine, the walls falling at the blast of the Israelite trumpets. Rebuilt by Hiel 500 years later, it sheltered Elisha's college of prophets, and witnessed Zedekiah's last struggle with Babylon before the Captivity. Antony presented the region to Cleopatra. Herod built here a palace and a new city, the scene of the New Testament stories of Bartimaeus and Zacchaeus, which Vespasian destroyed. Around some mediaeval monasteries arose a third city, founded by the Crusaders, which still survives. It was captured by the British troops on Feb. 21, 1918.

In 1931 the walls of the city that existed from 1600-1200 B.C. were unearthed. It is surmised that an earthquake destroyed them at the time of Joshua's attack.

Jeritza Maria. Austrian soprano. She was born at Brunn, and made her début as Elsa in *Lohengrin* at Olmutz in 1909. She was a prime favourite at the Hofoper, Vienna, from 1912-21, after which she repeated her successes in New York as a member of the Metropolitan Opera Company. Her autobiography, *Sunlight and Song*, appeared in 1924.

Jeroboam Name of two kings of Israel. **Jeroboam I.** was a son of Nebat. Solomon's suspicions of his loyalty led him to take refuge in Egypt. At Solomon's death Rehoboam's refusal to moderate his father's despotism caused the ten northern tribes to make Jeroboam, who had taken up their cause, their king. In this way there arose two Jewish kingdoms in Palestine, Israel and Judah. As centres of worship, in opposition to Jerusalem, Jeroboam set up golden calves at Dan and Bethel. He reigned from 937 to 915 B.C.

Jeroboam II. was king, 781 to 740 B.C. He was a son of Joash and is chiefly known for his victories over the Syrians (2 Kings, xiv.).

Jerome **Jerome Klapka.** English author. Born May 2, 1859, and educated in London, he was for a time a clerk and a teacher. He also did a little acting and in 1885 published *On the Stage and Off*. In 1889 Jerome made his name with *Three Men in a Boat*, a thoroughly humorous story. This was followed by the *Idle Thoughts of an Idle Fellow*. He wrote several novels including, *Paul Kelver* and *The Master of Mrs. Chilvers*. Of his many plays the best known is *The Passing of the Third Floor Back*; others include, *New Lamps for Old* and *The Prude's Progress*. In 1892 Jerome helped to found a magazine, *The Idler*, and from 1893 to 1897 he edited a popular weekly called *To-Day*. He died June 14, 1927.

Jerome Saint and scholar of the Christian church. He was born of Christian parents at Strido on the borders of Dalmatia and Pannonia about 340. He went to Rome to study, and was baptised in 360 by the pope. He then lived as a hermit in the deserts of Syria and studied Hebrew. In 379 he was ordained at Antioch and in 382 began translating the Scriptures into Latin. In 385 he

made his home in Bethlehem where he built a monastery, and where he completed his translation of the Bible (*The Vulgate*). He died Sept. 30, 420. Jerome was the first to distinguish between the canonical and apocryphal books of the Bible.

Jerome of Prague Bohemian reformer. Born at Prague about 1365, he studied there, at Oxford and in Paris, returning to Prague in 1407. At Oxford he came under Wycliffe's influence, and later became associated with John Hus. He was arrested for heresy, and, like Hus, was burned at Constance after a trial, May 30, 1416.

Jersey Earl of. English title borne by the family of Villiers. Sir Edward Villiers was lord chamberlain and secretary of state under William III., who made him Earl of Jersey in 1697. The 5th earl married the granddaughter of Robert Child, the banker, and since then the family name has been Child-Villiers, and each earl has been a partner in Child's Bank. The 7th earl was governor of New South Wales, 1890-93. The earl's eldest son is called Viscount Villiers, or Viscount Grandison, and his seats are Osterley House, Middlesex and Middleton Park, Oxfordshire.

Jersey Largest of the Channel Islands. It is 13 m. from the coast of France and covers 28,700 acres. Its inhabitants are chiefly Norman French by race and speak French, which is the official language. St. Helier is the capital and the chief port. Gorey, Corbière, St. Ouen and St. Brelade are smaller places. Mount Orgueil Castle is an object of historic interest. Jersey is a popular holiday resort with a very equable climate and much picturesque scenery. The soil is fertile. Potatoes, grapes, flowers and tomatoes are grown for the English market, and its breed of cattle is famous. The island is governed by a lieutenant-governor and a bailiff. The legislative body is called the States; some of its members are elected and some are permanent officials. The royal court is the court of law. Pop. 49,700.

A woollen garment worn by boys and girls and also by seamen is called a **jersey** because such were first worn by the seamen in Jersey.

Jersey City City of New Jersey. It stands on a peninsula, between the Hudson River and Newark Bay. It is part of the port of New York, with which it is connected by tunnels and ferries. There is a large shipping trade and the other industries are mainly connected with the preparation of food products, tobacco, chemicals, etc. Pop. (1930) 316,715.

Jerusalem Chief city of Palestine. It is situated 33 m. from Jaffa its port, with which it is connected by railway, and about 15 m. from the Dead Sea. Nearly 4000 ft. above the level of the sea, it was inhabited in the Stone Age and was the stronghold of Urusalin mentioned in the Tel-el-Amarna letters about 1400 B.C. It was captured by David about 1000 B.C., and became the national centre of the Jews. Temples were built by Solomon, Zerubbabel and Herod. At that time included in the Roman world, it witnessed the crucifixion of Christ and was destroyed by Titus in A.D. 70.

In 135 the Emperor Hadrian rebuilt the city, and about 200 years later Constantine the Great built a church on the site of the Holy Sepulchre. This attracted thousands of pilgrims from Europe for whom hospices were built and for the next 300 years it was a prosperous Christian city. In 637 it was taken by the Arabs, but for a time the pilgrims were welcomed. Later, however, there was a change of policy, and to recover the Holy Places the first crusade was organised. In 1099 Jerusalem was taken and until 1187 was the capital of a Latin kingdom. The Moslems then recovered it, and in 1517 it became a Turkish possession. It remained part of the Turkish realm until British troops (in the Great War) entered it in Dec. 1917.

The modern city is surrounded by walls built in the 16th century and pierced by eight gates. Two hills, Zion and Moriah, associated with events of great interest to the Christian world, are on the south overlooking the valley of Himmon. Quarters are devoted to the Jews, Armenians, Christians and Mohammedans. The main objects of Christian veneration are the Holy Places. The mosque of Omar is the chief of several mosques. The Wailing Wall is sacred to the Jews and there was trouble about it between them and the Mohammedans in 1929. The Roman Catholics, Anglicans and Greek Church have bishops in the city. The British have given it a new water supply and new official buildings. The industries chiefly centre around the providing for the wants of tourists and pilgrims. The Arabs call the city El Kuds, or the sanctuary. The population which was 62,700 in 1922 had increased in 1931 to 90,500.

Jervaulx Hamlet of Yorkshire (N.R.). On the Ure, 13 m. from Ripon, it is noteworthy only for the ruins of a Cistercian monastery, which was founded in 1156 and dissolved at the Reformation. The remains include the ruins of a cruciform church, chapter house and cloisters.

Jervis Bay District of New South Wales, Australia. It lies 82 m. south of Sydney and consists of a harbour and the adjacent land. This covers 28 sq. m. and belongs to the government of the Commonwealth which bought it in 1907 to serve as the port for Canberra (*q.v.*).

Jesmond District of Newcastle-upon-Tyne. Formerly a place of pilgrimage called Jesus Mount, it has still the remains of a pilgrimage chapel. Jesmond Dene is a public park.

Jesse Father of David, King of Israel. He was a native of Bethlehem and had eight sons. Isaiah's phrase "root of Jesse" suggests Christ's descent from David and Jesse (Matt. i.). This is represented in wood, or stone, or on a window of stained glass, or in painting or embroidery. **Jesse trees,** or **Jesse windows,** exist at Abergavenny, Wells, Christchurch, Hants, Dorchester, Oxon and elsewhere.

Jessel **Sir George.** English lawyer. A Jew, he was born in London, Feb. 13, 1824, and educated at a Jewish school and London University. He became a barrister in 1847 and in 1868 entered parliament as a Liberal. He was solicitor-general, 1871-72, and then became master of the rolls and later president of the court of appeal. He died Mar. 21, 1883. He was the first Jew to become a judge in Great Britain.

Jessop **Gilbert Laird.** English cricketer. Born May 19, 1874, he was educated at Beccles and Christ's College, Cambridge. He made his reputation as a member of the Gloucestershire county team, and was perhaps the hardest hitter of his day.

He was also a good bowler and a grand fieldsman. He played for Cambridge University, in 1899 as captain, for England against Australia, and for the Gentlemen, and was the author of some sensational feats of rapid scoring. He succeeded W. G. Grace as captain of the Gloucestershire team.

Jest Book Collection of witty sayings or humorous stories. During the crusading age raconteurs brought to Europe many tales, greatly enriching the material already available. The earliest extant collection is *A Hundred Merry Tales*, which was utilised by Shakespeare. Changing taste is exemplified by Joe Miller's *Jests*, 1739, and Mark Lemon's *Jest Book*, 1865.

Jester Sayer of witty things and maker of mirth. Jesters were kept in royal and noble households in mediaeval times and later. Originally a minstrel and reciter of romances, or *gestes*, he became a merry andrew or buffon privileged, like the court fool, to play pranks and utter pungent truths. He wore a motley dress, belts, ass-eared cowl and bauble. The last official court fool was kept by Charles I. The last nobleman's jester was the Earl of Suffolk's Dicky Pierce who died in 1728.

Jesuits Popular name for the religious order known as the Society of Jesus. It dates from 1543, although some years before that date Ignatius Loyola and four companions had banded themselves together and taken vows. The order soon became very influential.

Whilst retaining its original purpose of converting the heathen, its members mixed very much in political affairs and European history in the 16th and 17th centuries is full of records of their activities in this direction. In England they were prominent in the attacks on Elizabeth's throne and in Germany in the prosecution of war against the Protestants.

Meanwhile other members carried on mission work almost all over the world. Paraguay came under the rule of the order, one of the few instances in the world's history of a theocracy. In North America the labours of the Jesuits are among the most heroic in the annals of missionary work. In China, too, they were very successful.

In the 18th century the political work of the Jesuits made them suspect in several countries, and on several occasions they have come into conflict with the popes. In 1759 they were expelled from Portugal. France and Spain followed this example, and in 1773 the pope suppressed the order. It was not, however, killed, and in 1814 was revived. It has not returned, except in isolated cases, to the political field, but has been, and is, very active in the work of converting the heathen and educating the young.

The head of the order is the General, whose powers are almost absolute. Under him are the Provincials, who are heads of the various provinces. Members pass through a very rigorous training, and ten years must elapse before one can become a full, or professed member. Next in order are the coadjutors, the novitiates and finally the novices. Each member is bound to absolute obedience.

The zeal and learning of the members is unquestioned, but their methods have been sharply criticised. It has been held that they act on the principle that the end justifies the means, but this is denied by their apologists. Pascal's *Provincial Letters* were written against the Jesuits.

In England the Jesuits conduct several schools, the chief being Stonyhurst and Beaumont. In Ireland they have many. Their English headquarters are in Farm St., Belgrave Square, London, S.W. Their chief training college is in Rome where the General lives. The order is about 20,000 strong.

Jesus Christ Personal name of the central figure of Christianity. Jesus is the Greek form of the Hebrew Joshua meaning "Jehovah saves." Christ is a Greek title, "anointed," representing the Hebrew Messiah, the promised national deliverer.

Apart from S. Paul's indirect allusions, nothing is known of Christ's early life beyond what is contained in the four gospels.

He was born in the stable of an inn at Bethlehem, whither His parents had gone for the census ordered by the Roman government of Palestine. His parents were Jews, Mary and Joseph, the latter a carpenter of Nazareth, but the accepted Christian belief, based on passages in the gospels of S. Matthew and S. Luke, is that Mary was a virgin, a fact that accounts for the sinlessness of Christ. The date was fixed in the 6th century at the year 1, but modern calculations have placed it in 4 B.C. December 25 is kept as the natal day.

After a time the two, with the child, who had been circumcised and presented in the Temple, settled down at Nazareth. There were other children in the household, one view being that these were children of Joseph by another wife. With them Jesus was brought up, but only one event of His boyhood is recorded. When twelve years old He went to Jerusalem with His parents and was found by them arguing with the doctors in the Temple. When old enough He began work as a carpenter and in this occupation He passed His time until He was 30 years old. During this period His reputed father died, and presumably He helped to maintain His mother.

When 30 years old Jesus entered upon His life work. He was baptised by a relative, John, in the Jordan, and passed 40 days in retirement in the wilderness, where He was tempted by the devil. He then gathered around him twelve followers or disciples and spent nearly three years teaching and preaching as the little band wandered about from place to place. Of His utterances many take the form of parables, but the longest recorded is the one known as the Sermon on the Mount. He performed many miracles, mainly deeds of healing, during His ministry. He continually attacked the official classes, known as the Scribes and Pharisees, but the common people heard him gladly. His teaching is fragmentary, but it lays stress upon the love of God to man and contains sayings of infinite wisdom and universal application. He claims for himself, without any hesitation, the position of the Son of God and the interpreter to man of the divine will.

After nearly three years of teaching the officials decided to stop His activities. He was at Jerusalem and had just taken His last supper with His disciples, when, through the agency of one of the twelve, Judas Iscariot, He was seized and tried before Pontius Pilate. He bore himself with dignity and after some hesitation Pilate sentenced him to death. He was then crucified on a hill called Calvary between two thieves, dying on a day since commemorated as Good Friday. His body was moved to a tomb by one Joseph of Arimathea.

Such are the bare facts of Christ's earthly life, but the Christian Church was not built on these alone. It holds that after two days in

the tomb. He rose from the dead and appeared from time to time to various followers. After forty days He made in their presence His final ascension into Heaven. Attempts have been made to explain these occurrences, as well as the miracles, on natural grounds, for it is recognised that the existence of the Christian Church forbids them to be dismissed as mere efforts of the imagination.

Jet Black lustrous form of lignite resembling cannel coal, but harder and blacker. It is light in weight, easily cut, and takes a high polish. It is used for making ornaments and mourning jewellery. Whitby in Yorkshire is the chief English centre of the industry. There the jet is found in shales of the Upper Lias. Jet occurs also in Bohemia, Germany, and at Oviedo in Spain. Imitation jet ornaments are made from ebonite and black glass.

Jetsam In English law, property that is jettisoned, or thrown overboard during a shipwreck, or to lighten a ship in a storm. The loss of goods thus jettisoned is divided between those interested in the vessel and her cargo. This averaging, as it is called, is done by average adjusters.

Jethou Island of the Channel Islands. It lies to the south-west of Herm, and is 4 m. from Guernsey, from which it is governed. It covers 4 acres and is a mile in circumference.

Jevons **William Stanley.** English logician, economist, and statistician. Born at Liverpool, Sept. 1, 1835, he went to University College, London, in 1851. From 1854 to 1859 he was employed in the mint at Sydney. In 1866 he became professor at Owens College, Manchester, and in 1876 professor of political economy in London University. He was drowned whilst bathing at Hastings, Aug. 13, 1882. Jevons won a reputation as the author of books on logic, especially his *Elementary Lessons in Logic*. He also wrote much on political economy including, *Theory of Political Economy* and *Money and the Mechanism of Exchange*. His book, *The Coal Question*, attracted great attention when it appeared in 1878.

Jewellery Term applied to articles made of precious metals, gems and other materials for use as personal ornaments. The jeweller's craft is very ancient and was brought to a high pitch of excellence in ancient Egypt and Greece. At the present day the trade is split up into a number of specialised industries. The centre of the diamond cutting industry is at Amsterdam; Paris, Vienna and New York produce novel and inexpensive jewellery; in England, Clerkenwell, London, is noted for its high-class work, while Birmingham makes not only goods of high quality but also cheap and imitation jewellery. In London and Birmingham there are schools for teaching those entering the craft, and associations of employees and employed.

Jewry Land of the Jews, or the district in which they live. In the Middle Ages many cities had a Jewish quarter which was called the Jewry. There are remains of these in London in Old Jewry and Jewry Street, and in Winchester, Leicester, Oxford and other cities. Another name for Jewry is Ghetto.

Jews Race of Semitic origin, now scattered all over the world. The word Jew means a man of Judea, or of Judah. A synonym for it is Hebrew. The early history of the Jews is narrated in the Old Testament, the facts being supplemented and occasionally corrected by other information and by the results of archaeological research. They appear to have migrated from Mesopotamia to Palestine about 2000 B.C. under the lead of the patriarch, Abraham. Some 500 years later they moved with their flocks into Egypt where, after a time, their lot became one of great hardship. From this, under the guidance of Moses, they escaped and passed 40 years wandering in the wilderness.

Entering Canaan, the modern Palestine, the Jews conquered the tribes there and made their home again in the land they had previously left. They divided it among their twelve tribes named after the sons, or grandsons, of Jacob, also called Israel, one of their patriarchs. The tribe of Levi undertook the duties of the priesthood. The Jews were ruled at first by judges, but later they took a king called Saul. He was succeeded by David and then by Solomon, at which time the Jewish kingdom was clearly one of considerable wealth. At Jerusalem, their capital, Solomon built a magnificent temple which served as the centre of the national life. Before his time the Jews had been almost continually at war with one or other of their neighbours, but his reign was one of comparative peace.

STRIFE AND CAPTIVITY. Soon after the death of Solomon the Jewish kingdom was divided into two, Judah in the south and Israel in the north, and the story of the next few centuries is one of alternate wars and alliances between them and their neighbours. The two kingdoms came to an end in 586 B.C. and 721 B.C. respectively, and for a time the Jews were captives in Babylon. Again they returned to their own land and were under the dominance of the Seleucids. Later the priest kings, called the Maccabees, won freedom for them and made themselves rulers. In 63 B.C. the Jews passed into the orbit of Rome and at the time of Christ, the greatest Jew of all, their land was part of the Roman Empire. In A.D. 70 the Emperor Titus destroyed their temple and soon they were driven out and scattered, although it proved impossible to stamp out their virile sense of nationality.

THE DISPERSION. Since the dispersion, or diaspora, the Jews have been found in almost every country in the world. In most of them at one time or other they have been persecuted, often with great cruelty. From England they were expelled in the 12th century, but allowed to return in the 17th. In the 19th they were granted equality with other citizens; previously they had been excluded from offices of state and the privileges of citizenship. In 1933 an organised anti-Semite campaign on a large scale was started in Germany under the leadership of Adolf Hitler, the Chancellor.

Some, but by no means all, of the hostility that has been shown to them is due to their long association with the trade of moneylending. As moneylenders and bankers they have been unusually successful, and at times it has seemed as if the world's finances have been dominated by them. They have proved themselves adept, too, at other trades in which bargaining plays a considerable part. The Jews have produced quite a number of artistic and other geniuses and the race that includes such diverse names as those of Bergson, Disraeli, Einstein, Heine, Mendelssohn and Spinoza has no light claim to recognition among scholars and artists.

ZIONISM.—In the 19th century there was a movement to get the Jews back to Palestine,

this being called Zionism, and it received an impetus, when, as a result of the World War, Palestine was taken from the Turks.

In 1917 the "Balfour Declaration" embodied the British government's promise to make Palestine into a "national home" for the Jews. In 1920 Britain was appointed mandatory power for Palestine; in 1921 a "national home" was actually set up, and funds instituted for the purchase of land and for general colonisation purposes. From that time the position of the Jews in Palestine has steadily improved.

At the present time there are 15,000,000 Jews in the world, but there must be many times that number with Jewish blood in their veins. In Great Britain there are about 300,000, but this does not include the many who have, nominally at least, accepted the Christian faith. They live mainly in towns as they have done all over Europe since the dispersion. Very few Jews are found in country districts, although colonies of them have been settled on the land in America.

RELIGION. The religion of the Jews, one of great and elaborate ceremonial, is laid down in the Old Testament and in the sacred book called the Talmud. It is, as it has always been, strongly monotheistic and attaches great importance to the subject of food, some kinds being regarded as unclean. They worship in synagogues where rabbis expound the law. They have their own ceremonial as regards weddings and burials and English law makes provision for this. They have also their own calendar. The new year begins in October, and their year, 5690, was the Christian year 1929-30. They have their own names for the months, and several days, including the day of atonement and the passover, are set aside as fasts, or festivals. They have their own system of weights and measures.

The literary language of the Jews is known as Hebrew and in that they have an extensive literature. The language they speak is called Yiddish, and in it many papers are published.

Jew's Harp Small metal musical instrument. It consists of a steel tongue set in a frame, the neck of which is held with the player's teeth. The tongue is vibrated by the fingers and the pitch and volume of sound is controlled by the breath.

Jezebel Wife of Ahab, King of Israel. A daughter of Ethbaal, King of Tyre, she introduced Phoenician worship into Israel, persecuted the prophets of Jehovah, treacherously caused Naboth's arrest and stoning, and was destroyed by Jehu. Her name is a synonym for an abandoned and unscrupulous woman (1 Kings, xviii-xxi; 3 Kings ix.; Rev. ii.).

Jezreel City in the plain of Esdraelon, Palestine. Situated on a knoll 11 m. from Nazareth, it was Ahab's capital. Nowadays it is a stone-built village called Zer'in.

Jhansi City of British India. In the United Provinces, it is 60 m. from Gwalior. Protected by a massive wall 4¼ m. round and a Maratha fort, it is a trade centre. Pop. 66,432.

Jib Foremost sail in a sailing craft. Triangular, it extends from the jib boom or bowsprit to the foremast head. Beyond it may be a flying jib, and in yachts a balloon jib.

Jibuti Seaport of French Somaliland. Connected by rail with Addis Abbaba, it is the chief outlet for Abyssinia's trade, and is a free port with a good harbour. It is the seat of government for the colony. Its name is sometimes spelled Djibouti. Pop. (1931) 11,366, of which 628 are white.

Jig Appliance used in ore dressing for the sifting and concentration of the materials. It works on the principle that when particles of the same size and shape are agitated in water, the heavier ones rapidly sink to the bottom. The simplest form of jig or jigger consists of a number of sieves attached to a frame, which by means of a lever are shaken up and down in water. Types of jigs include one with a fixed sieve and a plunger to force water up through it. Also a device for holding in position accurately and tightly, work to be machined.

Jig Lively dance for one or more persons. The Irish jig is the national dance of Ireland. Bach, Handel and their contemporaries included jigs, usually spelled "gigues," in their suites. They are invariably in compound time.

Jihad Religious war of Mohammedans against unbelievers. Two were proclaimed simultaneously in 1877, one in India and the other at Constantinople against the Russians.

Jinn In Arabian mythology, a class of spirits. They are the offspring of fire, and appear in human or animal form. Their influence, if evil, may be averted by talismans. *See* GENIE.

Joab Hebrew warrior. He was a son of David's sister Zeruiah. He was made commander of the army and won a great reputation as a man of war. He slew Abner, Saul's former captain, Amasa and David's son Absalom, and protested against David's proposed census. By Solomon's command he was executed for conspiring with Adonijah (1 Kings, ii.).

Joachim **Joseph.** Hungarian violinist. Born near Presburg, June 23, 1831, he studied at Budapest, where he appeared in public at the age of eight, at Vienna and Leipzig, where he met Mendelssohn. In 1844 he visited London, where he later performed regularly. He held musical posts at Weimar and Hanover, and in 1869, a year after his appointment as head of a new school of music at Berlin, started his famous string quartet. He died Aug. 15, 1907. Joachim composed a good deal, his most notable work being his *Hungarian Concerto* (for violin and orchestra).

Joan of Arc French heroine. Born at Domrémy, Jan. 6, 1412, she was the daughter of a peasant. Devout and perhaps hysterical, she imagined she heard voices telling her to save France, then under the dominion of the English. In Feb. 1429, she procured an introduction to the uncrowned King Charles VII. By him she was given a troop of soldiers to lead to the relief of Orleans then besieged by the English. Her faith infused new courage into her countrymen and the siege was raised. Other victories were won and in July, 1429, Charles was crowned at Rheims. In 1430, Joan, wounded in a fight, was taken prisoner by the Burgundians and sold to the English. By them she was tried at Rouen, and on May 30, 1431, having been found guilty of sorcery and heresy, was burned. In 1920 she was canonised.

An immense literature has grown up around "the maid," as Joan is often called, and G. B Shaw has written a play, *Saint Joan*.

Joash Two kings of the Old Testament, also called Jehoash. One was king of Israel, 797 to 783 B.C. He was the son and successor of Jehoahaz and recovered the lands conquered by Syria by defeating Hazael's son Benhadad (2 Kings, xiii.-xiv.). Challenged by Amaziah of Judah, he reduced the land to vassalage.

The second was King of Judah from 836 to 797 B.C. A son of Ahaziah, he obtained the throne which had been usurped by Athaliah during a revolt encouraged by Jehoiada (2 Kings xi.-xiv.). He assented to Jehoiada's abolition of the worship of Baal, but reintroduced it after the death of the high priest.

Job Hero of a book of the Old Testament. The book of Job is the supreme achievement of Hebrew poetry. Its prose prologue describes an opulent Arabian emir in the patriarchal age suffering loss of his children and possessions and yet ascribing no wrong to God. The unknown author brings together three neighbouring emirs to discuss these calamities with him, presenting in verse form three cycles of argument. Each comprises six speeches, one by each friend and Job's reply, although the concluding speech is apparently lacking. A younger listener, Elihu, interposes to reconsider whether human suffering is punitive. Job is finally abashed and humbled by God's majestic response. In the epilogue Job is restored to still greater prosperity.

Jocasta In Greek legend, the mother of Oedipus and the wife of Laius of Thebes. On her husband's death, she married her own son Oedipus and bore him children, but, on discovering his identity hanged herself.

Jockey Rider in a horse race. Most jockeys are professionals and begin their career as apprentices in a racing stable. In Great Britain before they can ride in a race they must obtain a licence, either from the Jockey Club or from the National Hunt Committee. Licences to ride are likewise essential in most other countries.

The body that controls racing on the flat in Great Britain is called the **Jockey Club.** It has power to suspend jockeys for infringements of its rules. Its affairs are managed by three stewards and its headquarters are at Newmarket. There are jockey clubs for like purposes in Australia, France, Ireland and other countries.

Jodhpur Native state of Rajputana, India. Also known as Marwar, it is a sandy country traversed by the Luni river, and produces maize, millet and cotton. Its area is 35,016 sq. m., and its ruler is a maharajah. Pop. (1931) 2,125,982.

The capital, **Jodhpur,** is a trading centre. Pop. 73,480.

Joel Second of the twelve minor prophets of the Old Testament. A son of Pethuel, he dwelt in Jerusalem. He describes the locust plagues, sometimes regarded as symbolical, and utilises them to foreshadow the final judgment. Peter effectively quoted at Pentecost Joel's promise of the Holy Spirit. The name means *Jehovah is God* and designates also 13 other persons mentioned in the Old Testament.

Joffre **Joseph Jacques Césaire.** French soldier. Born Jan. 12, 1852, he entered the army in 1870 and saw active service in the Franco-Prussian War. He served too in Indo-China, 1885-88; West Africa, 1894; and Madagascar, 1896-99. In 1911 Joffre was made chief of the staff and in 1914, as arranged, he took command of the French armies on the western front. He retained that position for over two years in spite of a severe criticism. His plans failed to check the German advance and his own offensives in 1915 were not very successful, but he must be credited with some share in the victory of the Marne, and he retained the affection of the rank and file. In Dec., 1916, he retired, and in 1917 was created Marshal of France, the first for many years. He was then employed on one or two ceremonial missions. Joffre died Jan. 3, 1931.

Johannesburg City of Transvaal. It is on the Rand, 957 m. from Capetown, and is an important railway junction. Its port is Lourenço Marques. It was founded in 1888 when gold was discovered and is now the largest and most populous city in the land, the municipal area covering 81 sq. m. A university was founded in 1921, but was burnt down in 1929. Johannesburg has a racecourse and facilities for outdoor sports of almost every kind. The *Star* and *The Rand Daily Mail* are published here. The industries are mainly connected with the gold mines, but there is a valuable trade in livestock. It has a broadcasting station (49.2 M., 5 kW.). Pop. (1931, European) 203,273.

John Saint and apostle. A son of Zebedee and Salome, he and his brother James were Galilean fishermen whom Jesus called to be his disciples. James and John were called Boanerges, "sons of thunder," apparently because of their impulsive indignation. They formed with Peter the innermost circle of Christ's followers. John attended the trial of Christ before the Sanhedrim and Pilate, and stood by the Cross. He is commemorated on Dec. 27, and is distinguished as S. John the Evangelist, or S. John the Divine. According to tradition he lived his later life at Ephesus and died at a great age, the last survivor of the apostles. He is regarded as the author of the fourth gospel and of the book of Revelation.

John the Baptist Christian saint. Born in Judea, a son of Zacharias, he was, through his mother, Elizabeth, a cousin of the Virgin Mary. The last of the prophets, he led an ascetic life in the wilderness beyond Jordan, preaching the coming of the Messiah and practising baptism. He baptised Jesus Christ, recognising and acknowledging His identity. He was imprisoned and executed by Herod about A.D. 28. His day is June 24, and many churches are dedicated to him.

John Name of twenty-three popes. **John VIII.,** pope 872-82, combated the Saracens, sought the conversion of the Slavs and crowned as Emperor, first, Charles the Bald, and then Charles the Fat. He died in France, Dec. 16, 882. **John XII.,** pope 955-64, crowned Otto I. Emperor in 952. He was deposed in 963, and died May 14, 964. **John XXII.,** pope 1316-34, made Avignon his residence. He died Dec. 4, 1327. **John XXIII.,** an anti-pope during the Great Schism, was elected by the Pisans, 1410. He convoked, in 1414, the council of Constance which deposed him. He died Dec. 22, 1419. The others were of minor importance.

John King of Bohemia. Born Aug. 10, 1296, the son of the Emperor Henry VII., he became King of Bohemia in 1311. He neglected that country, however, and spent most of his time in France and elsewhere

abroad. He earned a high reputation as a warrior, assisting at various times the Teutonic Knights, the Emperor Louis, and Charles IV. and Philip VI., kings of France. Though becoming blind about 1340, he continued his adventurous life, and was killed at Crécy, Aug. 26, 1346. His son became emperor as Charles IV.

John King of England. He was the youngest of the five sons of Henry II., and was born at Oxford, Dec. 24, 1167. In 1177 he was made lord of Ireland, and in 1185 he visited that country. Like his brothers, he revolted against his father, and when his brother Richard became king in 1189 he acted again in a disloyal fashion. In 1199 he began to reign, being crowned May 26 of that year, and he reigned for 17 years, a disastrous period. A war with France ended in the loss of Normandy; a quarrel with the pope brought on an interdict and a humiliating surrender; the wrath of the barons forced him to sign Magna Charta in 1215. John renewed the war against the barons, who asked Louis of France to come to their aid. In the midst of the struggle the king died at Newark, Oct. 19, 1216.

John's first wife was Isabella, heiress of the Earl of Gloucester. He divorced her in 1200 and married a French princess, also named Isabella. He left two sons, Henry III. and Richard, Earl of Cornwall.

John Name of two kings of France. **John I.**, the posthumous son of Louis X., was seven days old when he died, Nov. 22, 1316.

John II., surnamed the Good, was born in 1319, and succeeded his father, Philip VI., in 1350. He carried on a war with England and was captured by the Black Prince at Poitiers in 1356. He was imprisoned in London from 1356 to 1360, when he was released. His son broke his parole as a hostage in 1363, so the king returned to London, and died there, April 8, 1364.

John King of Poland. A member of the famous family of Sobieski, he was born, June 8, 1624, his father being castellan of Cracow. He won renown as a soldier and was soon in command of the Polish army. In 1674 he made himself king and reigned for over 20 years. Much of his time was occupied in fighting the Turks and in 1676 he regained from them a large part of the Ukraine. His greatest exploit was in 1683 when he led his army to Vienna and won a great victory over the Turks, who were besieging that city. John died June 17, 1696.

John **Augustus Edwin.** English painter. Born in 1878, he studied art at the Slade School, London, and soon exhibited at the Royal Academy. His figure paintings, such as "Going Down to the Sea" and "The Orange Jacket" attracted much attention, but he is perhaps best known for his portraits. In 1921 John was elected A.R.A. and in 1928 R.A.

John **Sir William Goscombe.** British sculptor. Born in Cardiff in 1860, he went to London to study art. After a period in Paris, he began to work as a sculptor. His pieces include statues of King Edward VII. at Capetown; the Duke of Devonshire at Eastbourne; Viscount Wolseley in London and the Earl of Minto in Calcutta. He designed memorials to the Marquess of Salisbury in Westminster Abbey and Sir Arthur Sullivan in S. Paul's Cathedral, as well as some war memorials and the regalia and medal used at the investiture of the Prince of Wales at Caernarvon in 1911. He was knighted in that year, having been A.R.A. since 1898 and R.A. since 1909.

John **Epistles of.** Three letters in the New Testament. They are a homily of incomparable value, setting forth the nature of fellowship with God. The letters are usually regarded as written by S. John the Evangelist, but the second and third are contested by certain scholars who think that he wrote the first only.

John **Gospel of.** Fourth book of the New Testament. Assuming his readers are familiar with the synoptic gospels, the writer designs to prove that Jesus is the Christ, the son of God. No parable in the other gospels is repeated, only one miracle is common to all four gospels and four miracles mentioned are unrecorded elsewhere. The Judaean rather than the Galilean ministry is developed, and one-third of the book comprises the sayings and doings of Christ's last 24 hours. The authorship of the book is attributed to S. John, but some modern scholars think it was written after his death. They date it about 140, but differ as to whether the author was one of John's disciples or a stranger.

John Name of six East Roman emperors. John Cantacuzene, the most notable, was born about 1292, and, rebelling against the infant emperor, John Palaeologus, had himself proclaimed emperor in 1341. Becoming increasingly unpopular, he abdicated and retired to a monastery in 1354. He died in 1383. He was instrumental in giving the Turks, whose aid he invoked, a foothold in Europe.

John Spanish soldier. Usually known as Don John of Austria, he was born in Ratisbon, Feb. 24, 1547, the natural son of Charles V. by Barbara Blomberg. He commanded the fleet which smashed the Turks at Lepanto in 1571, and in 1576 became Governor-General of the Netherlands. He died Oct. 1, 1578.

John Bull Personification of England, or of the English. He is usually depicted as a stout, upright man, in a low-crowned hat, tail coat, breeches and riding boots. The name was originated by John Arbuthnot in a series of pamphlets, *Law is a Bottomless Pit* or the *History of John Bull*, 1712. The weekly paper, *John Bull*, was established in 1906.

John of Gaunt *See* LANCASTER, DUKE OF.

John o' Groat's House Spot on the north coast of Caithness, Scotland. Figuratively, but not actually, the most northernly point of Great Britain, it is 1¼ m. West of Duncansby Head, and is the site upon which a Dutchman, Groot, is said, early in the 16th century, to have built a house with eight doors. The reason of the doors was that there could be no question of precedence among the eight members of the family; each had his own door.

Johnson **Andrew.** American president. Born at Raleigh, North Carolina, Dec. 29, 1808, he first became prominent in Tennessee where he took part in politics and was elected to the legislature. In 1843 he became a member of Congress, and from 1853-57 he was governor of Tennessee. In 1864 he was elected vice-president and, on Lincoln's murder in the next year, he became automatically president. He followed the same policy as his predecessor, endeavouring by conciliation and concession to unite the nation together again. Serious troubles, however, arose with some of his colleagues, and he was

impeached, but was acquitted. In 1875 he was elected a senator, but died on July 31 of the same year.

Johnson Jack. Negro boxer. Born at Galveston, U.S.A., in 1878, he first became known in 1907 by beating Robert Fitzsimmons in two rounds at Philadelphia. He became the world's heavyweight champion in 1908, by beating Tommy Burns, and in 1910 won a celebrated battle at Reno over James J. Jeffries. In 1915 he lost the championship to Jess Willard. He published *Mes Combats* in 1914.

Johnson Samuel. English lexicographer. Born at Lichfield, Sept. 18, 1709, he was the son of a bookseller. He went to the grammar school in the city and then to Pembroke College, Oxford, and acquired a great fund of miscellaneous learning, due rather to a powerful memory than to sustained study. In 1721 he returned home from Oxford and assisted his father for a time, but the business was a poor one, and he became a schoolmaster at Market Bosworth. In 1735 he married a widow, Elizabeth Porter, and opened a school at Edial, but this was a failure.

In 1737, having already done a little writing, Johnson went to London with his pupil, David Garrick, and began to earn a scanty living by writing for the booksellers. He reported, or rather compiled, speeches in Parliament for *The Gentleman's Magazine* and wrote a poem called *London*. In 1747, having secured financial support, he began to work on his *Dictionary*, which appeared in 1755. He earned a little money, too, during these years by a poem, *The Vanity of Human Wishes*, and by contributing essays to *The Rambler*. In 1759, to pay for his mother's funeral, he wrote a novel, *Rasselas*. In 1752 he lost his wife, whom he dearly loved, and more than once he was in prison for debt.

In 1762 Johnson was granted a pension of £300 a year by the state and thenceforward, in easier circumstances, he wrote little but talked much. His writings during these 22 years were almost confined to *The Lives of the Poets* and *The Journey to the Hebrides*. His time was passed in London, except for an occasional visit to Oxford or elsewhere and one to France, and his favourite haunts were the Club, which he founded in 1764, and the house of Henry Thrale at Streatham, which he frequently visited. In argument he generally disconcerted his opponents by his remarks, which were the incisive expressions of a mind of unusual power, backed by a store of unusual information. He died Dec. 13, 1784, and was buried in Westminster Abbey.

A typical Englishman in many ways, Johnson stands out for his hatred of Scotsmen and his love of London, his delight in talk, his strong Tory opinions, and his religious faith. His friends included Burke, Goldsmith, Reynolds and Windham, but the most devoted of all was James Boswell whose *Life of Johnson* is considered the world's greatest biography. Without the cringing industry of Boswell, who treasured every word spoken by his idol, Johnson might have been forgotten.

There are many memorials to Johnson, and every year his memory is honoured by a meeting of the Johnson Society at Lichfield. The house in Gough Square, London, E.C., in which he lived, is now a museum.

Johnston Sir Harry Hamilton. British administrator, explorer and scientist. He was born June 12, 1858, and studied art for four years at the Royal Academy. In 1889 he founded the British South African Protectorate. He served as commander-in-chief for the Uganda Protectorate and leader of many scientific expeditions into Central Africa. His published works include valuable books on travel, and also a *History of the British Empire in Africa*. In his retirement he wrote several novels. He died July 31, 1927.

Johnston Thomas. Scottish politician. Born at Kirkintilloch in 1882, he was educated there and at the University of Glasgow. He became a journalist and founded the Socialist organ *Forward*, being also a prominent member of the Town Council of Kirkintilloch and a leader of the Independent Labour Party. In 1922 he was elected Labour M.P. for West Stirlingshire, in 1924 for Dundee, and in 1929 for West Stirlingshire again. In 1929 he was made an Under Secretary for Scotland and in 1931 he became Lord Privy Seal, his special business being to deal with unemployment. He resigned office in Aug. 1931, and lost his seat at the general election in October, 1931.

Johnstone Burgh of Renfrewshire. It stands on the Black Cart in a coal mining district, 10 m. west of Glasgow, and 3 m. south-west of Paisley, on the L.M.S. Rly. It has cotton and paper mills, engineering works and foundries. Pop. (1931) 12,837.

Johore Sultanate and British protectorate of the Malay Peninsula. It lies at the south extremity and is connected by road with the Island of Singapore by means of a causeway opened in 1923-24. The sultan is assisted by an executive and a legislative council. A British adviser has, by treaty made in 1914, the right to advise him. Rubber is extensively grown and is the chief export. Johore is the chief town. The area is 7678 sq. m. Pop. (1931) 505,309.

Joinery Art of joining and making of fittings of wood for houses, etc. It is associated with carpentry. The commoner woods used by the joiner comprise deal, pine, oak, mahogany and teak, and the work covers such things as the making and fitting of wood flooring, partitions, doors, window frames and casements, staircases, mouldings, and the special fittings of churches, schools and offices.

Joint In woodwork a piece of wood used to join together two other and usually larger pieces. Joints are of several kinds and bear distinctive names, such as **butt joint, dowel joint, mortise joint, tenon joint** and **housing joint.**

Joints are used for one of two reasons. Either the size of the material is insufficient for the purpose, or it is desirable to arrange the various components to the best advantage from the point of view of the direction of the grain of the wood, and the relative proportions of the various pieces. In the former case the joint is often effected by simply glueing both pieces of the material and clamping them together before the glue sets. The second case comprises all the structural joints, such as the tenon and the mortise, in which one part is shaped to fit into a hole made in the other part.

Joint Term in anatomy applied to the articulations between various bones. Joints may be classified as movable or immovable, the latter type being represented by the sutures between the bones of the skull. Of the movable joints, the articulations

between the vertebrae give only a very limited movement. The ball and socket joints of the hips and shoulder allow of a wide play of movement, and the hinge joint of the elbow moves in one plane only. A rotating joint is seen in the head of the radius, and a pivotal articulation in the attachment of the skull to the backbone.

Jointure Provision made by a husband for his wife in the event of his predecease. Strictly, it is an estate settled in joint tenancy on a husband and wife for their lives, and it thus provides for the wife on her husband's death. A widow cannot claim both jointure and dower.

Joinville Jean De. French historian. Born in 1224, he was the head of a noble family and was the lord, or sire, of lands in Champagne. In 1248-54 he accompanied Louis IX. (S. Louis) on crusade. He is remembered for his *Credo*, or confession of faith, 1250, and his *Life of S. Louis*, which makes him one of the three great chroniclers of Mediaeval France. The biography, which represents the king as a great Christian hero, has been translated into English. He died July 11, 1319.

Jókai Maurice. Hungarian writer. Born Feb. 19, 1825, he was educated at Presburg. He adopted the career of a journalist, and in 1863 became editor of a daily paper in Budapest. He mixed, too, in political life, and from 1861 to 1897 was a member of the lower house of the Hungarian legislature. In 1897 he became a member of the upper house. Jókai's claim to fame rests on his novels and stories, many of which have been translated into English. The titles of some of these are, *Midst the Wild Carpathians*, *The Turks in Hungary*, *The New Landlord*, *Eyes Like the Sea*, and *Black Diamonds*. He died in Budapest, May 5, 1904.

Joliette Town of Quebec, Canada. It stands on the Assemption river, 36 m. north of Montreal, on the C.P. and C.N. Rlys. It is an agricultural and lumbering centre, and has quarries and manufactures of flour and paper. Pop. 9100.

Jolly Boat Small boat belonging to a ship. It is manned usually by three or four sailors and is used for odd work. Jolly is a slang naval term applied to a marine.

Jonah Hebrew prophet. He announced to Jeroboam II. forthcoming victories over the Aramaeans (2 Kings xiv.). A book of the Old Testament bearing his name professedly narrates an episode in his life. The unknown writer sought to show that divine care was not limited to the chosen race. The incident of the whale, suggested by Persian mythology, symbolised Israel's temporary absorption by Assyria.

Jonathan Name of ten persons mentioned in the Old Testament. The most important was Saul's eldest son, who aided his father in the Michmash campaign to throw off Philistine oppression, and shared his fate at Gilboa. His friendship with David inspired an incomparable elegy from the latter (2 Sam. i.).

Jones Ernest Charles. English writer and Chartist. He was born in Berlin, Jan. 26, 1819, being the son of a soldier who was there in attendance on an English prince. In 1841 he wrote a story, *The Wood Spirit*, and in 1844 he became a barrister. He then joined the Chartists and, having refused a bequest of £2000 a year to leave it, became one of the leaders of the movement. In consequence of his share in the events of 1848 he was sent to prison for two years. He tried several times to enter Parliament, but in vain. He died Jan. 26, 1869. Jones wrote *The Labourer* and other works of a social character as well as an epic, written in prison, *The Revolt of Hindostan*.

Jones Henry Arthur. English dramatist. Born at Grandborough, Buckinghamshire, Sept. 28, 1851, his father was a farmer. He was educated at a local grammar school and began life as a clerk in London. He then became a commercial traveller and so remained until his first plays had been produced successfully. These were *A Clerical Error*, produced in London in 1879, and *The Silver King*, 1882. During the next 50 years, Jones wrote a regular succession of dramas. These include *Saints and Sinners*, *The Case of Rebellious Susan*, *The Liars*, *Mrs. Dane's Defence* and *The Pacifist*. He also wrote *Foundations of a National Drama* and other books on the subject. He died Jan. 7, 1929, and afterwards his *Life*, written by his daughter, appeared.

Jones Inigo. English architect. Born in London on July 15, 1573, he started life as a joiner. He studied architecture and came under the patronage of the Earl of Pembroke, who enabled him to visit Italy and France. Jones was the first to introduce pure Renaissance architecture into England, adapting Italian ideas, especially those of Palladio, to English requirements. One of his innovations was the internal staircase. He designed the Banqueting Hall, Whitehall, and Greenwich Hospital. He died June 21, 1652.

Jones John Paul. American sailor. Born in Kirkcudbrightshire, July 6, 1747, his name was John Paul, but later he added that of Jones to it. He went to sea when a boy and after some years settled in Virginia. In 1775, the colonies being at war with Great Britain, he was given command of a ship and for some years he made constant attacks on British shipping. He operated a good deal around the coasts of England and Scotland (which he knew) and was the most feared of all freebooters. His numerous exploits included a landing at Whitehaven, and the defeat of two English ships off Scarborough. After the end of the war Jones became an admiral in the Russian navy, which he led against the Turks. He died in Paris, July 18, 1792.

Jonquil Hardy perennial bulbous herb of various species of narcissus of the amaryllis order. The Spanish junquillo—little rush—so called from its form and narrow half-cylindrical leaves, 8-12 in. long, is primarily *N. jonquilla* which was introduced into Tudor England for its fragrance and colour.

Jonson Ben. English dramatist and poet. Born in London, about 1573, he was educated at Westminster and probably Cambridge, and joined the English army in Flanders. Returning about 1592, he became an actor and hack dramatist for Henslowe, although his first comedy, *Every Man in his Humour*, 1598, was produced by a rival company. In 1603 he wrote a tragedy, *Sejanus*, and in 1604 produced the first of his 30 court masques about which he later quarrelled with Inigo Jones. He published his collected works in 1616 and was granted a pension by James I. He died in 1637 and was buried in Westminster Abbey. The greatest English dramatist after Shakespeare, his plays include *Cynthia's Revels*, *The Poetaster*, *Volpone*, and *Epicoene*.

Jonsong Peak of the Himalayas. German mountaineers created a record by ascending to its summit (24,344 ft.) in June, 1930. This record was beaten when, in 1931, an English party climbed Mount Kamet (25,447 ft.).

Joppa Alternative name for Jaffa (*q.v.*), a seaport of Palestine, 53 miles north-west of Jerusalem.

Jordan Dorothea. Irish actress. Born in 1762, she first acted in Dublin in 1777. She moved to London in 1785, where she soon gained a great reputation. She acted at Drury Lane until 1809, and made her last appearance at Covent Garden in 1814. Though for 21 years the mistress of William IV., she died in obscurity at St. Cloud, France, July 3, 1816.

Jordan River of Palestine. Rising on Mt. Hermon, three perennial streams unite to flow through Lake Huleh at sea-level down to the Sea of Galilee. Thence the river falls precipitously for 200 m. to the Dead Sea, 1300 ft. below the Mediterranean. Never navigable, it has been throughout history an effective barrier between Palestine and Transjordan. The Jews of old regarded the Jordan as a sacred river and it figures much in Christian imagery. After the Great War a scheme was put forward for using the waters of the river to generate electric power.

Jordanes Historian of the Goths. He dwelt in Moesia in the 6th century, A.D., and was a member of the German tribe of the Alani. He wrote two works, a history from the Creation to his own time, and a history of the Goths, 551.

Jordans Village of Buckinghamshire. It is about 2 m. from Chalfont St. Giles. Here the Society of Friends have their most famous meeting house, and there are other buildings used by them. Adjoining is the burial ground which contains the tomb of William Penn.

Joseph Son of Jacob and Rachel, and Benjamin's elder brother. Born at Haran, his story, told in Genesis xxxvii.-xl., recounts the paternal favouritism and fraternal jealousy which led to his being carried captive to Egypt, where his skill in interpreting dreams made him vizier to the king. He contrived the settlement of his father and brethren in Goshen. His two sons, Ephraim and Manasseh, gave their names to two of the twelve tribes on the return, some centuries later, to Canaan.

Joseph Husband of the Virgin Mary and the foster father of Jesus. The gospels recount his betrothal to Mary and his life as a carpenter at Nazareth; he apparently died before Christ's public ministry began. Our Lord's brothers are usually regarded as half-brothers, Joseph's sons by a former wife. He is commemorated on Mar. 19.

Joseph of Arimathea Rich and influential Jew mentioned in the four gospels. A secret supporter of Christ, he went to Pilate after the crucifixion and asked for the body of Jesus, which he prepared for burial and laid in a tomb. His name occurs in mediaeval legends concerning Glastonbury and the Holy Grail.

Joseph Two Roman emperors and German kings. **Joseph I.**, the son of Leopold I., became emperor in 1705. He successfully opposed Louis XIV. in the War of the Spanish Succession. He died April 17, 1711. **Joseph II.**, the eldest son of Maria Theresa, was born Mar. 13, 1741, and became emperor in 1765, on the death of his father, Francis I.; his mother, however, remained the actual ruler until her death in 1780. Joseph then put into effect various reforms, but his home and foreign rule were alike unsuccessful. He was concerned in the partition of Poland in 1772, and fought against Turkey in 1788. He died Feb. 20, 1790, being succeeded by his brother, Leopold II.

Josephine Empress of the French. A daughter of Joseph Tascher de la Pagerie, she was born in Martinique, June 23, 1763. In 1777 she married the Vicomte de Beauharnais and lived in France. In 1794 her husband was put to death, leaving a son, Eugene, and a daughter, Hortense, later Queen of Holland. In 1796 Josephine married Napoleon Bonaparte, and in 1804 was crowned Empress. In 1810 she was divorced. She died May 24, 1814.

Josephus **Flavius.** Jewish historian. Born in 37 B.C. at Jerusalem, of a family of priests, he joined in the rising of the Jews in A.D. 66 and was taken prisoner, but was afterwards released by the Romans. He was in Jerusalem when it was taken, but afterwards lived in Rome where he was befriended by three emperors. He died about 100.

Josephus lives because of his books on the history of the Jews, works of very high value. As translated, their titles are *The Jewish War* and *Antiquities of the Jews*. He also wrote an autobiography and a defence of Judaism against Apion. They have been translated into English by G. W. Whiston, 1737.

Joshua Successor of Moses as leader of the Israelites into Canaan. He was a son of Nun and of the tribe of Ephraim. He was one of those sent to spy out the land of Canaan, and was closely associated with Moses during the wanderings in the wilderness. He took Jericho, defeated many of the native kings and divided the land among the tribes. He died at Mt. Ephraim at the age of 110.

The Book of Joshua, the sixth book of the Old Testament, describes the exploits of Joshua. The first 12 chapters tell how Canaan was conquered. The next nine describe the division of the land among the tribes, and the last three tell of Joshua's death and burial.

Josiah King of Judah. He was a son of Amon, whom he succeeded when eight years old. He discovered in the temple a law book, apparently part of Deuteronomy, or an allied work. This led him to make drastic reforms in religious matters. When the Egyptian King Necho crossed Palestine on his Assyrian campaign Josiah opposed him and was killed at Megiddo. He reigned from 639 to 608 B.C.

Joss The popular name for a Chinese idol. The temple where it is kept is called a joss-house. A joss-stick is a piece of fragrant tinder mixed with clay, to be burned as incense.

Joubert **Petrus Jacobus.** Boer soldier. Born in Cape Colony, Jan. 20, 1834, he became prominent during the Boer War of 1880-81, when, as commander-in-chief, he defeated the British at Laing's Nek and Majuba Hill. When war broke out in 1899, Joubert was named commander-in-chief, but on March 27, 1900, he died at Pretoria.

Joule **James Prestcott.** English physicist. Born at Salford, Dec. 24, 1818, he became a student of chemistry. Taking up the subjects of electricity and magnetism, he developed theories that attracted attention.

His great work was to investigate the problems of heat and energy, and in this field his discoveries were of immense importance. He died Oct. 11, 1889.

The **joule**, named after him, is a unit of electrical work or energy, practically equivalent to the work done, or heat generated, in maintaining for one second a current of one ampère against a resistance of one ohm; equal to 10,000,000 ergs.

Journal Daily record. The word is variously employed; for a daily newspaper, *e.g.*, *Le Journal*, a French paper founded in 1892; for a book used in double entry book-keeping; a record of the proceedings of a society, or public body; and for a personal diary. In engineering, it is that part of a revolving shaft in contact with the bearings.

Journalism Profession or trade of writing and preparing material for newspapers and other periodicals. Something of the kind has existed in most civilised countries since the invention of printing, but modern journalism only dates from the 19th century, when the mass of the people learned to read, although Defoe has been called the first journalist. It is now an important and influential profession.

In Great Britain societies exist to protect the interests of the journalist. They are the Institute of Journalists, which was established in 1884, and the National Union of Journalists. There is also a Society of Women Journalists in London. The universities of London and Bristol provide courses in journalism and there is a School of Journalism at Columbia University, New York. The Press Club is a journalistic centre in London, and in 1931 steps were taken to form a London livery company for those connected with newspapers.

JOURNALISM AS A CAREER. Journalism has been defined as "The writing and presentation of news, comment and opinion in newspapers or other periodical publications." It is the profession for those who can look at life and the events of the day, and write of them in such a manner as to interest, amuse, or instruct the public. It is a profession which should be entered with the eyes wide open, for the pitfalls are many, and the competition is intense.

The safest method of ensuring a steady income is to obtain a post on a newspaper or periodical, and here the openings for women are steadily increasing; most papers require at least one woman on their permanent staff, some are staffed almost exclusively by women. A London paper, however, is averse to taking on its staff any one who has not been trained on a provincial paper, while many provincial papers recruit their staffs from boys and girls who have just left school, and train them on the paper, beginning with office work. Every paper, however, is constantly on the look-out for fresh talent.

It is nearly always necessary to have shorthand in the early stages of journalism. Practical experience provides the best, and indeed the only adequate training for a successful career in journalism.

The staff journalist on a London daily usually receives a salary something in the region of seven to ten guineas a week. The editorial staff is usually higher paid (nine guineas per week is the minimum except on the financial and sporting papers and agencies) and leader writers and editors receive anything upwards from £1500 a year. The payment on a provincial paper usually begins at three guineas a week (editorial minimum, £4 7s. 6d.), and rises to seven.

Free-Lance Journalism is precarious, and for the people who handle "news" and "features" the opportunities are strictly limited. The outlook is more favourable in fiction writing (which cannot legitimately be described as journalism) and in certain specialised branches, but the competition is severe from the large numbers of people to whom such writing is a spare time occupation. In this kind of work a woman can compete on equal terms with her men colleagues, while she has the monopoly of certain subjects. Payment varies from 15s. per thousand words to a very much higher figure, according to the value of the article and the reputation of the writer.

It is advisable for the practising journalist to become a member of either The National Union of Journalists (7 John Street, London, W.C.1.) or The Institute of Journalists (2 and 4 Tudor Street, London, E.C.4).

Jove Alternative name for Jupiter (*q.v.*), the chief god of Roman mythology.

Jovian Roman emperor. He was born in Moesia, about 331, and was captain of the imperial bodyguard during the Persian campaign. On Julian's death he was proclaimed emperor, June, 363, when he signed a humiliating peace with Persia. He died in Bithynia, Feb., 364.

Jowett **Benjamin.** English scholar. Born April 15, 1817, he was educated at S. Paul's School and Balliol College, Oxford, of which in 1838 he was elected fellow. He was ordained and worked at Balliol as a tutor for 28 years. In 1855 he was appointed Professor of Greek, and in 1870 was chosen Master of Balliol. He retained that position until his death, Oct. 1, 1893.

Jowitt **Sir William Allen.** English lawyer. Born in 1885, the son of a clergyman, he was educated at Marlborough and New College, Oxford. In 1909 he became a barrister and in 1922 he was elected Liberal M.P. for the Hartlepools. He lost his seat in 1924, but in 1929 he was returned to Parliament by Preston. He then joined the Labour party, was made Attorney-General and was knighted. He continued in the same office when the national government was formed in 1931, but failed to secure a seat in the House of Commons, and returned to his practice at the Bar.

Joyce **James.** Irish writer. Born in Dublin, Feb. 2, 1882, he was educated at Clongowes and graduated at the Royal University. He wrote some verses, a play and a volume of short stories. *The Dubliners*, before he became widely known as the author of the extraordinary novel *Ulysses*, which, owing to its nature, was published abroad in Paris, not in England.

Juan Fernandez Group of islands in the S. Pacific, some 400 m. from Valparaiso. They belong to Chile. Of the three volcanic islands, only the largest, Mas-a-tierra, is inhabited. It was discovered about 1565 by Juan Fernandez, and was inhabited, 1704-09, by Alexander Selkirk, which gave Defoe the subject for Robinson Crusoe. It was occupied by Spaniards in 1750, and later was a Chilean penal station until 1913. A wireless station is on the island.

Jubaland Province of Italian Somaliland. It lies south of the Juba River, and was a British possession, as part of Kenya, until ceded to Italy in 1925. The

country is largely unexplored and its climate tropical. Kismayu is the capital and chief port. Its area is 35,000 sq. m. Pop. 100,000.

The Juba River rises in Abyssinia and, after a course of some 1000 m., empties into the Indian Ocean. It is navigable for small vessels for 400 m.

Jubilee Celebration of fifty years. The real jubilee is a Jewish festival commemorating the Exodus. Proclaimed by a *jobel*, or ram's horn, on the Day of Atonement every fiftieth year, slaves were freed, land left untilled, and certain alienated property restored (Lev. xxv.). It lasted for a full year, but was rarely observed. Pope Boniface VIII. instituted a jubilee year in 1300.

Nowadays the 50th anniversary of any event is a jubilee, *e.g.*, of Queen Victoria's reign. A 60th anniversary is called a diamond jubilee. The late King George V celebrated his Silver Jubilee (25 years' reign) in 1935.

The Book of Jubilees, or Little Genesis, was an apocryphal work of the 2nd century B.C. paraphrasing in 49-year periods the world's history from the creation to the lawgiving on Sinai.

Judah Fourth son of Jacob and Leah. Born at Haran, he superseded his elder brothers, and the most powerful of Israel's twelve tribes bore his name. After the death of Solomon, Judah was the name of one of the two kingdoms into which Palestine was divided.

Judaism The system of Jewish religious beliefs, practices and rites. Judaism is based on an ethical monotheism. At an early date the Jews abandoned polytheism for a belief in the unity and spirituality of God, linking together morality and religion. During the post-exilic period Judaism developed into that system of rigid obedience to the Law and priestly sacrificial worship, which existed in the days of Christ. The roots of Christianity are fixed deep in Judaism, and Paul, the greatest of Christian apostles, was a "Hebrew of the Hebrews," who never lost his sense of the greatness of his nation's spiritual heritage.

Judas Name of several biblical persons. They include (1) A disciple of Christ, "not Iscariot," perhaps Lebbaeus or Thaddeus, and "son or brother of James" (Luke vi.). (2) The Galilean, who led a revolt (Acts v.). (3) Judas Maccabaeus, Mattathias' eldest son, who gained for the Jews religious, but not political, independence. He died in 161 B.C. (1 Macc. iii.-ix.).

Judas Iscariot One of Christ's twelve disciples who afterwards betrayed him. A son of Simon of Kerioth, apparently Hazor, he was the only apostle who was not a Galilean. He acted as purse-bearer to the group. The account of his remorse and suicide in Matthew xxvii. differs from the one in Acts i.

Judas Tree Small tree of the leguminous order (*Cercis siliquastrum*). It is a native of the Mediterranean region. Growing irregularly, its branches produce abundantly fascicles of rosy-purple pea-like flowers, rarely white, before the smooth kidney-shaped leaves fully appear. The flowers impart an acid flavour to salads. Mediaeval woodcuts represent Judas Iscariot as suspended from its branches.

Jude **Epistle of.** Book of the New Testament. Its superscription attributes it to a brother of James, commonly identified with our Lord's brother. Some think, however, that it was written at a later date by another writer, also called Jude. It borrows from the Apocrypha, and most of it is practically contained in the second epistle of Peter. It consists of one chapter denouncing false teaching.

Judea District in the south of Palestine and west of the Jordan. Its boundaries towards Samaria and Idumea were ill-defined and variable. In the New Testament the word is used loosely for all western Palestine.

Judge High legal official who hears cases and tries criminals. Every judicial system has its judges, who are invariably lawyers of considerable experience. Each is attached to a court, and together they form the judiciary under a chief judge.

In England, as elsewhere, judges are of several grades. The highest are the Lord Chancellor and the law lords who sit in the House of Lords. Then come the lords justices who form the court of appeal, and then the judges of the high court, who are knighted on appointment and receive salaries of £4000 a year. They must be barristers of at least 10 years' standing. The judges of the court of appeal are recruited from the judges of the high court and receive a somewhat higher salary. All are entitled to pensions after serving for 15 years. They are appointed by the Lord Chancellor and are addressed as my lord. As representatives of the sovereign, they are received in state when they go on circuit, and it is high treason to attack them.

There are also in England **county court judges**, one to each circuit. These receive salaries of £1800 a year and are addressed as your honour. They must be barristers of at least seven years' standing and are appointed by the Lord Chancellor.

In Scotland judges are attached to the two houses of the court of session. Those who sit in the inner house, or court of appeal, are given the style of lord. In both parts of Ireland the courts are staffed by judges on the English model.

The Judges of the Bible were the men who ruled over the Jews before Saul was chosen king. They existed for about 450 years; among them were Gideon and Samson.

The **Judge-Advocate-General** is an official of the British army. He acts in an advisory capacity to the crown on matters of military law, especially those concerning courts martial, all of which he, or one of his assistants, attends. The office dates from the 17th century. He is assisted by a deputy judge-advocate-general. Similar duties are performed for the navy by the judge-advocate of the fleet.

Judges **Book of.** Book of the Old Testament. With its companion Ruth it is found between the Joshua story of Israel's settlement in Canaan and the books of Samuel and Kings concerning the monarchy. It comprises: (1) An introductory survey of the conquest. (2) A narrative showing how the people's transgression led to foreign oppression and how, to end this, warrior-judges, notably Gideon, Jephthah and Samson, arose at intervals. (3) Certain episodes in the history of Israel and stories about various judges and other personages. Its authorship is unknown, but it was probably written in the 7th century B.C.

Judgment In law a decision of a court in civil cases. It is delivered by the presiding judge and is carried out by officers of the court. In the House of Lords

and the judicial committee of the privy council each judge reads his own judgment, the decision being that of the majority.

A judgment summons is a summons taken out against one who will not pay a bill. The creditor must prove that the debtor can pay, and the judge will then make an order for the payment of a certain sum, usually by instalments. If this is not paid the creditors can apply for the debtor to be sent to prison. Technically he is sent to prison for contempt of court, not for failure to pay a debt.

Judgment The Last. The idea that God will come to the world for judgment is found in the Old Testament prophets. In the New Testament the same belief is represented in some places in dramatic fashion by means of apocalyptic imagery. Such passages are generally regarded as having symbolic value in the proclamation of the spiritual truth, that men's ultimate fate will be determined by their relation to Jesus Christ.

Judicial Committee Committee of the privy council that acts as the supreme court of appeal from the courts of the British Empire outside Great Britain and in ecclesiastical cases within Great Britain. Its members are the Lord Chancellor, the Lord Chief Justice, former Lord Chancellors and other peers who have held high judicial office and are members of the privy council, as well as any persons who are, or have been, judges of the supreme courts in any of the British Dominions.

The committee was set up in 1833, but its present constitution dates from 1928. The judges need not be unanimous in their decisions; a majority is sufficient. They sit without robes and their judgments take the form of recommendations to the sovereign. The committee's authority is not recognised by the Irish Free State.

Judicial Separation Term used in English law for a separation of husband and wife ordered by the High Court of Justice. It can be granted for adultery, cruelty or desertion for not less than two years. It is more serious than an ordinary separation order which can be made by a magistrate.

Judith Heroine of the book of Judith. This fictional work, which is in the Apocrypha, purports to narrate an episode in Jewish history recalling that of Jael. Judith, a wealthy widow, visited the besieging Assyrian camp at Bethulia and feasted with the general Holofernes. She then made him drunk and treacherously beheaded him. The theme inspired a vigorous early English poem of the 8th-10th century. This is preserved in the MS. which also contains Beowulf.

Juggernaut Name, meaning "Lord of the World," of the Hindu god, Vishnu, as worshipped at Puri in Orissa. The idol is kept in a temple in that city, but on certain festivals it is taken out and dragged in a huge car through the streets. The ceremony takes several days. Fanatics sometimes throw themselves under the wheels of the car and are killed, so giving rise to the sinister associations of the word.

Jugurtha King of Numidia. His uncle Micipsa bequeathed the kingdom to his two sons and to Jugurtha who murdered both and became sole monarch. Defying Rome and resorting largely to bribery, he was taken by Marius, exhibited in his Roman triumph, and finally killed in 104 B.C. Sallust wrote his life.

Jujube Name of a small tree, *Zizyphus vulgaris*, a native of China, but now grown in Mediterranean countries. TLe plant bears leathery leaves with thorny stipules and small greenish flowers followed by red or black sub-acid fleshy fruits. These were used formerly for flavouring the lozenges known as jujubes.

Ju-Jutsu or Jiujitsu Japanese method of offence and defence without weapons in personal encounter. It was at first a secret art practised by the nobility, but later it developed into a national system of physical culture for both sexes, especially in the army, navy and police.

Early in the 20th century schools arose in Great Britain, Europe and the United States, usually under Japanese exponents, and demonstrations of jiujitsu were given in music halls and other public places. The system was studied by the London police and other forces. Using anatomical knowledge the defendant seeks, by certain locks, strangle holds and twists, to divert the adversary's muscular strength to his undoing.

Julian Roman emperor. Born in Constantinople in 331, he was the nephew of Constantine the Great and was named Flavius Claudius Julianus. He studied in Athens and later abandoned Christianity, whence his name of Julian the Apostate. In 355 his cousin, the Emperor Constantine, made him joint ruler, married him to his sister, Helena, and put him in charge of Gaul. There he won several victories and gained the high regard of his troops who, in 360, revolted and proclaimed him emperor. Owing to the death of Constantine in 361 he secured the throne without trouble, but he only reigned for two years. He tried to restore the pagan religion and deprived the Church of its special privileges, although he tolerated the Christians. In 363 he organised a campaign against the Persians. Having invaded their land he was mortally wounded and died June 26, 363.

Julian Calendar Calendar as revised and modified by Julius Caesar in 46 B.C. It was in use in Western Europe until A.D. 1752, having been revised further by Pope Gregory XIII. in 1582. The Julian Year was of 365¼ days with a leap year of 366 days every fourth year, and the intervening three years of 365 days.

Julienne Clear soup containing herbs and vegetables cut into long narrow shreds. It was named in the 18th century after Julien, a French caterer in Boston, U.S.A.

Julius Name of three popes. Julius I. was Pope from 337 to 352. Julius II. was born in Italy, Dec. 5, 1443, of the family of Della Rovera. His uncle, Sixtus IV., made him a cardinal in 1471 and he lived the life of a wealthy Italian prince, taking part in warfare and encouraging literature and art. In 1503 he succeeded Pius II. as Pope and reigned for 10 years. As a temporal ruler he was successful. He won back much of the land taken from the Church and his greatest exploits were the formation of leagues that humiliated Venice and France. He died in Rome, Feb. 20, 1513. The portrait of Julius by Raphael is one of the world's masterpieces. Julius III. was Pope from 1550 to 1555.

Jullundur Town of India, also spelt Jalandhar. It is 47 m. from

Amritsar and was once the capital of a Rajput kingdom. It is now the chief town of a district in which wheat is grown. Pop. 71,000.

Jumna River of India. It rises in the Himalayas, and, fed from mountain snows and joined by numerous tributaries, flows through the United Provinces to join the Ganges at Allahabad. Delhi, Agra and Muttra are on its banks; its length is 850 m.

Jumping Branch of athletics. It is a feature at almost all athletic contests, including the Olympic Games. In modern times the long and high jumps are the chief forms. C. Nambu (Japan) created a record in the former with 26 ft. 2½ in. in 1931; W. Marty (U.S.A.), in a high jump, reached 6 ft. 9½ in. in 1934. There is also a pole jump, but this is less popular.

Jumping Hare South African rodent. Called by the Boers the springhaas (*Pedetes caffer*), it averages 2 ft. in length with rather longer tail, and is a burrowing night feeder. It owes its name to its ability to jump; sometimes it covers as much as 30 ft. at a single bound.

Jumping Mouse Genus of small rodent found in North America and China. It lives in forests, feeds upon seeds and leaves, and makes its home in clefts in the rocks. About 3 in. long, its jumping powers are remarkable, sometimes reaching 10 ft. It belongs to the genus *Zapus*.

Jumping Shrew Family of African insectivorous mammals also called elephant shrews. Allied to Asiatic tree-shrews, they are mainly nocturnal. Their long hind legs make kangaroo-like leaps.

Juneau Capital of Alaska. In the S.E. of the country, on Gastineau Channel, it was founded in 1880 as Harrisburg, and superseded Sitka as the capital in 1906. The centre of a gold mining region, it is also a fishing, lumbering and trading centre. Pop. (1930) 4043.

Jung **Karl.** Swiss psychologist. Born at Basle, July 26, 1875, he was one of Freud's leading pupils until 1911 and shares the latter's views as to the significance of unconscious mental conflict and repression. His conception of the unconscious is, however, wider and more vital than that of Freud, nor does he give to sex quite the same importance. Recent publications include *Contributions to Analytical Psychology* (1928) and (with Richard Wilhelm) *The Secret of the Golden Flower* (1930).

Jungfrau Mountain in the Bernese Oberland, Switzerland. It is on the border between Berne and Valais and near the town of Interlaken. It was first climbed in 1811 by the Meyer brothers. It is 13,670 ft. high and is a favourite peak for climbers.

Jungle Rank and tangled vegetation, large and small, sometimes almost impenetrable, or the more or less swampy region so covered. The Anglo-Indian word, first denoting such regions as the terai beneath the lower Himalayas, nowadays means any marshy thickset growth in tropical lands. Australian mound-birds and brush-turkeys are called jungle-fowl.

Juniper Genus of evergreen trees or bushes. They grow in the temperate and colder parts of the northern hemisphere and bear fruit like berries. The common juniper grows freely in Great Britain. To do well it needs a moist, deep loam and a sunny position.

The fruit of the juniper is used to flavour gin and as a diuretic in medicine. The wood is hard and smells of turpentine.

Junius **Letters of.** Series of political letters of unknown authorship. They appeared in *The Public Advertiser* between 1767 and 1772, over the name of Junius and were published as a book in the latter year. They were attacks on the ministers of the day, including the Dukes of Bedford and Grafton and even the king, George III. The printer, H. S. Woodfall, was prosecuted for printing them, but was acquitted.

The letters aroused extraordinary interest and were written by one who knew a good deal about affairs of state, both within and without, and was able to express himself in an arresting and forcible way. The secret of the authorship has never been discovered, though Sir Philip Francis is regarded as their most probable writer.

Junk Type of sailing vessel used by the Chinese and Japanese. It has a high stern and forecastle, usually with three masts having square sails of matting.

The term junk is applied to old ropes and cordage on ships, used for making oakum and mats, also for lumber and the salt meat formerly supplied to ships.

Junker Name used for the landowners in Prussia and North Germany generally. Many of them entered the army and their influence, coupled with a good deal of arrogance, made them very influential before 1914. The merchant princes of Danzig were also called junkers, the name being perpetuated there in the building called the Junkerhof. The word means a young man.

Junket Dish consisting of sweetened milk thickened with rennet into a curd. It is sometimes flavoured with brandy or liqueur and sprinkled with grated nutmeg. Devonshire junkets are served with clotted cream. In olden days merrymaking at a feast or picnic was called junketing.

Juno Chief Roman goddess. Worshipped by women at all life's crises, she was identified, especially in literature, with the Greek Hera, as such becoming Jupiter's sister and wife, the mother of Mars and queen of heaven. As every Roman had his genius, so every woman had her Juno; at childbirth she became Juno Lucina.

Junta Spanish word for a council. In Spain juntas were formed to manage the various departments of state and there was a supreme junta of the Inquisition. In 1806 a junta was formed to organise resistance against the French. In England the word suggests corruption, or at least inefficiency.

Jupiter Largest of the outer planets of the solar system. It has a diameter eleven times that of the earth, and has the form of an oblate spheroid, that is, owing to the rapidity of its axial rotation, there is a flattening at the poles with a bulging outwards in the equatorial region. Its mean distance from the sun is 483 million miles, and it has a year equal to twelve of our years and a day of 9 hr. 56 min. Of its nine satellites four are about the size of the moon, and were the first celestial objects discovered with the telescope by Galileo.

Jupiter Chief deity of the Romans, also called Jove. He was the son of Saturn and Rhea and the husband and brother

of Juno. As the chief of the gods and the god of thunder, rain and storm, he was given many auxiliary names, such as Pluvius and Tonaus. He was also regarded as the god of justice and hospitality. He was specially reverenced in Rome itself where his worship was celebrated with great splendour in the Capitol and elsewhere. The equivalent of the Greek Zeus, he was regarded as armed with thunderbolts and attended by eagles.

Jura Island of the Hebrides. Part of the county of Argyllshire, it is separated from the mainland by the Sound of Jura, and has an area of 160 sq. m. A rugged and bleak island, it has hills, the Paps of Jura, rising to 2500 ft. Cattle and sheep are reared, and there are deer forests. Pop. 600. The Sound of Jura is 21 m. long.

Jura European mountain range. It separates the Rhine and Rhône valleys and forms part of the frontier between France and Switzerland. About 150 m. long and 40 m. broad, the mountains have an average height of about 2400 ft., with peaks of over 5000 ft. Jura is also the name of a department of France.

Jurassic One of the larger geological systems of rocks. It derives its name from the Jura Mountains and comes between the Triassic and Cretaceous systems. The succession of strata consists of an alternation of clays and limestones with sometimes beds of sand. The system is divided into four groups; the Lias at the base with lower, middle and upper Volite above. It was the age of giant reptiles such as the ichthyosaurs, plesiosaurs, etc., and of the earliest bird, archaeopteryx.

Jurat Literally a person who is acting under an oath. It was, and to some extent is still, used for certain officials. Some of the members of the legislatures of the Channel Islands are known as jurats, and formerly the aldermen of the Cinque Ports were similarly designated.

Jurisprudence Science of law. It deals, not with any particular kind of law, or the law of any particular country, but with its general principles. A great deal has been written on the subject, which was clarified by John Austin in his *Lectures on Jurisprudence*. Later writers include Sir H. Maine, Sir P. Vinogradoff and Sir T. E. Holland in England, while much valuable work has been done by French, German and American writers such as Savigny and Story. At Oxford there is an honours school of jurisprudence and there are professors and lecturers on the subject at most of the universities. *See* LAW.

Jury In England a body of persons chosen to give a verdict in trials of importance, both civil and criminal. Trial by jury is a very old custom in England and something of the kind existed before the Norman Conquest, although the early juries were witnesses rather than judges, they declared the law, decided the sentence.

To-day there are three kinds of jury. The **grand jury** consists of any number from 12 to 23. It was formerly at assizes, to examine the charges against the various accused persons and decide if they were to go to trial. However, with certain exceptions (*See* GRAND JURY) grand juries were abolished in England in 1933.

The **petty jury** consists of 12 persons and these, having heard the case, are responsible for the verdict. It must be unanimous; if it is not, the jury is discharged and a fresh one called. In Scotland a jury can return a verdict of non-proven; in England it must be either guilty or not guilty. In civil cases the jury decides on the amount of damages, if any. Each jury has a foreman who speaks for it. A special jury, which is comprised of persons with a fairly high property qualification, is a form of the ordinary jury. The third kind of jury is the **coroner's jury**. At one time there was a jury for every inquest, but since 1927 it has not been necessary to have one except in cases of death by violence.

Any man or woman, between the ages of 21 and 60, with certain exemptions, such as doctors and clergymen, is liable to be called to serve on a jury and must serve unless a good reason for absence is given. A list of persons eligible is prepared by the local authorities and from this the jurics are picked as required. In important cases the greatest care is taken to keep the jury from outside influences, and anyone attempting to bribe a juror can be heavily punished. Jurors receive a small fee.

Justice of the Peace In Great Britain a man or woman appointed to keep the peace and often called magistrate. These justices are appointed by the Lord Chancellor for the various counties and such cities and boroughs as have a commission of the peace. Their duties include holding police courts, where minor offenders are tried, and forming in the counties the courts of quarter sessions. Oaths and depositions can also be taken before them and they can sign warrants.

The justices first appeared in the 13th century and since 1919 women have been eligible. Mayors and chairmen of urban district councils are justices by virtue of their office. All others are appointed for life.

Justiciar In mediaeval England the chief officer of state. There were justiciars in England from the time of William I. to that of Henry III., their office originally corresponding with that of the modern Lord Chief Justice. The Scottish supreme court for criminal cases is known as the High Court of Justiciary.

Justiciary Term sometimes used for the judges and the courts of law as a whole. In Scotland the High Court of Justiciary is the official name for the supreme court of criminal jurisdiction.

Justification Word used in law and theology. In English law a person can plead justification to a charge of libel or slander; he can also do so if charged with violence. He must prove in the former case that the alleged libel or slander was true and in the latter case that his life, or that of his wife or child, was in danger. If charged with a criminal libel he must prove that the words were published for the public benefit.

In theology the phrase justification by faith is used. It means that the believer can by faith be freed from the consequences of his sin.

Justin Two Eastern Roman emperors, **Justin**, or Justinus I., was a soldier, probably a Goth, and was proclaimed emperor on the death of Anastasius in 518. He died in 527.

Justin II. succeeded his uncle, Justinian I., in 565. He became subject to recurrent fits of insanity after 574 and appointed Tiberius as joint ruler. In his reign war broke out with

Persia, and the barbarians overran North Italy and the Danubian and Carpathian provinces. He died Sept. 26, 578.

Justinian Name of two Roman emperors. **Justinian I.** was born May 11, 483, in Illyria. He was the son of a peasant, but also a nephew of the Emperor Justin I. who educated him. In 527 he became emperor, and he reigned for nearly 40 years at Constantinople. His reign was marked by the victories of Belisarius and Narses over the Persians, Vandals and Ostrogoths, the result being that a great area in Europe, Africa and Asia, lost under previous emperors, was recovered. The emperor died Nov. 14, 565. His wife was the Empress Theodora.

Justinian is chiefly remembered, however, for the codification of Roman law which he organised. This consists, not only of the code, but of a *Digest* or *Pandect* and the *Institutes*, or explanations of the law. Its influence on the development of the legal systems of Europe can hardly be exaggerated.

Justinian II. was emperor from 685 to 695 and again from 705 to 711. During the intervening 10 years he was an exile, the result of a revolution. In 711 there was another rising and he was beheaded.

Justin Martyr Christian writer. Born in Samaria, about A.D. 100, of Greek parentage, he spent much time in the study of philosophy. He became a Christian and wrote an *Apologia* of the Christian faith, which was followed by a second one. According to tradition he was martyred about 165.

Jute Cordage and textile fibre obtained from two annual species of the genus *Corchorus*. This grows to a height of 10 to 15 ft. in parts of East Bengal, Orissa and Bihar. The fibre consists of the hard bast between the wood and cortex and is separated by steeping the stems in water for a time.

Jute fibre is weaker than flax or hemp, but having a silky lustre, fine texture, and good spinning power, it is used for cheap tapestries and carpets, also bags, packing canvas, cordage, etc. The chief centres of the jute industry are Calcutta and Dundee, where there are large jute mills.

Jutes Teutonic tribe. Their country of origin is obscure, but it may have been Jutland. Invading England in the 5th century, they settled in Kent and the Isle of Wight and probably parts of Hampshire. They are mentioned by Bede.

Jutland Mainland province of Denmark. It forms a peninsula and has a very broken coastline. Aarhus is the largest town and the Guden the longest river. It is an agricultural area. The original home of the Jutes, it was made part of Denmark in the 10th century.

Jutland Battle of. Naval battle fought May 31 and June 1, 1916, between the British and the German fleets. On May 30 the British fleet, hearing the Germans were coming out of their harbours, put to sea. Sir D. Beatty with a force of six battle cruisers and four battleships in support, put out from Rosyth, and Sir John Jellicoe with 28 battleships and three battle cruisers from Scapa Flow. Each was attended by destroyers, submarines and other auxiliary craft.

On the afternoon of the 31st, the British battle cruisers met the German battle cruisers, both being in advance of the main fleets. There was a sharp encounter in which two British battle cruisers, *Indefatigable* and *Queen Mary*, were destroyed. *Tiger* and *Lion* were badly damaged, as were the *Lutzow* and two other German ships. Towards 5 o'clock Beatty, hearing of the advance of the main German fleet, turned to draw the enemy on to the British fleet, which was steaming towards him. The main fleets came into touch about 6 o'clock, but the great ships were never seriously engaged and only one of them, *Marlborough*, was hit. There was fighting among the smaller ones in which the British suffered further losses. *Invincible*, a battle cruiser, was blown up and a cruiser squadron was badly damaged, *Defence* being sunk. Some of the German ships were battered, but they were, for one reason or other, much more difficult to sink At the approach of dark the British battleships drew off and prepared to renew the attack on the following day. There were torpedo attacks during the night, but when morning came it was found that the German fleet had escaped and was within the shelter of its minefields.

The result of the battle, however, was not satisfactory from the British point of view With a much stronger force, 149 ships against 110, including 28 dreadnought battleships against 16, the losses of the British were heavier than those of the Germans.

Juvenal Roman satirist. Little is known of his life, except that he was born about A.D. 60, served in the army and visited Britain and Egypt. He died in 140.

Juvenal is noted for his *Satires*, perhaps the most famous of their kind. Sixteen of them are extant. They paint in vivid colours the manners and morals of Rome in his time, but the picture of wickedness is now considered to be greatly exaggerated. They contain many familiar quotations, have been imitated by Johnson and Dryden, and many English translations have been made.

Juvenile Courts Separate children's courts set up by the Children Act of 1908. They were established for the hearing of charges against juveniles, such courts to sit in a different room or at a different time from that of the ordinary courts. The probation system figures prominently and beneficently in the work of these courts, also detention for varying periods in "approved schools."

Juvenile Offender In English law a young person, *i.e.*, under the age of 16, who has been arrested on some charge. By the Children's Act, 1908, such young people must be dealt with in such a way that there is no risk of their contamination by contact with adult criminals. This is done by their trial in special courts for children and by their detention, if necessary, in Borstal institutions. No juvenile offender can be sentenced to penal servitude.

Juxon **William.** English prelate. Born at Chichester, in 1582, he was educated at the Merchant Taylors' School, London and Oxford. He became a clergyman and in 1621 was made president of his college, S. John's. In 1627 he was chosen Dean of Worcester and in 1633 Bishop of London. From 1635 to 1641 he was Lord Treasurer and, during the Civil War, he was one of the most trusted advisers of Charles I. He attended the king at his trial and was with him to the end on the scaffold. In 1660 he was made Archbishop of Canterbury, and died June 4, 1663.

KAABA Sacred shrine in the great mosque at Mecca. It is an irregular masonry cube, 38 ft. high, containing an oval stone, 6-7 in. across, of suggested meteoric origin. Venerated in Arabia before the time of Mahomet, the prophet declared that the angel Gabriel gave it to Abraham.

Kabbalah *See* CABBALA.

Kabul Capital of Afghanistan. It stands in a fertile district on the Kabul River, and has a caravan trade in carpets, silks and cottons. Here is an old fort and its modern buildings include several colleges. Once the capital of the ancient Mogul empire, Timur made it the Afghan capital in 1774. It was taken by British troops in 1831, and was again occupied by them in 1842 and 1879. Pop. 70,000.

The Kabul River, which joins the Indus at Attock, is 270 m. long.

Kaffir Name adopted by Dutch and British settlers for African negroid peoples. It denotes more directly the Xosa, Pondo and Tembu tribes, who constitute, with the Zulus, the Zulu-Kaffir division of the S. Bantu peoples.

The Kaffirs are formidable warriors between whom and the white settlers there have been many struggles. Following a war in 1809 there was almost constant trouble during the next 70 years, breaking out into serious wars in 1834, 1836, 1850-53, 1858 and finally 1877-78.

To-day the Kaffirs form a considerable element in the population of S. Africa, and are largely employed on the land, in the gold mines and in miscellaneous occupations. The word is an Arabic word meaning unbeliever.

Kaffir Bread Native farinaceous food. It is derived from the spongy pith of the stems of a S. African cycad, *Encephalartos caffer*. This tree, which is sometimes grown for ornament, often reaches 20 ft. in height.

Kaffraria District of the Cape Province, S. Africa. It is the coastal region between the Great Kei River and the border of Natal. British Kaffraria, farther south between the Great Kei and Keiskamma rivers, was at one time a separate province, but was included in Cape Colony in 1865.

Kailyard School Name given to writers of sentimental fiction about humble Scottish life. The term was originally applied by J. H. Millar, in reference to the song, "There grows a bonny briarbush in our kailyard." S. R. Crockett, Ian Maclaren (John Watson), and Sir James Barrie have been included in this category.

Kaisariyeh City of Turkey, also called Kayseri, or Caesarea. A road centre on a tributary of the Kizil Irmak, it manufactures rugs and carpets. It is the seat of Roman Catholic, Greek and Armenian bishops. Pop. 39,134.

A village of Palestine, alternatively called Caesarea, is known by this name. Built by Herod the Great, it was once a magnificent city and seaport, being for a time the capital of the country. Here S. Paul was in prison for two years.

Kaiser Title of the Holy Roman emperors and, until 1918, of the rulers of Austria and Germany. It was first used in 800 for the Emperor Charlemagne, and after the dissolution of the Empire in 1806, was retained by the Emperor of Austria. In 1871 the King of Prussia also took the title, which was held by the two succeeding German emperors. The word means Caesar, and the feminine is Kaiserin.

Kaka New Zealand parrot (*Nestor meridionalis*). Rather smaller than its cousin, the kea, it is olive-brown in colour. It feeds on insects, besides extracting nectar from flowers. The eggs are laid in tree hollows. It is sociable and can be tamed as a pet.

Kakapo Bird of the parrot family (*stringops habroptilus*). Also known as tarapo, or owl parrot, it is a native of New Zealand, and is green, yellow and brown in colour. It nests in burrows, spends the day in holes in the ground, and seeks its food at night. The wings are not well adapted for flight, the birds usually moving on foot and in flocks.

Kalahari Desert of S.W. Africa. It stretches for about 600 m. N. of the Orange River, and covers some 120,000 sq. m. Impassable both in the dry and the rainy season, it is in places covered with vegetation. It is full of game and contains large deposits of salt. The few inhabitants are Bushmen who live by hunting.

Kalat Native state of Baluchistan. It is ruled by a khan, advised by a British political agent at Kalat, the capital. Its boundaries are Persia, India and the Arabian Sea. The land is mountainous, but much of it is very fertile. Area, 73,278 sq. m. Pop. chiefly Mohammedan, 328,000.

Kaleidoscope Optical instrument showing symmetrical forms produced by a combination of reflecting surfaces. In its simplest form it consists of a tube containing two mirrors inclined to each other at 60°, with an eye-piece at one end, and at the other a glass cell containing pieces of coloured glass. These, by rotation of the tube and repeated reflection, give various symmetrical patterns.

Kalgoorlie Town of W. Australia. The centre of a rich gold mining area, it is a modern town and a railway junction on the Transcontinental Rly. It is 380 m. to the east of Perth. Pop. (1931) 5722.

Kalmuk Western branch of the Mongol stock. The Kalmuks, or Kalmyks, form an autonomous area in the union of the Soviet republics, the capital being Astrakhan.

Kamchatka Peninsula of Siberia. It lies between the Sea of Okhotsk and the Bering Sea, and it has been a Russian possession since 1706. The severe climate precludes agriculture, the sparse population living by hunting and fishing. Petropavlovsk is the capital.

Kamet Peak of the Himalayas. It is in the Gharhwal district of the

United Provinces, being the highest mountain in a northern branch of the Himalayas called the Zaskar range. It is the second highest peak in the British Empire (25,447 ft.).

Kamloops City of British Columbia, Canada. At the junction of the N. and S. Thompson Rivers, it is 250 m. from Vancouver. It is a junction on the C.P.R. and the centre of a mining and ranching district. It has railway workshops and lumber mills. Pop. (1931) 6167.

Kanchenjunga 'World's third highest mountain. Situated in the Himalayas near the boundaries of Nepal and Sikkim, it is 75 m. from Everest. Its chief peaks, 28,150 ft. and 27,800 ft. high, can be seen from Darjeeling. In 1930 an international expedition ascended the mountain, but was compelled by the weather to return when it had reached a height of 24,400 ft. It has five peaks and the word means "the five treasure houses of the great snows."

Kandahar City of Afghanistan. It lies in a plain between the rivers Argand and Tarnak, 300 m. from Kabul, and commands a pass into India. The city is a trading centre, and owing to its position is an important fortress, surrounded by walls and having a citadel. It was occupied by the British in 1839 and 1879. Pop. 60,000.

Kandersteg Tourist resort in Switzerland. It is in the Bernese Oberland and stands nearly 4000 ft. high.

Kandy Town of Ceylon. Situated high among the mountains of the interior, it is 75 m. by railway from Colombo, and is noted for its temples, especially the famous Buddhist Temple of the Tooth and its royal tombs. It was once the capital of the native kingdom of Kandy, and was annexed by Britain in 1815. Pop. (1931) 36,541.

Kangaroo Family of pouched mammals indigenous to Australasia and New Guinea. The great grey kangaroo (*Macropus giganteus*) has a small head and large ears, with massive hindquarters and long legs. It measures about 5 ft. in length and can leap 30 ft. It is herbivorous and lives in herds. The female rears one young at a time in a pouch from the embryo stage until strong enough for independent life. There are also brush, rock, tree and rat kangaroos. The hide is valuable for leather, and the flesh, especially the tail, is eaten.

Kano City of N. Nigeria. The capital of the fertile province and emirate of Kano, it is an important trading centre, being the terminus of a railway from Lagos, and for caravans across the Sahara. Hides and ground nuts are produced, and leather, silk, and cotton goods manufactured.

Kansas Central state of the United States. A prairie state, it is watered by the Kansas and Arkansas rivers; the Missouri forms its N.E. frontier. Despite a scarcity of rain in the west, it is a rich agricultural state, producing maize, wheat and hay. Many minerals are worked. Topeka is the capital but Kansas City is the largest town. The state is governed by a legislature of two houses. It sends two senators and seven representatives to Congress. Area, 82,158 sq. m. Pop. (1930) 1,888,999.

Kansas City City of Kansas, U.S.A. It stands at the junction of the Kansas and Missouri rivers, opposite Kansas City in Missouri. The largest city in the state, and, after Chicago, America's chief livestock centre, it is well served by railways and has some fine parks. It has slaughtering and meat packing establishments, flour mills, machine and railway workshops, grain elevators and factories for soap and candles. Pop. (1930) 121,857.

Kansas City City of Missouri, U.S.A. An important railway junction on the Missouri River, it is opposite Kansas City in Kansas, with which it is connected by railway and other bridges. An important distributing centre, its industries are chiefly concerned with meat packing, grain, livestock and milling, and the manufacture of clothing, confectionery and agricultural implements. Pop. (1930) 399,746.

Kant Immanuel. German philosopher. Born in Königsberg, April 22, 1724, he was the son of a saddler. Scottish descent has been claimed for him. He studied at the University in Konigsberg and became a tutor in a private family. In 1755 he was appointed lecturer in the university, becoming in 1770 Professor of Philosophy. In 1797 he retired and died Feb. 12, 1804.

Kant ranks as one of the most influential of modern philosophers. His teaching is contained in three books which have been translated into English as *The Critique of Pure Reason*, *The Critique of Practical Reason* and *The Critique of Judgment*. He examines the nature of reason which exists, independent of experience. His conclusions are that there are three essential ideas: the soul as a thinking substance, the world as the totality of all phenomena and God as the absolute, perfect being. These ideas exist, however, only in the mind. His position is midway between that of the materialists and that of the idealists, though perhaps nearer to the latter than the former.

Kapok Tall evergreen tree of the family *Bombaceae* and found in the W. Indies. It has a prickly stem and its leaves are divided into five or more lance-shaped leaflets. Its yellow flowers have an external coating of silky wool, and the woody capsules are filled with silky hairs attached to the seeds. These filaments are used as stuffing for pillows and cushions, and especially lifebelts for which the fibre is particularly suitable. An oil is expressed from the seeds.

Karachi City and seaport of Bombay, India. It was founded in 1843 at the western end of the delta of the Indus. It was for a time the capital of Sind. The city has a fine harbour and a large export trade in wheat. It is connected by railway with the Punjab and is an important air station. Pop. (1931) 263,565.

Karageorgevitch Reigning dynasty of Yugo-lavia. Its founder was a Serbian peasant, Kara George (Black George) Petrovitch (1766-1817). Leading his countrymen against the Turks, he succeeded in throwing off the Turkish yoke, and was proclaimed ruler of Serbia, which, however, again fell into Turkish hands. In 1842 the crown was accepted by his second son, Alexander, but he was deposed in 1858. His son, Peter, became king in 1903, and after the Great War was made King of Yugoslavia. He was succeeded by his second son, Alexander, in 1921.

Karakoram Mountain range of Central Asia. Extending for over

400 m. across N.E. Kashmir, it connects the Himalayas with the Hindu Kush. In it is Godwin-Austen, 28,250 ft., the second highest mountain in the world. Several high but easy passes cross the range. In 1929 part of the range was explored by an Italian expedition.

Karakoram is also the name of an ancient Mongolian city. This was founded by Jenghiz Khan and was at one time the capital of the country. Its site was discovered in 1889.

Karelia Republic of Soviet Russia. It lies to the E. of Finland and covers about 52,000 sq. m., lying between Lake Ladoga and the White Sea. Petrosavodsk is the capital. Pop. 267,500.

Karlsbad Health resort of Czechoslovakia, formerly in Austria. It is now known by its Czech name of Karlovy Vary. It lies on the River Tepla, at a high altitude, among picturesque surroundings, about 70 m. N.W. of Prague. Its warm mineral springs which have been famous since the 14th century, attract a large number of visitors. The buildings include pump rooms and concert halls, and there are gardens and other attractions. There are porcelain works. kaolin being found in the neighbourhood. Pop. (1930) 24,029.

Karlsrune Capital of Baden, Germany. It is about 6 m. from the Rhine and 39 m. from Stuttgart. It is a railway centre and is connected by canal with its port Maxau on the Rhine. The industries include railway engineering, furniture, jewellery, plated goods, gloves and brewing. Pop. 145,700.

Karma Sanskrit noun meaning a deed or action. When applied to the action of a living human being, it is the doctrine that every action, good or bad, receives its reward or punishment. Thus it is bound up with the theory of transmigration, apparently undeserved reward or punishment having been caused by the karma of a previous life. The doctrine is found in the Jain and Buddhist religions.

Karnak Village in Upper Egypt. Situated near the right bank of the Nile, near the modern village of Luxor, it contains some of the most famous ruins in the world. The chief is the great Temple of Amen-Ra, 1200 ft. long. The world's largest temple, it was begun by Senusert I., 12th dynasty, and was enlarged intermittently down to Ptolemaic times. It contains an incomparable hypostyle hall, with numerous scenic reliefs. Other monuments include two obelisks and vast pylons approached by avenues of sculptured rams.

Károlyi **Michael Adam George Niklaus, Count.** Hungarian politician. Born at Budapest, March 4, 1875, he entered Parliament in 1905, and in 1912 changed from Liberal to Radical views. After the outbreak of war in 1914, he tried to conclude a separate peace with the Allies. After the Hungarian revolution of 1918, Károlyi was made Prime Minister, and President in 1919. Unsuccessful in his peace treaty, he had to hand over the government to the Soviet of Bela Kun, and left Hungary for Czechoslovakia. He was found guilty of high treason and felony, and his estates confiscated.

Karri Australian tree (*Eucalyptus diversicolor*). One of the gum trees, it grows to an enormous size in the forests of W. Australia. On account of its hardness the wood is much used for paving blocks and similar purposes.

Karroo Name given to a plateau of the Cape Province in S. Africa. It varies in height from 2000 to 4000 ft. above sea level. It is semi-arid in character but is healthy, and affords abundant food for sheep, both from the pasturage in the short wet season and the succulent shrubs of the dry period.

Kashgar City near the western border of Chinese Turkestan. The centre of a fertile area where grain, cotton, fruit, etc., are grown under irrigation, it is surrounded by barren mountainous country through which passes give access to India to the south and to areas north and west. The Zyzyl River runs through the city which, besides its trade, produces leather work, rough cotton and woollen cloth and has primitive oil refining. Pop. 80,000.

Kashmir Native state of India. It lies to the north of the Punjab and its borders also touch Afghanistan and China. A mountainous area covering 84,258 sq. m., it is traversed by the Himalayas and the Karakoram range, between which lies the fertile valley of the Indus, other important rivers being the Jhelum and the Chenab. The capital is Srinagar, Jammu being the next most important place. The people are chiefly Mohammedans, but the ruler, the Maharajah, is a Hindu. Agriculture is the chief industry and much of the land is forest.

In the Middle Ages, Kashmir under its own rulers, one of whom was Asoka, was a flourishing state. In 1581 it was made part of the Mogul empire, and later it was ruled by the Afghans and the Sikhs. In 1846 it came under British protection. In 1931 there was serious unrest in the state, British troops being sent to restore order. Pop. (1931) 3,330,518.

Kassassin Town of Lower Egypt. On the Suez Canal, it is 22 m. from Ismailia. Here, on Aug. 8 and Sept. 9, 1882, there were fights between the British forces and the Egyptians under Arabi Pasha.

Kassel Town of Prussia, Germany, the capital of the province of Hesse-Nassau. It is on the Fulda, 90 m. from Frankfort-on-Main. There is a picture gallery with some notable paintings, several museums and a library with a fine collection of books and manuscripts. One of the museums, built in the 20th century, contains antiquities found nearby. Kassel has railway workshops, engineering works and manufactures of paper, etc. Pop. 171,700.

Katabolism Term used in biology for the physical and chemical changes in the living body resulting in the breaking down of the tissues into simpler substances. It is the opposite of anabolism, and these two processes are more or less balanced during normal life.

Katrine Lake of Scotland. Mainly in Perthshire, it extends to Stirlingshire, and is drained by the Achray and Black Avon, providing Glasgow with much water. It covers about 5 sq. m., and is famed for its beautiful scenery.

Kattegat Arm of the sea between Denmark and Sweden. It connects with the North Sea through the Skagerak and with the Baltic by means of three channels, called the Sound, the Great

Belt and the Little Belt, which are divided from one another by islands. It is about 150 m. long. Shoals and sandbanks make navigation difficult.

Katydid Name used for certain grasshoppers found in N. America. They make a noise by stridulation which sounds like the words "Katy did."

Kauffer **Edward M'Knight.** American artist and designer. Born at Great Falls, Montana, in 1890, after an eventful life in America he began work at the Art Institute, Chicago, and then worked in Munich and Paris, and settled in London. He became expert at poster designing, and his boldness of design and keen sense of colour are found in the series of London's Underground Railway posters. His woodcut "Flight" (1922) is famous and he has edited *The Art of the Poster* (1924).

Kauffman **Angelica.** Swiss artist. She was born Oct. 30, 1741, in Switzerland. She studied art in Italy, and in 1766 settled in England where she became known as a portrait and decorative painter. In 1768 she was elected one of the original members of the Royal Academy. With Reynolds and others she was chosen to decorate S. Paul's Cathedral, London; but in 1781, after her marriage with Antonio Zucchi, a Venetian painter, she left England for Italy. She died in Rome, Nov. 5, 1807. Some of her work is seen in the large houses of that time.

Kauri Pine New Zealand tree. It reaches a height of 100 ft., with a straight trunk up to 10 ft. in diameter; but large specimens greatly exceed these dimensions. It gives excellent timber, lasting and readily worked. Fossil gum, dug from old forest sites, is used for varnish making.

Kavalla Town of Greece. It lies on the gulf of the same name, opposite Thasos Island; it has a good harbour and trades in tobacco. Bulgaria claimed Kavalla in 1913, thus bringing about the second Balkan War; but it was retained by Greece at the peace of that year. During the Great War it was occupied by the Bulgarians, and in Aug., 1916, was bombarded by British warships. It was given back to Greece in 1918. Pop. 50,000.

Kayak Eskimo canoe usually accommodating only one person. It consists of a wooden frame, about 18 ft. long and 2 ft. wide, covered with skins, which are arranged on the top so as to keep out water.

More modern boats are now common in places.

Kaye-Smith **Sheila.** English novelist. The daughter of Edward Kaye-Smith, a doctor at St. Leonards, she passed her early days in Sussex and soon gained a very intimate knowledge of the people there. In 1908 she published her first novel *The Tramping Methodist*. This was a success and others followed, dealing in the main with Sussex life. They include *Starbrace, Sussex Gorse, Tamerisk Town, Green Apple Harvest, The End of the House of Alard, Saints in Sussex, Iron and Smoke, The Village Doctor, Shepherds in Sackcloth* and *Susan Spray*. In private life Miss Kaye-Smith is the wife of Rev. J. P. Fry.

Kazakstan Republic of Soviet Russia. It is in Central Asia and covers some 1,825,000 sq. m., Kzyl-Orda being the capital. It dates from 1924. Pop. 6,500,000.

Kazan Capital of the Tartar autonomous republic of Soviet Russia. It stands on the Kazan Ra, a tributary of the Volga. It is an industrial town, manufacturing soap, candles, leather, chemicals, etc., and is on the trade routes to the East. It has a university. Pop. 202,000.

Kea New Zealand parrot (*Nestor notabilis*.) It is 17 in. long and has dull, black-edged, olive-green plumage. It frequents the mountains of South Island. Its partiality for the fat of the sheep leads it to attack the living animals, sometimes causing serious loss to farmers. It also feeds on the dead sheep. Its food at other times is fruit, seeds, insects and grubs.

Kean **Edmund.** English actor. Born in London, March 17, 1787, he earned a precarious living, as a boy, at fairs and circuses. In 1814 he appeared on the London stage, where, at Drury Lane Theatre, his Shylock made him famous. With equal success he played other Shakespearean parts, among them King Lear, Othello, Hamlet and Macbeth. He won successes also in plays by Massinger, Sheridan and other dramatists, and was probably the greatest tragic actor of his day. Twice he visited the United States where he had a great reception. In his later days he became very poor, owing largely to his extravagance, but he continued to play until his death at Richmond, March 25, 1833.

Other members of his family won renown on the stage. Kean's wife was an actress, and their second son, Charles John Kean, followed the same profession.

Kearsley Urban district of Lancashire. It is 3 m. from Bolton on the L.M.S. Rly. There are collieries in the neighbourhood and paper, cotton and bricks are manufactured. Pop. (1931), 9736.

Keate **John.** English schoolmaster. Born in 1773, he was educated at Eton and King's College, Cambridge. In 1797 he became a master at Eton, and was appointed headmaster in 1809; under him many salutary reforms were introduced into the school. He is best-known, however, for the frequent and severe floggings which he administered to the boys. In 1834 he resigned. Since 1820 he had been a canon of Windsor, and he held also a living in Hampshire until his death, March 5, 1852.

Keats **John.** English poet. Born in London, Oct. 29 or 31, 1795, he was the son of Thomas Keats, the keeper of a livery stable in Finsbury. He was sent to school at Enfield and was then apprenticed to a surgeon at Edmonton. He became a dresser at Guy's Hospital in 1816, but soon left that profession. In 1817 he published his first volume of poems; in 1818 *Endymion* appeared, and in 1820 *Hyperion and other Poems*. Before this time his health had begun to fail. Never very strong, he was undoubtedly affected by the savage criticisms meted out, in the reviews, to his work, by the death of his brother, Thomas, and by his unrequited love for Fanny Brawne. In 1820 he left England for Italy, but soon after reaching Rome he died, Feb. 23, 1821. He was buried in the Protestant cemetery there.

The longer poems of Keats include *Hyperion, Endymion*, the unfinished *Lamia, The Pot of Basil* and *The Eve of St. Agnes*. His genius,

however, is best revealed in the shorter ones, notably such unique pieces as the odes *To a Nightingale* and *To Autumn*: the sonnet *On First Looking into Chapman's Homer* and the *Lines on a Grecian Urn*. With these may be mentioned the ballad *La Belle Dame sans Merci*.

Much has been written about Keats, whose circle of friends included Shelley and Hazlitt. As a poet he occupies a very high place, one which becomes more secure as the years pass. He is above all the poet of beauty. He was no scholar, but more than any other English poet he caught the Greek spirit which he understood and interpreted with unparalleled fidelity. Later poets owe much to his influence.

The house in Keat's Grove at Hampstead known as Lawn Bank, in which Keats lived from 1817 to 1820, is now a museum dedicated to him. The centenary of his death was celebrated in 1931.

Keble John. English poet and divine. Born at Fairford, April 25, 1792, he was the son of a clergyman. He went to Corpus Christi College, Oxford, and became a fellow of Oriel College. In 1815 he was ordained, and became a curate in a Gloucestershire village, but he retained his connection with Oxford, where from 1831 to 1841 he was Professor of Poetry. In 1835 he married and became vicar of Hursley near Winchester. He died at Bournemouth, March 29, 1866, and was buried at Hursley.

Keble has two claims to fame. He wrote *The Christian Year* which contains some very popular hymns including "Sun of my Soul," and he was one of the founders of the Oxford Movement, which is usually dated from a sermon preached by him at Oxford in 1833. He had a good deal to do with *Tracts for the Times*.

Keble College, in Parks Road at Oxford, was founded in his memory in 1870. The chapel, in which hangs Holman Hunt's "Light of the World," is notable.

Kedge Small anchor with an iron stock. Its uses are to steady a ship when riding in harbour or river, to keep her clear of her bower-anchor when the tide turns, and, cast from a small boat, to enable her to move by warping.

Kedgeree Mixture of rice and fish, augmented by hard-boiled eggs, melted butter or white sauce. In India, rice, spice and shredded onion cooked with butter and the dholi pea are compounded as kedgeree.

Kedleston Village of Derbyshire. It is situated 4 m. from Derby, and is notable for its connection with the Curzon family, who have lived here since the 11th century. Kedleston Hall, the seat of Viscount Scarsdale, is a fine mansion in the classic style designed by Robert Adam.

Keeley Mary Ann. English actress. Born at Ipswich in 1806, she acted under her maiden name of Goward before, in 1829, she married Robert Keeley (1793-1869). Both she and her husband were popular comedians, and she acted in Shakespeare's plays; also in plays adapted from some of Charles Dickens' novels. From 1844-47, the pair were managers of the Lyceum Theatre, London. She died March 12, 1899, at Brompton.

Keeling Islands Another name for the Cocos Islands (*q.v.*).

Keene Charles Samuel. English artist. Born in London, Aug. 10, 1823, he was educated at Ipswich. After a spell in the office of his father who was a solicitor, he was apprenticed to a wood engraver. In 1851 he started to work for *Punch*, becoming a regular member of the staff in 1860 and it is for the excellence of his drawings in that journal that he is chiefly known, although he also illustrated several books. He died Jan. 4, 1891.

Keep Architectural term for the donjon or central portion of a mediaeval castle. It formed the living quarters and was the last refuge for the garrison in war time. The Norman keep was usually of the square type as seen in the White Tower of the Tower of London, but round and polygonal keeps were also common. The keep at Rochester is a fine example.

Keewatin Town of Ontario, Canada. With a station on the C.P. Rly., it is 130 m. from Winnipeg, on Lake of the Woods, and is visited for its fishing and shooting. Here is a large plant for generating electricity. Pop. 1300.

Keewatin was formerly a district of Canada. It had an area of 228,160 sq. m., and reached from the Arctic to Manitoba and Ontario, E. of Hudson Bay. In 1905 it was included in the N.W. Territories, and in 1912 parts of it were given to Manitoba and Ontario.

Keighley Borough and market town of Yorkshire (W.R.). It is 9 m. from Bradford and 205 from London. It stands at the confluence of the rivers Aire and Worth, and is served by the L.M.S. and L.N.E. Rlys., and the Leeds and Liverpool Canal. The industries include the manufacture of woollen and worsted goods, textile machinery and sewing machines. Pop. (1931) 40,440.

Keith Burgh and market town of Banffshire. Old and New Keith lie on the east bank of the River Isla, with Fife-Keith on the west. They are united by two bridges. The town is served by the L.M.S. and L.N.E. Rlys. It has cattle, horse and sheep fairs, and the industries include brewing and distilling. Near are some curious stone circles and the ruins of Milton Tower. Pop. (1931) 4424.

Keith Name of a famous Scottish family, members of which were Earls Marischal for some centuries before 1716. Among its noted members was the soldier **Francis James Edward Keith,** a younger son of the 9th Earl Marischal. He fought for the Jacobites in 1715 and 1719, and afterwards served in the Spanish, Russian and Prussian armies. He was one of the most trusted generals of Frederick the Great, who made him a Field Marshal. He was killed in battle, Oct. 14, 1758.

A sailor, **George Keith Elphinstone,** bore the title of Viscount Keith. Born Jan. 7, 1746, he entered the navy and saw a good deal of service. In 1796 he defeated a Dutch fleet and took Capetown. He helped to put down the mutiny at Spithead in 1797, and served later against the French in the Mediterranean. In 1797 he was made a baron, and in 1814 Viscount Keith. He died March 10, 1823.

Keith Sir Arthur. Scottish scientist. Born at Aberdeen, Feb. 5, 1866, he was educated at the university there and later in London and Leipzig. He became a doctor, and from 1899 to 1902 was Secretary of the Anatomical Society. He was then made conservator of the Museum, and Hunterian Professor at the Royal College of Surgeons,

London. In 1921 he was knighted, and in 1927 became President of the British Association. He has been F.R.S. since 1913, and from 1917-22 was Fullerian Professor at the Royal Institution.

Keith made himself a leading authority on anthropology, on which subject he wrote and lectured a great deal. His books include *The Human Body*, *The Antiquity of Man*, *Engines of the Human Body* and *The Religion of a Darwinian*.

Kelham Village of Nottinghamshire. It is on the Trent, 2 m. from Newark. Here is a factory for dealing with sugar beet which is grown in the neighbourhood. The fine hall is a theological college of the Church of England. Pop. 400.

Keller **Helen Adams.** American blind and deaf mute. Born June 27, 1880, she lost the senses of sight, hearing and smell when 19 months old. Anna Sullivan of the Perkins Institute of the Blind taught her to read by the deaf and dumb alphabet, also writing and typewriting. In 1890 she learned to speak. She graduated with honours at Radcliffe College, Cambridge, Mass., and wrote several books including *The Story of My Life*, 1903, and *The World I Live In*, 1908. In 1932 she visited Scotland to receive honorary degrees at the universities.

Kellermann **François Christophe.** French soldier. Born in Alsace, May 28, 1735, he entered the French Army in 1752 and served in the Seven Years' War. Later he was given a high command in the republican army, and he was responsible for its initial victory at Valmy in 1792. He served under Napoleon in Italy and Germany. In 1803 he was made a marshal, and in 1808 Duke of Valmy. He adhered to the Bourbons after the events of 1814-15 and died Sept. 23, 1820.

Kellermann's son, **François Étienne,** rivalled his father as a soldier. Born in 1770, he entered the army, and in 1796-97 held a command in Italy. He distinguished himself at Marengo and fought in Spain and at Waterloo. He died June 2, 1835.

Kellogg **Frank Billings.** American diplomat and lawyer. Born at Potsdam, New York, Dec. 22, 1856, he was educated in Minnesota, and admitted to the Bar in 1877. He practised in Rochester and St. Paul, and was special counsel in the action to dissolve the Union Pacific and Southern Pacific railway merger. Elected to the Senate, 1917-23, in 1924 he became American ambassador in London, resigning in 1925 to become Secretary of State in President Coolidge's Government, until 1929. Here he won fame as the originator of the **Kellogg Pact,** or Pact of Paris, signed in 1928, a multilateral treaty for the outlawry of war as an instrument of national policy.

Kells Urban district of Co. Meath, Irish Free State. It is on the Blackwater, 10 m. from Navan, and has a station on the Gt. S. Rlys. Here the kings of Meath had a palace, and here in the 6th century S. Columba built a monastery. It was the seat of a bishop from 800 to 1300. The remains include S. Columba's House, a round tower and some crosses. Pop. 2200.

The book of Kells, the finest illuminated manuscript of Irish work extant, was written here in the 8th century. It is now in Trinity College, Dublin.

Kelmscott Press Private printing press founded in 1890 by William Morris. Started in the Upper Mall, Hammersmith, it was removed to Sussex House nearby, in 1891. It was named after the village of Kelmscott in Oxfordshire. Morris aimed at beauty in printing, and produced many remarkable volumes. The wood-blocks are now in the British Museum, London.

Kelp Name given to the porous ash obtained by burning seaweed slowly in shallow pits or special retorts. From it is obtained iodine and alkaline salts. Formerly this was a large industry in Scotland and Normandy, but has declined owing to the production of iodine from caliche in Chile.

Kelpie Scottish water sprite. It is said to appear at fords on stormy nights, frequently in the shape of a horse. It is malignant and bodes evil.

Kelso Burgh and market town of Roxburghshire. Situated at the junction of the Teviot and the Tweed, it is 52 m. from Edinburgh, and is served by the L.N.E. Rly. A fine bridge crosses the Tweed here. It is an agricultural centre, with corn and cattle markets, corn mills and a factory for agricultural implements. Kelso is famed for its Benedictine abbey, founded in 1128. Of this much of the church remains, and it is national property. Pop. (1931) 3855.

Kelty Town of Fifeshire. It is 8 m. from Dunfermline, on the L.N.E. Rly. It owes its existence to the opening of the coal mines in the 19th century. Pop. 7800.

The River Kelty is a tributary of the Forth, and runs for some distance between Perthshire and Stirlingshire.

Kelvin River of Scotland. It rises in the Kilsyth Hills and flows through Glasgow to the Clyde at Partick. Kelvinhaugh and Kelvingrove are districts of the city named after it. In Kelvingrove Park are the buildings of the university and the art galleries. The river is 21 m. long.

Kelvin **Baron.** Scottish scientist. William Thomson was born in Belfast, June 26, 1824, and was educated at the Universities of Glasgow and Cambridge. In 1846, after a brilliant career at Cambridge, he was made Professor of Natural Philosophy at Glasgow where he remained until 1899. From 1900 to 1904 he was President of the Royal Society. In 1892 he was made a baron, and in 1902 he was given the Order of Merit. He died Dec. 17, 1907, when his title became extinct.

As a physicist Thomson was one of the greatest of his time. He studied thermodynamics and then electricity and magnetism, and the results of his work were of the highest importance to industry. They helped to make possible the electric cable and he was responsible for many of the inventions that have extended the general use of electricity. His paper *On Vortex Atoms* and his lectures on molecular dynamics and the wave theory of light contain the results of much of his thought, and have exercised considerable influence on students of a later day.

Kemal **Pasha, Ghazi Mustapha.** Turkish politician. Born in 1880 at Salonika, he became a soldier. In 1915 he commanded the Turkish armies on the Gallipoli peninsula and afterwards made himself a very formidable

figure in public affairs. At the head of a group of nationalists he set up a government at Angora which, in 1922, was strong enough to abolish the office of sultan. At the head of affairs, Mustapha Kemal won a signal diplomatic victory when the Treaty of Lausanne, in 1923, restored to Turkey much of the territory she had lost. In the same year Kemal was chosen president of the republic, which, under his strong rule, made great progress. He was still president in 1936.

Kemalists Turkish nationalists, followers of Mustapha Kemal Pasha. In 1920 the Kemalists set up a national assembly at Angora (now Ankara) which was responsible for the abolition of the sultanate and the caliphate, and the establishment of the republic in 1923. *See* TURKEY.

Kemble **Charles.** English actor. Son of Roger Kemble and brother of Sarah Siddons, he was born Nov. 25, 1775, and educated at Doual. His first stage appearance was at Sheffield in 1793. He subsequently appeared successfully in London, mainly in comedy. He was joint proprietor of Covent Garden Theatre and later an examiner of plays. He died Nov. 12, 1854.

Kemble left two daughters. The elder, **Frances Anne**, or Fanny (1809-93), was long a successful actress. Afterwards she made herself famous by her readings from Shakespeare. She wrote some plays and volumes of memoirs and died Jan. 15, 1893. The younger daughter, **Adelaide** (1814-79), became famous as an opera singer. She died Aug. 4, 1879.

Kemble **John Philip.** English actor. Born at Prescot, Feb. 1, 1757, a brother of Charles Kemble and Mrs. Siddons. Educated for the priesthood, he preferred the stage instead and made his first appearance at Wolverhampton in 1776. In 1783 he came to London, where he achieved great popularity as a tragedian, especially in Shakespearean characters. He was manager of Drury Lane Theatre, 1788-96, and of Covent Garden, 1803-17. He died Feb. 26, 1823, at Lausanne.

Kempis **Thomas à.** German writer. He was born about 1379 at Kempen near Dusseldorf. He was educated at Deventer and about 1400 entered an Augustinian monastery near Zwolle, becoming a monk, and living there until his death in 1471. He rose to be prior.

He made a complete copy of the Bible, and wrote histories, biographies, sermons, hymns, etc. He wrote also several books of devotion, one of which stands out as perhaps the greatest of its kind, *The Imitation of Christ*. It has been translated into many languages, and over 3000 editions have appeared. It was first printed at Augsburg in 1471 or 1472. In Brussels there is a copy written by Kempis himself, while in 1879 a facsimile edition was printed in London.

Kempston Urban district of Bedfordshire. It is on the Ouse, 2 m. from Bedford. Roman and Saxon remains have been discovered here. Pop. (1931), 5390.

Kempton Park District of Middlesex. It is near Sunbury, and is known for its racecourse. In the Middle Ages there was a palace here from which Henry VIII. used to hunt.

Kemp-Welch **Lucy Elizabeth.** English artist. Born at Bournemouth in 1869, she studied at the Herkomer School of Art, Bushey, Herts, and exhibited at the Royal Academy in 1894.

Her paintings of animals, especially of horses, show fine draughtsmanship, a strong sense of colour and good composition. Among her best works are "Colt Hunting in the New Forest" in the Tate Gallery, London; "Summer Drought"; "Horses Bathing in the Sea"; "Lord Dundonald's Dash on Ladysmith"; and "The Harvesters."

Kemsing Village of Kent. It is 3 m. from Sevenoaks with a station on the S. Rly. It is notable as the birthplace of S. Edith. An image of the saint which stood in the churchyard was visited by thousands who believed it had miraculous power.

Ken **Thomas.** English bishop. Born in July, 1637, at Berkhampstead, he was educated at Winchester and Oxford. He held livings in Essex, Hampshire and the Isle of Wight before 1679, when he went to the Netherlands as chaplain to the wife of William of Orange. In 1680 he returned to England and served as chaplain to Charles II., and held a clerical position in Winchester. In 1684 he was made Bishop of Bath and Wells and he was one of the seven bishops who refused to read the Declaration of Indulgence and were therefore tried and acquitted. He refused to take the oath of allegiance to William and Mary in 1689, thus becoming a nonjuror and losing his bishopric. He died at Longleat, March 19, 1711. Ken is best known as the author of two popular hymns, "Awake my Soul" and "Glory to Thee."

Kenchester Village of Herefordshire. It is 5 m. from Hereford and is the site of the Roman town of Castra Magna. Much of it was excavated, 1912-13, and interesting relics were found. Pop. 100.

Kendal Market town of Westmorland, in full Kirkby-in-Kendal, on the River Kent, and the L.M.S. Rly., 21 m. from Lancaster. Here are ruins of a castle. Horse and cattle fairs are held and woollen goods are made, this industry having been introduced by the Flemings in the 14th century. Pop. (1931), 15,575.

Kendal **Dame Margaret.** English actress. Born at Cleethorpes, March 15, 1849, she first appeared in London in 1865, under her maiden name of Margaret (Madge) Robertson. She won her greatest successes in emotional parts. In 1869 she married the actor W. H. Grimston (1843-1917), who took the name of Kendal. With Sir John Hare he was manager of the St. James's Theatre, 1879-88. Mrs. Kendal retired in 1907 and in 1926 was made a dame (D.B.E.). An *Autobiography* appeared in 1933. She died on 14th Sept., 1935.

Kenilworth Urban district of Warwickshire. It is 4 m. from Warwick, on the L.M.S. Rly. It is chiefly famous for its castle, now in ruins. This was added to throughout the centuries, notably by Simon de Montfort, Henry III. who took it in 1266, John of Gaunt, Henry VIII. and the Earl of Leicester, to whom it was given by Elizabeth. It was destroyed during the Commonwealth. The castle was one of the largest and most important in England. The town has a trade in agricultural produce. Pop. (1931), 7592.

One of Scott's finest novels, *Kenilworth*, describes the visit of Elizabeth to the Earl of Leicester in 1575, when she was entertained with great magnificence.

Kenley District of Surrey. It is 17 m. from London, on the S. Rly. The fine common is the property of the city corporation.

Kenmare Market town of Kerry, Irish Free State. It stands on the river of the same name and is reached by the G.S. Rlys., and by canal. It is a popular tourist centre, the attractions including fishing and some wonderful scenery. Near are Dorreen, a seat of the Marquess of Lansdowne, and Dunkerran Castle. Pop. 880.

Kenmare River, really an estuary, 28 m. long and reaching 6 m. wide, separates the counties of Cork and Kerry.

The Irish title of the **Earl of Kenmare** has been borne since 1801 by the family of Browne. The earl's eldest son is called Viscount Castlerosse. The son of the 5th earl, Viscount Castlerosse, made a reputation as a journalist on *The Daily Express*.

Kennedy Scottish family, the head of which is the Marquess of Ailsa. The home of the Kennedys was in Ayrshire and in 1452 Gilbert Kennedy was made a Lord of Parliament. A later Lord Kennedy became Marquess of Ailsa (*q.v.*).

Kennedy **Benjamin Hall.** English headmaster. Born in Birmingham, Nov. 6, 1804, he was educated at Shrewsbury and S. John's College, Cambridge. He became a fellow of his college and a clergyman, and in 1830 a master at Harrow. In 1836 he was chosen headmaster of Shrewsbury, and during the next 31 years he made this school famous for its classical scholarship. In 1867 he became Regius Professor of Greek at Cambridge, and he died April 6, 1889. Kennedy is known for his *Latin Grammar*.

Kennedy's brother Charles Rann Kennedy (1808-67), was also a famous classical scholar at Cambridge, and a fine lawyer.

Kennedy **Margaret.** English novelist. A daughter of C. M. Kennedy, a barrister, she went to Cheltenham College and then to Somerville College, Oxford. She studied history, and in 1922 published *A Century of Revolutions*. In 1924 she made a name with a novel, *The Constant Nymph*, which was equally successful on the stage and screen. Her later books include *Red Sky at Morning*, *Come with Me* and in 1931 *Return I Dare Not*. She is the wife of Mr. David Davies.

Kennedy **Thomas.** Scottish politician. Born in 1876, he became a Socialist and in time was appointed Secretary of the Social Democratic Federation. In 1921 he was elected M.P. for Kirkcaldy and he was re-elected in 1923, 1924, 1929 and again in 1935. In 1921 he was made one of the whips of the Labour Party in Parliament, and in 1924 was a Lord of the Treasury. In 1927 he became chief whip and in 1929 Parliamentary Secretary to the Treasury. In Aug., 1931, he resigned, and at the general election lost his seat, but regained it at the general election of Nov., 1935.

Kennet River of Berkshire. It rises in the Downs in Wiltshire, and passing Newbury enters the Thames at Reading. It is 44 m. long. The Kennet and Avon Canal, the property of the G.W. Rly., connects the river with the Avon at Bath.

Kennington District of London. To the S.E. of the city, it is in the borough of Lambeth. Kennington Park, once known as Kennington Common, was extended in 1931. Here is **Kennington Oval**, the headquarters of the Surrey Cricket Club, which, like much of the property around, is on the estate of the Duchy of Cornwall.

Kennington **Eric Henri.** English artist. Born in London, March 12, 1888, he studied art there. His first important work, "The Costermongers," was exhibited in 1914. It is now in the Luxembourg, Paris. In 1918 he was appointed an official artist on the western front. His works include a painting on glass, "The Kensingtons in Action," war memorials in Battersea Park, London, and Soissons, and the bronze statue of Thomas Hardy unveiled at Dorchester in 1931.

Kenora City of Ontario. It stands on the Winnipeg River, near its source in the Lake of the Woods, and 132 m. from Winnipeg. It has a station on the C.P.R. and is a centre of the lumbering industry. Pop. (1931) 6766.

Kensal Green District of London, to the N.W. of the city. It is chiefly famous for its cemeteries, but is also a busy district along the Harrow Road.

Kensington Borough of the county of London. Known as the royal borough, it lies to the W. of the city. The chief buildings include the Victoria and Albert Museum, the Natural History Museum, the Imperial Institute, the Albert Hall and the fine church of S. Mary Abbots. High Street is a popular shopping centre. The borough also includes Holland Park, Campden Hill and Brompton with its oratory and parish church, near where are Prince's Club and Harrod's Stores and Earl's Court. The Bishop of Kensington is a suffragan of the Bishop of London. Pop. 180,681.

Kensington Gardens is a pleasure resort adjoining Hyde Park. It covers 275 acres and contains the Round Pond and a sunk garden. In it are the Albert Memorial and several statues, including one of Peter Pan.

Overlooking the gardens is Kensington Palace, the birthplace of Queen Victoria. Originally a residence of the Earl of Nottingham, called Nottingham House, it was bought by William III. in 1689 and largely rebuilt by Wren. Features are the gallery, the orangery and the grand staircase. It is now divided into residences for various members of the royal family and others connected with the court.

Kent One of the kingdoms of England in Anglo-Saxon times. It was founded by the Jutes before 500 and had its own kings until about 700, Canterbury being the capital. Later it became part of Wessex. Its most notable king was Ethelbert.

Kent County of England. Its boundaries are the Thames and the sea with Surrey and Sussex on its inland borders. Its extent is 1555 sq. m. and, in the west, it forms part of the London area. Maidstone is the county town. Canterbury is the ecclesiastical capital of England and there is also a bishopric at Rochester. Kent is a fertile and in the main a level county. In the centre are the Weald and extensive areas where fruit and hops are grown, for which the county is famous. There are some hills in the west, Westerham Hill being about 800 ft. high. The chief rivers are the Medway, Darent and Stour. In the east near Dover a coalfield has been opened and model villages, such as Tilmanstone, erected.

Along the estuary of the Thames and on the Medway is a great industrial area, towns therein being Dartford, Erith, Gravesend, Chatham, Rochester and Gillingham. Chatham is also a naval station. Round the coast are watering places, some being on the so-called islands of Sheppey and Thanet. Among these are Herne Bay, Tankerton, Whitstable, Margate, Broadstairs, Ramsgate, Dover, Folkestone, Deal and Romney. Dover and Folkestone are also seaports for Continental traffic. Inland towns include Tunbridge Wells, a watering place, Bromley, Sevenoaks, Ashford, Faversham and Sittingbourne, and there are many picturesque little towns such as Cranbrook and Tenterden. In the south is Romney Marsh. Knole and Penshurst are famous English homes; Walmer, Hever and Leeds are castles of interest and the county is full of historic spots. It sends 11 members to Parliament.

Originally one of the Anglo-Saxon kingdoms, Kent passed under the rule of Wessex about A.D. 700.

Kent is a famous cricketing county, some of the earliest clubs having been founded here and more than once its eleven has won the county championship.

Persons born east of the Medway are Men of Kent; those born west are Kentish Men. Pop. (1931) 1,194,115.

A British cruiser called the *Kent* took part in the Battle of the Falkland Islands in 1914, after which she chased and destroyed the *Dresden*.

Kent Duke of. English title. There was an Earl of Kent in very early times and in the 13th century the title came to Edmund, a son of Edward I. Later it was held by the Holland family and then by the Greys. In 1706 Henry Grey, the 12th Earl, was made Marquess of Kent and in 1710 Duke of Kent. The titles all became extinct when he died in 1740.

In 1799 George III. made his fourth son, Edward Augustus, Duke of Kent. He was born Nov. 2, 1767, and served for a time in the army. He married, in 1818, Victoria (1786-1861), widow of the Prince of Leiningen and their only child was Queen Victoria. The Duke died Jan. 23, 1820. In 1934 Prince George, 4th son of King George V., was made Duke of Kent. *See* GEORGE.

Kentigern Scottish saint. He was born in 518 and was educated at Culross by Saint Servanus. A period of hermitage preceded his elevation to the rank of Bishop of Glasgow. He remained there until his death in 603, except for a few years passed in Wales. Sometimes called Mungo, or the beloved, Kentigern is the Patron Saint of Glasgow.

Kentish Town District of London. To the north-west of the city in the borough of St. Pancras, it is a densely-populated district. The industries include the making of cigarettes, furniture, etc. Here is the North-Western Polytechnic.

Kent's Cavern Cave near Torquay. It is famous for its evidences of Palaeolithic man. The cave was examined first in 1824, but a more thorough exploration was made from 1868 to 1880. Beneath a bed of stalagmite were found various implements of flint, bone and horn, together with the bones of the mammoth and other animals.

Kentucky State of the United States. It is an east-central state, covering 40,598 sq. m. A level and fertile region, except in the east where are the Alleghany Mountains, it produces great quantities of wheat, maize, tobacco, etc., and is famed for its horses. Frankfort is the capital, but Louisville is the largest city. Other populous centres are Covington and Lexington. The chief rivers are the Ohio, Mississippi, Big Sandy and Cumberland. In the state is the Mammoth Cave. Kentucky, which has been a state since 1792, sends two senators and 9 representatives to Congress. State government is carried on by a general assembly of two houses. Pop. (1930) 2,614,589.

Ken Wood Estate at Hampstead, now public property. Sometimes called Caen Wood, a house stood here in the 17th century or earlier. This became the property of the Duke of Argyll and later of the Earl of Bute. In 1755 the 1st Earl of Mansfield bought it and the house was largely rebuilt for him by Robert Adam. It remained a seat of the earls for about 150 years. In the 20th century it was bought by the Earl of Iveagh, who, in 1927, left to the nation the house and some 70 acres of land. The wood proper, previously acquired, was opened in 1925 as a public pleasure ground.

Kenworthy Joseph Montagu. English politician. Born March 7, 1886, the eldest son of Baron Strabolgi, he entered the navy in 1902. Having served through the Great War, he retired in 1920 with the rank of lieutenant-commander. In 1919 he had been elected Liberal M.P. for Hull (Central) and in 1926 he joined the Labour Party, losing his seat in 1931. In the House of Commons he became a pertinacious questioner of ministers. At one time Kenworthy was heavy-weight boxing champion of the navy.

Kenya British colony and protectorate in East Africa. It covers 224,960 sq. m. and has a coastline of about 600 m. on the Indian Ocean. Elsewhere its borders touch Tanganyika, the Sudan, Abyssinia and Italian Somaliland. The surface is hilly and in parts mountainous, Mount Kenya being 17,000 ft. high. The rivers include the Tana, Juba and Umba, and there are several lakes. Nairobi is the capital, but Mombasa is the largest town. Mombasa and Kilindini are seaports; Kisumu is a port on Lake Victoria.

The bulk of the country, the colony, is divided into seven provinces, originally forming the East Africa Protectorate. A strip of land along the coast and some islands, leased from the Sultan of Zanzibar, form the protectorate. The people are chiefly Bantus, but British settlers have taken up land, and there are many Indians and Arabs. Much of the soil is fertile, coffee, cotton, rubber, maize and other tropical products being grown, and there are farms for sheep and ostriches. Much of the land is heavy forest. The government is under a governor, assisted by an executive and a legislative council. Both Indians and Arabs are represented in the latter. The country has a railway system and aerodromes for the air service. The unit of currency is the silver shilling. Pop. (1931) 3,040,960, of whom 16,800 are Europeans.

Kepler Johann. German astronomer. Born at Weil, Dec. 27, 1571, he was educated at the University of Tübingen. In 1594 he went to Graz as Professor of Mathematics and Astronomy, and in 1601 he succeeded Tycho Brahe in a similar position

at Prague. Later he lived at Linz and was astronomer to Wallenstein. He died Nov. 15, 1630.

Kepler did a great deal of valuable work, but his chief title to fame arises from his three laws of planetary motion, which were used to good purpose by Newton, and are the basis of modern astronomy.

Keppel Name of a family famous in the British Navy. A member of the family came to England with William III. and was made Earl of Albemarle. **Augustus Keppel,** a son of the 2nd earl, was born April 25, 1725, and entered the navy as a boy. He saw a good deal of service and rose to be an admiral and commander-in-chief of a fleet. He was an M.P. for some years and in 1782 was made First Lord of the Admiralty and a viscount. He died Oct. 2, 1786.

A later sailor of the same family was **Henry Keppel,** a son of the 4th earl. He was born June 14, 1809, entered the navy in 1822 and lived until Jan. 17, 1904. He held important commands and rose to be an admiral of the fleet. Sir Henry wrote *A Sailor's Life Under Four Sovereigns.*

Kerensky **Alexander Feodorvitch.** Russian leader. He was born in 1881, became a lawyer in Moscow and a leading figure among the reformers and sat in the last Duma. In 1917, when the revolution broke out, he joined the government and, as Minister of War, directed the military operations that were the last efforts of Russia against Germany. Later in the year he became prime minister and then president of the new republic, and was for a time the ruler of the country. The Bolshevists, however, soon proved too strong for him and he escaped from Russia. In 1919 he published an account of his activities called *The Prelude to Bolshevism.* In 1932 he wrote for the Press in London.

Kerguelen Land Island in the Indian Ocean, sometimes called Desolation Land. It covers 1400 sq. m. but is uninhabited. It was discovered by Yves Kerguelen Tremarec, a French sailor, in 1772 and is a French possession, having been annexed in 1893.

A plant called the **kerguelen cabbage** is eaten by sailors as a vegetable.

Kerman City of Persia. It is about 400 m. south-east of Teheran and is the centre where several roads meet. A trading centre, it is famous for its carpets. Kerman is the capital of a province which is noted for its goats and camels. Pop. 40,000.

Kermes Dyestuff resembling cochineal in colour. It is obtained from the dried female scale insects found on a species of oak (*Quercus coccifera*) growing in the Mediterranean region. In Europe Kermes has been superseded by cochineal and the more recent aniline dyes, but is used still in the East.

Kerosene Name given to mineral illuminating oils, especially those derived from petroleum by fractional distillation and commonly known as paraffin oil. Kerosene is a mixture of liquid hydrocarbons with a specific gravity from about 0·780 to 0·830, and for safety in use must have a flashpoint not below 150°C.

Kerry County of the Irish Free State, in the S.W. of the Province of Munster. It covers 1815 sq. m. Tralee is the county town; other places are Killarney and Listowel. The coast is much indented by Kenmare River, Dingle Bay and other openings, and its interior is perhaps the most mountainous part of Ireland, containing McGillicuddy's Reeks and other ranges. The scenery, both coastal and inland, is very beautiful, as around Killarney, Glengariff and other beauty spots and on many rivers and lakes. Kerry includes Valencia and other islands. Agriculture is the chief industry, but there are also some peasant industries. There are many remains of the past in the county and many legends are associated with it. Pop. (1926) 149,171.

The title of **Earl of Kerry** is borne by the eldest son of the Marquess of Lansdowne, at one time a large landowner in the county. It dates from 1722. **Kerry cattle** are a small but fine and hardy breed found in this part of Ireland.

Kesteven One of the divisions of Lincolnshire. It is in the south-west of the county and covers about 750 sq. m. It has its own county council, Sleaford being its county town.

Keston District of Kent. It is 4 m. from Bromley and has become a residential suburb of London. Here is a large common.

Kestrel Genus (*Falco*) of small birds of prey. The common kestrel (*F. tinnunculus*), also called the windhover, is found in Great Britain and other parts of Europe and Asia. The male has black-spotted, reddish plumage, with ashy-grey crown and tail. The bird resembles the falcon and averages about 13 in. in length and feeds on mice and insects and sometimes on young birds. The eggs are red and spotted.

Keswick Market town and urban district of Cumberland. It stands on the Greta, 13 m. from Cockermouth, and is reached by the L.M.S. Rly. Near is Greta Hall, once the residence of Southey. The town is a centre for visitors to the Lake District; it adjoins Derwentwater and Skiddaw is near. Every summer the **Keswick Convention,** an evangelical gathering, is held here. Lead pencils are made in the town. Pop. (1931) 4635.

Ketch Small coasting vessel, fore and aft rigged. It has, in addition to a mainmast, a mizzen mast placed in front of the rudder. A similar rig is adapted for some kinds of yachts.

Ketch **Jack.** Public executioner. He lived in the time of Charles II. and in 1662 was appointed public executioner. He executed Lord William Russell, the Duke of Monmouth and other convicted persons. He died in 1686.

Ketchup Sauce or relish. It is prepared chiefly from mushrooms, tomatoes or green walnuts, salted and spiced, steeped in vinegar, and boiled. It is also spelt catsup.

Ketley Village of Shropshire. It is 2 m. from Wellington and has a station on the G.W. Rly. The chief industry is coal mining. Pop. 2200.

Ketones Series of organic compounds. They result from the oxidation of secondary alcohols, and, unlike the nearly-related aldehydes, do not possess reducing properties. Acetone is, industrially, the most important, being used as a solvent in several manufacturing processes. Other ketones occur as constituents of various essential oils.

Kett **Robert.** English agitator. Born about 1500, he lived at Wymondham, where he became a tanner. He took the lead against the enclosure of common lands. In 1549, with his brother, William, he marched with the rebels to Norwich and in July encamped on Mousehold Heath, where, sitting under a tree, he held courts and heard complaints from the people around. They got possession of Norwich, but on Aug. 26 the rebel force was destroyed by troops under the Earl of Warwick. The Ketts were taken and hanged, Robert being put to death in Norwich, Dec. 7, 1549, after a trial in London.

Kettering Urban district and market town of Northamptonshire. It is 72 m. from London and 14 from Northampton, on the L.M.S. Rly. Wicksteed Park is a public recreation ground. The chief industry is the manufacture of boots and shoes. Pop. (1931) 31,220.

Kettle Hole Natural cavity resembling a kettle's interior. They are due to scouring by detrital materials in eddying currents of water and are found in rocks. Examples occur in Switzerland, Norway and North America.

Kew Suburb of London. It is on the Surrey side of the Thames, 10 m. from London, and forms part of the borough of Richmond. A modern bridge connects it with Brentford. **Kew Green** is an open space and S. Anne's is the chief church. At Kew is the observatory maintained by the Meteorological Office.

Kew is chiefly known for its palace and gardens. The palace was bought by George III. in 1781 and was, for some time, a royal residence. In 1899 it was opened to the public.

Kew Gardens, originally the gardens of the palace and known as the Royal Botanic Gardens, are the chief botanical gardens in England. They cover 288 acres. During and since the 18th century many foreign plants were introduced, and the collection has become quite remarkable. In 1841 the gardens were opened to the public. In the grounds are four museums, the Chinese Pagoda, the Herbarium, Palm House and laboratories. The gardens come under the control of the Ministry of Agriculture as the centre for research into plant life and its possibilities.

Key In architecture a term applied to the central stone (keystone) at the apex of an arch, locking together the component parts.

A **key** is also an instrument for manipulating the bolt of a lock, and a tool for turning a nut.

In music a **key** is a system of sounds related to one certain sound or keynote, and also the lever which raises the hammer in a pianoforte or covers the sound-holes in a flute, etc.

Keyes **Sir Roger John Brownlow.** English sailor. Born in 1872, he entered the navy in 1885. He served for a time as a naval attaché and had commanded submarines when the Great War began. He served both in the North Sea and in the operations against the Dardanelles and in 1917 was made Commander of the Dover Patrol. He was responsible for the raids, in April, 1918, on Zeebrugge and Ostend, being rewarded with a knighthood. At the peace he was given £10,000 and made a baronet. In 1919 Keyes was chosen Commander of the Battle Cruiser Squadron of the Atlantic Fleet; in 1921 he became deputy-chief of the naval staff; in 1925 commander-in-chief in the Mediterranean and in 1929 commander-in-chief at Portsmouth. In 1930 he was made an admiral of the fleet. He struck his flag in 1931. He was elected M.P. for North Portsmouth in 1934, and again at the general election of Nov., 1935. In May, 1935, he was placed on the Retired List.

Keyham District of Plymouth. It stands on the Hamoaze, on the G.W. Rly. and consists chiefly of buildings associated with the naval dockyard. Here is the college at which students are trained to become engineer officers in the navy, accommodating about 350 pupils.

Keyne Welsh saint. She lived as a hermit near Bristol where legend identifies certain local fossils with snakes petrified by her prayers. Another tradition claims her for Cornwall where a well, bearing her name, exists. She lived about 485.

Keynes **John Maynard.** English economist. Born at Cambridge, June 5, 1883, he entered the civil service in 1906 and served in the India Office and the Treasury. In 1919 he represented the Treasury at the Peace Conference in Paris, but soon after he left the service and wrote a criticism of the conference in *The Economic Consequences of the Peace.* He then became bursar of King's College, Cambridge, and chairman of the National Mutual Life Assurance Co. Since 1912 he has edited *The Economic Journal.* In 1926 he published *The End of Laissez Faire* and in 1930 declared in favour of a tariff on imported goods. Another of his books is *A Treatise on Money,* and in 1931 he published *Essays in Persuasion.* Keynes married the Russian dancer, Lydia Lopokova.

Keys **House of.** One of the two branches of the legislature of the Isle of Man. It consists of 24 members, who are elected by men and women electors, for seven years. With the council or upper house, it forms the parliament of the island called the Court of Tynwald.

Keyserling **Hermann.** German writer and philosopher. Born in Estonia, July 21, 1880. He went to several universities, including Heidelberg, and spent several years in the study of science and philosophy. In 1908 he inherited his father's Russian estates and the title of count, but lost the former during the revolution of 1917. He settled at Darmstadt where, in 1920, he founded the School of Wisdom. After having spent much time in travel, he expressed his philosophy of life in the book which made him famous, and which has been translated into English, *The Travel Diary of a Philosopher,* 1925.

Khaki Indian word meaning dust-coloured and denoting various fabrics used for clothing for soldiers. It was first worn by soldiers in India in 1848 and during the Mutiny came further into use. Owing to its useful colour, it was introduced into the British Army during the war with the Boers, 1899-1902. Khaki then became the official field service uniform for almost all the troops and has been adopted by other armies.

Khalifa Title borne by the arch-leader Abdullah el Taashi. He first appeared as one of the advisers of the Mahdi and a leader of those who objected to Egyptian authority in the Sudan. In 1885 he succeeded to the Mahdi's position and ruling the tribes there, he maintained himself at Khartoum and

then at Omdurman until 1898. In September of that year his forces were utterly defeated by the British and Egyptians under Kitchener. He escaped, but on Nov. 24, 1899, was again defeated and killed.

Khan Title used in Asia. It means lord or master and was first used by the Mongol, Jenghiz Khan.

Kharkov Capital of the Ukraine. It is 250 m. from Kiev and is one of the most important trading and manufacturing centres in Russia. Well served by railways, it has a trade in wheat and wool and many manufactures. Its fairs are notable, and it has a broadcasting station (937.5 M., 20 kW.). Pop. 417,200.

Khartum City and capital of the Anglo-Egyptian Sudan. It stands at the junction of the Blue and the White Nile, 1356 m. from Cairo. It is connected by railway with Shellal, on the Nile, with Port Sudan, on the Red Sea and with El Obeid. The city proper lies between the White Nile and the Blue Nile, with a suburb across the latter. Away to the east is Omdurman. Khartum was founded in 1822 and destroyed by the Arabs in 1885. Taken by the British in 1898, it was laid out and rebuilt on modern lines. The buildings include the Anglican Cathedral and the Gordon Memorial College. Pop. 50,463.

Khedive Title borne before 1914 by the ruler of Egypt. A Persian name meaning prince, it was given in 1867 by the Sultan of Turkey to his vassal, Ismail Pasha. In 1914 Turkish rule in Egypt ended and the Khedive was deposed; the ruler's title was then changed to Sultan, and in 1922 the sultan was proclaimed king.

Kherson Town of Ukraine. 90 m. from Odessa, it stands on the Dnieper, being a river port. There are some manufactures and a trade in timber, hides, etc. Pop. 58,800. Another Kherson is 2 m. from Sevastopol in the Crimea.

Khiva City of the Soviet Republic of Uzbekistan. It is 470 m. from Tashkent and is an important trading centre. At one time it was the capital of a khanate, which lay to the north of the Sea of Aral and covered some 24,000 sq. m. It became Russian in 1873. After the Great War it passed under the rule of Bolshevists and was for a time the capital of a small Soviet republic. Pop. 20,000.

Khyber Pass Rocky defile leading from Afghanistan into India. It is 33 m. long and is now the main road from Kabul into the North-West Frontier Province. The railway has recently been continued from Jamrud, 11 m. west of Peshawar, to Landi Kotal overlooking the Afghanistan plains. There was fighting in the pass between the British and the Afghans in 1839-42 and again in 1879-80.

Kiao Chau District in the Province of Shantung, China. In 1898 Germany secured from China the lease of some 200 sq. m. here, on account of the murder of two German missionaries. On this was built the port of Tsingtau which was strongly fortified. On Nov. 7, 1914, after a siege, it was taken by the Japanese and British. The district was ruled by Japan until 1922, when it was returned to China.

Kicking Horse Pass Crossing in the Rocky Mts. in Canada. Situated on the eastern boundary of British Columbia, 5296 ft. above sea level, west of Banff, Alberta, it is traversed by the main line of the Canadian Pacific Railway. The Kicking Horse or Wapta River flows through it.

Kidbrooke District of London. It is in the borough of Greenwich, on the S. Rly., 7 m. from the city. Here is a station of the Royal Air Force.

Kidd **Benjamin.** British sociologist. Born Sept. 9, 1858, after being a clerk in the Civil Service he travelled in America and Canada in 1898, studying economics, and in 1902 did the same in South Africa. In 1904 he published *Social Evolution*, which was translated into many languages, including Chinese. He has also written *The Control of the Tropics* (1898) and *Principles of Western Civilisation* (1902). He died at Croydon, Oct. 2, 1916.

Kidd **William.** Scottish pirate. He was probably born at Greenock about 1660 and became a sailor, seeing a good deal of service on board a privateer in American waters. In 1696 he himself obtained command of a privateer intended to prey upon French commerce, but soon he turned pirate and, in the *Adventure*, did a great deal of damage to English and other shipping. In 1699 he was captured at Boston and sent to England where he was tried and sentenced as a pirate. He was hanged May 23, 1701.

Kidderminster Borough and market town of Worcestershire. It stands on the Stour, near where it falls into the Severn, 15 m. from Worcester and 135 from London, and is reached by the G.W. Rly. The chief industry is the manufacture of carpets. The town has memorials to Richard Baxter and Rowland Hill. Pop. (1931) 28,914.

Kidnapping Forcibly carrying away a human being, especially a child. Originally applied to stealing persons for the plantations in North America, it is now used for stealing a child. It is an offence in Great Britain, under a law of 1861, punishable by penal servitude. Legally it is known as abduction.

Kidney Organ of the body. Comprising a pair of glands in the abdomen, close to the diaphragm and the spine, it eliminates the blood's waste nitrogenous matter in the form of urea and other saline substances dissolved in water. It is bean-shaped and purplish-brown in colour. The two kidneys have abundant nerves, blood vessels and lymphatics, besides filtering and secreting tubes; there normally pass through the duct into the adult bladder 50 oz. or 2½ pints of urine in 24 hours.

The kidneys are subject to a number of diseases, among them Bright's disease and renal calculus.

The kidneys of the lamb, sheep and other animals are articles of human diet.

Kidron Watercourse and torrent bed in Palestine. Rising between Jerusalem and Olivet, it was the "Brook Cedron" of John xviii. It traverses a wild, magnificent gorge, Wady en-Nar, or the "Valley of Fire" and ends in the Dead Sea. During most of the year it is dry.

Kidsgrove Urban district and market town of Staffordshire. It is 6 m. from Stoke-on-Trent and 153 from London, on the L.M.S. Rly. It is also served by the Trent and Mersey Canal. Coal mining is the chief industry. Pop. (1931) 9937.

Kidwelly Borough and market town of Carmarthenshire. It stands on the little River Gwendraeth, near where it falls into Carmarthen Bay, and is 9 m. from Llanelly and 217 from London. The chief industry is the making of tinplate and around are coal mines. Pop. (1931) 3161.

Kiel Town and seaport of Germany, on Kiel Bay, an opening of the Baltic, and 70 m. from Hamburg. It owes its importance to its position at one end of the ship canal, and was, before the Great War, one of the chief stations of the German Fleet. The palace dates from the 16th century and the university from the 17th, but modern buildings have been erected for the latter.

The harbour was much improved after Kiel became Prussian in 1866. It was strongly fortified, but by the Peace Treaty of 1919 the defences were destroyed and the naval establishments turned to commercial uses. It has large shipbuilding yards and huge docks, as well as flour mills and printing works. Fishing is another industry and it is a pleasure resort, its annual regatta being a noted event. There is a large trade in agricultural produce. Kiel was part of Holstein until 1866 and the residence of the dukes of Holstein for many years. It has a broadcasting station (232.2 M., 0.25 kW.). Pop. 213,880.

Kiel Canal Ship canal. Cut through the peninsula of Jutland, it connects the North Sea and the Baltic. Begun in 1887 and finished in 1895 it was deepened between 1909 and 1914 to take the largest vessels. Its length is 61 m. and its depth 45 ft. Kiel is at one end of the canal and Brunsbüttel, on the Elbe, at the other, and there are huge docks at Brunsbüttel and Holtenau. By the treaty of 1919 the canal is open on equal terms to the ships of all nations that are at peace with Germany.

Kieselguhr Material used in making dynamite and some kinds of soap, as a polishing powder, and as packing for articles requiring to be fireproof. Consisting of the remains of diatoms, it is almost wholly silica and is found deposited in certain freshwater lakes in Scotland, Sweden, Germany, and North America, as a greyish or brownish material, sometimes called diatomite.

Kiev Town of Ukraine. It stands on the Dnieper, where it is joined by the Desna, 280 m. from Odessa. There are some manufactures and a large trade in cattle, timber and agricultural produce. An old city, Kiev was at one time the chief town of the principality of Kiev. It was taken by Russia in 1686. During the Great War it was seized by the Germans and later by the Poles. It has a broadcasting station (1034 M., 36 kW.). Pop. 514,000.

Kikuyu Village and district of Kenya, East Africa. The village is 15 m. from Nairobi and is notable because of a conference of missionaries held here in June, 1913. Various Protestant denominations were represented and joined in a communion service celebrated by two Anglican bishops. The Bishop of Zanzibar protested and the Archbishop of Canterbury consulted his colleagues on the matter. After a conference he decided, in 1915, that the two bishops had acted irregularly in giving communion to those who were outside the Anglican Church. He laid it down, however, that this could be done if the bishop of the diocese consented.

Kilbirnie Town of Ayrshire. It is on the River Garnock, 20 m. from Glasgow, and is reached by the L.M.S. Rly. The chief industry is engineering. There are ruins of a castle, at one time a seat of the Earl of Crawford. Near is Kilbirnie Loch. Pop. 8032.

Kilbride Town of Ayrshire. It stands near the coast, with a station on the L.M.S. Rly., 4 m. from Ardrossan. On the coast is a little watering place called Seamill. Pop. 2400.

Kilbride, which means the Church of S. Bride, is properly West Kilbride. East Kilbride is a town of Lanarkshire. There is also a Kilbride in Skye.

Kilburn District of London. To the north-west of the city, it is partly in Hampstead and partly in Willesden. In the 18th century a spa called Kilburn Wells existed here. The district includes Kilburn Park.

Kildare County of the Irish Free State. It is in Leinster, wholly inland, and covers 654 sq. m. The rivers are the Liffey, Boyne and Barrow, and it is served by the Gt. S. Rlys., and the main Irish canals. Kildare is the county town, others being Maynooth, Naas, Athy and Newbridge. The county contains the Curragh and much of the Bog of Allen. It has some ruins, notably those of Monasterevan. Pop. (1926) 58,028.

Kildare St. is a thoroughfare in Dublin. In it is the Kildare St. Club, the most famous of Irish clubs, founded in 1788.

Kildare Market town of Kildare; also the county town. It is 30 m. from Dublin, on the Gt. S. Rlys. Pop. 2116.

Kildare Earl of. *See* FITZGERALD.

Kilimanjaro Mountain of Tanganyika Territory, East Africa. It is an extinct volcano with two peaks, Kibo, the higher, being 19,325 ft., Mawenzi, the lower one, lying about 7 m. to the west. The lower part is a dense forest, the higher portion is covered with snow and glaciers. The top of the mountain was first reached in 1899; in 1927 the ascent was first made by a woman.

Kilkee Watering place of Co. Clare, Ireland. It is 8 m. from Kilrush, on the Gt. S. Rlys. The place is visited for the bathing and the scenery. Near are the ruins of Dunlicky Castle. Pop. 1700.

Kilkenny County of the Irish Free State. Wholly inland, it is in Leinster and covers 796 sq. m. Kilkenny is the county town; other places are Castlecomer, Callan and Thomastown. The rivers are the Barrow, Suir and Nore. The county is level except for a few hills in the north, and the soil mainly fertile. Agriculture is the chief industry, a little coal and marble being mined Pop. (1926) 71,000.

Kilkenny City and market town of Kilkenny, also the county town, and the seat of the Bishop of Ossory. It stands on the Nore, 81 m. from Dublin, by the Gt. S. Rlys. The town is divided by a small stream called the Bregen into two parts, one Irish and one English. Overlooking the city is the castle, the residence of the Marquess of Ormonde. In the neighbourhood are some monastic ruins and the restored Black Abbey. The industries include marble works and flour mills, and there is an agricultural trade. Pop. 10,050.

Killaloe City of Co. Clare, Irish Free State. It stands on the Shannon 17 m. from Limerick. Across the Shannon is Ballina, a bridge linking the two places. The town is visited for the fishing. Pop. 900.

Killarney Market town and urban district of Co. Kerry, Irish Free State. It is 46 m. from Cork, on the Gt. S. Rlys. Killarney House, the seat of the Earl of Kenmare, has beautiful gardens. Pop. 5300.

Near the town are the **Lakes of Killarney**, one of Ireland's beauty spots. They are three in number—the upper, middle and lower. The largest is 4 m. long. The middle one is sometimes called Muckross. Between the upper and middle lakes is the meeting of the waters, really a rapid. The river Flesk flows into the lakes and the River Laune flows out of them. There are several islands including Ross and Innisfallen, the latter once a famous seat of learning. Objects of interest are the ruins of Ross Castle and Muckross Abbey. Near are the Gap of Dunloe and many beauty spots.

Another Killarney is a town of Queensland. It is near the border of New South Wales. Pop. 1500.

Killiecrankie Pass in Perthshire. It is nearly 2 m. in length. The River Garry and a road go through the pass where, on July 17, 1689, Viscount Dundee and his Highlanders defeated an English force, 4000 strong. Dundee, however, was killed in the fight.

Killigrew **Thomas.** English dramatist. Born in London, Feb. 7, 1612, he was a son of Sir Robert Killigrew. He grew up at the court of James I. and Charles I. and became known later by his play *The Parson's Wedding*. In 1673 he was made Master of the Revels to Charles II. He built a theatre in Drury Lane, London. Killigrew died March 19, 1683, and was buried in Westminster Abbey. Altogether he published nine plays and in them women were first allowed to appear on the London stage.

Killingworth District of Northumberland. It is 6 m. from Newcastle, on the L.N.E. Rly. and is a coal mining centre. Pop. 10,600.

Killyleagh Seaport of Co. Down, Northern Ireland. It is 4 m. from Crossgar, on Strangford Lough. Linen is made here. Pop. 1600.

Kilmacolm Watering place of Renfrewshire. It is on the Firth of Clyde, 8 m. from Greenock, by the L.M.S. Rly. Here is a hydropathic establishment. Pop. 5300.

Kilmainham District of Dublin. To the west of the city, it has two famous buildings. One is the prison, built about 1850 and used for political prisoners. In 1882, C. S. Parnell, when in prison here, made the so-called **Kilmainham Treaty** with the British Government, represented by Captain O'Shea. He agreed, in return for his release, to assist the authorities to pacify Ireland. He and his colleagues were released, but the treaty had no other issue because of the resignation of the Irish Secretary, W. E. Forster, and the murder of his successor, Lord F. Cavendish. The other building is the hospital. This was built from designs by Sir C. Wren in 1675-79 and was long used as a home for old soldiers.

Kilmarnock Burgh and market town of Ayrshire. It stands on a tributary of the Irvine, called Kilmarnock Water, 22 m. from Glasgow, by the L.M.S. Rly. Its industries are engineering works and the making of boots, curtains, etc., and there is an agricultural trade. There is a Burns Museum in Kay Park and a Burns Memorial. The burgh includes Riccarton. At one time Kilmarnock was noted for the woollen bonnets made here and named after the town. Pop. 35,000.

The title of **Earl of Kilmarnock** was borne by the family of Boyd from 1661 to 1746. The Boyds owned land in Ayrshire and had a castle at Kilmarnock. William, the 4th earl, was taken prisoner at Culloden, and was executed, Aug. 18, 1746. The title then became extinct. The title of **Viscount Kilmarnock** is now borne by the eldest son of the Earl of Erroll (*q.v.*).

Kilmore Name of several places in Ireland. The most important is 2 m. from Cavan, which has both a Protestant and Roman Catholic bishop. Another **Kilmore** is in Mayo.

The title of **Earl of Kilmore** has been borne since 1822 by the family of Needham, who had lands in Co. Down. In 1625 Sir Robert Needham was made a viscount and in 1822 the 12th viscount was made an earl. The family seat is Mourne Park, Newry, and the earl's eldest son is called Viscount Newry.

Kiln Structure designed for burning, baking or drying materials. In the lime-kiln type, the material comes into contact with the fuel, broken limestone and fuel being fed at the top of the kiln and a red heat maintained for some hours, or continuously in some cases. In another type, the furnace is either beneath or surrounds an oven in which the material is baked or fired. Of this type are brick kilns, pottery and hop kilns. The hop kiln or oast house is provided with a funnel-shaped top which can be turned according to the direction of the wind.

Kilo Greek word for 1000. It is much used in the metric system as in kilogramme, 1000 grammes, kilolitre, 1000 litres and kilowatt, 1000 watts.

Kilometre Measure of length of the metric system. It is equal to 1000 metres or 10 hectometres, and its abbreviation is kilo. or km. Its equivalent in British measure is 0·62137 of a mile, nearly 1094 yards. Countries which have adopted the metric system (*i.e.*, France, Belgium) show road distances in kilometres. The square kilometre is equivalent to 247 acres or 0·3861 of a square mile.

Kilpatrick Old. Town of Dumbartonshire. It is on the Clyde, 10 m. from Glasgow, on the L.M.S. Rly. Legend says S. Patrick was born here. **New**, or **East Kilpatrick**, 6 m. from Glasgow is a suburb of that city. Its other name is Bearsden. **The Kilpatrick Hills** are in the counties of Dumbarton and Stirling.

Kilrush Urban district, market town and seaport of Co. Clare, Irish Free State. It is 27 m. from Ennis. There is a harbour and some shipping and fishing. Pop. 3700.

Kilsyth Burgh of Stirlingshire. It is 13 m. from Glasgow, on the L.N.E. Rly. The chief industry is coal mining. A range of hills near is called the **Kilsyth Hills**. Pop. (1931) 7551.

Near Kilsyth a battle was fought between the Royalists under Montrose and the Covenanters, Aug. 15, 1645. The Royalists were victorious.

Kilt Garment worn sometimes by men in the Highlands of Scotland. Part of the traditional dress of the Highlander, it is really a skirt reaching to the knee, made of tartan, each clan having its own coloured pattern. It is worn by the Highland regiments of the British Army. The kilt is also part of the national dress of Ireland and attempts have been made to revive its use there.

Kilwinning Burgh of Ayrshire. It stands on the Garnock, 24 m. from Glasgow, on the L.M.S. Rly. The industries include engineering works and woollen mills. Kilwinning is famous for its archers and as an early home of freemasonry. Its annual archery festival is described in *Old Mortality*. Pop. (1931) 5324.

Kimberley Name of two English villages. One is in Nottinghamshire, 7 m. from Nottingham, on the L.N.E. Rly. The chief industries are coal mining and brewing. Pop. 5200.

The other **Kimberley** is in Norfolk, 4 m. from Wymondham. Near is Kimberley Park, the seat of the Earl of Kimberley.

Kimberley City of the Cape Province, South Africa. It is in the west of the province, 540 m. by railway from Capetown, and is the most important place in a wide district. The museum contains a fine collection of Bushman art and there is an art gallery. It includes Beaconsfield and Kenilworth. Kimberley owes its existence to the diamond mines, the working of which is the city's main industry. The first was opened in 1870. Pop. 40,000.

In Oct., 1899, the Boers began to besiege Kimberley, which was held by a small British force until relieved on Feb. 15, 1900. The bulk of the defenders belonged to the Loyal N. Lancashire Regiment and the Kimberley Light Horse. Memorial Hill is a reminder of the siege.

Kimberley Earl of. English title borne by the family of Wodehouse. John Wodehouse, a member of an old and influential Norfolk family, was born Jan. 7, 1826, and educated at Eton and Christ Church, Oxford. In 1846 he succeeded his grandfather as Baron Wodehouse.

In politics a Liberal, he was Under-Secretary for Foreign Affairs, 1852-56 and 1859-61. In 1864-66 he was Lord-Lieutenant of Ireland. From 1868-70, having been made an earl in 1866, he was Lord Privy Seal, and in 1870-74 was Secretary for the Colonies. In 1880-82 he was again Secretary for the Colonies and in 1882-85 and 1886 Secretary for India. From 1892-94 he was again Secretary for India and from 1894-95 Foreign Secretary. He was leader of the Liberal Party in the House of Lords from 1896 until his death, April 8, 1902. His son, John, became the 2nd earl.

Kimbolton Market town of Huntingdonshire. It is 10 m. from Huntingdon, on the L.M.S. Rly. It is named after the little River Kym, which flows by it. Pop. 900.

Kimmeridgian Term used in geology. Applied to the dark bluish clay found in Dorset, Yorkshire and other English counties, it is a subdivision of the Jurassic system and belongs to the Upper Oolite series. The name is that of a village in Dorset near which the clay is found. Many fossils have been found in it.

Kimono Japanese garment with sleeves cut in one piece with the gown. It is long and loose and is confined by a sash.

Kin Relationship by blood. The term next of kin is much used in English law. In case of death the next of kin has certain duties. The property of a person who dies intestate is divided among his kinsfolk, according to certain rules. *See* INTESTATE.

Kincardineshire County of Scotland. It is in the east of the country with a coastline on the North Sea, stretching from Aberdeen to Montrose. Its area is 382 sq. m. In the north are deer forests and grouse moors; in the south is the district called Strathmore and in the west and in the centre are the Grampians. Stonehaven is the county town; other places are Inverbervie, Banchory and Laurencekirk. Agriculture is the chief industry, but the only fertile soil is in the valleys. There is some fishing. The county is sometimes called the Mearns. Pop. (1931) 39,864.

Kindergarten German word meaning children's garden. It is used for the system of educating young children, introduced by G. W. Froebel (*q.v.*). The system provides time for play and allows the child to exercise its creative faculties in a number of ways. In England the first kindergarten was opened in London about 1850, and soon they were found all over the land, often as departments of schools for girls.

For **Kindergarten Teachers** courses are provided at the Froebel Educational Institute Training College, Grove House, Roehampton Lane, S.W.15; Maria Grey Training College, Salisbury Road, N.W.6; The Training College, Bedford; and at certain of the two-year Training Colleges special courses in junior work are provided.

Kinderscout Hill in Derbyshire. Near Edale, it is the highest point of the Peak District, being 2088 ft. It is a grouse moor.

Kindersley Sir Robert Molesworth. English banker. Born Nov. 21, 1872, the son of a soldier, he was educated at Repton. He entered a banking firm and became Chairman of Lazard Bros. & Co., and a Director of the Bank of England. During the war period he was Chairman of the National War Savings Committee, and after its conclusion was constantly called to advise the British Government. He represented Great Britain when the Dawes Plan was arranged in 1924, and on other important occasions.

Kinematics Section of mechanics dealing with pure motion, that is, motion without reference to mass or force. It is concerned with direction, acceleration, velocity and composition of motion, and brings into the range of consideration the ideas of time and space in relation to motion. In many ways the distinction between kinematics and dynamics becomes somewhat arbitrary and artificial. Applied kinematics is a theory of mechanics dealing with the conversion of reciprocal into circular motion in an engine.

Kinetics Branch of the science of dynamics that treats of the

action of forces upon the motion of bodies and of the nature of motion itself. Newton's laws of motion, and the fundamental laws by which gravitation and planetary movements are explained, and the theory of vibrations are included under kinetics. The application of kinetics to matter in a gaseous state is termed the **Kinetic Theory of Gases.**

Kineton Village of Warwickshire. It is 9 m. from Stratford-on-Avon, on the Gt. Western Rly. At one time Kineton was a market town. Pop. 1000.

King Name used for a ruler. It was given to the rulers who governed the little states that grew up in England in Anglo-Saxon times and was used as a translation of the Latin word *rex*. There were kings in Greece and Rome and later many of the European countries called their rulers by an equivalent of this word, such as roi and konig.

The early kings were elected, often perhaps from a narrow circle, but later the office became hereditary. Hereditary kingship became the rule in England, Scotland, France, Spain, Portugal, Hungary and Bohemia. Poland retained an elective king. In 1700 the ruler of Brandenburg was made King of Prussia and later the rulers of other German states, Saxony and Bavaria among them, were given the title of king. A king was given to the Netherlands in 1815 and later in the 19th century kings arose in Greece, Rumania, Bulgaria and other parts of the Balkan area, and in Italy. The German kings disappeared after the Great War and in 1931 the King of Spain was deposed. France ceased to be a kingdom in 1852, when Napoleon III. declared himself emperor.

Some kings are kings of the people, *e.g.*, the King of the Hellenes and Louis Philippe when King of the French. Others, such as England, are kings of the land. To-day, king is used very generally as a term for a ruler. The old tribal rulers in Ireland are referred to as kings, and the word is also used for chiefs in Africa and Asia.

King Edward. English bishop. He was born Dec. 29, 1829, a son of the Archdeacon of Rochester. Educated at Oxford, he was ordained in 1854 and served as a curate. From 1858 to 1873 he was at the Theological College at Cuddesdon, first as chaplain and then as principal. In 1873 he was chosen Professor of Pastoral Theology at Oxford and Canon of Christ Church and from 1885 until his death, March 8, 1910, he was Bishop of Lincoln.

King was a prominent High Churchman who exercised a great influence over the students under his care and was remarkable for his personal piety. He is chiefly known for the case in which he was prosecuted before the Archbishop of Canterbury for permitting illegal ceremonial in church. The result was the so-called Lincoln Judgment that laid down the law of the Church of England about these matters.

King **William Lyon Mackenzie.** Canadian politician. Born Dec. 17, 1874, at Berlin, Ontario, he was educated for the law. In 1900 he entered the Ministry of Labour at Ottawa, and for eight years was a civil servant. In 1908 King was elected an M.P. and from 1909-11 he was Minister of Labour under Sir Wilfred Laurier. In 1919, on Laurier's death, he was chosen leader of the Liberal Party and in 1921 he became Prime Minister and Secretary for External Affairs. He left office early in 1926, but soon returned and was again Premier and Secretary for External Affairs, 1926-30. In 1930 his party was defeated and he resigned. Since 1926 he had sat in the House of Commons as one of the members for Saskatchewan. King attended the Imperial Conference in 1923. In Oct., 1935, he again became Prime Minister. His writings are chiefly on industrial subjects, on which he is an authority.

King Bird Name of various American flycatchers. The males, during the breeding season, resist pugnaciously the approach of large birds, even eagles. The commonest are the ashy-grey *Tyrannus carolinensis*, a summer migrant to Canada, and the grey, West Indian petchery (*T. griseus dominicensis*), which is larger, darker and fiercer still.

King Charles Spaniel Breed of toy dog which became fashionable in Charles I.'s reign. Derived from the cocker spaniel, there are two favourite strains, the glossy black-and-tan and the chestnut-red ruby. The dog has a short muzzle, wide eyes, upturned nose, long, silky coat and drooping ears. The tricolour Prince Charles is black, white and tan.

King Edward VII. Land District in the Antarctic Ocean. It lies to the south east of Ross Sea, nearly 2000 m. due south of New Zealand. It was touched at by Sir John Ross in 1842, but was not named until 1902, when R. F. Scott visited it.

Kingfisher Large family of birds allied to the hornbills. With large heads, long, straight bills and small feet, they are often brilliantly coloured. The common kingfisher, *Alcedo ispida*, is Britain's handsomest bird. The female lays two clutches of round, white eggs on unclean nests of disgorged fishbones burrowed in river banks. It lives mainly on fish, but some species live on insects and reptiles. The much larger North American belted kingfisher rarely straggles to Britain. *See* LAUGHING JACKASS.

King George V. Land District in the Antarctic regions. Its coastline was explored in 1911-14. It lies between Adelie Land and Oates Land and is nearly 2000 m. due south of New Zealand. It belongs to Great Britain.

Kinghorn Burgh of Fifeshire. It stands on the Firth of Forth. A monument marks the spot where, in 1286, King Alexander III. was killed by falling from his horse. Pop. (1931) 2001.

Kinglake **Alexander William.** English historian and traveller. Born at Taunton, Aug. 5, 1809, he was educated at Eton and Cambridge, and was called to the Bar in 1837. He travelled throughout the East, and recorded his impressions in *Eothen* (1844). He went to the Crimea in 1854, and at Lord Raglan's suggestion wrote an elaborate *History of the Crimean War*, upon which eight volumes he worked until 1887. He was M.P. for Bridgewater, 1857-68, and died Jan. 2, 1891.

King of Arms Name of a high official in heraldry. It dates from about 1400, and there are now in the British Islands four kings of arms, one for each of the great orders of knighthood. Garter, principal king of arms, is the herald of the Order of the Garter. Bath King of Arms is the herald of the Order of the Bath. The others are the Lord Lyon King of Arms in Scotland, and Ulster King of Arms in Ireland,

who act for the Order of the Thistle and the Order of S. Patrick.

King Oscar Land District of British North America. It is the south-western part of Ellesmere Island and a British possession, although named after a Swedish king.

King Oscar II. Land is in the Antarctic. It lies between Weddell Sea and Bellingshausen Sea, with Graham Land to the south. It was visited and named by the Swedish explorer, Nordenskiold, in 1902.

King Post Vertical beam at the apex of a pair of rafters, connected at its lower end to the tie beam. Struts project diagonally to the centres of the principal rafters when necesssary. This is the normal construction in roofs and bridge girders for spans up to 30 ft.; in wider spans two queen-posts usually replace the king post.

Kings **Books of.** Two books of the Old Testament. They give a history of the Jewish kings from the time of Solomon to the end of the monarchy. The author is unknown; tradition mentions Jeremiah.

The first two chapters of 1 Kings describe the death of David, thus continuing the second book of Samuel and the reign of Solomon. From 1 Kings xii. to 2 Kings xvii. the division of the country into Israel and Judah down to the time of the captivity is outlined; the final chapters of 2 Kings describe the Jewish kingdom to the fall of Jerusalem.

King's Bench Division

In England one of the three divisions of the High Court of Justice. It was at first the court held by the king, who, with the judges, sat on benches. It was held at first wherever he happened to be, but after a time was fixed at Westminster. Judges from this court went round the country to try offenders in the king's name, as they do to-day. In 1873 the court was reorganised and it now consists of 17 or 18 judges, with the Lord Chief Justice at its head. All criminal cases of importance come before these judges, as do civil cases except those concerned with chancery, probate, divorce and admiralty matters.

Kingsbury Urban district of Middlesex. Between Dollis Hill and Wembley Park, it is 7 m. N.W. of London and is served by the Met. Rly. Pop. (1931) 16,636.

Another **Kingsbury** is a village in Warwickshire. It is 124 m. from London, on the L.M.S. Rly. Pop. 1000.

Kingsclere Town of Hampshire. It is 9 m. from Basingstoke. Here is a famous training stable for race horses. The chief industry is brewing. Pop. 2500.

King's College Name given to various English colleges. **King's College, Cambridge,** was founded in 1441 by Henry VI. It is under a provost and has a close connection with Eton. It is noted for its chapel, one of the finest examples of Perpendicular architecture in existence.

King's College, London, is part of the University of London. It was founded in 1829 and the buildings are between the Strand and the Embankment. It is under a principal. Offshoots of the college are **King's College for Women** with buildings in the Strand and on Campden Hill, Kensington; **King's College School,** now at Wimbledon; and **King's College Hospital,** which has a fine range of buildings at Denmark Hill. The college was reorganised in 1908, when these branches were made independent.

Another **King's College** is a university at Halifax, Nova Scotia. It was opened at Windsor in 1790 and remained there until 1923 when, the buildings having been destroyed by fire in 1920, it was removed to Halifax. It then became associated with Dalhousie University.

King's Counsel In England, Scotland and Ireland a barrister, or advocate of superior rank. Any barrister can become a king's counsel on the recommendation of the Lord Chancellor or, in Scotland, of the Lord Justice General. He wears a silk gown and the act of becoming a king's counsel is called taking silk. He sits within the bar and cannot appear in a case unless a junior barrister appears with him.

King's County Former name of the county of the Irish Free State now known as Offaly (*q.v.*).

King's Cross District of London. It is in the borough of St. Pancras, where the Euston Road, Gray's Inn Road, Caledonian Road and other main thoroughfares meet. Here is one of the great London railway stations, now part of the L.N.E. system. King's Cross has also stations on the Met. and tube railways. The district was formerly called Battle Bridge. In 1836 a monument to George IV. and William IV. was erected here and the present name taken. The monument was pulled down in 1845.

King's Cup Name of a prize offered to competitors in yachting and air races. For yachting the cup is given to the winner of a race at Cowes. For aviation it is awarded every year to the winner of an aeroplane race over a course of 700 or 750 miles. The aviation cup was instituted in 1922 and in 1930 was won for the first time by a woman, Miss Winifred Brown. In 1932 Capt. W. L. Hope won it for the third time. The winner in 1935 was Fl.-Lieut. T. Rose.

King's Evidence Name given to a criminal who gives evidence against those associated with him in his offence.

King's Evil Name given in olden times to scrofula (*q.v.*) owing to the belief that sufferers from this disease could be cured by the touch of the king.

Kingsford-Smith Sir Charles E. Australian airman. Born Feb. 9, 1897, in 1928 he piloted the *Southern Cross* in the first trans-Pacific flight. Later he flew from Australia to England (1929), and from Ireland to America (1930) and in 1933 he flew from England to Australia in 7 days. He also made the first west to east Pacific crossing from Australia (1934), and was the first airman to fly round the world. He was knighted in 1932. In Nov., 1935, while attempting another England-Australia flight, he was reported missing in the Burma region, and all search for him and his companion proved in vain.

King's Inn Headquarters of the bar in the Irish Free State. It is conducted very much on the lines of the Inns of Court in London and dates from 1400, or earlier. It derives its name from the fact that Henry VIII. was its patron. The building in Henrietta St., Dublin, was erected in 1800.

Kingsley **Charles.** English clergyman and writer. The son of a

clergyman, he was born at Holme, Devon, June 12, 1819, and educated at King's College, London, and Magdalene College, Cambridge. In 1844 he became curate and then vicar of Eversley. In 1860-69 he was Professor of Modern History at Cambridge, and in 1873 Canon of Westminster. He kept his living at Eversley until his death there, Jan. 23, 1875.

Kingsley was a writer of vigorous, healthy stories, including *Westward Ho* and *Hereward the Wake*. Other novels, *Alton Locke*, *Yeast* and *Hypatia*, deal with social and religious problems. He also wrote a good deal of poetry, including *The Saint's Tragedy*, and two of the world's great books for children, *Heroes* and *Water Babies*. An early advocate of social reform, he was associated with the Christian Socialist movement. He wrote many articles under the name of Parson Lot.

Kingsley's daughter, Mary St. Leger, wrote novels under the name of Lucas Malet. They include *The Wages of Sin* and *Sir Richard Calmady*. She married the Rev. W. Harrison, rector of Clovelly, and died Oct. 27, 1931, at 79. Kingsley's younger brother, **Henry Kingsley**, also won a reputation as a writer. For a time he worked in the gold mines in Australia and was later a war correspondent. His novels include *Geoffrey Hamlyn*, *Ravenshoe* and *The Hillyars and the Burtons*. He died May 24, 1876.

Kingsley **Mary Henrietta.** English traveller. A daughter of G. H. Kingsley, who was a brother of Charles Kingsley, she was born in London, Oct. 13, 1862. Her intrepid journeys in the Dark Continent are described in her *Travels in West Africa*, 1897. She died at Simonstown, S. Africa, while engaged in nursing, June 3, 1900.

King's Lynn Borough, seaport and market town of Norfolk. It is near the mouth of the Great Ouse and is reached by a joint line of the L.M.S. and L.N.E. Rlys. One of the oldest seaports in England, it is full of historic interest. Its old guildhall contains some priceless relics. As a seaport Lynn has lost ground, partly owing to the closing of the river channels by sand. There is, however, some shipping, while fishing and rope making are other industries. Until 1918, King's Lynn, or Lynn Regis, sent one member to Parliament. Fanny Burney was born here. Pop. (1931), 20,580.

King's Messenger Name of four officials in the royal household. Their duties are to carry despatches to ambassadors and other persons in high position. Their badge is a silver greyhound.

King's Prize Prize for rifle shooting. It was first given in 1860 and until 1901 was called the Queen's Prize. The amount is £250, and it is awarded every year, being open to members of the forces throughout the empire. The shooting, which is at various ranges, first took place at Wimbledon, but since 1890 it has been at Bisley. In 1930 it was won for the first time by a woman, Miss M. E. Foster, and in 1931 A. G. Fulton created a record by winning it for the third time. In 1935 the winner was Ar.-Sergt. F. S. French, late Herts Yeo.

King's Proctor In England a high legal official. His business is to watch divorce cases in the public interest and to prevent collusion. His offices are at 12 Old Queen Street, Westminster, S.W.1.

King's Regulations Regulations issued under the authority of the king relating to the British navy, army and air force, covering their general organisation, seniority, leave, ceremonies, discipline, correspondence, financial and other returns, relations with the authorities in foreign places and in the dominions, etc.

King's Speech Address with which the king or his deputy opens each session of Parliament. It is prepared by the Government, and in it their programme for the coming session is outlined. It is read to both Houses assembled in the House of Lords and, after debate, an address of thanks is sent to his Majesty. There are similar speeches in the Parliaments of Canada, Australia, New Zealand and South Africa, where the Governor-General takes the place of the king.

Kingston Name of several places in England. Most are distinguished by an additional word, or words, as **Kingston-upon-Hull**, commonly called Hull (*q.v.*), and **Kingston-upon-Thames**. A smaller example is **Kingston Lacy** in Dorset.

Kingston-on-Soar is a village of Nottinghamshire. It is on the Soar, 10 m. from Nottingham, on the L.M.S. Rly. Here is the Midland Agricultural College. Kingston Hall is the seat of Lord Belper.

Kingston City and seaport of Ontario. It stands at the eastern end of Lake Ontario at the mouth of the Cataraqui River, 175 m. from Montreal. It is reached by both the C.P.R. and C.N.R., and is connected with Ottawa by the Rideau Canal. Flour milling and shipping, for which there are large docks, are prominent industries. Steamers go from here to other places on the Great Lakes and the St. Lawrence. Kingston occupies the site of Fort Frontenac, a frontier post. It was named after George III., and from 1841-44 was the capital of the country. Pop. 25,000.

Kingston City, seaport and capital of Jamaica. It stands on the south-east coast and has a good harbour. Kingston is a big trading centre and has a good deal of shipping. It is well served by railways. In 1907 great damage was done by an earthquake. Pop. 62,700.

Kingston **Duke of.** English title held from 1715-1773 by the family of Pierrepont. In 1627, Robert Pierrepont, a member of an old Nottinghamshire family, was made Viscount Newark, and in 1628 Earl of Kingston. In 1706 Evelyn Pierrepont, the 5th earl, was made Marquess of Dorchester and in 1715 Duke of Kingston. He was succeeded by his grandson, upon whose death in 1773 the titles became extinct. The estates passed to a nephew, Charles Meadows, who took the name of Pierrepont and was created Earl Manvers in 1806. The duke's seat was Thoresby, near Mansfield.

An Irish title of **Earl of Kingston** has been borne by the family of King since 1768. The family seat is Kilronan Castle in Roscommon, and the earl's eldest son is called Viscount Kingsborough.

Kingston **William Henry Giles.** English writer. Born in London, Feb. 28, 1814, he was the son of a merchant who lived in Oporto. His first success came with his story for boys, *Peter the Whaler*, in 1851, and soon he became one of the most popular writers of adventure stories. Among them were *The Three Midshipmen* and *The Three Admirals*.

Over 150 others including *From Powder Monkey to Admiral*, which ran as a serial in the *Boy's Own Paper*. He died Aug. 5, 1880.

Kingston-upon-Thames

Borough and market town of Surrey, also the county town. It is a boating centre on the Thames, 12 m. from London, on the S. Rly. Saxon kings were crowned here and the coronation stone is a feature of the market place. The industries include brewing. There is a fine church. Kingston Hill is a favourite residential area. Pop. (1931) 39,052.

Kingstown Seaport of the Irish Free State, called by the Irish, Dun Laoghaire. It is on Dublin Bay, 6 m. from Dublin, on the Gt. S. Rlys. Mail steamers run twice daily between Kingstown and Holyhead. There is a good harbour with two long and massive piers. Kingstown is also a pleasure resort and an urban district. The name of Kingstown was given to the place in 1821 when George IV. landed here. Pop. 19,000.

Kingstown is also the name of the capital of St. Vincent, Windward Islands.

Kingswood Urban district of Gloucestershire. It is practically a suburb of Bristol and is a coal mining area. Pop. (1931) 13,297.

Another **Kingswood** is a district in Surrey. It is 22 m. from London, on the S. Rly. A third **Kingswood** is a village in Gloucestershire.

Kingussie Pleasure resort of Inverness-shire. It is on the Spey, 46 m. from Inverness, on the L.M.S. Rly. Pop. 1200.

King William's Town Town of Cape Province, S. Africa. It stands on the Buffalo, 42 m. from East London. The centre of an agricultural area, it has a botanic garden and is known locally as King. Pop. (1931) 6542 (European).

Kinkajou Small cat-like mammal, *Cercoleptes caudivolvulus*. It is known also as the Tree-Bear, and belongs to the raccoon family. A native of Central and S. America, it is covered with soft, yellow-brown fur, and its tail is long and prehensile.

Kinmel Park Estate in Denbighshire. It is 4 m. from Rhyl. During the Great War a camp was formed here, and in 1919 this became a demobilisation centre. In 1929 the house and grounds were bought for a public school which aims at training boys for commercial life.

Kinnaird **Baron.** Scottish title borne by the family of Kinnaird. Sir G. P. Kinnaird, M.P., became the first baron in 1682. The 11th baron, Arthur Fitzgerald Kinnaird, who succeeded to the title in 1887, was a prominent footballer and a leader of the Evangelical Party, being president both of the Y.M.C.A. and the Football Association. The family seat is Rossie Priory in Perthshire.

Kinnoul **Earl of.** Scottish title borne by the family of Hay. Sir George Hay, Lord High Chancellor, was made an earl in 1633. The family seat is Balhousie Castle, Perthshire, and the earl's eldest son is called Viscount Dupplin.

Kino Gum of commercial and medical value. One kind is obtained from a tree that grows in India and another from an African tree. It is obtained by cutting the bark, and comes out dark red in colour. It is soluble in alcohol. Being an astringent, kino is used in tanning and dyeing, especially the dyeing of cotton. It is also used in making wine and in a gargle for the throat.

Kinross Burgh and county town of Kinross-shire. It stands on Loch Leven and is on the L.N.E. Rly. Pop. (1931) 2525.

Kinross-shire County of Scotland, between Fifeshire and Perthshire. It has an area of 82 sq. m. In the county is Loch Leven. Kinross is the county town. Except in the south the surface is flat. The chief river is the Devon. The county joins with a division of Perthshire to send a member to Parliament. Pop. (1931) 7454.

Kinsale Urban district, market town and seaport of Cork, Irish Free State. It is 24 m. from Cork by the Gt. S. Rlys. Fishing is the chief industry. Kinsale Harbour, which is really the estuary of the Bandon River, is a fine and protected sheet of water. Pop. 2750.

Off the Old Head of Kinsale, a headland to the S.W., the *Lusitania* was sunk in 1915.

Kintyre District of Argyllshire, sometimes spelled Cantyre. It is a peninsula in the south of the county, between the Firth of Clyde and the Atlantic. It is 38 m. long and at its southern point, called the Mull of Kintyre, is a lighthouse. The coast of Antrim is only 13 m. away.

Kipchak Central Asian nomads of Altaian stock, more or less mongolised. Found mostly in the Soviet Republic of Uzbekistan, they comprise both the middle horde of the Kirghiz-Kazaks, descended from the mediaeval White Horde, and the Kazan Tartars descended from the Golden Horde.

Kipling **Rudyard.** English writer. He was born in Bombay, Dec. 30, 1865, son of John Lockwood Kipling. He was sent to England and went to the United Services College, Westward Ho! In 1882 he returned to India.

In 1881 Kipling published a volume called *Schoolboy Lyrics*, but more important was the journalistic work he did between 1882 and 1890. This gave him a wide knowledge of Anglo-Indian and Indian life. In 1885 he contributed short stories to the *Civil and Military Gazette* at Lahore, and for a library of books issued by the firm of Wheeler, at Allahabad, he wrote many others. These are contained in the volumes *Plain Tales from the Hills*, *Soldiers Three*, *The Story of the Gadsbys*, *Wee Willie Winkie*, *The Phantom Rickshaw*, *Under the Deodars* and *The City of Dreadful Night*. The stories revealed Indian life to English readers in a new light, and on them the foundations of Kipling's fame were securely laid. In 1890 he published a powerful novel, *The Light that Failed*.

In the next 40 years, after he left India, Kipling was very busy, and the high quality of his work placed him in the forefront of English men of letters. His books are on a great variety of subjects, but each displays his uniquely individual touch. *From Sea to Sea* contains impressions of his travels. His verses are in *Barrack Room Ballads*, *The Seven Seas*, *The Five Nations* and *The Years Between*. His two *Jungle Books* are remarkable productions, and with them may be mentioned *Puck of Pook's Hill* and *Rewards and Fairies*, both written for children.

Volumes of short stories followed his early

ones. *Life's Handicap* and *Many Inventions* are chiefly Anglo-Indian in subject matter. Later came *The Day's Work. Traffics and Discoveries, Actions and Reactions, Debits and Credits, A Diversity of Creatures* and *A Book of Words. Stalky and Co.* relates the story of his schooldays, *Sea Warfare* deals with episodes in the Great War, on which he wrote other volumes. *Kim*, a novel, and the *Just So Stories* are almost as good as his best work. He wrote also *The History of the Irish Guards*, and with C. R. L. Fletcher *A History of England*. In 1930 he published *Thy Servant a Dog*, and in 1932 a new volume of stories, *Limits and Renewals*. In 1922 he was elected Rector of St. Andrews University, and delivered an address on Independence. His many honours included the Nobel Prize for literature in 1907. He died in Jan., 1936, and was buried in Westminster Abbey.

In 1892 he had married Caroline Balestier, and settled in Sussex. Their only son, **John Lockwood Kipling**, an officer in the Irish Guards, was killed in the Great War.

Kipper Originally a male salmon, dried and cured. The word is now used for a herring, split open and smoked.

Kirghiz Soviet republic in Asia. It is a district around the Sea of Aral and east of the boundary between Europe and Asia. It is divided into Kara Kalpakia and Kirghizia. The capital is Frunze. It covers 95,000 sq. m. and its population is 997,500. The republic, which is federated to the union at Moscow, was created in 1927. The name is that of the Kirghiz, a Mongol people who have long lived in this part of Asia.

Kirjath Hebrew word for "city" occurring in several Biblical place names. **Kirjath-jearim**, the city of woods, also called **Kirjath-baal**, is near Bethshemesh and was the resting place of the Ark of the Covenant before the Temple was completed at Jerusalem (1 Sam. vi., 1 Chr. xiii.). **Kirjath-sannah** and **Kirjath-sepher** were older names for the Canaanite town Debia, north of Beersheba (Josh. xv.). *See* HEBRON.

Kirkburton Urban district of Yorkshire (W.R.). It is 5 m. from Huddersfield, on the L.M.S. Rly. The chief industries are woollen mills and coal mines. Pop. (1931) 3184.

Kirkby in Ashfield Urban district of Nottinghamshire. It is a coal mining centre, on the L.M.S. and L.N.E. Rlys. Pop. (1931) 17,798.

Adjoining is **Kirkby Bentinck**, a new mining centre on the L.M.S. line.

Kirkby Lonsdale Market town and urban district of Westmorland. It stands on the Lune, 12 m. from Kendal, on the L.M.S. Rly. The bridge across the river dates from the 14th century. The town is the Lowton of *Jane Eyre*. Pop. (1931) 1370.

Kirkby Moorside Market town of Yorkshire (N.R.). It stands on the Dove, 29 m. from Whitby, on the L.N.E. Rly. The town is an agricultural centre. Pop. 1695.

Kirkby Stephen Market town of Westmorland. It stands on the river Eden, 10 m. from Appleby, on the L.M.S. Rly. Agricultural fairs are held. Pop. 1540.

Kirkcaldy Burgh, seaport and market town of Fifeshire. It stands on the Firth of Forth, 26 m. from Edinburgh, on the L.N.E. Rly. The chief street of the burgh is 4 m. long and Kirkcaldy is known as the "lang toun." The industries include the manufacture of linoleum, oilcloth and linen; there is also some shipping for which there are modern docks. Adam Smith was born here. Pop. (1931) 43,874.

Kirkcudbright Burgh, seaport and market town of Kirkcudbrightshire; also the county town. It stands at the mouth of the Dee, 30 m. from Dumfries, on the L.M.S. Rly. A fine bridge crosses the Dee, and there is a good harbour on Kirkcudbright Bay. Pop. (1931) 2311.

Kirkcudbrightshire County of Scotland. It is in the south west, covers 900 sq. m., and has a long coast line on the Solway Firth. Kirkcudbright is the county town; other places are Newton Stewart and Castle Douglas. Most of the area is mountainous. The Dee, Cree, Ken and Ure are the chief rivers and there are a number of lochs and much picturesque scenery. Agriculture is the principal industry. The county was ruled by the great family of Douglas, who had a castle at Threave. Later the Kings of Scotland appointed a steward to look after it, and this post was held by the Maxwells until 1747. Hence it is sometimes called the Stewartry. It unites with Wigtownshire to send a member to Parliament. Pop. (1931) 30,311.

Kirkdale Village of Yorkshire (W.R.). It is 8 m. from Pickering. There is a Saxon church. In a cave discovered here in 1821 have been found the fossilised bones of the rhinoceros, and other animals extinct in Great Britain. Another **Kirkdale** is a suburb of Liverpool.

Kirke **Percy.** English soldier. Born about 1645, he fought in the war against France. After serving in 1681-4 at Tangier, of which for a time he was Governor, he raised a regiment (now the Royal West Surreys) which fought at Sedgemoor, and in Ireland for William III. The men were called **Kirke's Lambs**, because of the lamb on the regimental badge, and their cruelties after Sedgemoor made these lambs notorious. Kirke died at Brussels in Oct., 1691.

Kirkham Urban district and market town of Lancashire. A cotton and flax manufacturing centre it is 8 m. from Preston, on the L.M.S. Rly. Pop. (1931) 4031.

Another **Kirkham** is a village of Yorkshire (E.R.). It is on the Derwent, 16 m. from York, on the L.N.E. Rly. The remains of an abbey, now public property, include the gatehouse and the cloisters.

Kirkheaton Urban district of Yorkshire (W.R.). It is 2 m. from Huddersfield on the L.M.S. Rly. Woollen goods are manufactured. Pop. (1931) 2610.

Kirkintilloch Burgh of Dumbartonshire. It is 8 m. from Glasgow and is served by the L.N.E. Rly. and a canal. There are iron founding and chemical industries. Pop. (1931) 11,817.

Kirk Kilisse Town of Greece. In Turkey before 1918, it is 30 m. from Edirne (Adrianople, on the railway to Istanbul. In Oct., 1912, during the first Balkan war, it was the scene of a decisive Bulgarian victory over the Turks.

Kirkliston Town of Linlithgowshire. It is 9 m. from Edinburgh, on

the L.N.E. Rly. The little river Almond passes it. The chief industry is distilling and oil mining. Pop. 3700.

Kirkoswald Village of Cumberland. It is on the Eden, 15 m. from Carlisle. Another **Kirkoswald**, a village in Ayrshire, is associated with Burns and his Tam o' Shanter.

Kirkstall Suburb of Leeds. Here are the ruins of a famous 12th century Cistercian abbey. The remains include the roofless church, chapter house, refectory and other buildings. Kirkstall is on the L.M.S. Rly.

Kirkstone Pass in the Lake District. It is between Red Screes and Caudale Moor, and is 1500 ft. at the top.

Kirkwall Burgh and seaport of the Orkney Islands, also the county town. It stands on Mainland, or Pomona. Pop. (1931) 3517.

Kirriemuir Burgh of Angus. It is 8 m. from Forfar, on the L.M.S. Rly. Its chief industry is weaving. Sir J. M. Barrie was born here, and it is the Thrums of his stories. Pop. (1931) 3326.

Kirton Town of Lincolnshire. It is 4 m. from Boston, on the L.N.E. Rly. Pop. 2400.

It is sometimes called **Kirton-in-Holland**, to distinguish it from **Kirton-in-Lindsey**, which is also on the L.N.E. Rly., and 6 m. from Brigg. Pop. 1600.

Kish Ancient city in Mesopotamia. It was a centre of Akkad culture and recent excavations have revealed a great temple and a cemetery.

Kishon River of Palestine. It flows through the country to the Mediterranean Sea which it enters near Acre. On its banks Sisera was defeated (Judges iv.), and the prophets of Baal were killed by order of Elijah (1 Kings xviii.).

Kismet Moslem term for fate, or destiny. A play by Edward Knoblock (*q.v.*), is called *Kismet*.

Kitchen Room in a house or hotel where food is prepared. It is usually fitted with a range or cooking stove and has shelves, cupboards and other receptacles for crockery. In many houses a scullery serves as an adjunct. In large hotels the kitchens are great rooms with elaborate fittings. Some old kitchens with cooking implements of a bygone age, like that at Christ Church, Oxford, are very interesting. In times of need municipal kitchens are opened, where food is supplied free or where poor persons can cook their own food.

A **kitchen garden** is a garden where vegetables and fruit are grown.

A **kitchen midden** is the name given to mounds of domestic refuse left by prehistoric people. Anthropologists and archaeologists have made valuable discoveries about early man by examining them.

Kitchener City and river port of Ontario. Formerly called Berlin, it is 62 m. from Toronto, on the C.N.R. and C.P.R. The electric railways, trams and factories obtain their power from Niagara. Furniture is made, sugar is refined and there are agricultural industries. Pop. (1931) 30,793.

Kitchener Earl. English soldier. Horatio Herbert Kitchener was born in Co. Kerry, June 24, 1850, the son of Lieut.-Col. H. H. Kitchener. After a course at Woolwich, he joined the Royal Engineers in 1871. He volunteered to serve in France during the war against Germany, but saw no fighting. From 1874-78 he was employed by the Palestine Exploration Fund, and from 1878-82 he was surveying in Cyprus. In 1882 he became an officer in the Egyptian army, and served in the campaigns in Egypt and the Sudan between that year and 1889, including the expedition for the relief of Gordon.

In 1892 Kitchener was made Sirdar, or Commander of the Egyptian Army, and in that capacity did a great work. He reorganised the forces and was responsible for the successful expedition to Dongola in 1896, and the victories at the Atbara and Omdurman that destroyed the power of the Mahdi and restored Khartum and the Sudan to British influence. He was made a baron and granted £30,000. In Dec., 1899, Kitchener left Egypt to serve as chief of the staff to Lord Roberts in S. Africa. He helped to change the fortunes of the struggle with the Boers, and, having succeeded Roberts as commander-in-chief, finished the war and assisted in making peace. He was then made a viscount and given £50,000 and the Order of Merit. From 1902-09 he was commander-in-chief in India, where he left his mark upon the organisation of the army.

In 1911 Kitchener returned to Egypt, this time as agent and Consul-General, and he was holding that position in 1914, although he was temporarily in England. On Aug. 5, having been made an earl, he was appointed Secretary for War, and he set to work to raise the force known as **Kitchener's Army**. In 1915, not altogether comfortable in his position (for, while seeing from the first the gravity of the outlook, he, like others, failed to grasp some of the essential and novel features of the tremendous struggle), he permitted some of his duties to be transferred to others and on June 5, 1916, he was sent on a mission to Russia. On the same evening his ship, the *Hampshire*, was lost; some say she struck a mine, and Kitchener was among the drowned.

Kitchener was unmarried and his titles and also his residence, Broome Park, Kent, passed to his elder brother, **Henry Elliott Chevallier Kitchener** (b. 1846), whose eldest son, called Viscount Broome, died in 1928.

There are various memorials to Kitchener, one being in St. Paul's Cathedral, another on the Horse Guards Parade, London, and a third at Marwick Head, near where he was drowned. Money raised by a national fund was devoted to founding scholarships of £150 a year. These are to train young men for commercial life and were at first given to those who had served in the Great War.

Kite Sub-family of birds of prey, particularly the common glede or red kite of Europe and N. Africa. This has reddish-brown plumage, but is now almost extinct in Britain. It is about 24 in. long and feeds on small birds and insects. The **black kite**, a rare visitant, and the **Egyptian** and **Indian pariah kites** are useful scavengers.

Kittiwake Bird belonging to the gull family. In colour it is white with a yellow bill. It is found chiefly in the N. Atlantic, breeding in Greenland and Spitsbergen (Svalbard), and visits the coasts of Britain. Occasionally it breeds in Britain. It feeds on fish and makes its nest in the cliffs. A variety with red legs is found in the N. Pacific. The young kittiwake is called a **tarroch**.

Kiwi New Zealand bird (*Apteryx*). There are three species, *A. mantelli*, *A. aus-*

tralis and *A. oweni*. They are rare and nocturnal, brown in colour with a long beak and only rudimentary wings, laying very large eggs for their size, which is about that of the common fowl.

Kleptomania Form of aberration exhibited in an uncontrollable propensity to steal. It sometimes attends epileptic insanity.

Klerksdorp Town of the Transvaal, S. Africa. It is 29 m. by railway from Potchefstroom, and is the oldest Boer settlement in the Transvaal. A stream divides the old village from the new town. Around the town are gold mines, and it is also an agricultural centre with important cattle markets. Near are irrigation works. Pop. (1931) 3600 (European).

Klip River of Natal, S. Africa. It rises in the Drakenberg Mountains and joins the Tugela near Ladysmith. The district around Ladysmith is called the **Klip River district.**

Klipspringer Small variety of antelope. It is found in Africa, especially in rocky districts, and is an exceptionally good climber. Its name means rock jumper.

Klondyke River of the Yukon Territory, Canada. It joins the Yukon near Dawson City. In 1896 the discovery of gold in the Klondyke and its feeders caused much excitement. The district along the river is also called Klondyke.

Klopstock **Friedrich Gottlieb.** German poet. Born at Quedlinburg, July 2, 1724, he was educated for the Church at Jena and Leipzig. Instead, however, of becoming a pastor he devoted himself to writing religious poetry. He lived at Copenhagen on a pension granted to him by the King of Denmark and died at Hamburg, March 14, 1803. Klopstock's great work, *Der Messias*, was begun in 1748 and finished in 1773.

Kluck **Alexander von.** German soldier. Born May 20, 1846, he fought against Austria in 1866 and against France in 1870-71, being wounded at Metz. In 1906 he became a general. In 1914, when he was inspector general of the three army corps centred in Berlin, he was given command of the army that invaded Belgium. He entered Brussels, won other victories and marched towards Paris. He was attacked on the Marne and driven back to the Aisne, where his army entrenched itself. In 1916 he retired, and in 1920 he issued a book translated into English as *The March on Paris*.

Knacker (Icelandic *knakkr*, a saddle). Dealer who traffics in old or disabled horses. By English law a knacker must kill the horse delivered to him within two days. He is forbidden to work any horse sent to him, or to sell it alive, and he must keep a careful record in his books of the animals delivered to him. He must not kill any animal within sight of another animal waiting to be killed, nor must he cut off any of its hair before it is killed.

Knapweed (*Centaurea nigra*). Perennial plant of the order *Compositae*. Found in waste places and on dry meadowland it is two or three feet in height with hairy stems and small rough leaves. The flower heads, which resemble thistles, are bright purple in colour. It is sometimes known as the **greater knapweed.**

Knaresborough Market town and urban district of Yorkshire (W.R.). It is on the Nidd, 4 m. from Harrogate, on the L.M.S. Rly. The ruined castle is finely placed above the river. Near the bridge are St. Robert's Chapel, an old shrine, and the Dropping Well. St. Robert's Well is associated with the crime of Eugene Aram. Mother Shipton is also connected with the town. Pop. (1931) 5942.

Knebworth Village of Hertfordshire. It is 25 m. from London, on the L.N.E. Rly. Here is Knebworth House, the seat of the Earl of Lytton. The estate with its extensive grounds has been in the family since about 1500. The eldest son of the Earl of Lytton is called Viscount Knebworth.

Knee Joint Joint in human beings and other animals. It is formed by the femur or thigh-bone, the flattened top of the tibia or main bone of the lower leg, and the patella or knee cap. Powerful muscles, specially adapted to maintain man's erect attitude, permit of bending the knee and straightening the leg in a direct line, each movement being accompanied by a slight rotation. The joint is surrounded by a system of strong ligaments, lined with a synovial membrane producing lubricating fluid. Two internal ligaments cross between the two bony prominences at the end of the thigh-bone. Dislocation of the joint is rare, but cartilages may be ruptured or displaced.

Kneller **Sir Godfrey.** English painter. Born at Lubeck, Aug. 8, 1646, he studied art in Italy, and in 1676 settled in London. He was appointed court painter by Charles II., and worked in England until his death. Kneller painted portraits of the ladies of the court of Charles II. and his successors to George I.; also Louis XIV. and Peter the Great. He also painted Sir Isaac Newton, and the 48 members of the Kit Kat Club. He was knighted in 1691 and died Oct. 19, 1723.

Kneller Hall, Twickenham, is the headquarters of the Royal Military School of Music.

Knickerbocker Surname, originally Knickerbacker, of a Dutch colonist in New York in the 17th century. From a prominent descendant Washington Irving borrowed the pen-name Diedrich Knickerbocker when writing his burlesque *History of New York*, 1809.

Knight One who has received the honour of knighthood. The earliest knights were members of an order, such as the knights of the hospital of S. John and he Knights Templars. Others were made knights by the king or other high personage, usually for deeds of valour. The custom grew up of addressing a knight as sir before his Christian name and this is the usual title of all knights unless, as with some members of the great orders of knighthood, they hold a higher one.

There are ten classes of knights, all being created by the sovereign. Three belong to the great orders of knighthood, garter, thistle and S. Patrick, but most of these are peers. Six other orders, Bath, Star of India, S. Michael and S. George, Indian Empire, Royal Victorian Order and Order of the British Empire, consist of knights and members of lower rank, such as commanders and companions. The knights are called sir and use the letters G.C.M.G., K.C.B., K.B.E., or others indicating the order and rank. The equivalent of knight in the orders that admit women to

membership is dame. The tenth class consists of knights bachelor. They belong to no order, but have a society of their own at 21 Old Buildings, Lincoln's Inn, London, W.C. In 1926 they secured the right to a distinctive badge. Persons knighted for services of a civic nature are usually made knights bachelor.

The wife of a knight is strictly speaking a dame, but in practice is addressed as lady. Knighthood is not hereditary. Some Irish chiefs are called by courtesy knights, *e.g.*, the Knight of Kerry, and the title is used by the order of S. John of Jerusalem and the Primrose League.

Knight **Charles.** English publisher. The son of a bookseller and printer, he was born at Windsor, March 15, 1791, and joined his father in business. In 1811 they founded a local newspaper which Knight edited until 1821. In 1822 he moved to London and became a publisher. He started *Knight's Quarterly Magazine*, but is better known for the cheap literature he issued such as *The Penny Magazine* and *The Penny Cyclopaedia*. He worked in association with the Society for the Diffusion of Useful Knowledge and became publisher of *The London Gazette*. Knight was also an author and wrote *A Popular History of England* in eight volumes, lives of Shakespeare and Caxton, and the autobiographical *Passages of a Working Life*. He died at Addlestone, March 9, 1873.

Knight **Dame Laura.** English artist. A daughter of Charles Johnson of Nottingham, she studied art first at Nottingham and later at S. Kensington. In 1903 she married a portrait painter, Harold Knight, and in the same year first exhibited at the Royal Academy. She was elected A.R.A. in 1927, and in 1929 was made a D.B.E. Her pictures deal chiefly with theatrical subjects and circus life, of which she has made a special study.

Knighthood Social and military system that existed in Europe in the Middle Ages. Men were made knights in various ways, one of the most usual being by a religious ceremony which included a vigil before an altar prior to taking vows. Others were made knights for gallantry on the field of battle.

The knights formed a distinct class. They fought on horseback and in armour, and were the landowners and aristocrats of their day. The system began to decay about 1300 and came to an end a century or so later.

The orders of knighthood, however, still survive in England and other monarchical countries and the honour of knighthood is still conferred by sovereigns. The senior order is the Order of the Garter. The Order of the Golden Fleece, which had an Austrian and a Spanish branch, was the greatest of the European orders of knighthood.

Knightlow Hill in Warwickshire. Here every year on Nov. 11, representatives of the parishes in the hundred of Knightlow meet. They stand round a hollow stone on the hill and into this throw the money due from them to the lord of the hundred. The steward of the Duke of Buccleuch calls them together and presides over the proceedings.

Knighton Market town and urban district of Radnorshire. It is on the River Teme, 195 m. from London, on the L.M.S. Rly. Pop. (1931) 1836.

Another **Knighton** is a suburb of Leicester.

Knightsbridge Thoroughfare in London. It runs from Hyde Park Corner to Kensington Gore. Here are Harrod's Stores, the barracks of the Household Cavalry and Prince's Club.

Knight's Fee (or **Knight-service**). Piece of land, the holder of which in feudal times was responsible for sending knights to serve the king in time of war. The obligation varied from time to time, and the relief paid on inheriting one of these fees was 100 shillings.

Knights Templars Mediaeval military order. It was founded at Jerusalem about 1118 to protect pilgrims to the Holy Sepulchre. It was given a home in Jerusalem in a palace called Solomon's Temple.

The order soon became rich and powerful. Its head was the Grand Master and it was divided into commanderies, each under a governor or master. The members were both monks and soldiers and took the vows of chastity, poverty and obedience. About 1300 it had 15,000 members and owned a great deal of property. The order was very active during the crusading period and fought also against the Moors. It was suppressed in 1312 by the Pope.

The Templars wore a white mantle with a red cross. Their banner was called beauseant, and their motto *Non nobis, Domine, non nobis, sed Nomini Tuo da gloriam*. The seal showed two knights riding one horse.

Knoblock **Edward.** English dramatist. Born in New York, April 7, 1874, Edward Knoblauch was educated at Harvard. In 1911 he achieved a notable success in London with his play *Kismet*. Another success was *Milestones*, 1912, which, like *London Life*, 1894, he produced in association with Arnold Bennett. In 1931, with J. B. Priestley, he dramatised *The Good Companions*. In 1916 he was naturalised in England and changed the spelling of his name.

Knockaloe Place in the Isle of Man. It is south of Peel and here, during the Great War, was a large internment camp for German civilians.

Knock-knee Deformity in which, when the lower limbs are straightened, the knees close inwards and the legs diverge. It may be due to rickets in young children, and is sometimes remediable by resting in bed, or using splints, or by surgical operation. It may also arise from excessive standing or weight-carrying when young.

Knockmealdown Range of hills in the Irish Free State. It is on the borders of Tipperary and Waterford. The highest point is 2600 ft.

Knole Residence of Lord Sackville. It is 2 m. from Sevenoaks and stands in a large park. It contains some magnificent rooms and priceless works of art. It was at one time a residence of the Archbishops of Canterbury and of the Earls and Dukes of Dorset (*q.v.*).

Knollys Name of a notable English family. It is descended from Sir Francis Knollys, Lord Mayor of London in the 15th century. **Francis Knollys**, a member of this family, was born July 16, 1837. He became a court official under Queen Victoria, private secretary to the Prince of Wales, afterwards Edward VII., and was private secretary to George V. until 1913, when he resigned.

Knighted in 1886, he was made a baron in 1903, and a viscount in 1911. He died Aug. 15, 1924.

Knot Nautical measure of speed. A vessel is said to travel so many knots, this meaning a certain distance per hour. A nautical mile is 6080 ft., so if a ship travels 60,800 ft., in an hour, she travels at 10 knots. In former times the record was kept by tying knots in a piece of rope.

Another kind of knot is a fastening together of two pieces of rope or string. In addition to the ordinary knot, elaborate kinds are used by sailors and studied by Boy Scouts. These include the clove hitch and the reef knot, the latter being the simple knot tied a second time Others are the granny knot, the bowline knot, the timber hitch and the blackwall hitch.

A third kind of knot is a portion of wood, harder than the rest, found sometimes in tree trunks.

Knot Wading bird of the plover family (*Tringa canutus*). Related to the sandpiper, it breeds in the Arctic regions and visits Britain in autumn and winter, haunting marshy flats for molluscs. It was fattened for the table in England in Tudor times. Its average length is about 10 in.

Knottingley Urban district of Yorkshire (W.R.). It is 3 m. from Pontefract on the River Aire, on the L.M.S. Rly. It is a river port on the Aire and Calder navigation system, and has some manufactures. Pop. (1931) 6842.

Knout Form of whip once used in Russia for the flogging of criminals and political prisoners. It consisted of triangular thongs of hardened leather interwoven with wire and bound together. Applied to the naked flesh it produced terrible wounds, and the results were often fatal. Its use was abolished by the Tsar Nicholas I.

Knowlton Village of Kent. It is 9 m. from Canterbury. As the result of a newspaper competition Knowlton was awarded the prize for sending, voluntarily, the highest proportion of its male inhabitants to the Great War. A granite cross records this fact.

Knowsley Residence of the Earl of Derby. It is 8 m. from Liverpool. It is a large house standing in a park of 2500 acres and most of it dates from about 1700. The picture gallery is especially fine. The estate came to the Stanleys when, in the 14th century, one of them married the heiress of the Lathoms. In 1931 the Earl of Derby sold 1700 acres of the estate to the Corporation of Liverpool for housing purposes.

Knox **John.** Scottish reformer. He was born near Haddington about 1515 and attended one of the Scottish universities, probably St. Andrews. When a priest and tutor in a nobleman's family his friendship with George Wishart led him to join the reformers just after the murder of Cardinal Beaton in 1546. He was taken prisoner by the French when they captured the castle of St. Andrews, and was for a time a galley slave. In Feb., 1549, he was released, at the instance of Edward VI., and during that king's reign he lived in England. He was offered the Bishopric of Rochester, made a royal chaplain, and assisted in the preparation of the articles in the Prayer Book.

In 1553 Edward died and Knox went to Dieppe and then to Geneva, where, as at Frankfort and elsewhere, he made a name as a preacher. He returned definitely to Scotland in 1558. The reformers were then in a position of power, and Knox, full of the teaching of Calvin, was soon their leading spirit. He won many adherents by his preaching, but was equally zealous as a politician. He made a treaty with England, now under Elizabeth, gained for himself and his friends the direction of affairs and proceeded to make Protestantism the religion of the country.

In 1561 the young Queen Mary returned to Scotland and quickly roused the anger of Knox, who, however, retained a good deal of power. When Mary fled to England, Knox and his friends were again dominant, but the murder of the Earl of Moray in 1570 was a great blow to them. Knox went to St. Andrews to be among his friends, but returned to Edinburgh to preach once more in St. Giles'. He died there Nov. 24, 1572.

Knox was twice married, once to Marjory Bowen and secondly to Margaret Stewart. His chief book is his *History of the Reformation in Scotland*. In 1558 at Geneva he wrote *The First Blast of the Trumpet Against the Monstrous Regiment of Women*. Knox was intolerant and a fanatic, but he has left his mark for good on Scotland, the educational system of which owes much to the ideas of his *Book of Discipline*.

Knox **Ronald Arbuthnott.** English writer. Born Feb. 17, 1888, one of the four brilliant sons of Rev. E. A. Knox, Sanskrit scholar and in 1903-21 Bishop of Manchester, he was educated at Eton and Balliol College, Oxford, where he had a fine career. He became fellow and lecturer at Trinity College, and, having joined the Roman Catholic Church, was later made chaplain to the Roman Catholic students in the University. Father Knox has written a good deal of fiction as well as more serious works. His books include *The Viaduct Murder, Essays in Satire, Caliban in Grub Street*, and *The Belief of Catholics*.

Knox's eldest brother, **Edmund George Valpy Knox** (born 1881) was educated at Rugby and Corpus Christi College, Oxford. He joined the staff of *Punch*, and as Evoe became known for his humorous writings, many of which have appeared in book form as *Fancy Now, It Occurs to Me, Here's Misery* and *The Other Eden*. In 1933 he succeeded Sir Owen Seaman as Editor of *Punch*.

Knucklebones Game very popular in ancient times and the forerunner of dice games. At first played with the knuckle bones of sheep, which were thrown and caught on the back of the hand, it is now played with stones.

Knur and Spell English ball game of mediaeval origin. It requires a knur or small ball, a steel-springed trap or spell, and a stick. The stick, called the pommel, is about 4 ft. long with a flexible handle and a head of hardwood. The spring makes the ball rise, whereupon the player hits it with the stick as hard as he can. The longest drive wins.

Knutsford Market town and urban district of Cheshire. It is 15 m. from Manchester on the Cheshire Lines Rly. Knutsford is known in fiction as *Cranford*, and Mrs. Gaskell, the authoress of that work, who lived here for many years and died here, was buried in the old Unitarian Graveyard. The name is taken from King Canute. Pop. (1931) 5878.

Knutsford Viscount. English title borne by the family of Holland. Henry Thurstan Holland, a son of a physician,

Sir Henry Holland, was born Aug. 3, 1825. He went to Harrow and Trinity College, Cambridge and became a barrister. Having been for some years in the Colonial Office, he sat in the House of Commons from 1874 until 1888. In 1885 he was Financial Secretary to the Treasury; in 1886 Vice-President of the Council, and in 1888-92 Secretary for the Colonies. He was made a baron in 1888, and a viscount in 1895. He died Jan. 29, 1914.

Knutsford's son and successor, Sydney Holland, the 2nd viscount, was best known for his splendid work for the London hospitals. He was chairman of the London Hospital and devoted his life to collecting funds for its support. He died July 27, 1931, and was succeeded by his brother, Arthur Henry Holland-Hibbert (born 1855), of Munden, Walford, as 3rd viscount.

Koala (*Phascolarctus cinereus*). Native name of a marsupial mammal. Found only in Australia, it is stout and clumsy, tailless, with ashy-grey fur and tufted ears. Living in eucalyptus trees, it feeds on their leaves and tender shoots, occasionally digging for roots, which it stores in its cheek pouches. Its average length is about 2 ft.

Kobe City and seaport of Japan. Sometimes called Hyogo, it is 22 m. from Osaka, on the west coast of the Inland Sea. There is a good deal of shipping and the industries include shipbuilding. The city was founded in 1868 and a fine harbour has been built. Pop. (1931) 787,616.

Koch Robert. German scientist. Born Dec. 11, 1843, he was educated at the University of Gottingen, and became a doctor. He practised at Hanover, but soon gave his time chiefly to research work, being, in 1880, made a member of the Imperial Board of Health in Berlin. In 1882 he discovered the bacillus of tuberculosis, and a little later the bacilli of cholera and phthisis. In 1885 he was made Professor at Berlin University, and Director of the Institute of Hygiene, and in 1891 Director of the Institute for Infectious Diseases. Later he spent much time in S. Africa in researches into cattle diseases. Tuberculin, or the lymph cure for tuberculosis, was another of Koch's discoveries. On these he wrote several books. In 1905 he received the Nobel prize for medicine, and he died May 28, 1910.

Koh-i-nur Name given to a famous diamond. Said to have been found at Golconda, India, it originally weighed 186 carats. Formerly in the possession of the Mogul emperors and the later Indian princes, in 1849 it was presented to Queen Victoria, was recut to 106 carats, and now forms one of the British crown jewels.

Kohl Powder used in Egypt for darkening the eyes. It was used by Jezebel (2 Kings ix.).

Kokra Timber obtained from a tree in Burma called *Aporosa dioica*. It is very hard and is used for musical and scientific instruments.

Kola Nut of an African tree, also called gum. It is about the size of a walnut and is very bitter to the taste. It contains a good deal of caffeine and the natives eat it as a stimulant. The tree on which it grows is an evergreen, sometimes 40 ft. high, and bearing pale-yellow flowers.

Kolubara River of Yugoslavia. It rises near Valievo and flows mainly north to the Save. In Nov. and Dec., 1914, a battle was fought along its banks between the Austrians, who had invaded Serbia, and the Serbians. It lasted nearly a month, but in the end the Austrians were driven out.

Komati River of S. Africa. It rises in the Transvaal and flows through Swaziland and Mozambique to Delagoa Bay. Its chief tributary is the Crocodile and where the two unite is the village of Komati Poort. This is 58 m. from Lourenço Marques.

Komintern The. Third, or Communist, International. It is the international organisation of the Communist party of all nations, and was founded in March, 1919. Its chief purpose is to hasten world revolution, and it rejects parliamentarism as a means to this end. It is an association bound together by a common programme and principles. It organises "cells," which work in different places, to the common end, and are subordinated to the party as a whole.

Konia City of Turkey. It is in Asia Minor, about 300 m. from Izmir (Smyrna). There are manufactures of carpets and silks, and a considerable trade in agricultural produce. The name is sometimes spelled Konieh. Pop. 47,495.

Koniggrätz (or **Kralové Hradec**). City of Czechoslovakia. It is 14 m. from Prague. Near is the village of Sadowa, after which the Germans called the battle in which they routed the Austrians in 1866. Pop. 13,100.

Konigsberg City and river port of Germany and chief town of E. Prussia. It stands near the mouth of the Pregel, 366 m. from Berlin. The university is an old foundation, but has fine modern buildings, among them an observatory and a library. The castle is imposing.

There are large modern docks, and the industries include shipbuilding, the manufacture of machinery and chemicals, and the preparation of foodstuffs. The city, which is a railway centre, was founded by the Teutonic Order and later was the capital of the Dukes of Prussia. It has a broadcasting station (217 M., 0.5 kW.). Pop. 280,000.

The **Königsberg** was the name of a German cruiser destroyed in the Rufiji River, E. Africa, in July, 1915.

Koodoo African antelope, *Strepsiceros capensis*. Tawny with vertical white stripes on the sides and reaching 5 ft. at the shoulder, it is exceeded in size only by the eland, to which it is allied. The horns, present only in the male, are spirally twisted.

Kootenay River and lake of N. America. The river rises in Canada in the Rocky Mountains, but part of its course is in the United States. Entering Canada again it passes through Kootenay Lake to the Columbia river. It is 400 m. long.

Kootenay Lake is in the south-east of British Columbia. It is 60 m. long and covers 220 sq. m. Kootenay is also the name of a pass across the Rocky mountains. This is between the provinces of Alberta and British Columbia, just north of the international boundary.

Kopeck Russian coin. It is the hundredth part of a rouble, or nominally something less than a halfpenny.

Kopenick Town of Prussia. It is on an island in the Spree, 10 m. from Berlin. Pop. 31,000.

The Captain of Kopenick was a cobbler,

Wilhelm Voigt. In Oct., 1906, he dressed himself as an army officer, and with an imposing guard, pretended he had come on important business to the burgomaster. He thus obtained a good deal of money, but was soon arrested. He died in 1918.

Kopje Dutch name for the flat round-topped elevations that are scattered over the tablelands of S. Africa. In the Great Karroo and elsewhere compact lava-sheets of geological age have been weathered and fretted into hillocks up to 100 ft. high. They greatly influenced operations in the S. African War, 1899-1902.

Koran The. Sacred book of the Mohammedans. It claims to be a divine revelation, communicated through the angel Gabriel at intervals over 23 years to the Prophet Mahomet. At his dictation various scribes wrote them down on scattered fragments of parchment, stone, palm ribs and other materials. These were traditionally collected by Zaid at the behest of Mahomet's successor, Abu Bekr, and a definite text was afterwards prepared for the Caliph Othman. Islam's supreme authority on matters of faith, morals and law, the Koran is a rhymed prose rhapsody of 6000 verses. It is divided into 114 *suras*, and opens with the Fatiya, the prayer repeated five times daily by all devout Moslems.

Korea District of Asia, also called Chosen. A peninsula on the mainland it was formally annexed by Japan in 1910. It is 600 m. long and covers over 85,200 sq. m. Its northern boundaries are Feng-Tien and Manchuria: on the west is the Yellow Sea, on the east the Sea of Japan. It includes over 1000 islands. The land is forested and mountainous, and the rivers are short and rarely navigable. Seoul, or Keigo-fu, is the capital: other large towns are Fusan-fu, Heigo-fu (the old capital), and Taikyu-fu. Seoul, Chemulpo, Fusan and Gensan are four of several open ports.

Rice, barley, wheat, beans, tobacco and cotton are grown and cattle are reared. Gold, iron ore and coal are mined to a slight extent, fishing is carried on, and fruit is grown. There is a railway system and there are many good roads. The Central Bank is the bank of Chosen: the chief coin is the yen.

The Koreans are physically a fine race with a culture of their own. Their language, intermediate between Mongol, Tartar and Japanese, contains many Chinese words, and their written language is a mixture of Chinese and native characters.

HISTORY. Korea, whose troubled history goes back 1000 years B.C., was an independent kingdom in the 10th century. Its rulers were called emperors until late in the 19th century, for a great part of which the country was the victim of much unrest. After the devastating invasion of the Japanese in 1592-98 until recent times it was nominally under Chinese suzerainty. This was ended by the Chino-Japanese War of 1894-5, by which time the Japanese had important trading interests in the peninsula. After the Russo-Japanese War of 1904-5 Korea was virtually a Japanese protectorate until it was formally annexed by Japan in 1910, when a Governor-General was appointed and members of the Korean imperial house were given Japanese patents of nobility. Since then its material prosperity has increased considerably. The name is also spelled Corea. Pop. 21,058,305.

Korniloff **Lavr Georgievitch.** Russian soldier. He was born in Siberia, the son of a Cossack, and was trained for the army. He fought for the Boers in S. Africa, 1899-05, and served against Japan in 1904-05. During the Great War he saw service and was taken prisoner, but he quickly escaped and as leader of an army took part in the offensive of July, 1917, winning a notable victory over the Austrians. He was then put in charge of all the Russian armies, but quarrels soon broke out between him and Kerensky. He then formed an army in the south of Russia and fought against the Bolsheviks until he was killed in the Caucasus, March 31, 1918.

Kosciusko Mountain of New South Wales, the highest in Australia. It is in the Australian Alps and reaches 7328 ft.

Kosciusko **Tadeusz.** Polish soldier. Born in Lithuania, Feb. 12, 1746, he became a soldier and served in the French Army. He fought for the American colonists against Great Britain, and then led the Poles against the Russians. Following the partition of 1794, he set up a government in Warsaw, but after one or two victories, was defeated by both Prussians and the Russians. He was taken prisoner, but was set free in 1796, and lived in Switzerland. On Oct. 15, 1817, he was killed by his horse falling over a precipice at Soleure.

Kosher Jewish word denoting food or culinary vessels made fit and clean by Talmudic ritual. As Jews are forbidden to swallow blood, beasts are killed for them by their own butchers who sharply sever the windpipe. The meat is soaked in water, salted and washed thrice.

Kossovo District of Yugoslavia. A plain about 50 m. long, it is near the frontier of Albania. The name means the field of blackbirds.

In 1389 the sultan, Murad I., defeated the Serbs here, and in 1448 Murad II. defeated the Hungarians under Janos Hunyadi. There was fighting here during the Balkan War. In Nov. 1915, the Serbian armies gathered to resist the advance of the Germans. After some hard fighting they were compelled to retreat. Many perished in the cold, but others were rescued by Allied help, and taken to Corfu.

Kossuth **Lajos (Louis).** Hungarian leader. Born Sept. 19, 1802, he was educated at Budapest and became a lawyer. In 1832 he was elected a member of the diet at Presburg, and was soon prominent among the advocates of political and social reform. For expressing his opinions in a paper he edited he passed three years in prison. Seven years later, in 1847, he became a member of the diet of Hungary, and in 1848 was the recognised leader of the party that demanded independence for the country. His energy raised a national force, and the diet declared for independence with himself as governor, or dictator. The movement failed, partly because foreign countries would not assist, and in 1849 Kossuth resigned his office and went to Turkey.

For the rest of his days Kossuth was an exile in England, where he was received as a hero. His *Memoirs of My Exile* is an English translation of one of his books. He died in Turin, March 20, 1894. He had refused the offer of pardon and had lost his nationality, but his body was taken to Buda for burial.

Kossuth's son, **Ferencz Kossuth** (1841-1914), was a prominent politician in Hungary from 1895 until his death.

Koumiss Drink made from the milk of the mare and the camel. Obtained by allowing the milk to ferment, it

is drunk by the Tartars and other Asiatic peoples. It has an acid taste, but is serviceable as a diuretic and for other purposes in medicine. It can be made from cow's milk.

Kovno City of Lithuania, also called Kaunas. It is on the Niemen, 60 m. from Vilna, and is the capital of the republic pending the recovery of Vilna, which is also claimed by Poland. The city has a number of manufactures, does a considerable trade in grain, etc., and is an important railway junction. There is a large Jewish element in the population. Pop. 115,000.

Kowloon Peninsula in China near Hong Kong. It was ceded to Britain in 1860 and is part of the colony. At one time there was here a large city of which only the walls remain. Near its site a new town has been built.

Kraal Collection of huts around a cattle enclosure. It is sometimes stockaded with timber fences or mud walls. Kraals are built by the Kaffirs and Hottentots and the word is also used for similar villages in E. Africa, and sometimes for enclosures for animals.

Krakatoa Volcanic island in the Strait of Sunda. Midway between Sumatra and Java, it covers 18 sq. m. In 1833 an eruption here destroyed 35,000 lives, did great damage and set up world-wide disturbances. Two-thirds of the island disappeared.

Kraken Fabulous sea monster of Scandinavian legend. Supposed to be of enormous size, it has been likened by an old Norwegian writer to an island appearing in the water with arm-like appendages resembling those of an octopus. It is the subject of one of Tennyson's early poems

Kran Persian coin. It has been replaced as the unit of currency by the rial, which is equivalent in value. It is still in circulation, however, and is worth about 4d.

Krassin **Leonid Borisovitch.** Russian revolutionary. Born in 1870, he entered business life, but becoming associated with the extremists was, for a time, an exile. He had returned to Russia when the revolution began in 1917, and as one of its leaders he helped to arrange the Treaty of Brest-Litovsk, and became a minister in the new government. In 1920, and again in 1921, he was sent on a trade mission to England, and he represented the Soviet Government in London in 1925-26. He died in London, Nov. 24, 1926.

Kreisler **Fritz.** Austrian violinist. Born in Vienna, Feb. 2, 1875, he studied in Vienna and Paris, and soon showed exceptional powers. He toured the United States in 1889, and first appeared in London in 1903. He served in the Austrian Army during the Great War and was wounded. He has since made several appearances in London, being regarded as the world's greatest violinist. In 1929 he received the honorary degree of LL.D. from Glasgow University.

Kremlin Russian word for a citadel. The most famous is the kremlin at Moscow. It stands on a hill overlooking the river Moskva, covers about 100 acres, and is surrounded by a wall.

Kriemhild Figure in German legend. A sister of the King of Burgundy, she married Siegfried, King of the Nibelungs. Siegfried was murdered by Hagen and Kriemhild married the King of the Huns. Her life, thenceforward, was devoted to vengeance. She gave a feast to Hagen and others; this was followed by a fight in which many were killed. After the struggle she killed Hagen with Siegfried's sword, and was then killed by Hildebrand. The story is told in the *Niebelungenlied*, and figures in Wagner's opera sequence *Der Ring des Nibelungen*.

Kris Dagger used by the Malays. It has usually a sinuous blade. The handle is commonly of wood, but some examples are of ivory, with a decorated scabbard.

Krishna Hindu deity. A chieftain in the Mahabharata, he later became Vishnu's eighth avatar or incarnation. His popularity throughout N. India is based on legends, which make him a cowherd lad associated with his favourite mistress Radha. Usually painted blue, he is represented as standing on a snake, sometimes playing a flute, and with four hands.

Krithia Village of Gallipoli. It is about 4 m. from the end of the peninsula, and was the scene of severe fighting in 1915. It was attacked by the British on April 28, but the Turkish defences were too strong for them to reach it. On May 6-8 there was a further attack which also failed, but on June 4, a third attack resulted in the gain of a good deal of ground. Another attack, also partially successful, took place on June 28. A further effort to advance was made in August and on Nov. 15 the Turkish positions were assailed for the last time, successfully, but in the following January Gallipoli was evacuated.

Krone Monetary unit of Norway, Sweden, Denmark and Iceland. The word means crown. It is worth about 1s. 1½d. and normally 18 go to the £ sterling. It is divided into 100 ore. Before 1925 the krone was the monetary unit of Austria and was also used in Hungary.

Kronstadt Seaport of Soviet Russia. It stands on an island at the mouth of the Neva, 20 m. from Leningrad. It was founded in 1703 as a harbour for the Russian capital, and before the Great War was a naval station, strongly fortified. A canal links it with Leningrad. The dockyard is maintained by the Government. Pop. 21,000.

Kronstadt City of Rumania, now known as Brassó or Brasov. Beautifully situated at the foot of the Transylvanian Alps, it was until 1919 in Hungary. The inner town has remains of 16th century fortifications. It is now a banking centre, and has oil refineries and cement works. Pop. (1930) 56,234.

Kroonstad Town of the Orange Free State. It is 129 m. from Bloemfontein and is an important railway junction. It is the centre of an agricultural district. Pop. (1931) 5639 (European).

Kropotkin **Peter Alexeivich, Prince.** Russian geographer, author and revolutionary. Born at Moscow, Dec. 9, 1842, he entered the Corps of Pages at St. Petersburg in 1857, and in 1862 went with a Siberian Cossack regiment to Siberia, where he carried out two geographical surveys. In 1871 he explored the glacial deposits of Finland and Sweden, and in 1872 he visited Switzerland. Later, becoming an anarchist, he spread nihilist propaganda on his return to Russia. He was several times arrested in Europe, but escaped to England, and settled there, 1883-1917, when he returned to Russia. He died Feb. 8, 1921.

Kru Negro people. They live in scattered communities along the coastland of

Liberia. They display an aptitude for seafaring which has led to their contracting as Kru boys for service on vessels navigating the Guinea coast. They practise face marking, tattooing and tooth mutilation. They number over 40,000.

Kruger Stephanus Johannes Paulus. Boer politician. Born at Colesberg in Cape Colony, Oct. 10, 1825, he went as a boy into the Transvaal and settled there. In 1880 he was a leader in the revolt against British annexation, and was the active spirit of the provisional government during the war of 1880-81. In 1883 he was elected President, an office he still held when difficulties arose between Great Britain and the Transvaal in 1899. Stubbornly hostile to concessions of any kind, he must bear some of the responsibility for the war that followed. In 1900 he went to the Netherlands, but he was in Switzerland when he died, July 14, 1904. In 1902 he wrote a volume of memoirs. Kruger combined a hard and narrow religious creed with much political subtlety.

Krugersdorp Town of the Transvaal. A gold mining centre at the western end of the Rand, it is 20 m. from Johannesburg. Pop. (1931) 13,653 (European).

Krupp German family. Friedrich Krupp, born in 1787, started in business at Essen as a maker of iron and steel in 1812. He died in 1826, and the business was conducted by his son Alfred. He made it a very successful concern and when he died, July 14, 1887, left it to his son Friedrich Alfred Krupp. He died Nov. 22, 1902, leaving an only daughter, Bertha, who married Gustav von Bohlen und Halbach.

The Krupp works made railway material on a large scale, but were best known as armament works. Guns, ammunition, armour-plate and other war material were turned out in immense quantities before the Great War. The firm had branches at Annen and elsewhere, and shipbuilding yards at Kiel. Something like 80,000 men were employed, and for them there were welfare organisations on an elaborate scale. After the Great War the works were devoted to the making of electrical, agricultural and other kinds of machinery, as well as railway plant.

Krypton Very rare element having the symbol Kr and atomic weight 82.92. It occurs in extremely minute quantities in the atmosphere and has been found in varied gases given off from the waters of mineral springs. It is distinguished by the bright yellow and green lines in its spectrum.

Kubelik Jan. Bohemian violinist. Born July 5, 1880, near Prague, he learned to play from his father, a market gardener. In 1898 he made his debut in Vienna and tours in Europe and the United States made him one of the leading violinists of the day. He married the Countess Czaky Szell.

Kublai Khan Mongol Emperor of China. He was born about 1216, the grandson of Jenghiz Khan. In 1259 he became grand khan of the Mongols. His great work was the conquest of China, which occupied him some 20 years. He then became head of a great Mongol Empire with his capital at Peking, where he held a splendid court. Under him Buddhism became the State religion. His empire lasted only until 1368. Kubla Khan was the patron of Marco Polo, and Coleridge wrote a fragmentary poem on him.

Kufah Village of Iraq. It is 90 m. to the south of Bagdad. Here the caliphs lived before moving to Bagdad. It gives its name to a script used for the earliest copies of the Koran.

Kufra Group of oases in Libya. They are near the border of Egypt and are the headquarters of the Senussi. Caravan routes go across the desert, but few Europeans have visited the district.

Ku Klux Klan American secret society. It was founded in Tennessee in 1865 and developed into an elaborate and organised movement. Its aims were to maintain the purity and dominance of the white race against the negro, and it was soon very strong in the southern states. The head was the grand wizard; other officials were grand dragons, grand giants and grand titans; every member was a ghoul. Terrorism was freely employed. In 1871-72 laws were passed forbidding these secret societies and after a time the Ku Klux Klan disappeared. In 1915 the society was revived in Georgia. Its aims were practically the same, the dominance of the white, or what was called 100 per cent Americanism. Its influence was also directed against Roman Catholicism.

Kumanovo Town of Yugoslavia. It is 20 m. from Uskub. In Oct., 1912, the Serbians gained a great victory over the Turks here, the fighting occupying three days. During the Great War the town was taken by the Bulgars in Oct., 1915, and was not regained by the Serbs until Sept., 1918.

Kumasi Chief town of Ashanti, sometimes spelled Coomassie. It is 160 m. from Sekondi on the coast. Pop. (1931) 36,284.

In 1874 British troops entered Kumasi and destroyed a good part of the town. Another expedition was sent against it in 1896, when a British resident was installed. In 1900 the British in the town were attacked by the tribesmen, but held out from March till July when they were relieved by a force which met with stubborn resistance. *See* ASHANTI.

Kümmel Name of a popular liqueur. It is made of sweetened spirit flavoured with cumin and caraway seed. The name is the German word for cumin.

Kun Bela. Hungarian agitator of Jewish extraction. Born in 1886 he became a lawyer and a journalist. After the Great War, in which he served, he set up a Bolshevist republic in Hungary. This only lasted for a few months. He then went to Russia, but was again agitating in Hungary in 1927.

Kuomintang Political party in China. It is composed of the followers of Sun Yat Sen and stands for a policy of China for the Chinese. It became prominent in 1927, its strength being chiefly in the south of the country.

Kurd People of mixed stock inhabiting the region loosely called Kurdistan. This is now divided among Turkey, Persia and Iraq, the Kurdish population being about 1,500,000. Descended from the Carduchi who opposed Xenophon's retreat in 400 B.C., they are partly settled, partly nomadic. They are mainly Mohammedans.

Kurdistan District of Asia Minor. It is part of the Turkish republic and its chief town is Diarbekr. It lies to the south of Armenia and has the Euphrates

on the west. It is inhabited chiefly by nomads. The boundaries have never been clearly defined.

Kuria Muria Group of five islands off the coast of Arabia. They belong to Great Britain and cover about 22 sq. m. They are about 750 m. from Aden and on them guano is found. The islands, which serve as a landing place for the Red Sea cable, are peopled by a few Arabs. They are under the control of the Persian Gulf Residency.

Kurile Group of 31 islands off the coast of Japan. Their Japanese name is Chishima and the inhabitants are chiefly fisherfolk. They extend for 150 m., almost to Kamchatka. Area, 3969 sq. m. Pop. 5000.

Kuroki **Count Tamesada.** Japanese soldier. Born in 1844, he entered the army and won a reputation during the war with China. In 1904 he was given command of an army and he led this to victory over the Russains at the battles of the Yalu and Mukden. He died Feb. 4, 1923.

Kuropatkin **Alexei Nikolaievitch.** Russian soldier. Born in 1848, he became an officer and gained experience with the French army in Algeria in 1874. He held a staff appointment in the Russo-Turkish war of 1877-78 and added to his reputation by exploits in Turkistan and Caucasia. In 1898 he became Minister for War and in 1904 was chosen to command the forces against Japan. After the Russian defeat at Mukden he was superseded, but was given another command. He was put in command of a group of armies during the Great War and in 1916 went as governor to Turkistan. Later he was arrested and on Feb. 10, 1921, he died in Moscow.

Kut Short name for Kut-el-Amara. A town of Iraq, 290 m. from Basra, it is almost encircled by the river Tigris. It was rebuilt after the Great War and has some modern buildings. There is a cemetery for British and Indian soldiers.

A good deal of fighting took place at Kut during the Great War. In Aug., 1915, a British force was sent against the Turks defending it, and a battle took place on Sept. 28, the British being victorious. The British, under Sir C. Townshend, then moved farther up the river, but met with defeat at Ctesiphon and fell back on Kut in Nov. Kut was fortified and was soon surrounded by Turkish troops. Between Jan. and April, 1916, several attempts to relieve Kut were made, but failed, and on April 29, when the force was at starvation point, 9000 troops, 6000 being Indians, surrendered. In Jan., 1917, new forces having been collected and put under Sir Stanley Maude, the campaign for its recovery was begun. There was some hard fighting, but on Feb. 23, 1917, the town was occupied by the British.

Kuwait State of Arabia. It is on the N.W. shore of the Persian Gulf and is ruled by a sheikh, or sultan. The chief town is Kuwait. It has a fine harbour and does a fair amount of trade. The sheikh is on friendly terms with the government of India. Pop. 50,000.

Kvass Russian alcoholic beverage. It is made by fermenting rye meal, dough or bread, or wheat or barley meal, sugar and fruit being added. It contains from 1 to 2 per cent. of alcohol. It is made both commercially and in the home.

Kyd **Thomas.** English dramatist. Born in London in 1558, he was educated at Merchant Taylors' School. His first play, *The Spanish Tragedy* (1584-89), was popular for many years. He later became friendly with Marlowe, and was arrested with him for "blasphemies" and imprisoned until after Marlowe's death, when his patron forsook him. He died in poverty in 1594. *The Spanish Tragedy* was long the best-known play in Europe, and was played as a stock piece in Germany and Holland until the eighteenth century. He also wrote *Solimar and Perseda* (1588) and *Cornelia* (1593-94).

Kyle District of Ayrshire. It lies between the rivers Doon and Irvine and is one of the districts into which the county was at one time divided.

Kylemore Lake or lough of Co. Galway, Irish Free State. It is in the N.W. of the county, not far from Letterfrack, in the midst of magnificent scenery. There is Kylemore Castle, once a seat of the Duke of Manchester, a fine building decorated with Connemara marble.

Kyles of Bute Sea channel of Scotland. It is about 16 m. long, between the county of Argyll and the Island of Bute. It is famous for the scenery along its shores.

Kyneton Town of Victoria, Australia. A mining centre and pleasure resort on the river Campaspe, 53 m. from Melbourne. Pop. 3400.

Kyoto City of Japan. It is on the Island of Honshiu, 27 m. from Osaka. Kyoto is an industrial centre with manufactures of fancy goods and artistic ware. It is also an important railway junction and is well supplied with electric power. Pop. (1930) 765,142.

Kyrie Eleison Greek invocation translated as *Lord have mercy upon us* and used in religious worship. In the mass it follows the introit and is repeated thrice to each person of the Trinity. *Christe eleison* is the variant used for the second person. In the Church of England it is used at both morning and evening prayer.

Kyrle **John.** English philanthropist. Born at Dymock in Gloucestershire, May 22, 1637, he was educated at Balliol College, Oxford. He passed his life in Ross, Herefordshire, where he had some property and was known as The Man of Ross. He built churches and schools and was prominent in other beneficent work. Pope, who first called him The Man of Ross, and Coleridge praised him in poems. He died Nov. 7, 1724.

The **Kyrle Society** was founded to perpetuate his memory. It exists to benefit the poor and its offices are at 92 Victoria Street, London, S.W.

LAAGER In South Africa a protected camp. It is made by arranging the convoy wagons in a circle as was done by the Boers when they were trekking from one part of the country to another.

Laaland Island of the Baltic Sea. It is 447 sq. m. in extent and lies off the mainland of Holstein. The soil is fertile and much of it is covered with forests.

La Bassée Town of France. It is 16 m. from Lille, on the canal named after it. A small mining town, it was destroyed during the Great War, but has been rebuilt. It has been adopted by Preston.

Laboratory Place set apart for carrying out scientific experiments. It varies in character and equipment according to the nature of the science. In the teaching of physical science laboratories are essential; also for purposes of research, whether academic or economic. **The National Physical Laboratory** at Teddington, where research and the testing and standardisation of materials are carried out, is an important government laboratory.

Labouchere Henry du Pré. English politician and journalist. Born in London, Nov. 19, 1831, he was educated at Eton and Trinity College, Cambridge, and entered the diplomatic service. In 1865 he was elected an M.P., but he soon lost his seat. In 1880, however, he was returned for Northampton and he remained in the House of Commons, one of its most prominent figures, until 1905. During those years he was persistent in his efforts to secure integrity in public life. He died in Florence, Jan. 15, 1912.

In 1870 Labouchere, who had done a little writing for *The Daily News*, established *Truth*, and to him was due the distinctive feature of that weekly journal, its constant and fearless exposure of impostors and jobbery.

Labour In economics one of the factors in the production of wealth, the others being land and capital. It describes work done on raw material, except that which takes the form of management and direction.

The share of the joint product which should fall to labour in the shape of wages has been the subject of much discussion and many troubles. One idea is that labour is a commodity to be bought in the market at the lowest possible price, this being in practice the minimum cost of living. Another view is that labour has the first claim on the product of industry. Tariffs and other factors outside the industrial system also influence wages.

Labour Ministry of. Department of the British Government. It was set up in 1916 to deal with matters affecting labour, such as unemployment and arbitration, and is under a minister, usually a member of the Cabinet, who is assisted by a parliamentary secretary and staff. The offices are at Montagu House, Whitehall, London, S.W.1.

Labour Day Name given to May 1. On that day the workers in most European cities hold labour demonstrations. In the United States and Canada, and in some parts of Europe, Labour Day is a national holiday.

Labour Exchange Office established and controlled by the state for the registration of the unemployed, and the adjustment of the supply of labour to the demand. In Great Britain they were established in 1910, but in 1916 the name was changed to **Employment Exchange** (*q.v.*).

Labour Party Political party in Great Britain and other countries. Existing to further the interests of the working classes, it arose during the 19th century and became powerful in the 20th. In Great Britain it was first represented in Parliament in 1900.

In 1923 the Labour Party became the official Opposition in the House of Commons, and in 1924 it formed a ministry. This had a short life, but a second Labour Ministry was in power from May, 1929, to August, 1931. Then the party split, the majority under Mr. Arthur Henderson forming the Opposition, while a minority supported the National Government of Mr. J. Ramsay MacDonald. In the ensuing General Election (1931) the Labour party was reduced from 265 members to 51, the Unionist party securing no fewer than 471 seats. On Mr. Arthur Henderson's defeat at the 1931 election leadership of the Labour party passed to Mr. George Lansbury. He resigned for health reasons in Oct., 1935, and Major Attlee became chairman till after the General Election in Nov. when he was appointed leader. At that Election 154 Labour members were returned to Parliament as against the National Government total of 431.

The Labour Party holds an annual conference and its headquarters are at Transport House, Smith Square, Westminster, S.W.1. Associated with it is the **Parliamentary Labour Party**, all Labour members of Parliament, but the Independent Labour Party is quite distinct.

Labour Parties have obtained political power in other countries, especially Australia. There it has dominated the politics of the several states and has been in power for a considerable portion of the Commonwealth's existence, its leaders being Mr. W. M. Hughes, Mr. A. Fisher and Mr. J. H. Scullin. The Labour Parties in Canada and the United States have not yet secured political power.

Labrador District of North America. The most easterly part of the continent, it consists of a stretch of land along the Atlantic Ocean, from the Gulf of the St. Lawrence to Hudson Bay. The coastline, which is about 1000 m. long, is indented with many bays and fringed with many islands. The interior is mountainous, the climate cold and the soil unfertile. The population consists of (1931) 4624, mostly Eskimos, and the only industry is fishing. There are, however, considerable natural resources in the shape of timber and minerals that are still unexploited.

The area of Labrador is about 500,000 sq. m., divided between Canada and Newfoundland. In 1927 the Privy Council settled a dispute about the boundary, and 110,000 sq. m. of the land were given to Newfoundland. This coastal strip is Labrador proper. In 1932 it was stated that Canada was willing to purchase Labrador from Newfoundland.

Labradorite Variety of soda-felspar. It occurs in many igneous rocks, and, owing to its fine play of colours, is used for making cameos and decorative slabs.

La Bruyère **Jean de.** French essayist. Born in Paris, Aug. 16, 1645, he was educated at Orleans University. Called to the Bar in 1673, he became, on Bossuet's introduction, tutor to Condé's grandson. In 1688 he published his *Caractères*, sarcastic pictures of well-known contemporaries which more than once caused his defeat as candidate for the Academy. His style, like Racine's, is an excellent example of classical French. He died May 10, 1696.

Labuan Island of the East Indies. Situated off the north-west coast of Borneo, it has been British since 1846 and under the control of the Straits Settlement since 1907. Malays form the main element in the population. Agriculture is carried on and there is some export trade. Victoria (pop. 1500) is the capital and has a good harbour. Pop. (1932) 7771.

Laburnum Genus of hardy herbs of the leguminous order. They are natives of southern Europe. The common *L. vulgare*, introduced into England in the 16th century, bears pendulous sprays of yellow pea-like flowers. Purple laburnum is a hybrid of this with an allied species. Scotch laburnum has smooth pods. The wood of the laburnum is used to some extent by cabinet makers.

Labyrinth Name given to an intricate series of passages in a building or underground. The most famous labyrinth was that of Cnossos in Crete, built, according to the legend, by Daedalus. In Egypt, at Hawarah, there are the remains of another renowned labyrinth built by Amenemhat III., and mentioned by Herodotus.

Lac Purple dyestuff used for dyeing leather and silk. It is prepared from the bodies of *Coccus lacca*, an insect occurring on the twigs of *Ficris indica* and other trees in India, China and Japan. The insects secrete the resin known as stick lac, and the dye is obtained by soaking the lac with the insects in water.

Lac **(or Lakh).** Hindu word for 100,000, but used to describe any great number. A lac of rupees, 100,000, is worth between £6000 and £7000.

Laccadive Group of islands in the Indian Ocean. Situated some 200 m. from the Malabar coast, the group consists of 14 islands, 9 of which are inhabited. They are administered by the Madras Presidency. The people, who are mainly Mohammedans, carry on a trade in coconuts and coconut products. Pop. (1931) 16,046.

Laccolith Term used in geology. It is applied to an intrusive igneous rock which has been forced up in a molten state to spread between the overlying strata forming a lenticular mass. Owing to this intrusion the superficial strata have become elevated into a large anticlinal dome, examples of this structure being met with in Utah.

Lace Ornament of silk or cotton used on clothing and for other purposes. Lace is of two kinds, that made by hand and that made by machinery. Both are worked according to designs provided for the worker and some of these are very beautiful. Handmade lace has been produced for centuries, and various kinds were called after European cities which specialised in their manufacture. Thus we hear of Venetian, Mechlin and other laces. In England, lace-making flourished in Devonshire and Buckinghamshire, and some beautiful lace was also made in Ireland.

Point lace, in which the Venetians excelled, is not unlike embroidery, the lace pattern being worked upon a fabric foundation. **Pillow lace** is made by plaiting the threads around bobbins placed on a pillow or frame and arranged to form the required pattern.

In the 18th century lace was first made by machinery, and in the 19th this became a staple industry of Nottingham and its neighbourhood, as well as of Devonshire and parts of Scotland. Other centres were Calais and Plauen.

Machine lace is made on a machine invented by John Leavers, and the laces are named usually after the patterns of hand-made varieties, such as Brussels, Valenciennes, Torchon and Alençon.

In the 20th century the prosperity of this industry dwindled. For five years after the Great War the English manufacturers were protected by a safeguarding duty of 33⅓ per cent., but this was removed in 1930. Protection was again given, however, when a general tariff on imported manufactures was imposed in 1932. Bleaching is a subsidiary industry.

Lacedaemon In Greece, a name, used interchangeably with Laconia, for the district around Sparta (*q.v.*).

La Chaise **François de.** French priest. The son of a noble, he was born at Aix, Aug. 25, 1624, and educated at Lyons. He became a member of the Society of Jesus and was appointed in 1674 confessor to Louis XIV., a position which he held until his death, Jan. 20, 1709.

His name is borne by a cemetery in Paris **(Père La Chaise),** one of the most famous in the world.

Lachine Town of Quebec. It is on Lake St. Louis, really part of the St. Lawrence, 8 m. from Montreal. Near are some rapids in the river, and the canal cut to avoid them is called the Lachine Canal. There are some manufactures. Lachine has stations on the C.P.R. and C.N.R. Pop. 15,400.

Lachish Ancient city of Palestine. It stood 16 m. from Gaza and was a place of importance in early times. The site has been excavated and valuable discoveries made. It is mentioned several times in the Bible, and in Joshua x. there is a reference to the King of Lachish.

Lachute Town of Quebec, Canada. It is 44 m. from Montreal and is served by the Canadian Pacific Rly. The industries include sawmilling. Pop. 3906.

Lacquer Name given to a resinous varnish which gives a highly polished surface when applied to wood or metal. Japanese lacquer is made from the resinous exudation from the lacquer tree, *Rhus vernicifera*, and is used for cabinets, trays, boxes, etc., giving a very hard and polished coating. Ordinary lacquers are made from shellac dissolved in spirit with the addition of other resins and colouring matter, and are applied to metal and hardened by stoving the articles.

Lacrosse Outdoor ball game. The name is really la crosse, the crosse being the stick used by the player. The game is played on a field about 100 to 150 yds. long. The stick is furnished at the end with a net, and the aim of the player is to catch the ball

in this and then to carry, or hurl, it forward. The ball is of rubber, weighing about 4½ oz.

A side consists of 12 players and the aim of each is to get the ball between the goal posts. The players are arranged much as in association football and only goalkeepers may handle the ball. In England to-day matches are played between Oxford and Cambridge; since 1887 they have been played between north and south, and since 1922 there has been a regular county championship. The game is very popular in Canada, whence it was introduced into England.

Lactation Secretion of milk, or the period of suckling an infant. In human beings normal milk appears within two or three days of the birth of the child, the average amount being 12 or 16 oz. daily. This lasts for about five weeks, after which the amount increases until the child is about eight months old. It then decreases gradually.

Lactic Acid Several organic acids, having the formula $CH_3.CHOH.COOH$. The commonest, formed during the souring of milk by bacterial fermentation of milk-sugar, is a syrupy liquid, but can be obtained in crystalline form. It occurs also in fermenting vegetable matter and in meat juice.

Lactometer Name given to a type of instrument used in the determination of the quality of milk. There are several forms of lactometers. One is a variety of hydrometer for taking the specific gravity of milk, and another is a cylindrical graduated glass vessel which measures the volume of the separated cream.

Lactone Group of colourless liquid compounds soluble in water and alcohol and having usually a faint aromatic odour. They are regarded as intramolecular anhydrides of certain hydroxy acids, and are obtained by the elimination of water from certain hydroxy-carbonyl acids by the action of mineral acids upon the salts of these acids.

Lactose Scientific name for milk sugar occurring in milk. It is less soluble and not so sweet as cane sugar. It does not ferment with yeast, but undergoes fermentation with the common mould, *Penicillium glaucum*, forming lactic acid and causing the souring of milk. Lactose is a by-product of the milk industry in Switzerland, New Zealand and elsewhere.

Ladoga Lake of Russia. In the north of the country, it is on the borders of Finland and only a few miles from Leningrad. It covers 7000 sq. m., being the largest lake in Europe, and its length is 125 m. A canal to the Gulf of Finland, 50 m. away, has been planned.

Ladrones or Mariannes. Group of islands in the Pacific Ocean. They are about 1500 m. from the Philippines and are governed by Japan, under mandate from the League of Nations, except Guam, which belongs to the United States. Saipan, Tinian and Rota are the largest of the islands, many of which are uninhabited. Coconuts, cotton, tobacco, rice and other tropical products are grown here. Their area is 430 sq. m. and the population 69,530, of whom 49,635 are natives and the rest Japanese.

Ladybird Large family of beetles (*Coccinellidae*). They have clubbed antennae and apparently three-jointed feet. Comprising about 2000 species, the most familiar British species are the red or yellow two-spot and seven-spot. With bodies usually shining and hairless, they are economically valuable, because they and their larvae mostly consume scale insects and plant lice.

Ladybrand Town of the Orange Free State. It stands in the mountains of Basutoland, about 5000 ft. above sea level. It is connected by railway with Bloemfontein. Pop. (Eur. 1931) 2396.

Lady Chapel Place for the altar of the Virgin Mary in large churches. It was often a separate building, but to-day is more usually part of the main structure. There are some very beautiful lady chapels in the English and French cathedrals and churches. A fine example is at Ely, but there are many others, as in the new cathedral at Liverpool.

Lady Day Name given to March 25. In the Christian calendar it is the day of the annunciation of the Virgin Mary. It is a quarter day in England and Ireland.

Lady's Mantle Flowering herb of the order *rosaceae*. It grows in the northern parts of Europe and Asia. The yellowish flowers grow in clusters.

Ladysmith Town of Natal, Africa. It stands near the Klip River, 190 m. from Durban, with which it is connected by railway. There is a racecourse, and a market is held here. Standing about 3000 ft. high, the town is visited by invalids. It owes its name to the wife of Sir Harry Smith, at one time Governor of Cape Colony. Pop. (Eur. 1931) 3659.

In 1899 a British force, 12,000 strong under Sir G. White, was besieged here by the Boers. The siege lasted from Nov. 1, 1899, to Feb. 28, 1900, when the relieving force, under Sir Redvers Buller, entered the town.

Lady's Smock (*Cardamine pratensis*). Perennial plant of the cruciferous order. It is found in Great Britain in moist meadows and swampy places in the spring. Its flowers are of the palest lilac or pinkish purple shade, borne on stems 12 to 18 in. high. The upper leaves are pinnate with small narrow leaflets; the lower leaves broader and more rounded with a larger terminal leaf. Other names for it are cuckoo flower, and milkmaids.

Laertes In Greek legend, King of Ithaca and the father of Odysseus. He joined in the Calydonian boar hunt and in the expedition of Jason and the argonauts. He was still alive when Odysseus returned home after his wanderings.

Lafayette **Marquis de.** French statesman. Marie Joseph Paul Yves Roch du Motier was born Sept. 6, 1757, of noble family. In 1777 he went with some followers to help the colonists in America in their struggle with Britain and he served with them throughout the war. In 1789, being again in France, he was elected to the states general, and commanded an army when war broke out with Austria, but soon quarrelled with the dominant Jacobins and fled from the country. In 1799 he returned to France, and came into prominence after the restoration of the Bourbons. In 1824 Lafayette visited the United States, where he was received as a hero. He died May 20, 1834. Two American cities are named after Lafayette, as is also the **Lafayette National Park** (12 sq. m.) in Mount Desert Island, off Maine.

La Fère Town of France. It is 10 m. from St. Quentin, at the junction of the rivers Serre and Oise. The Germans took it in their advance of 1914 and kept it until Oct. 13, 1918.

La Fontaine **Jean de.** French writer. Born at Château-Thierry, July 8, 1621, he studied to become a priest, but instead took to the law. However, he never settled down to regular work, but lived an idle and dissolute life, chiefly in Paris. In 1661 he began to write and during the next few years published the volumes on which his fame rests. The most valuable are the *Fabliaux* written in verse; almost equally famous are the *Contes*. La Fontaine, who was very friendly with Molière and Racine, died April 13, 1695.

Lagash City of Babylonia. It was founded by the Sumerians perhaps in 3000 B.C., or earlier, and was a flourishing centre of their culture. It had its own rulers, called patesis, who were subject to one or other of the kingdoms of that time, including Akkad and Ur. Soon after 2400 B.C. the city disappeared.

Lager Light beer. It is produced in Bavaria at low temperatures by decoction and bottom fermentation. It differs from infusion beers in containing more unfermented malt extract and carbonic acid and less alcohol. British beers resembling lager are produced by variant methods.

Lagerlöf **Selma Ottiliana Louisa.** Swedish writer. Born Nov. 20, 1858, she was at first a teacher but soon began to write. In 1891 she made a reputation with some short stories, *Gosta Berling's Saga*. Novels followed and most of them have been translated into English. The English titles of the best are, *An Adventure in Vineta*, 1895; *Jerusalem*, 1901-02; *The Adventures of Nils*, 1906-07; *The Outcast*, 1920; *The General's Ring*, 1925; *Anna Svärd*, 1927. *From My Childhood* appeared in 1930. Her books owe their success to their vivid pictures of Swedish life. In 1909 she was given a Nobel prize, and in 1914 was elected to the Swedish Academy as its first woman member.

Laggan Loch, or lake, of Inverness-shire. It is 7 m. long, and the River Spean flows through it.

Lagoon Sheet of water. It may be an estuarine shallow enclosed by dunes of river silt, as at Venice. Other lagoons are formed by springs, and others are sheets of water within a coral atoll.

Lagos City and seaport of Nigeria. It stands on a small island of the same name, just off the mainland, with which a bridge connects it. Lagos has a good harbour and a considerable trade passes through it. Here is a wireless station. Pop. (1931) 100,000.

The district and town of Lagos became British in 1862 and until 1914 there was a colony of Lagos. This now forms part of the protectorate of Nigeria.

In Lagos Bay on Aug. 18, 1759, four French warships were destroyed by a British fleet under Admiral Boscawen.

Lagrange **Joseph Louis.** French scientist. Born in Turin, Jan. 25, 1736, of French parents, he was educated there. He became professor in the University at Turin, and in 1766 director of Berlin Academy. His later years from 1787 were spent in Paris, where he was a professor. He died April 10, 1813. His investigations into the principles of acoustics, mechanics and dynamics, were of the highest value. His chief work is the *Mécanique Analytique*.

La Harpe **Jean François de.** French writer. Born in Paris, Nov. 20, 1739, he began to write, and in 1763 produced a tragedy called *Warwick*. This was followed by others and also by books of criticism called *Lycée, ou Cours de Littérature*, in 12 volumes. He favoured the Revolution, but, having been imprisoned, turned to the Royalist side. He died Feb. 11, 1803.

La Hogue Cape of the Contentin Peninsula, France. Here, on May 19, 1692, an English fleet, under Admiral Russell, aided by some Dutch ships, defeated the French, most of whose ships were destroyed by the pursuers, who sent fire ships amongst them. The victory saved England from invasion as France had an army of 20,000 men ready near Cape La Hogue. The battle is sometimes called after another cape on the peninsula, Barfleur.

Lahore City of India and the capital of the Punjab. It stands on the left bank of the River Ravi, 1250 m. from Calcutta and is a great railway centre. There is an old and a new part of the city. A university for the Punjab has been founded and there are several colleges. The mausoleum of Ranjit Singh and the Hall of Mirrors are reminders of the past. The city is still surrounded by its walls and a bridge crosses the river. The large railway works give much employment and there are some native manufactures, but the agricultural trade is more important. Pop. (1931) 429,747.

Laibach City and river of Yugoslavia. The town, which stands on the river, is 44 m. from Trieste and is the chief town of a large district. Pop. (1931) 59,768.

In 1821 a congress of European powers was held at Laibach. It was the last of the series that was started in 1814. There the powers authorised the Austrians to occupy Naples.

Laissez Faire French expression, meaning "Let alone." It is used in political economy to summarise the individualist, as against the collectivist, doctrine of non-interference by governments in politics and trade, and supposedly originated in 1680, when Legendre remarked to Colbert, regarding government regulation of commerce, "Laissez faire, laissez passer."

Laity Term used for the whole body of laymen and lay women, *i.e.*, all who are not clergy. In the Church of England one of the three houses of the national assembly is the **House of Laity**. The members are elected for five years by the diocesan conferences.

Lake Expanse of water occupying a depression in the land surface. Lakes from various causes are liable to fluctuate greatly in extent and tend gradually to disappear. They may form in rock basins or be caused by an obstruction such as ice or moraine accumulations in a river valley; or by the upheaval or subsidence of land, or old volcanic craters. The Caspian Sea and Lake Superior are the two largest lakes in the world.

Lake Name given to insoluble pigments used in dyeing. They are formed by the combination of an organic dyestuff with alumina or metallic salts. A number of lakes are used as watercolour paints, especially those from the madder plant (rose madder), and from cochineal (crimson lake), but are being replaced by more permanent alizarine pigments.

Lake District Area in the north of England. It covers

some 400 sq. m. in the counties of Cumberland, Westmorland and Lancashire, and is a picturesque district of mountains, lakes and valleys. The chief centres are Keswick, Ambleside, Grasmere and Bowness, and in the district are the three highest mountains of England, Scafell, Helvellyn and Skiddaw. The lakes include Windermere, Derwentwater, Ullswater, Coniston, Grasmere and others. The district is much visited by walkers and climbers and has several packs of foxhounds. It was first made popular by the poems of Wordsworth, Coleridge and Southey, the Lake poets.

Lake Dwelling Habitation supported on piles or fascines, usually found on shallow lake margins. Remains found in Central Europe, especially in Switzerland, from 1853 onwards, yielded many objects belonging to the stone, bronze and early iron ages; similar dwellings are still seen in Borneo and Papua. In neolithic times villages of 200 or 300 huts on pile-supported platforms were the centres of a civilisation that included fishing and some agriculture.

Lake of the Woods Lake of North America, partly in Canada and partly in the United States. It covers 1850 sq. m., and in it are many islands, hence its name. Kenora at the Canadian end is the chief port on the lake.

Lally **Thomas Arthur.** French soldier. Born Jan., 1702, he was the son of Sir Gerald O'Lally, an Irishman and a Jacobite. He entered the French army and took part in the expedition of 1745, but his chief exploits were in India. In 1756 he led a force to that country and for five years conducted the fight against the British in and around Madras. In the end he was defeated and made prisoner, when he surrendered Pondicherri. Allowed to return to France, he was tried for treachery, found guilty, and beheaded May 7, 1766.

His son, **Trophime Gerard Lally-Tollendal**, became known as a Royalist during the French Revolution. He was made a marquis by his friend, Louis XVIII.

Lamaism Religious system prevalent in Tibet, Mongolia and Sikkim. A form of Buddhism, it is administered by monks and nuns. The chief pontiff is the temporal **Dalai** or **Grand Lama**, inhabiting the Potiala Palace at Lhasa; the **Pen-Ch'en Lama**, the spiritual head, inhabits the Tashi-lhunpo monastery. The Dalai Lama is Buddhism's acknowledged head in China, but not in Japan.

Lamarck **Jean Baptiste.** French scientist. Born Aug. 1, 1744, he entered the army, in which he served during the Seven Years' War. An injury compelled him to seek another calling and he became a bank clerk. He spent much time in studying botany, and in 1773 published a book on the flora of France; through this he became a member of the Academy in 1778, and keeper of the herbarium in the royal garden in Paris. He lectured there on zoology for 25 years, and at the same time worked out the ideas on evolution which are expressed in his books, *Philosophie Zoologique* and *Histoire des Animaux sans Vertebres*. In a sense he was a forerunner of Darwin, but he knew nothing of natural selection and the variation of types. He died in Paris, Dec. 18, 1829.

Lamartine **Alphonse Marie Louis de.** French writer and politician. Born at Mâcon, Oct 21, 1790, he was educated at Lyons and then went to Italy. In 1820 he published some poems called *Méditations*, and these with later volumes marked the revival in his country of romantic poetry. He also wrote a book on his travels in the East, and a narrative poem called *Jocelyn*. In 1833 he entered political life as a deputy, became Foreign Minister, and was for a time the most powerful man in the country. In a few months he resigned, and the rest of his days were passed in writing. His notable books include *La Chute d'un Ange*, *Confidences* and *Nouvelles Confidences*. As an historian he won fame with his *Histoire des Girondins*; he also wrote a history of the events of 1851-52. He died May 1, 1869. Lamartine married an Englishwoman, Marianne Birch.

Lamb **Charles.** English writer and wit. Born in London, Feb. 10, 1775, the son of John Lamb, he was educated at Christ's Hospital in Newgate Street, and in 1792 became a clerk in the service of the East India Co. There he remained until his retirement in 1825. He lived with his sister, Mary, in the Temple, and then in succession at Enfield, Islington, Edmonton and elsewhere. He died Dec. 27, 1834, and was buried at Edmonton.

Lamb is best known by his *Essays of Elia*, of their kind the most delightful and popular in the language, which first appeared in *The London Magazine*. With his sister he wrote *Tales from Shakespeare*, and he himself wrote *The Adventures of Ulysses* and other books for children, as well as a tragedy, *John Woodvil*, and a number of poems. Lamb had a great circle of friends, and many of his witty sayings have been preserved. Chief among his friends was S. T. Coleridge. His domestic life was clouded by the periodical madness of his sister, who in one of her attacks killed their mother. After this tragedy Charles took charge of her until his death. She lived until May 20, 1847.

Lambeth Borough of the county of London. It is on the south side of the Thames, having a considerable frontage on the river, and includes the districts of Brixton, Kennington, Vauxhall, Herne Hill, Tulse Hill and part of Norwood. The industries include pottery and engineering works, but there are many others. A kind of pottery produced here in the 17th century is known as **Lambeth ware.** A new bridge over the Thames was opened by King George V. in July, 1932. The borough sends four members to Parliament. Pop. (1931) 296,162.

LAMBETH PALACE, which overlooks the river, has been for 700 years a residence of the archbishops of Canterbury. The building is full of interest. Features are the dining hall, the chapel and the rich library, the gatehouse and the Lollards' Tower. Part of the grounds called Archbishop's Park is open to the public.

A decennial meeting of bishops of the Anglican Church is held at Lambeth, and is called the **Lambeth Conference.** The last was held in 1930.

Lambton Castle Seat of the Earl of Durham. It is 8 m. from Durham, overlooking the River Wear and was built in the 18th century on the site of an older house. It stands in a large park. In 1930 the house was closed, and in 1932 some of the literary and other treasures were sold.

Lamentations **Book of.** Book of the Old Testament. Ascribed to Jeremiah, it consists of five dirges, four of which are written acrostically, beginning with the successive letters of the Hebrew

alphabet; the fifth is non-acrostic. The laments, concerning Nebuchadnezzar's capture of Jerusalem and destruction of the temple, 586 B.C., are read in the synagogue annually on Aug. 6.

Lamesley Town of Durham. It stands on the Team, 4 m. from Gateshead, on the L.N.E. Rly. Coal mining is the principal industry.

Lamia In classical mythology, a Libyan queen whom Zeus loved. When Hera slew her children she destroyed every child she could secure. Greek mothers used her name as a bogey to frighten their children. She passed into Greek demonology as a vampire enticing youths to their destruction, as in Keats's poem, *Lamia*.

Lamination Term in geology. It is applied to the structure seen in sands, clays and shales where the component particles are laid down in thin layers ranging from an inch down to $\frac{1}{150}$th of an inch in thickness. Lamination is due to successive depositions of fine mud or sand by rivers or tidal currents, usually in quiet waters.

Lammas Day Name given to August 1, a Scottish, and formerly also an English, quarter day. In mediaeval times it marked the end of the wheat harvest, and on it a loaf was offered as a thanksgiving by every harvester. It was thus the loaf mass or lammas. When the calendar was altered, lammas day was moved to Aug. 12. The **lammas fields** were the fields which on this day were thrown open for pasturage; previously they had been enclosed for the growing of corn.

Lammermuir Range of hills in Scotland. They run through Berwickshire and East Lothian (Haddingtonshire) to St. Abb's Head. Lammer Law (1733 ft.) is the highest point. The scene of Scott's novel, *The Bride of Lammermoor*, is laid here.

Lampblack Impure form of soot. It consists of amorphous carbon and hydrocarbons obtained by burning in special furnaces such substances as oil, resin and other organic material, the lampblack being collected from the hood or flues of the furnace. It is used in the manufacture of black paint and printers' ink.

Lampeter Borough and market town of Cardiganshire. It is on the Tiefy, 27 m. from Carmarthen, on the G.W. Rly. Here is S. David's College, founded in 1827 for the training of candidates for the ministry of the church in Wales. Pop. (1931) 1742.

Lampoon Name used for a satire, or attack of a somewhat vulgar character, on an individual. It may be either in verse or prose. At one time politicians were very subject to lampoons.

Lamprey Family of aquatic vertebrates of an order lower than fishes. Scaleless and jawless, they cling to rocks or fishes by their mouths. British sea lampreys, river lampreys, or lamperns, and mud lampreys, or prides, all ascend rivers for spawning, and are captured mainly for bait for seafish. They are found in all temperate waters.

Lanark Burgh, market and county town of Lanarkshire. It stands on the Clyde, 31 m. from Glasgow, on the L.M.S. line. Cotton and other textiles are manufactured, and there is an agricultural trade. Every June a town festival is held on Lanark Moor, and there are race meetings twice a year. The scenery in the neighbourhood is very beautiful. Pop. (1931) 6178.

Near is **New Lanark**, where Robert **Owen** erected cotton mills and worked them as an experiment in socialism.

Lanarkshire County of Scotland. It is in the south-west of the country and, as the Clyde flows through it, is sometimes called Clydesdale. It covers 879 sq. m., and is chiefly noted for its rich coal mines which have made it a great industrial area. More than one-third of the population of Scotland lives in Lanarkshire, which includes most of Glasgow, as well as Lanark, Rutherglen, Motherwell, Hamilton and Airdrie. Away from the mines there is much fertile land, where market gardening and the rearing of horses, cattle and sheep are carried on. Clydesdale horses are famous. The chief rivers are the Cart, Kelvin and other tributaries of the Clyde, and in the south are the Lowther Hills. The county is full of scenes and buildings of historic interest. Pop. (1931) 1,585,968.

Lancashire County of England. In the north-west of the country, it has a long coastline on the Irish Sea. Elsewhere its boundaries are Yorkshire and Cheshire. In the north is a portion of the county separated from the rest by Morecambe Bay and known as Furness. The county is entered by the Pennines. The rivers include the Mersey, Irwell, Ribble, Lune, Calder and Darwen. Coniston is the largest lake.

Much of Lancashire is a thickly populated area, and is a centre of the coal-mining and cotton industries. Liverpool and Manchester are the chief industrial towns, and the principal seaports, Manchester being linked with the sea by a ship canal. Other large towns are Salford, Blackburn, Bolton, Oldham and Preston. Lancaster is the county town; Barrow-in-Furness is a large seaport. Blackpool and Southport are popular watering places. Lancashire is a famous cricketing county and has innumerable cricket and football clubs. Pop. (1931) 3,926,760.

The **Lancashire Fusiliers**, a regiment of the British army, was raised in 1688 and was formerly known as the 20th Foot. It has a long and honourable record of active service, and had many battalions in the field during the Great War. The depôt is at Bury.

Lancaster Borough, market town and river port of Lancashire; also the county town. It is on the Lune, 7 m. from the sea and 230 m. from London, on the L.M.S. Rly. Much of the old castle is now used as law courts and contains a museum. The chief industries are the making of linoleum and engineering works, while there is a little shipping in the river. Pop. (1931) 43,396.

The Royal Lancaster Regiment, which has its depôt at Lancaster, is nowadays known as the King's Own.

Lancaster Duchy of. Name of the estates that belong to the King as Duke of Lancaster. They are chiefly in the counties of Staffordshire and Lancashire and are managed by a council, the head of which is the chancellor of the duchy, a member of the Government. In 1931 the income of the duchy was £120,000, and £62,000 was paid to the King. The duchy has an attorney-general, and courts are held in the name of the Duke, who appoints the high sheriff of the county.

Lancaster Duke of. Title borne by the king of Great Britain.

Henry III.'s younger son, Edmund, was made Earl of Lancaster in 1267, and this title passed to his great-grandson, Henry, who was made a duke in 1351.

Duke Henry was a famous soldier until his death on May 13, 1356. He left no sons, only a daughter who married, in 1359, John of Gaunt, a son of Edward III. In this way Gaunt obtained the rich estates of the duchy and the title of Duke of Lancaster, which passed on his death to his son, who became Henry IV. The duchy then became associated with the crown and since that time (1399) the king, or queen, has been Duke of Lancaster.

Lancaster **Duke of.** English prince. John of Gaunt, so named because he was born at Ghent, was the fourth son of Edward III. Born June 24, 1340, in 1359 he married Blanche, the heiress of Henry, Duke of Lancaster, and so obtained that title. She died in 1369 and he married Constance, daughter of Peter, King of Castile. John spent much of his time fighting in France and Spain, and at one time hoped to become King of Castile. When his father's health was feeble he became active in English politics, and he remained so during the reign of his nephew, Richard II. At this time he was the leader of the party that favoured the teaching of Wycliffe and opposed the church. He died Feb. 3, 1399, leaving a son who became Henry IV., and a daughter, Catherine. His third wife was Catherine Swynford. By her he was the father of the Beauforts, who played an important part in public affairs during the reigns of Henry IV. and Henry V.

Lancaster **House of.** Family that provided kings of England from 1399 to 1461. Its founder was Edmund, a son of Henry III., who was made Earl of Lancaster in 1267. In 1351 Henry, a later earl, was made a duke, and from him the title passed to Edward III.'s son, John of Gaunt, who married the duke's daughter. Their son Henry claimed the throne as being descended from Edward I., and in 1399 landed in England from his exile and was crowned Henry IV., Richard II. being deposed. He, his son Henry V. and his grandson Henry VI. were kings in turn. Richard, Duke of York, claimed the crown in opposition to Henry VI., and the Wars of the Roses began. The result was the deposition of Henry VI. in 1461 and his murder in 1471. His son had already been killed and the house of Lancaster became extinct in the male line.

Lancaster **Joseph.** English reformer. Born in 1778, he opened a school in Borough Road, London, in 1801. He introduced into this the monitorial system, and the experiment was so successful that in 1808 the Royal Lancasterian Society was founded to develop his ideas. This became the British and Foreign School Society. Lancaster went to the United States in 1818, and was in New York when he died, Oct. 24, 1838. He is regarded as one of the pioneers of popular education in England.

Lancaster **House.** Mansion containing the London Museum. It is near St. James's Palace and overlooks the Green Park. Formerly York House, it was built about 1826 for the Duke of York, and was bought successively by the Duke of Sutherland (1841) and Lord Leverhulme (1912). The latter renamed it Lancaster House, and presented it to the nation to contain the London Museum.

Lance Slender cavalry spear. It was used by the knights in the Middle Ages. Its use was revived during the Napoleonic wars and in the 19th century it was adopted for regiments in the British, Prussian and other armies. It is now only a ceremonial weapon. The lance is from 8 to 9 ft. long, made of steel with a short, triangular spear head. Sometimes it is of ash or bamboo with a steel head.

Lance Corporal Non-commissioned officer in the British army. It is the lowest rank in the service. The lance-corporal wears a single chevron on each sleeve.

Lancelet Small vertebrate creature. It is found near the coast of most warm countries and is about 2 ins. long. It is like a fish in shape, but is a much simpler organism, being merely a piece of jelly with a backbone. It belongs to the class *Cephalochorda*, and is interesting because, being the lowest of the vertebrates, it is regarded as the link between these and the invertebrates. Its other name is amphioxus.

Lancelot Character in the Arthurian legends. He appears as the handsome knight who won the love of Arthur's queen, Guinevere, and so broke up the company of the Round Table. He was known as Sir Lancelot of the Lake, and tradition makes him the father of Galahad. He is said to have become a monk after his great battle with Arthur. His story is in Malory's *Morte D'Arthur* and in Tennyson's *Idylls of the King*.

Lancers Cavalry regiment in the British army. They are so called because their principal weapon was the lance. At one time there were six of them, 5th, 9th, 12th, 16th, 17th and 20th. The oldest, the 5th and 9th Lancers, were raised in 1697, and the others in the 18th century. After the Great War the number of lancer regiments was reduced to four and in 1929 one of these, the 12th, was made into an armoured car regiment. The other three are the 9th, the 16th/5th, a union of those two, and the 17th/21st, another union. All have fine records of service, especially the 17th, which wears as its badge a Death's Head and is called the Death or Glory Boys.

Lancers Square dance. It is of French origin and was very popular in the 19th century. It consists of five figures, and eight people compose the set.

Lancewood Tough elastic timber of various trees of the custard apple order. It grows in British Guiana and the West Indies. Assegai wood, allied to dogwood, is sometimes called **Cape Lancewood.**

Lanchester Town of Durham. It is 8 m. from Durham, on the L.N.E. Rly. The chief occupation is coal mining. The town occupies the site of a Roman city and many Roman remains have been unearthed. Pop. 5200.

Lancing Village of Sussex. It is 8 m. from Brighton, and has of late become a seaside resort. On the Downs above the village is Lancing College, properly **St.** Nicholas College, Lancing, a public school with accommodation for about 400 boys.

Land Word used for the earth on which we live and which provides us with the fundamental needs of human life. In most countries of the world a great deal of it is owned by private individuals, but there are public lands, or land which belongs to the

state as a whole. Much of the land in private hands is let out for rent.

The private ownership of land has created many difficulties, and sometimes perhaps injustices, and as a remedy its nationalisation has been suggested. The special taxation of land, which it is argued differs from other commodities in that its amount is strictly limited, has been advocated, and in one or two cases has been put into practice. In Ireland, where the land problem is particularly acute, much of the land has been bought by the tenants from the landlords with the aid of the state.

In Great Britain economic causes in the 20th century have led to the sale and break up of many large landed estates. All over the civilised world the tendency is for the ownership of land to pass from the large holder to the small one.

In Great Britain land is conveyed from one person to another by lawyers who draw up conveyances, which, with other documents, constitute the title deeds. This applies to the two kinds of land found in the country, freehold and leasehold. The laws dealing with land are very cumbersome, but a series of laws passed in 1925 helped to simplify them.

To facilitate the transfer of land, a system of registration has been devised. This has been adopted in Canada, Australia and other parts of the British Empire and to some extent in England. An office for the registration of titles to land was opened in London. In 1898 the registration of land sold was made compulsory in the county of London and in 1925 in the borough of Eastbourne; it is also compulsory in Yorkshire and Middlesex; elsewhere it is optional. The owner of land on the register for a certain time obtains an absolute title to it which is guaranteed by the state, and future transfers can be carried out at small cost.

Land In economics one of the factors in production, the others being capital and labour. The share of the joint product which it receives is known as rent. According to Ricardo's theory of rent, the amount of rent is decided by the value of a piece of land over land on the margin of cultivation, *i.e.*, land which just pays for the expenses of cultivation and no more.

This idea of rent is quite sound in theory, but in practice it needs modification. Local customs play their part in determining the value of land. Moreover, land, especially agricultural land, has had a certain amount of capital put into it and must offer a return in the shape of profits.

The enormous increase in land values in towns has led to a demand for special taxation on these, but so far only temporary expedients have been attempted in this direction.

Land Army Organisation set up in Great Britain in 1917. It was composed of women who were enrolled, wore a uniform and received a regular weekly wage. Each entrant received training and an outfit. Their duties were to assist farmers, and at one time they numbered about 20,000. The organisation, which had a journal, *The Landswoman*, was dissolved after the war.

Landau Town of Bavaria. It stands near the Hardt Mountains, 30 m. from Mannheim, on the little River Queich. At one time it was a free city and was fortified. In 1648 it was given to France and in 1816 to Bavaria. The town is a centre of the wine trade. Pop. 17,000.

Landau gave its name to a kind of carriage, once popular in England. This could be open or closed and was usually drawn by one horse.

Land Court Body that decides matters concerning the tenure and rent of land. In 1911 one was set up in Scotland. This fixes fair rents, especially in the areas occupied by crofters, and decides the price of land that is taken for small holdings.

Land Crab Widespread family of tropical crustaceans. Their modified gill cavities, acting as lungs, enable them to live on land. They spend the day in burrows, sometimes two or three miles inland, migrating to the coast collectively in the breeding season. The Jamaica violet land crab is a table delicacy, especially when soft-shelled during moulting.

Landes District of France. It is in the south-west of the country, and is a noted expanse of sand and marsh covering 3615 sq. m. in the departments of Landes, Lot-et-Garonne and Gironde. On it furze grows freely and sheep are pastured. At one time the people of the Landes went about on stilts, so difficult was it to traverse the sand and marsh, but now there are roads that to a large extent have made this mode of progress unnecessary. The department of Landes lies along the Bay of Biscay.

Landgrave German title meaning "count of the land." There were several such in the Middle Ages and later, one being the ruler of Thuringia. In Hesse there were landgraves until 1918.

Land League Society set up in Ireland in 1879. Its object was to reform the land system of that country. Its inspirer was Michael Davitt, and its president, C. S. Parnell. The methods adopted, including refusal to pay rent, boycotting and even outrages, brought its supporters into conflict with the law, and in 1881 the league was declared an illegal association. After this time less was heard of its operations, and as the landlords were gradually bought out there was less need for it.

Landlord Primarily one who owns land. It is also used for the owner of houses and for the licensee of an inn. Many landlords let their land and houses to others who are known as tenants and who pay rent.

In Great Britain, as in other countries, a number of laws deal with the relations between landlord and tenant. The several Rent Restriction Acts and an important act passed in 1927 regulate the position as regards property which is not agricultural. One result was to give retiring tenants of business premises the right of compensation for improvements. As regards agricultural land also, the retiring tenant is entitled to compensation for improvements made by him. *See* LAND; RENT.

Landor **Walter Savage.** English writer. Born at Warwick, Jan. 30, 1775, the son of a doctor, he was educated at Rugby and Trinity College, Oxford. For a time he lived in Wales and wrote poems. Later he raised and led a force to help Spain in the Peninsular War. On his return from this expedition, he lived again in Wales, then in Florence, and then, for 20 years (1838-58), in Bath. In 1858 he went back to Florence where he died, Sept. 17, 1864.

Landor was a fine scholar and a man of considerable gifts. He had many friends,

but his quarrelsome nature made an equal number of enemies. Of his writings the most popular are, *Imaginary Conversations*, 5 vols., *The Examination of W. Shakespeare* and *Pericles and Aspasia*. He also wrote a tragedy, *Count Julian*, and many poems. Landor had a great love for republicanism, admiring Washington and Garibaldi.

Landrail Alternative name for the corncrake (*q.v.*) used to distinguish it from a water rail. It also denotes generally any rail frequenting uplands, *e.g.*, the New Zealand weka rail.

Landrecies Town of France. It stands on the Sambre, on the borders of Belgium, 50 m. from Lille, and was long a fortified town. Near is the forest of Mormal. On Aug. 25, 1914, when the British were retreating from Mons, sharp fighting with the Germans took place here. The Germans were driven out, but soon regained the town and held it until the end of the war.

Landscape Term in art applied to a picture representing a view of a country as seen by the artist. Among the greatest of landscape painters are Ruysdael and Hobbema of the Dutch school, Claude, Corot and Rousseau of the French school, and the English artists, Constable, Bonnington and Turner.

Landscape gardening means laying out a garden with regard to its general appearance, not to the details of beds and borders. It thus needs a considerable area and is best seen in the gardens of the great English houses such as Alnwick and Bowood. Natural features can be used with great effect.

Landseer **Sir Edwin Henry.** English artist. Born in London, March 7, 1802, he studied art under his father, an engraver, and at the Royal Academy Schools, London. In 1826 he was made A.R.A. and in 1830 R.A. He was knighted in 1850. He died in London, Oct. 1, 1873. Landseer became very popular as an animal painter. His works are represented in the Tate and National Galleries, London. In the form of engravings his pictures became very well known, *e.g.*, "The Monarch of the Glen" and "Dignity and Impudence." He designed the lions in Trafalgar Square, London.

Land's End Extreme western point of England. It is in Cornwall, 9 m. from Penzance, and is visited by pleasure seekers. The granite cliffs rise to a height of 100 ft. Near are the Longships, a group of islets on one of which is a lighthouse.

Landslip Subsidence of strata on the coast where hard beds rest upon soft impermeable ones. The action of springs and waves wear away the softer rocks rendering the overlying beds unstable and liable to break and slide down on to the shore. Examples are seen at Axmouth, Devon and Antrim, Ireland.

Land Tax Form of taxation. Taxes on land have been levied in many countries and have taken many forms. The feudal system included what was usually a tax on land, and tithes are a tax on land. In Great Britain in 1692 a tax was levied on land at the rate of 4s. in the £. Later owners were allowed to commute the tax and many did so. To-day it is only paid for a small proportion of the land of the country and produced £650,000 in 1932. It is levied on the parishes and the amount divided up among the landowners.

In modern times there has been a demand for taxes on land that has improved in value owing to the growth of population and other causes. In Australia a tax of this kind was levied and there was one in Great Britain between 1910-1920, this being called the increment value duty. In 1929 a new land tax was introduced. This took the form of a tax on the capital value of land at the rate of a penny in every £1. Agricultural land and also plots of land worth £120 and less were exempt. A valuation of all the land in the country was begun, but this was suspended in 1931, and the proposed tax was abandoned.

Lane **Lupino.** English actor and acrobat. He was born June 16, 1892, and made his first London appearance as "Nipper Lane" in 1903. He is a member of the famous Lupino family noted for its acrobatic skill since 1780 and is himself an expert acrobat.

Lanercost Village of Cumberland. It stands on the Irthing, 11 m. from Carlisle. It is famous for the ruins of its 12th century priory, which has some old and interesting tombs.

Lanfranc English prelate. Born at Pavia about 1005, he became a priest and settled in Normandy. In 1041 he became a Benedictine monk at Bec, and in 1045 he was made head of that house. Through the influence of William, Duke of Normandy, he was made head of a monastery at Caen in 1062, and Archbishop of Canterbury in 1070. He died May 24, 1089, and was buried in Canterbury Cathedral, which he himself had rebuilt after the fire of 1067.

Lanfranc was a scholar and wrote some treatises and commentaries. He was also one of William's most trusted advisers.

Lang **Alexander Matheson.** British actor. Born in Montreal, May, 15, 1879, the son of a Scottish minister, he was educated at Inverness and St. Andrews, and in 1897 first appeared on the stage. Under F. R. Benson he played Shakespearean characters with much success and he soon became prominent. He took a company to Australia and S. Africa and as a producer was responsible for, *Mr. Wu*, *Othello*, *Carnival* and *The Wandering Jew*, in all of which he himself appeared. His other successes included Charles Surface in *The School for Scandal*; John Storm in *The Christian*; and he also played in *Jew Süss* and *Elizabeth of England*. Lang has also taken part in productions for the films.

Lang **Andrew.** Scottish writer. Born at Selkirk, March 31, 1844, he was educated at Edinburgh Academy, St. Andrews and Oxford. He was made a fellow of Merton College, Oxford, and became a writer for the press. He wrote regularly for *The Daily News* and for other journals, partly on politics but more frequently on books, his work being marked by wide knowledge, graceful style and real, though unobtrusive, scholarship. Working to the end, he died July 20, 1912.

Lang's books are very numerous and on a variety of subjects. Some are volumes of poetry, such as *Grass of Parnassus*; others are translations, the most notable being those of the *Iliad* and the *Odyssey*, in which he collaborated. He also wrote a *History of Scotland*, and biased but scholarly books on Mary, Queen of Scots and Joan of Arc, also on the Young Pretender and the rising of 1745. *A Monk of Fife* is a novel and with Rider Haggard he wrote *The World's Desire*. On anthropology and folklore he was something of

an authority, his books including, *Custom and Myth* and *Magic and Religion*. His volumes of essays on literature such as *Letters to Dead Authors* and *Books and Bookmen*, are perhaps his most enduring work.

Lang **Cosmo Gordon.** British prelate. A son of Rev. J. Marshall Lang, principal of the University of Aberdeen, he was born Dec. 31, 1864, and educated at Glasgow and Balliol College, Oxford. He became a fellow of Magdalen College, entered the Church and from 1890-93 was vicar of S. Mary the Virgin at Oxford, and from 1896 to 1901 vicar of Portsea. Afterwards he became successively Bishop of Stepney, Canon of S. Paul's and (in 1909) Archbishop of York. In 1928 he was appointed Archbishop of Canterbury in succession to Dr. Davidson.

Lang **John Thomas.** Australian politician. Born in Sydney, Dec. 21, 1876, he became mayor of Auburn and a prominent figure in the Labour movement. In 1913 he entered the legislative assembly of New South Wales where he became leader of the Labour party. From 1920-22 he was Treasurer and from 1925-27 he also held the office of Prime Minister. In 1930 Lang again became Prime Minister, and he was prominent during the financial crisis of 1931, when he advocated the policy of repudiation, and in March refused to find money for the interest due in London on New South Wales loans. During 1931 and 1932 he carried on a struggle against the government of the Commonwealth that passed legislation to compel New South Wales to meet its liabilities, but in 1932 the general election went against him, and he left office.

Langdale Two valleys in the Lake District. **Great Langdale** is near Grasmere and is 5 m. long. At Elterwater it meets **Little Langdale**, a somewhat shorter valley. Two pikes at the top of Great Langdale are known as the Langdales, they are Harrison Stickle (2400 ft.) and Pike o' Stickle (2330 ft.). A village in Great Langdale is called **Langdale**. It is 4 m. from Ambleside.

Langholm Burgh of Dumfriesshire. It is on the Esk, 21 m. from Carlisle, on the L.N.E. Rly. **Old Langholm** is on one side of the river and **New Langholm** on the other. The burgh is noted for its sheep fairs and tweed is manufactured. Near is **Langholm Lodge**, a seat of the Duke of Buccleuch. Pop. (1931) 2448.

Langland **William.** English poet. He was born at Cleobury Mortimer about 1330 and became a priest. He passed most of his life in London without a regular charge and died in 1400 or thereabouts.

Langland is famous as the author of *The Vision of Piers Plowman*, a picture of the life of the time in England which is invaluable. The scene is the Malvern Hills, near his home.

Langside District of Glasgow. It is famous because here on May 13, 1568, the forces of Mary, Queen of Scots were beaten by those under the Regent Moray. Mary escaped to England. Langside is now in the city of Glasgow.

Langton **Stephen.** English prelate. Born about 1150, he studied in Paris and became a priest. In 1206 he was made a cardinal and in 1207 was appointed Archbishop of Canterbury, but owing to the opposition of King John, he did not obtain the post until 1213, spending his time in France. Langton is best known as one of the leaders of the barons who compelled John to sign Magna Charta, and as a defender of the church and the rights of the English nation. He died July 9, 1228, and was buried at Canterbury. The theological *Commentaries* he wrote were valued by scholars in the Middle Ages.

Langtry **Lily.** English actress. Born in Jersey, Oct. 13, 1852, she was the daughter of a clergyman there, Rev. W. C. Le Breton. In 1874 she married Edward Langtry, and in 1881 she appeared on the London stage where her beauty and ability soon made her the most popular actress of the day. She remained for many years a great favourite, her successes including parts in *She Stoops to Conquer*, *Macbeth*, and *As You Like It*. She played also in South Africa and the United States and for a time managed a London theatre. She also owned racehorses. Her second husband was Sir Hugo de Bathe. She died Feb. 12, 1929.

Language Any expression of thought, specifically the verbal utterance developed by mankind from inarticulate gesture into articulate speech for recording and communicating ideas. Language is not heritable, but acquired by each individual after birth. It may comprise isolated, agglutinative and inflected, or analytic and synthetic forms. Developed in various primary areas, these passed into local dialects by migration and settlement, being classifiable into major groups such as Indo-European, Semitic, Hamitic, Altaic, Austric, Bantu, Amerind and the like. Dialectic branches are especially abundant in isolated regions, *e.g.*, mountain valleys and islands. Sign language and drum language are conventional modes of communication independent of the tongue.

Languedoc One of the provinces of France before 1789. It was in the south-east of the country, lying to the north of the Pyrenees and the west of the Rhône. Its chief town was Toulouse. The Albigenses and then the Camisards lived in the district. The word means the *langue*, or language, *d'oc*, because the inhabitants pronounced the French word for yes as *oc*.

Lankester **Sir Edwin Ray.** English scientist. Born May 15, 1847, the son of a medical man, he was educated at S. Paul's School, London, and Downing College, Cambridge. He began to lecture at Exeter College, Oxford, and from 1874-90 was Professor of Zoology at University College, London. From 1891 to 1898 he was Linacre Professor of Comparative Anatomy at Oxford, and from 1898 to 1907 director of the Natural History Museum at South Kensington. One of the leading zoologists of his time, Lankester wrote text books, and after his retirement devoted his talent to popularising the sciences of which he was a master. His volumes include, *The Kingdom of Man*, *Diversions of a Naturalist*, *Secrets of the Earth and Sea* and *Science from an Easy Chair*. In 1906 he was president of the British Association and he helped to found the Marine Biological Association. Knighted in 1907, he died Aug. 15, 1929.

Lannes **Jean.** French soldier. Born April 11, 1769, the son of a livery stable keeper, he entered the army in 1792. Soon he attracted the notice of Napoleon, and was made a general. In Italy he added to his reputation at Marengo, and he held high commands at Austerlitz, Jena and Friedland. He also served in Spain and Portugal, and was made Duke of Montebello and a

marshal. At the battle of Aspern he was seriously wounded, and died May 31, 1809.

Lanolin Name given to hydrous wool fat. It is a yellowish white tenacious substance derived from the skin of the sheep. It contains cholesterin and the ethers of certain fatty acids, is absorbed readily by the skin, used as the basis of many ointments for rapid absorption of drugs.

Lanrezac **Charles Louis.** French soldier. He was born in Guadeloupe, July 31, 1851, and entered the army. He passed through the school of war and made a reputation as a student of strategy. He rose to the rank of general, and in 1914, when war broke out, he was a member of the Council of War and head of the 5th army. He led his army at the battle of Charleroi, but he did not agree with the French plan of campaign, and his relations with Joffre were bad. On Sept. 3 his command was taken from him. He died Jan. 18, 1925.

Lansbury **George.** English politician. Born Feb. 21, 1859, he emigrated when young to Australia. Having returned to England in 1885, he became known as a socialist politician. In 1903 he was elected to the borough council of Poplar which he also represented on the London County Council. From 1910-12 he was Labour M.P. for Bow and Bromley and he was again elected in 1922 and at subsequent elections. From 1929-31 he was First Commissioner of Works and in 1931, when nearly all the Labour leaders had lost their seats in Parliament, he was selected to lead the Opposition. He resigned leadership for health reasons in Oct., 1935.

Lansdown Hill outside Bath. On it is a tower built by William Beckford and called Beckford's Tower. On July 5, 1643, it was the scene of a fight between the Royalists and the Parliamentarians, in which the former were driven back with heavy loss. On the hill is a monument to Sir Bevil Grenville, who was killed.

Lansdowne **Marquess of.** English title borne by the family of Fitzmaurice. The early Fitzmaurices were barons of Kerry in the Irish peerage, and in 1722 one of them was made Earl of Kerry. A younger son of the 1st Earl was made Earl of Shelburne in 1753, and the 2nd Earl of Shelburne was made Marquess of Landsowne in 1784. The family estates are in Wiltshire, where is the family seat of Bowood. The marquess has also estates in Ireland. His eldest son is known as the Earl of Kerry.

William Petty Fitzmaurice, the 1st marquess is better known as the Earl of Shelburne (*q.v.*). In 1809 **Henry Petty Fitzmaurice** became the 3rd marquess. He had already been Chancellor of the Exchequer (1806-07), and for the rest of his life he was one of the leaders of the Whig party, holding high office under successive Whig governments. In 1852 and 1855 he refused to become premier and later he refused a dukedom. Died Jan. 31, 1863.

Lansdowne **Marquess of.** English statesman. Henry Charles Keith Fitzmaurice was born Jan. 14, 1845, and was educated at Eton and Balliol College, Oxford. In 1866 on the death of his father, the 4th marquess, he succeeded to the titles and estates and entered upon his long career of public service. He held a junior office in the Liberal ministry of 1868-74 and again for a short time in 1880. In 1883 he was appointed Governor-General of Canada and from 1888-93 he was Governor-General of India. In 1895, as a Liberal Unionist, Lord Lansdowne was made Secretary for War, a post he retained until he became Foreign Secretary in 1900.

Resigning office in 1905 he became leader of the Unionist party in the House of Lords. He was concerned in the negotiations of 1914 on the Irish question, and in 1917 advocated a peace with Germany. He died June 3, 1927. His life was written by Lord Newton, 1929.

Lord Lansdowne married a daughter of the Duke of Buccleuch. His younger son, **Lord Charles Mercer Nairne,** was killed in the Great War; the elder son having, as Earl of Kerry, sat in the House of Commons, became the 6th marquess on his father's death.

Lansdowne **House.** London residence. It is in Berkeley Square, and was built in the 18th century by the brothers Adam. Additions were made to it later. Long the London house of the Marquess of Lansdowne, it was sold in 1929.

Lansing **Robert.** American politician. Born at Watertown, New York, Oct. 17, 1864, he was educated at Amherst College. He became a lawyer, was employed on several important international cases and was closely associated with the government. In June, 1915, he succeeded W. J. Bryan as Secretary of State and he held that position throughout the war period, when his knowledge of international law was extremely useful. He attended the Peace Conference in Paris, but in Feb., 1920, resigned, and returned to his legal practice at Watertown. Lansing wrote *The Peace Negotiations* and *The Big Four of the Peace Conference.*

Laocoon Group of statuary. It was discovered in Rome in 1506, and is now preserved in the Vatican Museum. It represents the final episode in the Greek legend of the Trojan priest, Laocoon, where two serpents strangle him and his two sons. The raised arms and some parts of the serpents have been restored.

Laodamia Character in Greek legend. The wife of Protesilaus, who was killed during the siege of Troy, she implored the gods to allow him to return to her from Hades for three hours. On his return to Hades she died and so went with him.

Laodicea Name of several cities founded or renamed by Seleucid kings. The chief, situated on the river Lycus near Colossae, was renamed by Antiochus II. (3rd cent. B.C.) after his wife Laodice. Its early Christian community was addressed by Paul in his epistle to the Colossians and reproved for lukewarmness in Revelation (Ch. iii.).

Laomedon In Greek legend the King of Troy. For an offence Zeus ordered Apollo and Poseidon to serve Laomedon. In return the king promised them rewards, but when the time came he refused to honour his undertaking. Poseidon therefore sent a sea monster to ravage his lands, and to save them it was decided to sacrifice the king's daughter, Hesione, to the beast. Hercules saved the princess, but again Laomedon refused the promised reward. For this he and his sons, save one, were killed. The survivor, Priam, became King of Troy.

Laon City of France. It is 87 m. from Paris, and has a magnificent cathedral and an old palais de justice. Owing to its position it was an important fortress in

the Middle Ages and a residence of the Carlovingian kings. There was much fighting here during the Great War. The town was entered in Aug. 30, 1914, by the Germans who remained in possession until Oct., 1918. Pop. 19,125.

Lão-Tsze Chinese philosopher. He lived in the 6th century B.C., and was the author of a work called Tâo-teh-king, one of the sacred books of the Chinese. He teaches the religion called Tâoism, a kind of pantheism: "All things originate from Tao, conform to Tao, and to Tao they at last return," Tao being the supreme being. He taught also a belief in the transmigration of souls. He was librarian to one of the ruling princes and finished his life in a hermitage.

La Paz Capital of Bolivia. It is the actual seat of government, though Sucre is the legal capital. It stands high up in the mountains in the centre of the country. Railway lines connect it with the coast at Mollendo and with other places. La Paz is a prosperous trading centre, with a university and some fine buildings. Pop. 146,930.

Another **La Paz** is a small port of Argentina, on the Parana river. A third **La Paz** is in Mexico. This is a seaport.

Lapis Lazuli Beautiful blue mineral. It consists of silicate of soda, lime and alumina with sulphur and chlorine. It has been valued as an ornamental stone from ancient times, being known to Pliny as *sapphirus*. It is used still in mosaic work, and was the original source of the pigment ultramarine.

Laplace **Marquis de.** French scientist. Pierre Simon Laplace was born March 28, 1749, and showed exceptional gifts as a mathematician. In 1767 he became a teacher of this subject in Paris and later a professor of analysis. He published the result of his researches on the integral calculus, in 1796 his famous book on astronomy, *Exposition du Système du Monde* appeared, and in 1799 the still more famous *Mécanique Céleste*. His researches into the movements of the tides, the planets and the solar system generally have won for him a reputation as the greatest of French astronomers. He was equally great as a physicist, and in physics, too, his researches were of profound significance. Laplace was made a marquis and died March 5, 1827.

Lapland District of Europe. In the extreme north, it is in Sweden, Norway and Finland. It is a thinly peopled land of forests and morasses, owing its name to the Lapps, a race short in stature, with high cheek bones and snub noses. They are nomads and live by hunting and fishing. They number about 30,000 in Europe and there is a colony of them in Alaska.

La Plata **Rio de.** Name of a river estuary and city in South America. The estuary is made by two great rivers, Uruguay and Parana, and divides Argentina from Uruguay. It is about 200 m. long and at its mouth about 150 wide. There are several ports on the estuary, which is a great trading route.

The city of **La Plata** is in Argentina, 35 m. from Buenos Aires and five from its port, Ensenada. It is a modern place and has some fine buildings and parks. Pop. (1931) 182,401.

Lapwing Common British bird (*Vanellus arvstatus*), also called the green plover and the peewit. It is found in Europe and Asia and winters in India and Africa. It has four toes. Its back is greenish and it has white underparts. It feeds upon insects and worms. Its eggs are laid on the ground and used to be sold and eaten as plovers' eggs.

Larbert Town of Stirlingshire. It is just outside Falkirk on the River Carron and 24 m. from Edinburgh. It is a railway junction. Pop. 1500.

Larceny In English law a form of theft. The stealing and carrying away of goods "with intent permanently to deprive the owner thereof," constitutes larceny. It is a felony and can be punished by penal servitude for as much as 14 years. For simple larceny, or common theft, the maximum sentence is three years.

Larch Genus of deciduous cone-bearing trees (*Larix*). The common larch, *L. europaea*, native in the Alps, is a lofty tree from 80 to 140 ft. high, with needle-like leaves and small cones. Its hard, tough timber serves for poles, pitwood, railway sleepers and domestic building; and it also furnishes turpentine and bark for tanning. Largely planted in Britain, it suffers much from the larch canker fungus; hence other species, *e.g.*, Japanese red and N. American western larch, are being tried.

Lares Roman household divinities. Originally each family land had its tutelary deity, who became the centre of the household worship. The lararium, or shrine, usually contained images or pictures of youths holding horns of plenty and plates. Public lares had chapels at crossroads.

Largo Seaport of Fifeshire. It is on Largo Bay, an opening of the Firth of Forth, 3 m. from Leven. It has a fishing harbour, and remains of a castle. Largo Law is a hill near, 960 ft. high. Pop. 2271.

Largs Burgh and watering place of Ayrshire. It stands on Largs Bay, 43 m. from Glasgow, on the L.M.S. Rly. Near here, in 1263, a Norwegian army was defeated by King Alexander III. and Norway was compelled to give up the Hebrides. Pop. (1931) 6115.

Lark Name of a family of birds (*Alaudidae*). There are many species but only a few are seen in Great Britain. The chief are the skylark and the wood lark, both of which make their nests in the country. The crested lark, the shore lark and others visit the country and, like the other larks, are fairly general in the warmer parts of Europe and Asia.

Larkspur Popular name for the flower also called the delphinium (*q.v.*).

Larne Seaport, market town and urban district of Northern Ireland. It is in Co. Antrim, 24 m. from Belfast, and stands at the mouth of **Lough Larne**, an opening of the Irish Sea. The town has a good harbour. Pop. (1926) 8100.

La Rochefoucauld **Duc de.** French writer. Born in Paris, Sept. 15, 1613, François de la Rochefoucauld served in the army. He mixed in the tangled politics of the time and figured in the wars of the Fronde, after which his time was passed mainly in social life in Paris. In 1663 the duke published the book on which his fame rests, *Reflexions ou Sentences et Maximes Morales*. He also wrote some *Memoires*, which are very valuable for the history of the time. He died March 17, 1680.

Larva Stage in the metamorphosis of many forms of animal life after

emergence from the egg. It usually differs considerably from the adult form. In marine forms, such as mollusca and crustacea, the larvae are pelagic, while the adult lives on the sea bottom. Among the amphibia some adult forms are terrestral, while their larvae are aquatic. Among insects, the larva is concerned with feeding and growth while the adult is adapted chiefly for reproduction.

Laryngitis Inflammation of the mucous membrane of the larynx, or organ of voice. The acute form, resulting from catching cold, inhaling irritant vapours, swallowing hot fluids, or overstraining the voice, may be attended by hoarseness, a barking cough, a choking feeling, difficulty in swallowing, and impeded breathing. If repeated, or produced by excessive smoking, it may become chronic. When the epiglottis swells the affection is called oedematous, and this serious condition may result from phthisis or syphilis.

Treatment.—Give inhalations of steam containing Friar's balsam (2 teaspoonfuls to 1 quart of boiling water); keep the patient in a warm room, and insist on absolute rest of the voice. For children, ipecacuanha is a good remedy (½ teaspoonful every half-hour until vomiting occurs), and a steam kettle in the room is soothing.

Laryngoscope Surgical instrument used for the examination of the interior of the larynx and trachea. It consists of a mirror fixed to a long handle, another mirror being adjusted to the brow of the operator and reflecting a powerful beam of light on the first mirror, which is placed at the back of the mouth.

Larynx In human beings a cartilaginous chamber lying below and continuous with the pharynx and leading to the trachea or windpipe. The cartilages forming the larynx are the thyroid in front, a ring-like cricord and two small arytenoids. A slit-like opening into the pharynx, the glottis, is bounded by a movable flap or epiglottis, which projects behind the tongue. The larynx contains the vocal cords, which extend across the cavity and are concerned in the production of the voice.

La Salle **Sieur de.** French explorer. René Robert Cavalier de La Salle was born at Rouen, Nov. 22, 1643, and went out when a youth to Canada. He made several voyages along the St. Lawrence and the Mississippi, and was the first to trace the Mississippi to its mouth in the Gulf of Mexico (1682). The vast Mississippi region he annexed as a French possession and was appointed its governor. In 1684 he landed by mistake in Texas and spent two years in trying to reach the Mississippi. While attempting to return to Canada he was murdered by his men, who became desperate, March 20, 1687.

Lascar Indian word used by the Portuguese for inferior army servants or camp followers, *e.g.*, gun lascars. Long applied to Asiatic seamen, especially Indians on coasting or ocean-going vessels, it is officially recognised by the Merchant Shipping Acts as excluding non-Indians, *e.g.*, Malays and Chinese. The Indian Government now limits it to deck hands.

Lascelles Name of a famous Yorkshire family. Its head is the Earl of Harewood (*q.v.*), and his eldest son is called Viscount Lascelles.

Lasker **Emanuel.** German chess player. Born Dec. 24, 1868, he soon showed extraordinary genius as a mathematician. On this subject he wrote a good deal, at the same time becoming famous as a chess player. In 1892 he won the championship of England and in 1893 the championship of the United States. In 1894 he became the world's champion and he retained this title until Casablanca beat him in 1920. In 1921 he was again beaten by Casablanca.

Laski **Harold J.** English political philosopher. Born in Manchester, June 30, 1893, he was educated at Manchester Grammar School and New College, Oxford. From 1914-1916 he lectured in history at M'Gill University, and from 1916-1920 at Harvard and, later, Yale. Connected since 1920 with the London School of Science, in 1921 he became Vice-Chairman of the British Institute of Adult Education. He has sat on many public committees, and has published articles on political economy.

Las Palmas Seaport, city and health resort of the Canary Islands. It stands on Grand Canary and its main industry is shipping, as steamers call here to coal. The buildings include a 16th century cathedral. There is a good modern harbour. Pop. (1931) 79,444.

Lassalle **Ferdinand.** German socialist. Born April 11, 1825, at Breslau, the son of a merchant, he was well educated, but adopted no profession. For some years he lived in Paris, Heine being among his friends. Having returned to Germany he took part in the rising of 1848 and was put in prison. Later he published his book, *System of Acquired Rights*, and in 1863 helped to form a national party of workers. A love affair with Helene von Donniges involved him in a duel at Geneva and on Aug. 31, 1864, he died from his wounds. The duel is the subject of Meredith's novel, *The Tragic Comedians*.

Lasso Hemp rope or rawhide thong ending in a slip-noose used for catching and throwing cattle on the ranches. It varies in length from 35 to about 100 ft. In the Argentine it is attached to the girth, but in North America to the saddle-horn. A form of lasso is used in Siberia for catching reindeer.

Last Measure for fish. A last consists of 13,200 fresh herrings. It is used in certain ports on the east coast of Great Britain as an alternative to the cran which is used in other ports.

Last Supper Paschal meal shared by our Lord with His disciples on the eve of His crucifixion. It is commemorated throughout Christendom in the Holy Communion or Eucharist (1. Cor. x.). It has inspired painters in all ages, notably in Leonardo da Vinci's wall painting in Milan. *See* EUCHARIST.

Laszlo de Lombo **Philip Alexius.** British painter. Born in Budapest in 1869, he was educated there and studied art in Paris. His portraits attracted much attention and, having settled in England, he was commissioned to paint King Edward VII., Queen Alexandra and other persons of note. In 1914 he was naturalised.

Latakia Seaport of Syria. It is 70 m. from Tripoli and has a good harbour from which the produce of the country is shipped. It occupies the site of Laodicea, and excavations have revealed remains of the

earlier city. The town gives its name to a kind of tobacco grown in Syria. Pop. 21,404.

Lateran Palace in Rome, once the residence of the popes. It was built in the 16th century on the site of an older building and is now a museum.

Near is the Church of **S. John Lateran,** long the papal church and therefore regarded as the mother church of the Christian world. There have been five **Lateran Councils,** the most important being the fourth held in 1215, which declared the supremacy of the Bishop of Rome, defined the doctrine of transubstantiation and made provision for a crusade.

The treaty of 1929 with Italy which recognised the independence of the Vatican state, is called the **Lateran Treaty.**

Laterite Deposit of yellowish or reddish coloured clay. It is found in India, the Sudan and parts of South America. These clays are very extensive and of considerable thickness, and result from the decomposition of rocks rich in iron minerals. Laterite is used locally for making mortar, cement and also tiles, etc.

Lathe Machine used for turning and shaping articles of wood, metal or other materials. Lathes vary in character from the simple "turn bench" of the watchmaker, where the work is rotated by a bow, to the modern types with crank and flywheel mechanically driven, often of great size.

Lathom Village of Lancashire. It is 3 m. from Ormskirk and was once a market town.

Lathom House, the seat of the Earl of Lathom, was formerly a castle and a seat of the Stanleys, from whom it passed in 1730. In 1645-46 the castle was defended by Charlotte, Countess of Derby, on behalf of Charles I., but she was compelled to surrender it after a prolonged siege. It was then destroyed. The present house was built in the 18th century.

The title of **Earl of Lathom** was given in 1880 to Edward Bootle-Wilbraham, 2nd Baron Skelmersdale, who represented the two old families whose names he bore.

Latimer **Hugh.** English bishop. Born in 1490, or 1491, at Thurcaston near Leicester, the son of a yeoman, he became a clergyman and obtained a living in Wiltshire. In 1535 he was made Bishop of Worcester, but in 1539 he was imprisoned for not accepting the Six Articles. He resigned his bishopric, but soon returned to it. Meanwhile he had identified himself with the reformers, and during the reign of Edward VI. devoted himself to assisting Cranmer in furthering the Reformation and in preaching. Soon after Mary's accession in 1553 he was put in prison. In Sept., 1555, after a trial at Oxford, he was found guilty of heresy and was burned with Ridley on Oct. 16. The spot is now marked by the Martyrs' Memorial. Some of Latimer's sermons are extant and have been published.

Latin Language of the Romans and one of the great classical languages of the western world. It belongs to the Indo-European group and was spoken by the Latini, a people living in central Italy some centuries before Christ. It became the language of the Romans and in it their great literature was written. The century before Christ and the early years of the Christian era were its great age. To this time belong Virgil, Cicero, Horace and the other great writers of classical Latin.

It is impossible to exaggerate the influence of the Latin language on literature in the west of Europe and in North America. It is the foundation of French, Italian, Spanish and other romance languages, and has contributed largely to the development of English. It became the language of the Church and of education, and in consequence the language of botany and other sciences. For long, education, following the monastic tradition, was conducted in Latin, and our public schools show signs of this influence to-day.

Latitude Angular distance at the centre of the earth of any point upon the surface measured north or south from the equator. The equator is regarded as 0° of latitude, and parallels of latitude are imaginary circles on the earth's surface parallel to the equator. A degree of latitude equals 69½ m.

Latitudinarians (Lat. *latus,* broad). Name given to certain divines in the Church of England in the 17th and 18th centuries. They included Gilbert Burnet, Chillingworth, Tillotson and Hales, and were known for their liberal opinions, regarding creeds as of secondary importance.

Latium District of Italy. Before Rome became great, a district to the south of the Tiber was inhabited by the Latini and called Latium. The towns in it, Alba Longa being one, formed themselves into a league which in the 4th century was engaged in a war with Rome. The Latini were beaten and their territory became part of the republic of Rome. The name survives as that of the language spoken by the Romans.

La Trappe Monastery near Alençon in France. It was founded in 1140 as a Cistercian house and some remains of its church still stand. It is famous because it gave its name to the Trappist Order which was founded here in the 17th century.

Latten Variety of brass or bronze. It consists of copper and zinc used in the form of thin sheets for making memorial plates and vessels in churches. The term is applied also to brass sheets for wire-drawing, and to the mild steel plates used in the manufacture of tin-plate.

Latter Day Saints Formal and correct name of the body known more usually as Mormons. It is really the Church of Jesus Christ and Latter Day Saints, and was adopted in 1834. *See* MORMONS.

Latvia Republic of Europe. It consists of Courland and other districts that before 1918 were part of Russia. Its area is 24,440 sq. m. and the population is (1930) 1,900,045. It has a coastline of 338 m. on the Gulf of Riga and the Baltic Sea. Its other boundaries are Russia, Estonia and Lithuania. Riga is the capital and the chief seaport; other places are Libau, Dvinsk, Mitau and Windau. The country is flat and the soil fertile. There are many rivers, the chief being the Dvina. Agriculture is the chief occupation of the people, and rye, barley, oats, flax and potatoes are grown. A good deal of the land is forest. There is some fishing. About three-quarters of the people are Letts and over half are Protestants. The language is Lettish.

Latvia is governed by a president, elected for three years, a cabinet and a parliament of one house. Proportional representation is the rule at these elections. The country has a railway system and a state bank. There is a small army recruited by compulsory service.

A state of Livonia, founded in the 15th

ceatury, embraced what is now called Latvia, but after 1560 Courland became a duchy under the authority of Poland. In the 18th century Latvia was included in Russia.

In 1917 the Letts decided to press for independence. In Nov., 1918, they declared their land a free state, and in Jan., 1921, their independence was recognised by the League of Nations, to which Latvia was admitted. The country's boundaries were fixed and a period of steady progress began, with socialism as a strong force in political life.

Laud William. English archbishop. He was born at Reading, Oct. 7, 1573, and educated at S. John's College, Oxford, of which he became a fellow. He held several livings but his abilities and energy soon marked him out for a larger sphere. Entering the Church he was made chaplain to several noblemen and was soon chaplain to James I. His advancement was rapid. He was elected President of S. John's, Dean of Gloucester, and in 1621 Bishop of S. David's. In 1626 Charles I. made him Dean of the Chapel Royal. From 1626-28 he was Bishop of Bath and Wells, and in 1628 he was made Bishop of London. In 1633 he became Archbishop of Canterbury.

The king's ecclesiastical policy in England and Scotland was inspired by Laud and was in general unwise and provocative. It aimed at establishing uniformity of worship on somewhat narrow lines, and was the cause of much unrest, especially in Scotland. In 1641 the House of Commons took action. Laud was impeached, and under a bill of attainder beheaded on Tower Hill, Jan. 10, 1645. A notable high churchman, Laud accepted much of the ritual and creed of the Roman Church and disliked Puritanism in all its forms.

Laudanum Name given to tincture of opium. It is a dark reddish brown liquid, standardised to contain 0.75 per cent. of anhydrous morphine. It is prepared by steeping powdered opium in dilute alcohol for some time, afterwards straining, pressing and filtering the product. Laudanum is used in prescribed doses as an anodyne and soporific.

Lauder Sir Harry Maclennan. Scottish comedian. Born Aug. 4, 1870, he earned a living as a coal-miner. His gift of song and humour attracted attention, and in 1900 he appeared as a professional in London, becoming extraordinarily popular. Some of the songs he sang were his own compositions. In 1920 he was knighted and retired from the stage, but in 1931 he reappeared in London. Lauder has written *A Minstrel in France* and *Roamin' in the Gloamin'*.

Lauderdale Duke of. Scottish politician. John Maitland was born at Lethington in East Lothian, May 24, 1616, a son of the 1st Earl of Lauderdale, whom he succeeded in 1645. He became a leading spirit among the Covenanters but soon changed sides, and in 1650 returned to Scotland with Charles II. Taken prisoner at the Battle of Worcester, he was not released until 1660.

With Charles II. on the throne Lauderdale became very prominent. He was a member of the Cabal and Secretary of State for Scotland, where he was responsible for the savage persecution of the Covenanters that took place between 1672 and 1680. He had also a good deal to do with the direction of affairs in England and in both countries he made himself hated. He left office in 1680 and died in Aug., 1682. In 1672 Lauderdale was made a duke but the title died with him.

Lauderdale Earl of. Scottish title held by the family of Maitland. They held land in Berwickshire, and in 1590 Sir John Maitland, Secretary of State under James VI., was made Lord Maitland of Thirlestane. His son was made an earl, and John, the second earl, a duke. When he died in 1682 the dukedom became extinct, but the earldom passed to his brother, Charles, and has since remained in the family. The earl is Hereditary Royal Standard-Bearer for Scotland. His eldest son is called Lord Maitland, and his seat is Thirlestane Castle in Berwickshire.

Lauds Service in the Roman Catholic Church. In the early church it was sung at daybreak. To-day it is sometimes said after matins. The Psalms 148, 149 and 150 are called the "lauds," or psalms of praise, and from these the service received its name.

Laughing Gas Name given to nitrous oxide. It is prepared by heating ammonium nitrate to 350°F., when the salt is resolved into the gas and water vapour. It is a colourless, transparent gas with a sweet taste, and when inhaled produces insensibility, hence its use as an anaesthetic in dental surgery and in operations of short duration. *See* ANAESTHETICS.

Laughing Jackass Australian name for a powerful bird, the largest of the kingfisher family (*Dacelo gigas*). With dull greenish-blue, brown-freckled plumage, it has a strident, clamorous laugh, and is protected for its skill in killing reptiles and mice. The same region possesses various other laughing kingfishers.

Launceston Borough and market town of Cornwall. It stands where the Kensey falls into the Tamar, 213 m. from London, on the Gt. Western and Southern Rlys. The chief objects of interest are the castle keep, the property of the Duchy of Cornwall, and the ruins of an old prison and Norman gateway. The borough includes Newton on the other side of the Kensey, once a separate town. The town is chiefly a centre for the sale of agricultural produce. Pop. (1931) 4071.

Launceston City and river port of Tasmania. It stands where the North and South Esk unite to form the Tamar, 40 m. from the sea, and is the chief town in the northern part of the island. It is connected by railway with Hobart. There is a shipping trade with Australia; other industries are smelting and the marketing of fruit. Pop. (1932) 31,210.

Laundry Establishment where washing and dressing of soiled linen and clothes is carried on. Laundry work is now done mostly by mechanical means. Rotary washing machines are used. These consist of a perforated cylindrical cage for the reception of the soiled linen, enclosed in an outer casing containing the soapy water. Hydro-extractors are used for the removal of water and the final drying is effected by dry air treatment, while ironing is carried out by gas or steam-heated rollers.

In Great Britain laundries are inspected by public health officials, and there are legal provisions about the hours of employment and the workers' conditions.

Laurel Name of diverse evergreen shrubs and trees with leathery, lance-shaped leaves. The laurel of antiquity was probably the Mediterranean bay tree (*Laurus nobilis*). The cherry laurel (*prunus Laure-*

cerasus) and the Portuguese laurel contain hydrocyanic acid. These three grow freely in Great Britain. Britain's only native laurel is the spurge (*Daphne laureola*). The Indian Forest Dept. call the decorative timber of the saj tree (*terminalia*) laurel wood. North America and Japan furnish other laurels.

Laurentian Rocks Pre-Cambrian metamorphosed rocks found in the Laurentian Highlands north of the St. Lawrence estuary. They now rank as the undermost archaean rocks, 30,000 ft. thick, upon which an upper Laurentian or Labradorian series rests unconformably. A primitive land area, called Laurentia, is thought to have existed from Canada to the Scottish Hebrides, its shores receiving the earliest palaeozoic sediments.

Laurie **Annie.** Scottish heroine. She was a daughter of Sir Robert Laurie, a landowner of Maxwellton, Dumfriesshire, and was born in 1682. On her marriage in 1717 an unsuccessful suitor, William Douglas, wrote the song which has made her name immortal. The music was composed by Lady John Scott, who added a verse to the song.

Laurier **Sir Wilfrid.** Canadian statesman. Born Nov. 20, 1841, he was of French-Canadian, Roman Catholic parentage. He was educated at McGill University, Montreal, and became a lawyer and a journalist. In 1871 he was elected to the legislature of Quebec, and in 1874 to the House of Commons at Ottawa, where he represented East Quebec. In 1877 he was for a short time in the Cabinet.

An eloquent speaker, Laurier soon came to the front, and in 1887 was made the leader of his party, the Liberals. In 1896 a General Election gave the Liberals a majority and he became Prime Minister, a position he held for 15 important years. He gave preferential tariffs to Great Britain, restricted immigration and carried through other reforms. His proposals for reciprocity with the United States led to his defeat in 1911 and he resigned. As leader of the opposition, he favoured Canada's entry into the Great War in 1914, but objected to conscription. He died Feb. 17, 1919.

Laurium Mountain in Greece. It is about 30 m. south-east of Athens and was celebrated in ancient times for its silver mines. They belonged to Athens and from them the city obtained much wealth. Within recent years mining has been revived in the district and considerable quantities of silver and lead, as well as cadmium, manganese and iron, are produced.

Lausanne City of Switzerland. It stands on the north side of the Lake of Geneva, 38 m. from Geneva, and is an educational and literary centre. Here Gibbon wrote much of the *Decline and Fall*. Its port is Ouchy on the lake and it is the capital of the canton of Vaud. It has a broadcasting station (680 M., 0.6 kW.). Pop. 76,200.

The Treaty of Lausanne was signed, July 24, 1923, between the Allies and Turkey. It fixed the boundaries of Turkey as they are to-day. In June, 1932, the European Powers held a conference at Lausanne to discuss the question of war debts, and especially Germany's failure to pay reparations. An agreement was reached putting an end to reparations payments, Germany in return undertaking to contribute £150,000,000 towards the reconstruction of Europe. The payment, however, was not to be made at once and was dependent on an agreement about war debts being reached between Germany's creditors and U.S.A. The president of the conference was Mr. Ramsay MacDonald (*q.v.*).

Lauterbrunnen Village and pleasure resort of Switzerland. It is in the Berneso Oberland, 8 m. from Interlaken, and is a good centre for the most beautiful of the Swiss scenery. Near is the Jungfrau.

Lava Molten rock poured out from a volcano. Lava may flow to a considerable distance when very fluid or form accumulations around the vent when viscous. As the lava flows, owing to the escape of steam, the surface becomes slaggy, while the interior forms a compact mass.

Laval **Pierre.** French statesman. Born in 1883, he became a socialist. In 1908 he was mayor of Aubervilliers and a little later he was elected to the Chamber of Deputies. He was made a senator in 1924, and in 1925 was Minister of Public Works. In 1926 he was Vice-President of the Council under M. Briand, and in 1930 Minister of Labour under M. Tardieu. In Jan., 1931, he became Premier and Minister of the Interior, and it was his lot to deal with the difficulties about the payment of reparations that arose in 1932. In Jan., 1932, he reconstructed his ministry, but a little later he was forced to resign.

Laval-Montmorency **François Xavier de.** French prelate. Born at Laval, of a famous family, April 30, 1623, he entered the priesthood. In 1674 he became Bishop of Quebec, and, after the governor, the most influential man in the colony. He resigned his bishopric in 1683, but remained in Canada until his death, May 6, 1708.

Laval is known as the founder of the Laval universities of Quebec and Montreal.

Lavater **Johann Kaspar.** Swiss scientist. Born at Zurich, Nov. 15, 1741, he was there educated and became a minister. His whole life was passed in his native place, and much of his time was devoted to writing and study. He wrote poems and books on mysticism, but his claim to fame is his work on physiognomy, which has been translated into English. He died Jan. 2, 1801.

Lavender Genus of perennial herbs or shrubs of the labiate order (*Lavandula*). The cultivated *L. vera* bears erect branches with long stalked spikes of fragrant mauve flowers, from which an aromatic oil is distilled; 250 lb. of flowers yield 1 lb. of oil. In England the flowers are grown for commercial purposes at Micham and Hitchin. **Sea lavenders** are species of statice of the plumbago order.

Lavenham Town of Suffolk. It is 10 m. from Bury St. Edmunds, on the L.N.E. Rly. There is a guildhall dating from the 16th century, and one of the finest churches in the county. At one time Lavenham was a flourishing market town and a centre of the cloth manufacture. Pop. 2000.

Laverstoke Village of Hampshire. It stands on the Test, 2 m. from Whitchurch, and contains the paper mills at which, since 1724, the paper for English bank notes has been made. They are owned by the family of Portal whose residence is **Laverstoke House.**

Lavery **Sir John.** Irish artist. Born in Belfast in March, 1856, he studied art in Glasgow and then in London and Paris, and became a celebrated portrait painter. In

1912 he was created A.R.A., and in 1921 R.A. He was knighted in 1918. His work may be seen in the National Portrait Gallery, London, in the collections in Glasgow, Liverpool, Manchester and at Ottawa and elsewhere abroad.

Lavoisier Antoine Laurent. French scientist. Born in Paris, Aug. 26, 1743, and there educated, he held official positions, including that of director of the state powder works, and gave much time to chemical research. He gave the name oxygen to the "dephlogisticated air" discovered by Priestley, and by his researches established the method of weighing chemical substances. He showed that matter is indestructible, and until recent times his theory was implicitly accepted. He was made farmer-general of the taxes, a position which led to his execution on May 8, 1794, a victim of the Revolution.

Law Word meaning rule or order. It is used in two main senses. The first is for an inevitable order of the universe, as the laws of motion or the laws of cause and effect.

In the second sense it refers to a rule laid down for human action, disobedience of which is likely to be followed by some penalty or inconvenience. The general name for such rules is law; the study of law is jurisprudence.

Men cannot live together in society without law, and laws appeared at a very early stage in human history. In their growth religion played a great part, and early laws were regarded as the commands of a god. This idea in modern times is partly responsible for what is known as the moral law. The early codes contain strong evidences of priestly influence.

Gradually among primitive peoples custom became an important factor in the development of law, and many early codes of law, *e.g.*, the laws of the English before Norman times, are merely collections of accepted customs. The lawgivers of ancient times, such as Hammurabi and Moses, were not legislators in the modern sense. They did not make laws; they restated those already existent. The Greeks had a developed system of law, but modern law owes its greatest debt to the Romans.

Law has been classified in various ways. The Romans divided it into the civil, or national, law, and the law of nations, which is the basis of international law. This division premises that certain laws, or rules, are by their very nature binding upon all mankind, but others only upon a particular people or state.

Another division of law is into the civil law, and the canon, or ecclesiastical, law, and another is into the common, or unwritten law and the statute law, a classification familiar in England, while a third class is case law, or law as interpreted by the judges. In England, as in other countries, the criminal law has been separated from the civil law and this makes a further branch. Another distinction of importance to students is that between customary law and the Austinian definition of a law as the positive command of a sovereign, who has power to enforce it.

To-day every country has its own legal system, influenced by the national genius and history. Each system has three essentials; an individual, or body, with power to make laws; a body of judges to declare them, and another body to enforce them. The various legislatures are the law-makers. The judges declare the laws and the police, or a similar organisation, with an army in reserve, enforce them. International law must be excepted from these statements, because as yet no power to enforce its orders has been created.

Law is one of the oldest subjects of study at the European universities. As a profession it attracts many thousands of men and a few women. Lawyers are divided into several classes, but entrance to each is everywhere a privilege guarded by educational and other tests. *See* BARRISTER, SOLICITOR, etc.

LAW AS A CAREER. The legal profession is divided into two classes, Barristers (called in Scotland "Advocates") and Solicitors; the two are closely interdependent, but no one may practise both. A barrister can only be employed through a solicitor, since, by an ancient custom, no layman may have direct communication with the bar. In England both branches are open to women.

As Law is one of the "learned" professions, so it is one of the most exclusive, by reason of the high standard of ability necessary, no less than on account of the long and expensive courses of training. For the first four or five years of his career the young barrister will earn next to nothing, and it is well to take this fact into consideration at the outset. But for a person of sufficient ability it offers a promising career with wide opportunities, while the scope for women is increasing.

A university degree, in Law or in Arts, is the best foundation for a legal training. Also it exempts from the preliminary examinations, and reduces the period of special training to three years.

Barristers. To become a barrister, a student enrols himself as a member of one of the Inns of Court. During, or at the end of the period of special training (not less than three years), he must pass the bar examinations, for which he can prepare in several ways. He may attend the lectures arranged by the Council of Legal Examination (15 Old Square, Lincoln's Inn, London, W.C. 2), or attend university classes, or study privately, or "read in chambers." This last is usually done whether lectures and classes are attended or not. It consists of becoming a pupil to a barrister in order to gain practical experience. A fee of 100 guineas a year is payable.

The Inns of Court are four in number—Gray's and Lincoln's, the Inner and Middle Temples. Before being "called to the Bar" or certified as a qualified barrister, a student must pass the bar examinations, and must also keep twelve terms, *i.e.*, three years. He fulfils the requirements of keeping terms by dining in hall a certain number of times each term. The number varies according to the status of the student.

Total fees (excluding a deposit of £150) are between £158 and £170, varying according to the Inn. Particulars of fees and of entrance examinations should be obtained from the Treasurer's Office of the Inn which the student intends to enter.

The Faculty of Advocates, Edinburgh, is the controlling body for admission to the Scottish Bar. The procedure and standards of the examinations are similar, but as Scots Law is different from English Law, an English barrister cannot practise in Scotland, and *vice versa*. The Irish Bar is controlled by the Honourable Society of King's Inn, Dublin.

Solicitors. To become a solicitor, it is necessary at the outset to pass an entrance examination set by the Law Society, the body responsible for the organisation of the profession. Membership is open to any qualified practising solicitor. It is then necessary to

ıter into what is known as "service under rticles" (as an articled pupil to a firm of ılicitors) for a period of five years (three for ıe graduate). Premiums are frequently very gh—varying from 100 to 500 guineas. There also a Government stamp duty of £80 to ıy on articles and £25 on admission.

Fees for law classes, which are attended ıring apprenticeship, and for examinations ust also be taken into account. The final ıamination is usually taken at the end of the ɔriod of articled service, and success in it ıtitles the student to seek admission to the oll and to practise as a solicitor.

Professional clerkships in a solicitor's office 'e paid anything from £200 to £500 a year, ıd more responsible posts are paid up to ɔout £800 a year. In dependent practice ' in partnership a successful man may expect) earn anything from £600 to £2000 a year ɔcording to the size of his business and its 'ofessional standing. The salaries of municipal ıd government solicitors range from £300 year to £1500. Information concerning fees, ıtrance examinations, etc., may be had from ıe Law Society, Bell Yard, London, W.C. 2.

Law **Andrew Bonar.** British politician. The son of a Presbyterian minister,) was born in New Brunswick, Sept. 16, 358, and educated in Glasgow. He entered ısiness life in Glasgow with some relatives, ıd after a successful career in the iron trade) retired. In 1900 he was elected Unionist .P. for a division of Glasgow; in 1902 he ok office as Parliamentary Secretary to ıe Board of Trade, and in these years he made s reputation by his speeches in favour of riff reform. In 1905 he left office and in 1906 as defeated in Glasgow, but almost at once as elected for Dulwich.

In 1911, although he had never sat in a ıbinet, Bonar Law was elected leader of the nionist Party in the House of Commons. s such he took a leading part in the great ents of July and August, 1914, and later, hen the coalition ministry was formed in 915, he became Colonial Secretary. In the isis of Dec., 1916, he acted with Lloyd eorge and became Chancellor of the Exchequer ıd leader of the House of Commons. In 1918) left the exchequer, but he retained his other ɔst until March, 1921, when he resigned for asons of health. He had represented Great ritain in Paris at the Peace Conference.

In October, 1922, after the end of the ɔalition, and a general election which resulted a Unionist victory, he became Prime Minister, ıt in the following May he resigned. He died ct. 30, 1923.

Law **John.** Scottish financier. Born April 21, 1671, he was the son of a goldsmith in Edinburgh. In 1694 he was sentenced death for killing a man in a duel, but escaped om prison and reached Amsterdam, and for) years or more travelled about Europe. His ute intellect was soon turned to the possibilies of credit. He could not persuade the arliament of Scotland to take up his idea of a nd bank, but he was more successful in France. ith his brother, **William,** he started in 1716 bank in Paris, and in 1718 the regent allowed m to make this a national bank. For a time flourished, and in 1719 Law founded a comıny to trade in the region of the Mississippi, ıt soon the crash came. In 1720, having just ɔen made Controller-General of Finance, ıw found that he could not meet his obligaɔns. His property was confiscated and he left France. He lived in England in poverty for some years, and died March 21, 1729.

Law **William.** English mystic. He was born in Northamptonshire in 1686, and educated at Cambridge. He became a clergyman, but, as he refused to acknowledge George I., he did not obtain a living. For some years he was tutor to the Gibbon family, and his last years were passed quietly in Northamptonshire. He died April 9, 1761. Law wrote a good deal, but his fame rests on one book alone, *A Serious Call to a Devout and Holy Life*, 1728, long one of the most popular of its kind. He studied mysticism, became the leading interpreter in England of the ideas of Jacob Bochme, and wrote two books on the subject. He also wrote against the stage.

Law Agent Scottish equivalent of the English solicitor. They have a professional society and their duties and privileges were laid down by the law in 1863. To become a law agent the candidate must serve articles and pass examinations.

Law Court Building where justice is administered. The phrase law courts is used in England for the building in the Strand, London, in full, the Royal Courts of Justice, where the judges of the high court sit. Other capital cities have law courts. In Edinburgh the Parliament House is used; in Belfast a new building has been erected. Ottawa and Pretoria have law courts for Canada and South Africa respectively. For the German republic the law courts are in Leipzig, and for the United States at Washington.

Lawes **Sir John Bennet.** English scientist. Born at Rothamsted, Dec. 28, 1814, he went to Eton and Brasenose College, Oxford. In 1822 he inherited his father's estate at Rothamsted and there, on leaving Oxford, he began experimenting with the growing of crops. The results were of high value to agriculture, and in 1899 the work was handed over to a trust he created, The **Lawes Agricultural Trust,** which still conducts it. He became F.R.S. in 1854, and in 1882 was created a baronet. Lawes died Aug. 31, 1900.

Law Lord Name given in England to the Lords of Appeal. They are six in number and sit in the House of Lords as life peers. With other members of the House of Lords who have held high judicial office they hear the appeals from the lower courts of law. In Scotland the judges of the Court of Session are made lords for life, but they are not members of the House of Lords. The salary of a law lord was £6000 a year, but was reduced by 20 per cent. in 1931.

Lawn Thin sun-bleached fabric of linen or cotton. It is used for dresses, trimmings, handkerchiefs and the like. Formerly called cloth of Rheims, and in Tudor times Laune linen, it was named from the town of Laon. Some fine muslins are called lawns. Bishop's lawn is used for the sleeves of the robes of Anglican bishops.

Lawn Tennis Popular outdoor game played by both sexes. The implements are racquets and balls, and it is played on a court 78 ft. long and 36 ft. wide. The court is divided into two equal parts by a net and further into sections by white lines, and the aim of the players is to hit the ball so that it falls within the court, but at such a pace, or in such a position, that it cannot be returned. A failure to return the ball counts a point to the other side. The score goes 15, 30, 40, 50, so that four points can make a game.

If, however, both sides reach 40, or deuce, the game is continued until one side is two points ahead of the other. The side that wins six games scores a set, but here again if the sides reach 5 games each, the set cannot end until one side is two games in front. Sets of 12-10, or thereabouts, are quite usual.

The game is usually played by two persons against two, but it can be played by one against one. In this case the court is less broad, a portion at each side, 4 ft. 6 in. wide, being now outside it. Grass courts are the more common, but of late years many hard courts of gravel, cement or asphalt have been laid down. On these the game can be played throughout most of the winter. There are regulations about the weight and size of the balls, but none about the rackets.

There are tennis clubs all over Great Britain and Ireland; also in the United States, Canada, France, Japan and other countries. The great event of the lawn tennis year is the international meeting at Wimbledon, where players from all over the world meet to decide the various championships. Since the Great War American players have often been successful in the men's games, although France has won a number of victories. Among the women the outstanding player has been Suzanne Lenglen. In the early days of the championship matches, which began in 1877, players from Ireland were the most notable exponents of the game.

The game in Great Britain is governed by the Lawn Tennis Association which was formed in 1888. Its address is 28 Essex Street, London, W.C. 2. Professionals are recognised for coaching and other purposes, but are strictly debarred from matches and competitions.

The Davis Cup is contended for by male teams from the various countries. The Wightman Cup is fought out between woman players from Great Britain and the United States.

The game developed from real tennis and was at first called sphairistike (*q.r.*). It was played in 1874 and soon took its modern form. Names of great players include the Irish brothers Renshaw and Doherty, Borotra and Cochet, the Americans, Tilden and Ellsworth Vines, who won the singles championship in 1932, and Jack Crawford, winner in 1933. Famous women players include Suzanne Lenglen and Mrs. Helen Wills Moody.

Lawrence Christian saint and martyr. Born, according to tradition, at Huesca, Spain, he became a deacon in Rome. During Valerian's persecution in 258 he was ordered to produce the church's treasures. He showed some beggars, and was sentenced to be burned alive in an iron chair, usually represented as a gridiron. The church which Constantine erected over his tomb is one of Rome's seven pilgrimage churches. He is commemorated on Aug. 10.

Lawrence **Arabella Susan.** English politician. Born in 1871, she was educated at Newnham College, Cambridge, and began to work among the poor in London. In 1912 she became a member of the London County Council and she kept her seat until 1928. In 1923 she was chosen Labour M.P. for East Ham, North, and represented that constituency again, 1924-31, when she was beaten. In 1929-31 she was Parliamentary Secretary to the Ministry of Labour, and held several important posts in the Labour movement, including organiser of the National Federation of Women Workers and deputy chairman of the Labour Party.

Lawrence **David Herbert.** English writer. Born at Eastwood, Sept. 11, 1885, the son of a coal-miner, he was educated in Nottingham. In 1911 he published his first novel, *The White Peacock*, and in 1913 he made his name with *Sons and Lovers*, a realistic story of life among the coal-miners. Henceforward his life, passed partly in Mexico and partly in Italy, was occupied with literature and art. His other novels include *The Trespasser*, *The Lost Girl*, *The Plumed Serpent*, *Kangaroo*, *The Ladybird* and *The Prussian Officer*, a volume of stories. *The Rainbow* was suppressed and *Lady Chatterley's Lover* was printed abroad. He wrote a good deal of verse, including a volume called *Pansies*, some essays and some plays. He died March 3, 1930.

By some Lawrence is regarded as a great literary artist, but his realism revolted many. In his genius there was a strong morbid strain.

Lawrence **Lord.** English administrator. John Laird Mair Lawrence was born at Richmond, Yorkshire, March 4, 1811, and educated at Foyle College, Londonderry, and at Haileybury. He joined the service of the East India Company in 1829, took part in the war against the Sikhs in 1846, and when the Punjab had been conquered was given charge of it. His energy and resource did much to keep the district loyal during the Mutiny, and he was able to lead an army of Sikhs from there to the relief of Delhi. He retired in 1858, but returned to India in 1864 and served as Governor-General until 1869. He was then made a baron. He died June 27, 1879, and was buried in Westminster Abbey.

Lawrence **Sir Henry Montgomery.** English soldier. Born in Ceylon, June 28, 1806, an elder brother of Lord Lawrence, he entered the Indian army in 1823. He served in the various wars of the next 25 years, including those against the Afghans and the Sikhs. In 1848 he was knighted and for a time he served with his brother in the Punjab. When the Mutiny began he was at Lucknow and he led the defence of the Residency there for four months until he was wounded, dying July 4, 1857.

Lawrence **Sir Herbert Alexander.** English soldier. Born Aug. 8, 1861, he was a son of the great Lord Lawrence. He served in the S. African War, but later left the army for business. In 1911 he rejoined and saw service as a staff officer in Egypt and Gallipoli. Knighted in 1917, in 1918 he was Chief of the Staff to Sir Douglas Haig. In 1919 he left the army and became chairman of the banking firm of Glyn, Mills, Currie & Co., and a director of other large concerns. Since 1926 he has been Chairman of Vickers, Ltd.

Lawrence **Sir Thomas.** English artist. He was born in Bristol, May 4, 1769, the son of an innkeeper. He painted portraits when only a child, and later studied art in London. He soon made a reputation and was elected A.R.A. in 1791, and R.A. in 1794. In 1792 he was made painter to the king, and in 1815 he was knighted. In 1820 he was chosen President of the Royal Academy and he died in London, Jan. 7, 1830.

Lawrence was the most fashionable portrait painter of his day and his subjects included many notable European figures. Many Lawrence portraits are at Windsor and in the National Portrait Gallery, London.

Lawrence **Thomas Edward.** English soldier and explorer. Born Aug. 15, 1888, he was educated at Oxford High

chool and Jesus College, Oxford. A scholarhip enabled him to go out to Syria in 1910, and uring the next four years he learned a great eal about the Arabs and did excavation work t Carchemish. In 1914 he was employed on eographical work at the War Office, and in 915 he was sent out to Egypt, Turkey having ist entered the war against Great Britain. Ie then went on to Arabia, where his knowedge of Arab life was invaluable. In that ountry, negotiating with the Arab tribes, rganising them for war and leading them in attle, he was the mainspring of the campaign hich destroyed the Turkish influence in that egion. Officially he was a staff officer with he rank of colonel of the British army.

In 1919 Lawrence attended the Peace onference in Paris, but he soon left it in isgust. He was made a fellow of All Souls ollege, and in 1922-23 he acted as adviser o the Colonial Office. In 1922 he enlisted as a echanic in the air force as T. E. Shaw, a name hich he took by deed poll in 1927. He wrote n account of his adventures as *The Seven illars of Wisdom*, 1926. An abridged edition, *evolt in the Desert*, appeared in 1927. He was illed in a road accident in May, 1935.

Lawson Sir Wilfrid. English politician. Born Sept. 4, 1829, the son of he 1st baronet, he became M.P. for Carlisle in 859, for Cockermouth (1886-1900), for the amborne division (1903-05) and again for ockermouth in 1906. He died July 1, 1906. n his day Lawson was very well known for is advocacy of temperance and kindred eforms.

Lawyer Member of any branch of the legal profession. In England nd elsewhere it includes barristers and olicitors; in Scotland advocates, writers to he signet and law agents. Each of these has s own professional organisation. *See* ARRISTER, SOLICITOR, LAW.

Laxative Substance gently stimulating the action of the bowels. It ay be a food, *e.g.*, cabbage, brown bread, oney, prunes; or a mild medicine, *e.g.*, alphur, magnesia.

Laxtonberry Fruit first raised in 1930. It is a cross etween the raspberry and the loganberry and s grown in the same way as the latter. To nsure fertilisation it should be planted near ther fruit trees.

Layamon English poet. He was a priest who lived in Worcestershire in the 12th century. He was the author r translator of *Brut*, a poem of great value to tudents of the English language. He took an xisting story written by Wace and turned it nto rhyme. Brut, a descendant of Aeneas, is epresented as the ancestor of the Britons.

Layard Sir Austen Henry. English scholar. The son of a clergyman, e was born in Paris, March 5, 1817. He was ducated mainly in Italy, but later studied w in London. Between 1845 and 1847 he id most valuable work on the ruins of ineveh, publishing its results in his *Nineveh nd its Remains* and other works, and sending ome of his specimens to the British Museum. ater he explored the ruins of Babylon and rote *Nineveh and Babylon*. From 1852-57 nd again 1860-69 Layard sat in Parliament. rom 1861-66 he was Under-Secretary for oreign Affairs, and from 1868-69 Chief ommissioner of Works. In 1869 he was sent as ambassador to Madrid, and in 1877 to Constantinople. He died July 5, 1894.

Layering Method of propagation of plants in which an artificial sucker is formed by bending over and pegging down a branch into the soil. A strong shoot is chosen, the lower leaves removed, and the stem partially cut across a joint; it is then pressed into suitable soil at an angle and held in position by a peg. At the partially severed joint roots are soon formed, producing a new plant which can be detached from the parent.

Layman One who is not a professional. It is used chiefly for those who are not priests, clergymen, or ministers. Convocation in the Church of England has houses of laymen set up in 1886.

Lay Reader In the Anglican Church a layman licensed by a bishop to perform various duties. They take extra services in consecrated buildings and assist the clergy in other ways, but do not administer the communion. They were established in 1866.

Lazarette Public hospital for the quarantine of persons with contagious diseases. The word is connected with Lazarus, who is supposed to have suffered from leprosy.

Lazarists Order of secular priests. They are dedicated to missionary work in rural districts, instruction of the ignorant and training of youth for the priesthood. The order was founded by S. Vincent de Paul, confirmed by Urban VIII. in 1632, and established in the College de S. Lazare, Paris. They are also called Vincentians.

Lazarus Character in the New Testament. He was a wealthy and influential native of Bethany, whom Jesus raised from the dead (John xi.-xii.), and with whom and his sisters Martha and Mary, he was a frequent guest.

Another Lazarus is the beggar mentioned in the parable of the rich man (Luke xvi.). The word is the Greek form of the Hebrew Eleazar.

Lazulite Blue or greenish-blue vitreous mineral occurring in Switzerland, Sweden and Brazil. It consists of phosphate of aluminium and iron with some magnesium hydroxide.

Leacock Stephen Butler. Canadian writer. Born in Hampshire, Dec. 30, 1869, he went to Canada when a child and was educated at Upper Canada College and the University of Toronto. For some years he was a teacher at his old school, but in 1903 he became Lecturer in Political Science at McGill University, Montreal, and in 1908 he was appointed Professor of Political Economy there. Leacock wrote several books on political economy, including *Practical Political Economy*, 1910, and also biographies and essays on literary subjects. His reputation, as far as the general public is concerned, rests on his volumes of short, humorous stories, such as *Literary Lapses, Nonsense Novels, My Discovery of England, Moonbeams from the Larger Lunacy, Short Circuits and Winnowed Wisdom*. In 1932 *The Dry Pickwick* appeared.

Lead Important metallic element. It has the symbol Pb, atomic weight 207·2 and melting point 327°C., and is one of the most widely distributed and useful of metals. Its principal ore is the sulphide, galena and cerussite, the carbonate is also valuable.

Lead is a very soft, bluish-grey metal, very malleable, ductile and heavy, but with little tenacity. It readily tarnishes in moist air, but the layer of oxide formed protects the surface from further change. The metal is used in sheet and other forms for roofing, pipes, cisterns, etc., and its compounds have many industrial applications.

The world's annual production of lead is about 1,400,000 tons, or rather more than the consumption. As it is chiefly mined with silver, it is not surprising that the United States and Mexico provide half the supply. Australia, Canada, Germany and Spain produce each over 100,000 tons a year. Burma is the next producer and the large supplies in Rhodesia are not yet fully worked. Great Britain produces about 10,500 tons a year.

Lead Plummet or sinker used for sounding the depth of the sea. Shallow waters are easily sounded by letting down a piece of lead attached to a marked line and greased with tallow, which brings up samples of the sea bottom.

Leadenhall Market in London, between Cornhill and Aldgate. It dates from the 13th century, and is the chief London market for poultry. The buildings date from 1881 and are entered from Leadenhall and Gracechurch Streets. The site of East India House in Leadenhall Street is now occupied by the building of Lloyd's.

Leader *Benjamin Williams.* English artist. Born at Worcester, March 12, 1831, the son of E. Leader Williams, he studied art in his native town, and in London, and made a reputation by his English landscapes. In 1883 he was elected A.R.A. and in 1888 R.A. He died March 22, 1923.

Leadhills Village of Lanarkshire, 18 m. from Lanark and on the L.M.S. Rly. Here are some old lead and silver mines and the village, 1300 ft. up, is one of the highest in Scotland. Pop. 850.

Leaf Outgrowth from the stem of a plant forming a lateral expansion of varying form and function. In a foliage leaf the cuticle and epidermis have numerous openings or stomata leading to the air spaces in the cellular tissue or mesophyll and functioning in transpiration. The mesophyll is traversed by veins or vascular bundles, continuous with those of the stem, and it contains the chlorophyll grains which give the green colour to the leaf and function in carbon assimilation under the action of sunlight. A typical foliage leaf consists of a leaf base, stalk or petiole, and blade or lamina.

League Association or alliance of a permanent character, especially between states. They existed among the Greek states. The Hanseatic League was a union of cities, chiefly German, for economic ends, which was at its height in the 14th century and a modern example is the League of Nations.

To-day the word is used for political and social organisations such as the Anti-Gambling League. It is also much used in sport for a group of clubs which play matches with each other for a championship.

League Name given to a measure of length. It varies in different countries, but in Britain it is equivalent to three English miles or in nautical measure to three knots or the twentieth part of a degree. The Gallic or Roman league was equal to 1500 paces or roughly one and a third English miles.

League of Nations International organisation. It came into existence Jan. 10, 1920, as part of the treaty that followed the Great War. Its headquarters are at Geneva. It has over 50 members, including all the leading countries of the world except the United States, Germany, Mexico and Brazil. Each of the dominions of the British Empire is a separate member with its own vote. English and French are the official languages. The cost of the league is over £1,000,000 a year, paid by subscriptions from its members.

The aims of the League are laid down in the Covenant: "The High Contracting Parties, in order to promote international co-operation and to achieve international peace and security by the acceptance of obligations not to resort to war, by the prescription of open, just and honourable relations between nations, by the firm establishment of the understanding of international law as the actual rule of conduct among Governments and by the maintenance of justice and a scrupulous respect for all treaty obligations in the dealings of organised peoples with one another, agree to this Covenant of the League of Nations."

The Covenant of the League contains fundamental clauses on the prevention and settlement of disputes. These clauses bind nations who are members of the League not to employ force for the settlement of a dispute until they have first submitted it to the League of Nations (or to arbitrators or to judges), waited at least six months for the award or decision, and then allowed at least three more months to elapse.

The organisation of the League is in five sections. The assembly is a meeting held each September when three representatives from each member state attend. The council, which meets at least four times a year, consists of representatives from five states that are permanent members and from nine others who are temporary members. The permanent members are Great Britain, France, Italy, Russia and Japan. The temporary members are elected each year. The Secretariat, under the Secretary General, is the civil service of the League. The two other departments are the permanent Court of International Justice at the Hague and the International Labour Office at Geneva, which aims at improving the condition of labour all over the world.

Besides dealing with matters concerning boundaries, health, finances, transit, etc., the League has controlled mandated territories, governed the Saar till it returned to Germany by plebiscite vote in March, 1935, and helped to govern Danzig. It strove to settle the Sino-Japanese dispute 1932-3, and the Gran Chaco war between Bolivia and Paraguay, settled June, 1935, after the withdrawal of Paraguay from the League in February.

In Jan., 1935, the League mediated between Yugoslavia and Hungary when hostilities were threatened after the Marseilles assassinations, and from Jan. received continuous notes from the parties to the Italo-Abyssinian dispute. After rejection of many peace proposals, including those of the 5-power Committee, Italy was declared aggressor in Oct., 1935, and 51 members agreed to the operation of Sanctions, Austria and Hungary alone declining.

Important conferences on disarmament (1932-5) have also been called under the auspices of the League.

Leamington Borough and inland watering place of Warwickshire. It stands on the Leam, 2 m. from Warwick and 98 from London. There are pump rooms and gardens and much accommodation for visitors. Its early name was Leamington Priors, altered afterwards to Royal Leamington Spa. Pop. (1931) 29,662.

Leander In Greek story the lover of Hero, the priestess of Sestos. In order to visit her he swam the Hellespont from Abydos. One night the light from the lighthouse at Sestos failed him and he was drowned. **The Leander Rowing Club** with headquarters at Putney, London, was founded in 1818.

Leap Year Year of 366 days occurring every 4 years. It was introduced by Julius Cæsar in 46 B.C. in the Julian calendar, in order to adjust the calendar year to the solar year, which is not quite 365¼ days. The slight over-correction is put right by omitting leap year at the proper long intervals.

Lear **Edward.** English writer of Danish descent. Born in London, May 12, 1812, he became a draughtsman. He exhibited regularly at the Royal Academy and spent much time in travel, writing and illustrating accounts of his journeys. In 1846 he published *The Book of Nonsense*, and on this and his other volumes of verses, *More Nonsense Rhymes* and *Laughable Lyrics*, his fame rests. He died Jan. 30, 1888.

Lease Word used in English law in connection with real property. A lease is granted by an owner called the lessor to a tenant called the lessee. Farms and large houses are usually let on lease, the period being usually 7 or 14 years, though it may be less or more. A lease for three years or more must be in writing. In the case of repairing leases, the tenant must keep the premises in good repair.

A **mining lease** is a permission to work minerals. It is given by the owner of the land who usually receives payment in the form of a royalty on each ton of mineral taken out of the ground. Coal, tin and other minerals and metals are worked in Great Britain under mining leases.

Leasehold Name used in England for land held on a lease, the other kind of land being freehold. In a sense, however, all land is freehold, as someone owns the freehold of a piece of leasehold land. Leasehold land is let out for a term of years, usually 99, for building purposes, the payment for it being called the ground rent. At the end of the period the land and the buildings thereon become the property of the person who owns the land, or his successors. Several attempts have been made to end this system, but without success. It is, however, possible to convert a leasehold into a freehold by buying the land outright. Leaseholds are regarded in English law as personal not as real property.

Leasing In Scots law the offence of making seditious statements about the king and the government of the country. It is not now treated as a crime, unless accompanied by seditious action.

Leather Skin or hide of an animal after being subjected to the process known as tanning, which preserves it from decomposition and gives it increased strength, toughness and insolubility for use in making footwear, gloves, saddlery, bags, etc. The skins of oxen, horses, sheep and goats are commonly used, but seal, whale, fish and alligator skins have their own special application.

In preparing leather the hide is first cleaned, removing the hair, flesh, etc., and then tanned by one of the many methods now in use. In bark tanning the hides are steeped in an infusion of tannin, made from oak bark or other vegetable material, until conversion into leather is complete. In chrome tanning chromium compounds are used, giving a highly resistant material. Chamois leather is prepared by an oil treatment producing a soft pliable form of leather.

In England the main centres of the leather industry are Bermondsey, London and Leeds. In Bermondsey a technical college is maintained by the Leathersellers' Company, founded in 1444, one of the London livery companies. It has large estates, is interested in Colfe's Grammar School at Lewisham, and has a hall at 13 St. Helen's Place, Bishopsgate, London, E.C.

Leatherhead Urban district of Surrey. It stands on the Mole, 18 m. from London on the S. Rly. It is regarded as the original of picturesque Highbury in Jane Austen's *Emma*. Tanning, brewing and the making of bricks and pottery are the chief industries. Pop. (1931) 6916.

Leatherwood Sole American genus of shrubs of the spurge-laurel order (*Dirca*). The Atlantic and Californian species yield a tough inner bark used by N. American Indians for fibrous thongs. Their acrid properties are deleterious, both externally and internally.

Leatherwood is also the name of the close-grained timber of a tree that grows in New South Wales. It belongs to the saxifrage order and has a distinctive odour.

Leaven Term applied to the substance used in bread-making to cause the dough to rise, thus giving a spongy texture. This is due to fermentation and the production of minute bubbles of carbonic acid gas in the dough. The usual leaven is fermented dough prepared from flour mixed with water, salt and yeast. Aerated bread is made by forcing carbonic acid gas under pressure into the dough, thus giving porosity to the bread.

Lebanon Range of mountains in Syria. It is about 100 m. long and runs almost parallel to the Mediterranean. The average height of the mountains is about 7000 ft., though some exceed 10,000. Solomon's Temple was largely built of cedar wood from Lebanon.

Lebanon Republic of Syria. It is governed by France under mandate from the League of Nations. Formerly part of Syria, it was made a state in 1920. Its boundaries are the Mediterranean on the W., the Anti-Lebanon range on the E. and Palestine on the S. Its area is about 4300 sq. m. Beirut is the capital. Pop. 862,600.

Leblanc **Nicolas.** French scientist. Born in 1742, his fame rests upon the process for making soda from salt which he discovered by using sulphuric acid heated by a mixture of chalk and charcoal. He started a factory, but this was taken from him during the French Revolution. Late in the 19th century, his process was replaced by the Solvay method. Leblanc committed suicide, Jan. 16, 1806.

Le Bourget *See* BOURGET, LE.

Lebrun **Albert.** French politician. Born in Lorraine, Aug. 29, 1871, he was educated at Nancy where he studied engineering. In 1900 he was elected to the Chamber of Deputies, and in 1911 he was made Minister of Commerce, a post he held until 1913, when he was Minister of War for a few months. In 1917-18 he was Minister of Blockade under Clemenceau, and in 1919 Minister of the Liberated Regions. In 1920 he was elected to the Senate, and in 1926 became its vice-president. He succeeded M. Doumer as President of the Senate in May, 1931. A year later, after Doumer's murder, he was elected President of the Republic.

Le Brun **Charles.** French artist. Born in Paris, Feb. 24, 1619, he showed early talent. After spending some years in Rome he returned to France and was chosen by Colbert as the first director of the Gobelin tapestry factory. He founded the Royal Academy of Fine Arts in Paris and the French School at Rome. His work is seen in some of the decorations at Versailles. He died Feb. 12, 1690, in Paris.

Le Brun **Marie Louise Elizabeth Vigée.** French artist. Born in Paris, April 16, 1755, she studied under Vernet, and showed great skill in portraiture at an early age. In 1775 she married the painter, Jean Baptiste Le Brun, and for some years was a fashionable portrait painter in Paris, and a member of the Academy. Her works number over 600 portraits and 200 landscapes. Six of her paintings are in the Louvre, and she is represented in the National Gallery, London. She died in Paris, March 30, 1842.

Le Cateau Town of France. It stands on the River Salle, 15 m. from Cambrai. There in the Middle Ages the Bishop of Cambrai built a castle and the place was called Cambrai-le-Cateau. It was then in Flanders, but in 1678 it became part of France. In 1559 a treaty between France and Spain was made here. Pop. 12,000.

During the Great War, Le Cateau was continuously in the fighting area. During the retreat from Mons Sir H. Smith-Dorrien and his corps made a stand here on Aug. 26, 1914. The British, about 52,000 strong, held back the enemy until the afternoon, when the retreat was continued.

The second Battle of Le Cateau was fought Oct. 6, 1918, part of the final British advance. Three armies were engaged, and a great deal of ground was recovered, including Le Cateau.

Lecky **William Edward Hartpole.** Irish historian. Born near Dublin, March 26, 1838, he was educated at Cheltenham and Trinity College, Dublin, and became one of the foremost historians of the age. He was Unionist M.P. for Dublin University from 1895 to 1903. He died Oct. 22, 1903.

Lecky's chief works are two philosophical studies of great value and interest, *The Rise and Influence of Rationalism in Europe* and *The History of European Morals*, as well as *A History of England during the 18th Century*. He was given the Order of Merit in 1902. His *Life* was written by his widow.

Leconfield **Baron.** English title borne by the family of Wyndham. The first earl was George Wyndham, an illegitimate son of the last Earl of Egremont. He inherited the earl's great wealth and was made a baron in 1859. The estates are around Petworth House, the family seat near Chichester.

Lecouvreur **Adrienne.** French actress. Born April 5, 1692, she first appeared on the stage in 1717. She soon made a reputation and for some years was the greatest tragic actress of the time. She died March 20, 1730. Madame Lecouvreur was also famous for her lovers, who included Voltaire and Marshal Saxe.

Lectern Term applied to reading desk in churches from which the lessons are read. It is made of wood, often elaborately carved, or of brass or bronze, and usually takes the form of an eagle with outstretched wings, supported on a central column.

Lectionary Book containing portions of Scripture prescribed for reading at public worship throughout the year, or a table of such lections or lessons. The practice of public Scripture reading, established in the Jewish synagogue, was continued in the early Christian church. The table of lessons in the Anglican prayer book was replaced by a new lectionary in 1879.

Leda In Greek mythology, the wife of Tyndareus, King of Sparta. Zeus, in the form of a swan, visited her when bathing. She thus became in one version of the story the mother of Castor and Pollux, Clytaemnestra and Helen of Troy. The Leda and swan motive is represented on classical marbles, terra cottas, gems and wall paintings.

Ledbury Market town and urban district of Herefordshire, 13 m. from Hereford, on the G.W. Rly. The chief buildings are the church, with a detached tower, and the market house, and an institute is named after Elizabeth Barrett Browning who lived here. The main industries are tanning and malting. Pop. (1931), 3283.

Ledger In book-keeping the principal account book of a business. Into it all debits and credits are posted from the journals, cash book etc., so that it gives a complete record of financial transactions.

Lee Nautical term. It is the side away from the one from which the wind blows, and therefore the sheltered side. The other is the windward or weather side.

Lee District of London, in the borough of Lewisham, about 7 m. S. of the City on the S. Rly. There is a chapel built by Christopher Boone, and almshouses of the Merchant Taylors' Company. The manor house, once a residence of the Earl of Northbrook, is now a public library.

Lee River of England. It rises in Bedfordshire and flows into the Thames near Blackwall, 46 m. long and navigable. It is used to feed the New River. From Enfield Lock to Hackney a channel has been cut. The Stort is its chief tributary, and it is managed by a conservancy board with headquarters in London. The name is sometimes spelled Lea.

Lee River of Cork, Irish Free State. It rises in a lake and flows through the county for 45 m. until it falls into Cork Harbour. It passes Macroom and flows in two arms past Cork, to which city it is navigable.

Lee **Nathaniel.** English dramatist. Born in 1653, he was educated at Westminster School and Trinity College, Cambridge. He became an actor, but was more successful

as a writer of plays. He lived a very dissolute life and passed some years in Bethlehem Hospital. He died in 1692. Lee's dramas include *Nero; Gloriana, or the Court of Augustus Caesar; The Rival Queens* or *Alexander the Great;* and several others. With Dryden he wrote two tragedies in blank verse, *The Duke of Guise* and *Oedipus.*

Lee **Robert Edward.** American soldier. Born in Virginia, Jan. 19, 1807, the son of a general, Henry Lee, he became an officer in the army. He served in the engineers and gained experience in the war against Mexico (1846), and in service against the Indians. From 1852-55 he was Superintendent of West Point.

In 1861, on the outbreak of the Civil War, Lee threw in his lot with the Southerners and commanded a force sent to the confederate army from Virginia. In 1862 he was promoted to command the forces around Richmond and there he won some conspicuous successes, completely turning the tide of war for a time in favour of the south. In 1863 he won a great victory at Chancellorsville, and, although defeated at Gettysburg, he managed to hold his own against superior forces who were aided by the command of the sea. In 1864 he conducted the famous Wilderness Campaign and succeeded in thwarting his opponent, Grant. In Feb., 1865, Lee was put in command of all the southern forces, but by then they were too weak to make any impression on the strengthened Northerners. On April 9, 1865, he was surrounded and forced to surrender at Appomattox Court House. In a short time he was pardoned, and he was President of Washington College, Lexington, from 1865 to Oct. 12, 1870, when he died.

Lee **Sir Sidney.** English writer. Born in London, Dec. 5, 1859, his name was Solomon Lazarus. He was educated at the City of London School and Balliol College, Oxford. He began his literary career on the staff of *The Dictionary of National Biography,* and in 1891 was made its editor, being now known as Sidney Lee. In 1898 his *Life of Shakespeare* appeared, and a revised edition in 1915. He also wrote *Lives* of Queen Victoria and Edward VII. His other books include *Great Englishmen of the 16th Century,* and *The Principles of Biography.* He was Professor of English Language and Literature at the East London College, and received many academic honours, including a fellowship of the British Academy. He was knighted in 1911 and died March 3, 1926.

Lee **Sydney.** English artist. Born in 1866, he studied art in Manchester and Paris. He won several prizes by his etchings and engravings as well as his paintings. His picture "Among the Dolomites" was bought for the nation and he has pictures in Liverpool, Glasgow and other cities, as well as in the South Kensington Museum. He was elected A.R.A. in 1922 and R.A. in 1930.

Lee **William.** English inventor. Born at Calverton, Nottinghamshire about 1560, he was educated at Cambridge. He became a clergyman and was at Calverton from 1582 to 1593. While there he invented a frame for knitting stockings more quickly than they could be knitted by hand. He took it to London and made a success of it. His concluding days were passed in Rouen and in Paris, where he died about 1610.

Leech Order of segmented worms. They possess suckers at one or both ends and live on the blood of animals. There are many species, some living in water and others in marsh land. The best known, both found in England, are the horse leech and the smaller leech much used at one time by medical men. The latter is about 2 in. long and sucks by making a triple wound with the tooth-like plate in its mouth.

Leech **John.** English artist. Born in London, Aug. 29, 1817, he was educated at the Charterhouse. In 1841 he joined the staff of *Punch,* and his 3000 drawings in that journal show a fund of humour, combined with great technical skill, and form a most valuable companion to the history of the age. He illustrated *The Christmas Carol* by Dickens, and other books. Many of his drawings are in the South Kensington Museum. He died in London, Oct. 29, 1864.

Leeds City and county borough of Yorkshire (W.R.). It stands on the Aire, 185 m. from London, and is served by both the L.M.S. and L.N.E. Rlys., as well as by canals to both the E. and the W. coast. S. Peter's is the parish church, while the Roman Catholics have the Cathedral, S. Anne's. Parks and open spaces include Roundhay Park and Woodhouse Moor. The ruins of Kirkstall Abbey and the estate of Temple Newsam belong to the city.

The chief industry of Leeds is the manufacture of cloth and clothing. Others are engineering works, leather works, printing works and factories for making shoes, chemicals, glass, etc. Leeds was made a county borough in 1888, and its boundaries were extended in 1912. In 1897 its mayor was made a lord mayor. Pop. (1931) 482,789.

The **University of Leeds** was founded in 1904, its nucleus being Yorkshire College, which consisted of the Leeds College of Medicine and the Yorkshire College of Science. It has fine buildings, including a block erected in 1928-32, and possesses equipment for all branches of scientific study. Its medical school is famous.

The Leeds and Liverpool Canal is a waterway, 127 m. long, connecting the district with the Mersey.

Leeds Village of Kent. It is 4 m. from Maidstone. There are ruins of a castle. The building was formerly a fortress and its gateway and the drawbridge over the moat remain.

Leeds **Duke of.** English title borne since 1694 by the family of Osborne. **Sir Edward Osborne** was a London apprentice in the 16th century. He married his master's daughter and became very rich. His grandson, **Edward,** inherited his wealth, including estates in Yorkshire, and was made a baronet. His son, **Thomas Osborne,** was made Earl of Danby in 1674, and Duke of Leeds 20 years later. The titles passed to the duke's son and other descendants. **Francis,** the 5th duke, married the heiress of the Earl of Holderness and obtained Hornby Castle. He was Secretary of State from 1783 to 1789. When the 7th duke died in 1859, the title passed to a younger son of the 5th duke, whose descendant still holds it.

In 1931 the 11th duke sold the family estates, including Hornby Castle, which was pulled down. The duke's eldest son is known as the Marquess of Carmarthen.

Lee-Enfield Name given to the type of rifle modified from

the Lee-Metford and adopted by the British army and navy. The rifle has a length of 44½ in., with a weight of 8 lb. 14½ oz., and a calibre of ·303 in. The range is 2000 to 3700 yards, for which there are two sets of sights. The magazine holds ten cartridges, fed to the barrel by a spring worked by a bolt action.

Lee of Fareham Viscount. English politician. Arthur Hamilton Lee was born Nov. 8, 1868, and educated at Cheltenham College. After a course at Woolwich he passed into the army and served therein until 1900. For part of the time (1893-98) he was a professor at the Royal Military Academy, Kingston, Canada. In 1900 he was elected Unionist M.P. for the Farcham division, and from 1903-05 he was Civil Lord of the Admiralty. In 1915 he became Parliamentary Secretary to the Ministry of Munitions, and in 1917-18 he was Director-General of Food Production. In 1919 he was made Minister of Agriculture, and in 1921 he became First Lord of the Admiralty. He resigned in Nov., 1922, having represented Great Britain at the Washington Conference. Since then he has been chairman of important royal commissions and actively connected with Anglo-American and other movements. In 1918 Lee was made a baron and in 1922 a viscount. He inherited the estate of Chequers (*q.v.*), which, in 1921, he presented to the nation.

Lee-on-the-Solent Watering place of Hampshire, 91 m. from London, on the S. Rly. Here are good sands and bathing.

Leek Hardy biennial bulbous herb of the lily order (*Allium porrum*). It is grown from seed and later transplanted into trenches. The root is blanched like celery and cooked and eaten as a vegetable. The leek is the national emblem of Wales and is worn on March 1, S. David's Day.

Leek Urban district of Staffordshire. It stands on the L.M.S. Rly., 154 m. from London and is also served by a canal. Its fine old church of S. Edward has four Saxon crosses. The main industry is the manufacture of silk. Near the town is Rudyard Lake. Pop. (1931) 18,556.

Lees-Smith Hastings Bertrand. English politician. He was born in India in 1878, and educated at Aldenham School and for the army at Woolwich, but he abandoned a military career and graduated at Queen's College, Oxford. He became known as an economist, and was connected with Ruskin College, Oxford, and the London School of Economics. In 1910 he was elected M.P. for Northampton, and he sat in the House of Commons as a Liberal until 1918. In 1922 he joined the Labour Party, and was elected M.P. for the Keighley division, but lost his seat in 1931. In 1929 Lees-Smith was made Postmaster-General in the Labour Ministry, and in 1931 he was for a few months President of the Board of Education. He resigned office in Aug., 1931, and in Oct. lost his seat in Parliament but was returned for Keighley in 1935.

Leeward Islands Group of islands in the W. Indies. They lie between the Atlantic Ocean and the Caribbean Sea and are called Leeward because of their position with regard to the trade winds. They extend from Puerto Rico to Martinique and the British islands include Dominica, Montserrat, St. Kitts, Antigua Anguilla, Nevis and some of the Virgin Islands. Barbuda and Redonda are dependencies. They cover 715 sq. m., and are under a governor, executive and councils. Antigua is the seat of government. Sugar and molasses are produced, and lime juice is made. Cotton and tobacco are grown. In 1933 it was proposed to unite the Leeward and Windward Islands under one governor, with headquarters at St. Lucia, and to name the new colony the British Caribbean Islands. Pop. (1931) 127,829.

Martinique, Guadeloupe and St. Martin belong to France. Those of the Virgin Islands that are not British belong to the U.S.A., having been bought from Denmark in 1916.

Left In politics a party holding advanced views, radicals or socialists. When the National Assembly met at Versailles in 1789 the extremists sat on the left of the hall, the moderates on the right.

Leg Limb supporting and moving the body. Most vertebrates have two pairs. Insects have normally three pairs; spiders, four; higher crustacea, five; some millipedes more than 100 pairs. The human leg or shank contains the tibia or shin bone, which enters into the knee joint and, aided by the fibula, into the ankle joint.

Legacy Money or property left to a person by will. A gift of a particular thing, a picture by Reynolds for instance, is a specific legacy. A general legacy is a gift of money out of the estate. If there is not enough money to pay all the legacies each must accept the same proportion, unless, by the terms of the will, one or more legacies are to have preference.

Legacy Duty Tax payable by persons who receive personal property owing to the death of another. In the case of real estate the same duty is payable, but it is called succession duty. Both rank as death duties. Legacy duty is payable by the recipient unless the person leaving the money orders it to be paid from the estate. The rate is 1 per cent. to husband, wife or lineal descendants; 5 per cent. to brothers and sisters and their descendants; and 10 per cent. to all other persons.

The duty is not payable when the total value of an estate is £15,000 or less, nor when the sum left to a widow or child under 21 years of age does not exceed £2000, nor when the total amount received by a husband, wife or lineal descendant does not exceed £1000.

Legal Tender Money or currency in which debts can legally be paid. In Great Britain and N. Ireland notes of £1 and 10s. are legal tender for payments of any amount. Bank notes of greater value than £1 are legal tender in England and Wales only. Gold coins are legal tender to any amount. Silver coins are legal tender up to £2 and bronze ones up to 1s.

Legate Ambassador, also called a nuncio, sent by the pope on errands of importance. They are usually cardinals and members of the papal court.

Legation Term used for the minister to a foreign country and his staff. It is also used for the building in which they conduct their business unless this ranks as an embassy. The land on which it stands is regarded by international law as part of the country it represents and the building is usually free from all rates and taxes.

Legend Something appointed to be read. Originally it was a

passage of Scripture read in divine worship and later something from the lives of the saints in monastic refectories, *e.g.*, Voragine's *Golden Legend*. It embraced also secular tales, *e.g.*, Chaucer's *Legend of Good Women*. From their fabulous tendency the word came to denote a story, often fancifully embroidered, differing from a myth because it concerned a nation, family or individual, and had a basis of truth. It denotes also an inscription on a coin, monument, or coat of arms.

Leghorn City and seaport of Italy, called Livorno by the Italians, on the W. coast, 12 m. from Pisa and 50 from Florence. Its fine harbour, enlarged in the 20th century, has made shipping the chief industry, along with shipbuilding and glass-making. At one time the city was famous for its straw hats and for a breed of fowl popular in Great Britain.

Leghorn, when a very small place, passed from one ruler to another until, in 1421, it became a dependency of Florence, then ruled by the Medici family, who made it a place of some importance. Pop. (1931) 124,391.

Legion Unit of the Roman Army. usually fixed at about 6000. In addition each legion had 300 cavalry and a number of auxiliary troops. There were 25 or 30 legions, each divided into 10 numbered cohorts, with an eagle as a standard.

Legion of Honour French order, founded by Napoleon in 1802. The president of the republic is the grand master, and there is a chancellor and a council. The badge is a five-armed cross surmounted by a laurel wreath and suspended by a red ribbon. Soldiers, sailors and civilians are alike eligible for membership, which, during the Great War, was given to soldiers of the allied countries. It was also given to towns in France and Belgium. Members are divided into five classes : grand cross, grand officer, commander, officer and chevalier.

In 1930 the Irish Free State decided to establish a Legion of Honour.

Legislation Making of laws. The making of new laws to meet changing conditions is an important part of the work of the modern state. In Great Britain legislation is primary, *i.e.*, the making of laws proper, or secondary, *i.e.*, the making of rules by local authorities or departments, to carry out the laws.

There is a Society of Comparative Legislation at 1 Elm Court, Temple, E.C. 4. *See* LAW.

Legislature Name used for any body that has the power of making laws. In Great Britain and other parts of the British Empire it is the two Houses of Parliament ; in the United States the two Houses of Congress ; and in France the Chamber of Deputies and the Senate. In some cases the legislative powers are limited by the constitution, which may often contain clauses defining the powers of each house. *See* PARLIAMENT.

Legitimacy State of being lawful or legitimate. It is usually applied in English and Scottish Law to cases of marriage and birth. Marriages are legitimate if neither party has a husband or wife living and if other conditions as to age and relationship are observed. Children are legitimate if they are born in lawful wedlock, or if the parents are subsequently married. If not they are illegitimate. Before 1926 a subsequent marriage did not make children legitimate in England, although it did so in Scotland and other countries where Roman law prevailed.

Legitimists Name used for those who support the claim to the throne of a fallen dynasty. They believe that, although kings may lose their thrones, they cannot lose their rights, and therefore their claims remain good. In Great Britain the Jacobites, who hold that a descendant of Charles I. is the rightful sovereign, are legitimists. In France the legitimists believe in the claims of the Bourbons ; in Spain they support the claim of Alphonso XIII. and his sons. *See* JACOBITES.

Legros **Alphonse.** French artist. Born at Dijon, May 8, 1837, of humble parents, he worked for a time as a painter and decorater. He studied art and settled in London, where he taught etching at S. Kensington. In 1876 he was appointed Slade Professor of Fine Art at University College, London, a post he held until 1892. Legros died Dec. 8, 1911.

Legumin Nitrogenous substance or protein. It forms one of the constituents of the reserve food material occurring in the seeds of the pea and broad bean, and belongs to the group of globulins, distinguished by their insolubility in water and solubility in saline solutions.

Lehar **Franz.** Hungarian composer. Born April 30, 1870, after studying at Vienna and Prague he became a conductor, producing his first opera, *Kukuska*, subsequently called *Tatiana*, in 1896. His charming melodies and waltzes have earned him great popularity, and among his successes may be mentioned *The Merry Widow*, *Paganini*, *Gypsy Love* and *Frederica*.

Leibnitz **Gottfried Wilhelm.** German scholar. Born at Leipzig, July 6, 1646, he lived for some time in Paris and visited London. His early study of the law was abandoned for mathematics, and he discovered a new method of the calculus, which led to a dispute with Sir Isaac Newton. He invented a calculating machine.

In 1676 Leibnitz was made librarian to the Duke of Brunswick at Hanover, and there he became a trusted friend of the family. He tried to reform the coinage, and to bring about something like a union of Christendom. In 1700 he persuaded Frederick I., King of Prussia, to found the Academy of Sciences at Berlin, and of this he was made president. He died at Hanover, Nov. 14, 1716.

Leibnitz possessed a powerful and original mind ; his interests were multifarious and his influence great, but his best work was done as a philosopher. He expounded a system in which substance consists of atoms, or monads, each self-contained and individual, the whole forming a perfect harmony with its centre and creator, God.

Leicester City and county town of Leicestershire. It stands on the Soar, 99 m. from London, on the L.M.S. and L.N.E. Rlys., and has two canals. The County Hall, used for the assizes, includes the dining hall of the castle around which the town grew. Trinity Hospital is an old almshouse ; the chantry house is now a museum, and there is a 14th century gateway. Leicester has a university college, a school of art and a technical school. S. Martin's church is now the cathedral. There are several fine parks

including Bradgate and Abbey, both with historical associations.

The making of hosiery is the principal industry; there are also factories for making boots and shoes, cotton goods, etc. In 1919 Leicester was made a city, and in 1927 it became the seat of a bishop. In 1928 its mayor was given the title of Lord Mayor. Leicester occupies the site of the Roman station, Ratae, and there are Roman remains as well as remains of its mediaeval walls. Pop. (1931) 239,111.

Leicester **Earl of.** English title borne by several families. The first earls were the Norman Beaumonts, and later came Simon de Montfort (1206); Edmund, Earl of Lancaster, a son of Henry III. (1265); and in 1564 Robert Dudley. Robert Sidney, a brother of Sir Philip Sidney, was made earl in 1618, and the Sidneys held the title until 1743. Thomas Coke was earl from 1744 to 1759, and the Townshend family held the earldom from 1784 to 1855.

In 1837, Thomas William Coke was made earl, his title distinguished as Leicester of Holkham. He was a son of Robert Wenman, who took the name of Coke when succeeding to the estates of his uncle, the Earl of Leicester, who died in 1759. **Thomas W. Coke,** born May 6, 1752, inherited the estates in 1776 and became the most famous agriculturist of his day. He was for years an M.P. and a leading social figure. He drained and cultivated the land around his Norfolk seat, Holkham Hall, making it very productive. He did much to improve the breed of sheep and cattle and the quality of the crops. He died June 30, 1842, and the title is still held by a descendant. The earl's eldest son is called Viscount Coke.

Leicester **Earl of.** English courtier. Robert Dudley was born about 1532, a younger son of John Dudley, Duke of Northumberland. He was a member of parliament and served as a soldier, but he is best known as the husband of Amy Robsart and the suitor of Queen Elizabeth, whom he entertained in his magnificent castle at Kenilworth in 1575. In 1560 Amy Robsart, whom he married in 1550, died at Cumnor place, Oxford, probably by foul play; in 1573 he married Lady Shenfield and in 1578 he bigamously married Lettice, Countess of Essex, but all the time he was paying his addresses to Elizabeth. In 1564 Dudley was made an earl, and in 1585 he was sent with an army to the Netherlands, but he showed no great military skill. In 1586-87 he was Governor of the United Provinces, and in 1588 he commanded the force at Tilbury gathered to meet the Spaniards. He died Sept. 4, 1588, it is said by poison.

Leicestershire County of England. It covers 823 sq. m. and is mainly level, but contains Charnwood Forest with its hills and the Wolds in the N.E. Agriculture is the chief industry, and there is some coal mining. Leicester is the county town. Other places are Loughborough, Hinckley, Market Harborough and Coalville. Ashby-de-la-Zouch, Lutterworth and Belvoir are places of historic interest, and Melton Mowbray a hunting centre. The county is a famous hunting shire and is a first-class cricketing county. Pop. (1931) 302,683.

The Leicestershire Regiment was raised in 1688 and known as the 17th Foot. It has a long record of service and is called The Tigers, from the regimental badge granted in 1804. The depôt is at Leicester.

Leiden Town of the Netherlands, also called Leyden, 9 m. from the Hague. The Old Rhine flows through the town, which is well served by railways. There is a butter market and a weigh house, and the museums contain valuable collections of antiquities and works of art. The industries include cloth-making, printing and a trade in farm produce.

Leiden is famous for its university, founded in 1575, at one time one of the greatest centres of learning in Europe. The great event in its history was its siege by the Spaniards in 1572-73, when it was relieved by flooding the adjacent land. Pop. (1932) 71,598.

Leigh Borough and market town of Lancashire, 11 m. from Manchester on the L.M.S. Rly. The main industry is the manufacture of cotton. Pop. (1931) 45,313.

Leigh-on-Sea Watering place of Essex. It is on the Thames estuary, 33 m. from London on the L.M.S. Rly. It adjoins Southend-on-Sea, and has been part of the borough since 1913. It has some shipping, and is a fishing centre.

Leighton **Lord.** English artist. Frederick Leighton was born in Scarborough, Dec. 3, 1830. He was educated mainly in Italy and studied art in Brussels, Paris, Frankfort and Rome. He made a reputation with "Cimabue's Madonna carried in Procession" in 1855. In 1858 he settled in London, and in 1864 was elected A.R.A., and in 1866 R.A. In 1878 he was made President of the Royal Academy. Knighted in 1878 he became baronet in 1886 and baron in 1896. On Jan. 25, 1896, he died unmarried and was buried in St. Paul's Cathedral.

Leighton was a careful student of Greek art and had a remarkable sense of beauty. His pictures, mainly classical in style and subject, include "Paolo and Francesca," "The Harvest Moon," "Wedded," "The Bath of Psyche" and "Flaming June." He was also a fine sculptor as he proved by his "Athlete Struggling with a Python," now in the Chantry collection. He built, in 1866, **Leighton House,** at 12 Holland Park Road, Kensington. It is Oriental in style, and many of the decorations were brought from Syria. Its most notable apartment is the Arab Hall. It is now a public museum, and in 1928 two galleries were added.

Leighton Buzzard Market town and urban district of Bedfordshire. It stands on the Ousel, 41 m. from London, on the L.M.S. Rly. There is a beautiful market cross and an old school. The town lives chiefly on its agricultural trade. Pop. (1931) 7031.

Leinster Province of Ireland. It is wholly in the Irish Free State and covers the E. and S.E. part of the country. It contains 12 counties—Carlow, Dublin, Kildare, Kilkenny, Leix, Longford, Louth, Meath, Offaly, West Meath, Wexford and Wicklow. The Shannon divides it from Connaught.

The **Leinster Regiment,** formerly the 100th and 109th Foot, was disbanded in 1922. It was also known as the Royal Canadians.

Leinster **Duke of.** Irish title, borne since 1766 by the family of Fitzgerald. In 1316 a descendant of the 1st Baron of Offaly was made Earl of Kildare.

The 10th earl was executed in 1537. The family seat is Carton, near Maynooth, and the duke's eldest son is styled the Marquess of Kildare.

Leipzig City of Germany. It is in Saxony, 74 m. from Dresden and 104 from Berlin. Famous as a trading, musical and educational centre, and for its historic associations, it has the largest railway station in Europe, two airports and the supreme law court of the Republic. There are several museums, including one of the book trade, a stock exchange and fine theatres and concert halls. A tower of the citadel is now part of the town hall. It has been for centuries a centre of the bookselling and fur trades, and these are the chief articles sold at the famous **Leipzig Fair**, now held twice a year. The manufactures include chemicals, machinery, paper, scientific and musical instruments, etc. Printing is an important industry and owing to its position the city is a great distributing centre. It has a broadcasting station (259 M., 2 kW.).

The **University of Leipzig**, founded in 1409, is one of the most celebrated in Germany. It has an observatory and botanical garden, and an institute of agriculture. The schools include the noted Conservatoire of Music. Leipzig became a centre of Protestantism and the University was one of the strongholds of the reformed learning. Pop. 679,159.

The **Battle of Leipzig**, called "the battle of the nations," was fought Oct. 16-18, 1813, between the French under Napoleon, and the allied Russians, Austrians and Prussians. The French were defeated with heavy losses.

Leiston Urban district of Suffolk, 4 m. from Saxmundham on the L.N.E. Rly. The main industry is agricultural and the chief object of interest the abbey ruins. Pop. (1931) 4184.

Leith Port of Edinburgh, on the Firth of Forth, 2 m. N. of the city, on the L.N.E. and L.M.S. Rlys. It has a large harbour, enlarged just before the Great War, and extensive docks, and is connected with Edinburgh by Leith Walk. The chief industry is shipping; others are distilling, sugar refining and the manufacture of chemicals.

Leith belonged for two centuries after 1329 to the citizens of Edinburgh and was several times attacked by the English. It had a citadel and was surrounded by walls. In 1533 it was made a burgh, but in 1920 it was included in Edinburgh.

Leith Hill Hill in Surrey, on the S. Downs, about 5 m. from Dorking and 965 ft. high, the highest point in the S.E. of England. There are fine views from the summit, on which is a tower.

Leitrim County of the Irish Free State. It is in the province of Connaught and covers 613 sq. m., with hills in the N. and E. The Shannon flows along its borders, and Lough Allen is the largest lake. Carrick-on-Shannon is the county town; others are Manor Hamilton, Mohill and Jamestown. **Leitrim** itself is a village on the Shannon. There is a small coalfield in the county, but agriculture is its staple industry. Pop. (1926) 55,907.

The title of **Earl of Leitrim** has been borne since 1795 by the family of Clements. The first holder was Robert Clements, an Irish M.P. The family estates are in Donegal and Leitrim, and the earl's eldest son is called Baron Clements.

Leix County of the Irish Free State, known until 1922 as Queen's County. In the province of Leinster it covers 664 sq. m. It is served by the Gt. S. Rlys. and the Grand Canal. Maryborough is the county town; other places are Portarlington, Mountmellick, Stradbally and Abbeyleix. The chief rivers are the Barrow and the Nore. Agricultural pursuits occupy most of the people, but the soil is not very fertile as there is much bogland. In the N. are the Slieve Bloom Mts. Pop. (1926) 51,540.

Leland **John.** English writer. Born in London about 1506, he was educated at S. Paul's School and Cambridge. He showed a distinct aptitude for research, and in 1533 became the Royal Antiquary. He wrote *Itinerary*, describing a journey through England and Wales which has been of great value to modern scholars. He left an immense collection of notes. His reason gave way and he died April 18, 1552.

Lely **Sir Peter.** English painter. He was born near Utrecht, Sept. 14, 1618, and studied art in the Netherlands. He settled in London in 1641, became an English subject and was knighted and made Court Painter by Charles II. He died Nov. 30, 1680.

Lely is best known for his portraits of the ladies of the court of Charles II., which are now in Hampton Court Palace.

Leman **Gerart Mathieu Joseph Georges.** Belgian soldier. Born Jan. 8, 1851, he was educated for the army which he entered in 1872. In 1880 he was made professor at the military college, and in 1905 its commandant. In 1914 he was commanding the fortress of Liége, which he defended against the Germans until it was taken. He remained a prisoner of war until Jan., 1918. Leman died Oct. 17, 1920.

Lemberg Town of Poland, known also as Lwow, in Galicia, 355 m. from Vienna. It is a great railway junction, and has cathedrals of the Greek, Armenian and Roman Catholic churches. The city has many manufacturing and other industries. Lemberg was founded in the 13th century, and its famous university dates from 1661. In 1772 it was taken from Poland and given to Austria, when it became the capital of Galicia. In 1919 it became part of the new Poland. Pop. (1931) 313,177.

There was much fighting around Lemberg during the Great War. After some hard and prolonged battles, it was evacuated by the Austrians and entered by the Russians early in Sept., 1914. There was another great battle for it in 1915, and in June the Russians were driven out by the Germans.

Lemming Rodent of the vole family, about 5 in. long, yellowish brown in colour; it is found in Europe, Asia and N. America. It lives in the ground like the rabbit and feeds on grass. It is very common in Norway. It has a habit of migrating at certain times; in enormous numbers the animals move across the country, eating the crops on their way, until they reach the sea. They swim there until they are drowned. The banded lemming turns white in winter.

Lemnos Island of Greece in the Aegean Sea. It is 45 m. from the entrance to the Dardanelles. It covers 180 sq. m. The chief town is Lemnos, or Castro, and the chief crops fruit and tobacco. Mudros Bay, like Lemnos itself, was used by the Allies during the Great War against Turkey. The island

was a Turkish possession from 1478 to 1925. In ancient times it was famous for its earth, which was believed to cure cases of plague and poison. Pop. 25,000.

Lemon Oval fruit of an evergreen tree, apparently a variety of citron (*Citrus medica*), known only in its cultivated state. Extensively grown in Italy, Spain, Greece, California, Florida and S. Africa, its yellow rind furnishes candied peel and an essential oil; its pulp, as a juice, is used for lemonade and citric acid, and for various cooking and medicinal purposes. Large quantities are imported into Great Britain.

Lemon Mark. English writer and humorist. Born in London, Nov. 30, 1809, the son of a hop merchant, he became manager of a brewery in London. He founded and edited *The Field* and edited also *The London Journal* and *The Family Herald*. In 1841 he helped to found *Punch*, and he was its editor from 1843 to 1870, when it became a national institution. Lemon wrote many plays, including *Hearts are Trumps*, several novels and a good deal of other literature, including fairy stories and a *Jest Book*. As Uncle Mark he won a reputation as a lecturer, and he was also known as an amateur actor. He died at Crawley, May 23, 1870.

Lemonade Beverage comprising lemon juice diluted with water and sweetened with sugar. Boiling water is poured on sliced fruit, sugar is added and it is left to cool. It is a palatable thirst-quenching drink, used hot or cold. A pinch of bicarbonate makes it effervescent. Aerated water flavoured with essence or peel of lemon is called lemonade.

Lemon Grass Name of several tall aromatic grasses. They are widely cultivated in the tropics for their essential oils. That sold as East Indian is distilled from *Andropogon flexuosus*, indigenous to Cochin and Tinavelly; West Indian comes from *A. citratus*, also produced in Ceylon and Malaya. They often masquerade as oil of verbena.

Lemon Sole Flatfish allied to the dab, extensively caught in trawlers in the N. of Europe. It is smaller but wider than the ordinary sole, to which it is inferior in flavour. It spawns in the spring and early summer. The fish is not allied to the true sole, the name being a corruption of the French *limande*, meaning dab.

Lemprière John. British scholar. He was born in Jersey about 1768, educated at Winchester and Pembroke College, Oxford, and became a schoolmaster. In 1792 he was made headmaster of Abingdon Grammar School, and, having been ordained, was vicar of Abingdon, 1800-09. He then went to Exeter as headmaster of the grammar school there, and later held livings in Devonshire. He died Feb. 1, 1824. Lemprière's name lives through his *Classical Dictionary* and his *Universal Biography*.

Lemur Family of monkey-like mammals. They are confined to Madagascar and the Comoro Islands, but at one time roamed over Europe and Africa. The head resembles that of the fox and the general appearance is something between a cat and a monkey. They live in trees and sleep during the daytime. Their food consists of small birds, insects, eggs, fruit, etc. The several species vary in size, but all are tameable and affectionate.

Lena River of Siberia. It rises near Lake Baikal in the S., flows mainly N. and falls into Nordenskiold Sea, a branch of the Arctic Ocean. One of the longest rivers of the world, it is a gold-bearing stream, 2900 m. long. The property of the English company which worked the gold has been seized by the Soviet authorities. The Lena Islands are in the estuary.

Lenglen Suzanne. French lawn tennis player. Born at Compiègne, May 29, 1899, she won her first championship when only 14. From 1919 to 1925 she held the Ladies' Singles Championship at Wimbledon, and she won similar honours in France and the U.S.A. In 1927 she became a professional. She has written several books on the game, and her first novel was published in 1925.

Lenin Name taken by the Bolshevist leader, Vladimir Ilyich Ulyanov. He was born April 10, 1870, the son of a schoolmaster, and was educated at Simbirsk, his birthplace, and then at the University of Kazan. As a student he was a leader in the demonstrations against authority prevalent at that time. He went to St. Petersburg to study law, and was exiled to Siberia. Released in 1900, he lived for a time in Paris and London. He was in Russia during the brief revolution of 1905, after which he resided chiefly in Switzerland. During these years he was one of the leaders of international socialism.

In 1917 the German Government agreed to an arrangement by which Lenin and other leaders were to return to Russia. They passed from Switzerland to Germany in a closed train and reached Petrograd. Kerensky was then dominant in Russia, and the new arrivals were unable to overthrow him. Trotsky, who was by now closely associated with Lenin, was put in prison, while Lenin escaped by flight. With Trotsky released, they renewed their agitation and in Nov., 1917, they succeeded in destroying the authority of Kerensky. The new ideas of government worked out by them during the years of exile were then put into operation. A council of people's commissioners was set up with Lenin as president, and the system known as Bolshevism was established. Peace was signed with Germany and Moscow made the country's capital in March, 1918. Opposition was ruthlessly crushed and the system established by Lenin and Trotsky remained dominant. Closely guarded in the Kremlin, Moscow, Lenin retained his power until his death, Jan. 31, 1924. The Bolshevists honoured his memory by a magnificent tomb. In 1920 Petrograd had been renamed Leningrad.

Leningrad City and seaport of Russia, formerly known as St. Petersburg and then as Petrograd, and until 1918 the capital of the country. At the mouth of the River Neva, the oldest part is on an island and the larger part on the left bank, and its harbour is used by medium sized ships. A ship canal leads to its outport, Kronstadt.

Leningrad has some fine buildings, including the famous winter palace overlooking the Neva. The Hermitage once housed one of the finest collections of treasures in Europe. The churches included the cathedrals of S. Isaac and the Kazan Cathedral, a model of S. Peter's at Rome; but both have been turned into museums. Other churches have been closed and dismantled. The fortress of S. Peter and S. Paul contains a famous prison. There is a university founded in

1819, and many colleges and schools. The famous thoroughfare long called the Nevski Prospect has been renamed Oct. 25 Street. The chief industry is shipping for which there are extensive docks. There are two broadcasting stations (1000 M., 100 kW. and 351 M. 1.2 kW.).

Leningrad was founded in 1752 by Peter the Great who made it the capital. There have been several risings in the city, notably in March, 1917. In 1931 a scheme for rebuilding the city and restoring its prosperity was put forward. Since 1918 the population has declined; it is now 1,617,007.

Lennox District of Scotland. It goes from Dumbarton to Stirling, and includes the county of Dumbarton and parts of the counties of Stirling, Renfrew and Perth. In the district are the Lennox and Kilpatrick Hills and the Campsie Fells. There was an **Earl of Lennox** in the 12th century, and a later earl was father of Lord Darnley. In 1581 Esme Stuart was made Duke of Lennox, but the title died out in 1672. In 1675 Charles II. gave it to an illegitimate son, Charles Lennox, Duke of Richmond, and it has since been held by the dukes of Richmond.

Lennoxtown Town of Stirlingshire, 11 m. from Glasgow on the L.N.E. Rly. It is a coal mining centre and has also textile mills. Pop. 2600.

Leno **Dan.** English comedian, whose real name was George Galvin. He was born Dec. 20, 1860, and won fame as an entertainer by his clog dancing. He was also something of an acrobat. In 1888 he appeared in London in the pantomime at Drury Lane, and for the next 20 years he was perhaps the most popular figure in variety entertainments. His native humour, unique of its kind and quite clean, delighted thousands. Leno died Oct. 31, 1904.

Lens Portion of a transparent medium, usually glass, enclosed between two surfaces which are parts of spherical or plane surfaces. In passing through a lens light rays are refracted and become more convergent or divergent according to the type of lens. Convex lenses, which are thicker at the centre than at the edges, are either double convex, plano-convex or concavo-convex. Concave lenses, thinner at the centre than at the edges, have corresponding forms to the convex type.

Lens Town of France. It is on a canalised river, 13 m. from Arras, and stands on a rich coal field, with engineering works and iron and steel industries. Buildings destroyed during the Great War have been rebuilt and industries restarted. A memorial church has been built by the Canadians.

In the Middle Ages and later, Lens was a fortified town; in Aug., 1649, the Spaniards were defeated by the French. In Oct., 1914, the Germans occupied Lens, and attempts to recover it failed, one being made in the Battle of Loos in Sept., 1915. The Germans evacuated it on Oct. 2, 1918. Pop. (1931) 33,513.

Lent In the Christian year the 40 days just before Easter. It begins on Ash Wednesday, and is for many a time of abstinence. It commemorates the 40 days passed by Christ in the wilderness. The French call it *carême*.

Lenthall **William.** English politician. Born in June, 1591, the son of a landowner in Oxfordshire, he was educated at Oxford. He became a barrister and in 1640 was elected M.P. for Woodstock. In 1641 Charles I. appointed him Speaker of the House of Commons, and he retained the office until 1653. Throughout the Civil War Cromwell addressed to him his letters about the campaign. He was speaker again in 1659 when the Rump was recalled. Lenthall was exempted from pardon in 1660 but he was unmolested, and he died at his residence at Burford, Oxfordshire, Sept. 3, 1662.

Lentil Annual herb of the order *Leguminosae*. It grows in the Mediterranean region and bears single pale-blue flowers. Its seeds are a valuable article of food, as they contain a very high proportion of carbohydrates and protein. They grow in pods and can be cooked whole or split, or ground into a meal.

Leo Name of one of the constellations. It is situated just beneath the feet of the Great Bear, and contains a number of important stars, such as Regulus, or α Leonis; the blue star, Denebola, or β Leonis; and the double star, Algieba. It is also the fifth sign of the Zodiac, and as such no longer corresponds with the constellation.

Leo Name of 13 popes. The most important are Leo I., Leo X. and Leo XIII., who are noticed separately. **Leo II.** was pope, 682-83. **Leo III.**, pope from 795 to 816, crowned Charlemagne emperor and was canonised in 1673. **Leo IV.**, pope from 847-855, built the part of Rome called after him the Leonine city. **Leo V.** was pope in 903 and **Leo VI.** in 928. **Leo VII.** was pope, 936 to 939, and **Leo VIII.** from 964 to 965. **Leo IX.**, a German, was pope, 1049 to 1054. **Leo XI.**, like Leo X., a member of the Medici family, was pope for a few weeks in 1605. **Leo XII.** pope from 1823 to 1829, was a harsh and unpopular ruler at a time when liberal ideas were spreading rapidly in Europe.

Leo I. Pope from 440 to 461. He was chiefly occupied in combating heresies and in strengthening the authority of Rome. He is best remembered, however, as the pope who saved the city from Attila and his Huns, and later protected it when it was captured by Genseric and the Vandals. He died in Rome, Nov. 10, 461, and was canonised. He is known as Leo the Great.

Leo X. Pope from 1513 to 1521. A son of Lorenzo the Magnificent, of the Medici family, he was born in Rome, Dec. 11, 1475. He was made a cardinal and in 1513 was chosen pope. Thoroughly secular in his outlook, he was the typical pope of the Renaissance. He carried on several wars, but his chief interests were in his splendid court, where art and literature flourished. The Reformation began during his reign. He died Dec. 1, 1521.

Leo XIII. Pope from 1878 to 1903. Born March 2, 1810, he studied for the priesthood and in 1837 was ordained. He served Pope Pius IX. in a secular capacity, both in Italy and the Netherlands, and in 1846 he was appointed Archbishop of Perugia. In 1853, as Cardinal Pecci, he was one of the leading personages at the papal court. Very active, he was on good terms with most of the European countries, but would not recognise the Italian Government in Rome. He wrote poems and issued several encyclical letters, one on capital and labour. He died July 20, 1903.

Leo Name of six East Roman emperors. **Leo I.** called the Great reigned from 457 to 474. His grandson, **Leo II.** only reigned

for a few weeks. **Leo III.**, the greatest of the six, founded the Isaurian, or Syrian, dynasty when he began to reign in 717, and in 726 he forbade the worship of images.

Leominster Borough of Herefordshire, at the junction of three small rivers, 157 m. from London and 12 from Hereford, on the G.W. and L.M.S. Rlys. The magnificent church has a Norman nave. There s a trade in hops. Pop. (1931) 5707.

Leon Kingdom of Spain. It originated in the 10th century and was united for short periods with Aragon and Castile; it was finally united with Castile in 1230. It covered about 20,000 sq. m. in the N.W. of the country, and included, as well as the capital, Leon, the cities of Salamanca and Valladolid.

Leon City of Spain, 174 m. N.W. of Madrid, in mountainous country. Its cathedral is Gothic (founded 1199) and around the old city are the mediaeval walls and gates. Beyond is an industrial quarter. Pop. (1931) 29,337.

Leon City of Nicaragua, Central America. The town is a centre for trade in minerals, timber and coffee, which are exported from Corinto, 32 m. to the N. It dates from 1610 and was formerly the capital of the republic. Pop. 23,565.

Leonardo da Vinci Italian artist and scholar. Born in 1152 at Vinci, near Florence, he was the illegitimate son of a lawyer. About 1470 he worked in the studio of Verocchio and later he was in Egypt as an engineer. In 1482 he settled in Milan, at the magnificent court of the Sforza family. In 1500 he was architect and engineer to Caesar Borgia in Florence, and in 1506, invited by Louis XII., he went to France. He died near Amboise, May 2, 1519.

Poet and scientist as well as artist, his genius was expressed also in engineering, architecture and mathematics, and he anticipated many discoveries of modern science, including the airship. The outstanding proofs of his artistic power are the "Mona Lisa," in the Louvre at Paris, "The Last Supper," now somewhat faded, at Milan, and "The Virgin of the Rocks," in the National Gallery, London. There are collections of his drawings in the British Museum and at Windosr Castle. He wrote a book on art.

Leoncavallo **Ruggiero.** Italian composer. Born in Naples in 1858, in his best known works, the operas *Pagliacci* (1892) and *Zaza* (1900), he used his sense of dramatic possibilities to full advantage. His other works, apart from *La Bohème*, were not very successful. He died Aug. 9, 1919.

Leonidas King of Sparta. He is remembered because he was the leader of the small band of Spartans who defended the Pass of Thermopylae against the Persians. He began to reign in 491 B.C. and was killed in the pass in 480, with all his followers, about 1000 in number.

Leonids Name given to the streams of meteors or shooting stars, which appear to originate in the constellation Leo. These meteors are small bodies moving in regular orbits, and when entering the earth's atmosphere at a high velocity become incandescent by the friction of the air. The leonids may be observed about November 14, and at intervals of about 33 years showers of exceptional brilliancy occur when the earth crosses the orbit of a meteoric band.

Leopard Large member of the cat family, *Felis pardus*, found in Africa and Asia, and notable for its spots. The fur is tawny and is valued for rugs. The average length is about 4 ft. The leopard preys by night on other animals, such as dogs, goats and monkeys and is very savage, although it will not usually attack man. It can climb trees. One variety is called the snow leopard, and there is a black leopard in Africa, now becoming rare. In India the true leopard is called the panther; the word leopard is reserved for the cheetah, which is a favourite quarry for sportsmen.

Leopold Name of two Holy Roman emperors. **Leopold I.**, a son of Ferdinand III. was born June 9, 1640 and educated to be a priest. On the death of his elder brother, in 1654, he became emperor, and much of his reign was occupied in wars with France under Louis XIV. He had also to resist the advance of the Greeks and to deal with revolts in Hungary and Bohemia. To secure for his son, Charles, the throne of Spain he entered upon the War of the Spanish Succession, but died in the midst of it, May 5, 1705. His two sons, Joseph and Charles, succeeded him in turn.

Leopold II., a son of Francis I. and Maria Theresa, became Grand Duke of Tuscany in 1765. In 1790 he became emperor in succession to his brother, Joseph II., but he died soon afterwards, March I, 1792. He was succeeded by his son, Francis II.

Leopold I. King of the Belgians. Born at Coburg, Dec. 16, 1790, a son of the Duke of Saxe-Coburg-Gotha, he became a soldier and fought against Napoleon. In 1816 he married Charlotte, only daughter of George IV., and was made Duke of Kendal. In 1831 he was chosen the first King of the Belgians and soon he married as his second wife a daughter of Louis Philippe. He reigned for 34 years and did a great deal to make Belgium a peaceful and prosperous country. He took a continual interest in affairs in Britain. He died Dec. 10, 1865, leaving two sons, his successor Leopold, and Philip, Count of Flanders.

Leopold II. King of the Belgians. The elder son of Leopold I., he was born in Brussels, April 9, 1835, and, as Duke of Brabant, served in the army. He became king in 1865 and ruled, on the whole successfully, for 44 years. His management of the Congo Free State, which he owned until 1908, brought upon him a certain amount of odium. He died at Laeken, Dec. 17, 1909, and was succeeded by his nephew, Albert.

Leopold III King of the Belgians. Son of King Albert, he was born Nov. 3, 1901, and in 1926 married Princess Astrid of Sweden. On the death of his father in a mountaineering mishap on Feb. 23, 1934, he succeeded to the throne. In the following year he and Queen Astrid were involved in a road accident and she was killed (Aug., 1935). His elder son is called the Duke of Brabant.

Leopoldville Capital of the Belgian Congo. It is on the left bank of the Congo, near Stanley Pool, and was founded in 1882. It is a river port and an administrative centre. In 1923 it was made the capital of the state. Pop. 10,000.

Lepanto Harbour of Greece. It is on the N. of the Gulf of Corinth, and has a certain amount of trade. The Turks took it from Venice in 1499.

The Battle of Lepanto, one of the great naval fights of the world, was fought Oct. 7, 1571. Spain, Venice and Genoa united to send a fleet against the Turks of about 200 galleys, under Don John of Austria. It almost destroyed the Turkish fleet of 275 galleys, and put an end to the naval power of the sultan.

Lepidoptera Order of insects represented by the butterflies and moths. They are characterised by having four wings covered with minute coloured imbricating scales, a hairy body and sucking mouth parts. Their metamorphosis is complete, consisting of a larva or caterpillar, possessing spinning glands, a pupa or chrysalis, and an imago or perfect insect.

Lepidus **Marcus Aemilius.** Roman soldier and triumvir. He was born about 74 B.C. and in the war between Caesar and Pompey, supported Caesar who made him Dictator of Rome and Consul. In 43, after Caesar's murder, he was, with Mark Antony and Octavian, one of the three who ruled the Roman World between them. His share was France and Spain, and later, Africa, but he quarrelled with Octavian and all his power was taken from him. He died 13 B.C.

Leprechaun In Irish folklore a small creature resembling an old man. He is usually harmful, but is beneficent to human beings who can withstand his trickery. He is credited with the power of discovering buried treasure.

Leprosy Chronic transmissible disease. It is due to the bacillus leprae (discovered in 1871) and was a terrible scourge in antiquity. In the Mosaic law there are many regulations about it, and in the Middle Ages in Europe and Asia the sufferers were segregated in leper houses, compelled to wear warning bells, and special windows were provided for them in churches. After the 15th century the disease gradually disappeared from Europe. It is still a scourge in Africa, Asia and the Pacific Islands and there are leper hospitals and asylums in India, Ceylon, South Africa and the Philippine Islands. It is estimated that there are over 2,000,000 lepers in the world.

There are two forms of leprosy. The nodular form shows itself in an irregular thickening of the skin and in the formation of nodes, or tubercles, which may develop into ulcers. In its nervous or anaesthetic form whitened patches appear on the skin, there is a deadening of sensation, the sufferer losing all sense of pain, heat, cold and touch and perhaps the extremities of the limbs fall away.

Many remedies have been tried for leprosy, including mercury, salvarsan and other drugs, as well as serum and vaccines, but the best results have been obtained by the injection of chaulmoogra oil.

Lerwick Chief town and seaport of the Shetland Islands. It is on the island of Mainland on Bressay Sound, with a good harbour for its fishing industry. Fort Charlotte is used by the Naval Reserve. A festival is held in the town every January.

Lesbos Greek island. Lying near the coast of Turkey, N.E. of Smyrna, it is mountainous with fertile soil, olives, grain, fruit, etc., being produced. Sappho, Alcaeus, Theophrastus and other famous writers lived here. The modern name and that of the chief town is Mytilene. Area 618 sq.m. Pop. 161,557.

Leslie Burgh of Fifeshire, on the Leven, 12 m. from Cupar, on the L.N.E. Rly. The parish church may be the "kirk on the green," in a ballad by James I. The green was at one time used for bull baiting and the bull stone is still seen. Linen and papermaking are the main industries. Leslie House is the seat of the Earl of Rothes. Pop. (1931) 2477.

Leslie **David.** Scottish soldier. A son of Sir Patrick Leslie, who had estates in Fife and was made Lord Lindores, he was born in 1601 and gained experience of war in the Swedish army. He took part in the Battle of Marston Moor in 1644 and defeated Montrose at Philiphaugh in 1645. When the Scots took up the cause of Charles II. he commanded the army that was beaten by Cromwell at Dunbar in 1650. From 1651 to 1660 he was a prisoner in the Tower of London. In 1661 Leslie was made Lord Newark, a title held by his descendants until 1790. He died in 1682.

Leslie **Shane.** Irish writer. Born in 1885, he was educated at Eton and King's College, Cambridge, served in the Great War and soon began to write. His output, both in prose and verse, is considerable and includes *The Life of Cardinal Manning*, *Life of Sir Mark Sykes*, *The End of a Chapter*, an autobiography; *Mrs. Fitzherbert*, a play, and the novels, *The Oppidan*, *The Anglo-Catholic* and *The Cantab*. In 1932 he published *Studies in Sublime Failure*.

Lesnes Name of an abbey at Plumstead, Kent. It was founded as an Augustinian house in 1178 and lasted until the Reformation. The ruins and grounds are public property.

Lesseps **Ferdinand de.** French engineer. Born at Versailles, Nov. 19, 1805, he joined the consular service in 1825 and secured an appointment at Alexandria. He was afterwards in Spain as French ambassador. In Egypt, de Lesseps had seen the possibilities of a canal across the Isthmus of Suez and after 1849 he devoted his life to making it. He obtained the concession, formed the company and supervised the work until the opening of the canal in 1869. Afterwards he undertook to cut a canal across the Isthmus of Panama, but this was less successful. De Lesseps was ruined and discredited by the mismanagement associated with the scheme, was tried and sentenced to imprisonment but never served the sentence. He died Dec. 7, 1894. A cousin of the Empress Eugénie, he was made a viscount by Napoleon III.

Lessing **Gotthold Ephraim.** German author and critic. Born in Saxony, Jan. 22, 1729, the son of a Lutheran clergyman, he was educated at the Universities of Leipzig and Wittenberg. He wrote critical articles for the periodicals, and spent time in travel and in making friends with the thinkers of the age. In 1767 he was appointed playwright to the theatre at Hamburg and in 1770 Librarian to the Duke of Brunswick. He died at Brunswick, Feb. 15, 1781.

Lessing was a constructive thinker and his ideas on art and literature had great influence on Goethe and others. His greatest works are perhaps *Laokoon*, in which he gives his ideas on poetry and the plastic arts, and *Nathan the Wise*, a drama that is a fine plea for religious toleration. His other works include *Miss Sara Sampson*, a tragedy, and *Minna von Barnhelm*, the first German comedy. He also wrote, to give them their English titles, *The Young Scholar*, *How the Ancients Depicted Death* and *The Education of the Human Race*. His ideas on the drama are in his *Hamburg Dramaturgy*.

Letchworth Urban district of Hertfordshire, 34 m. from London, just outside Hitchin, on the L.N.E. Rly. Around the Jacobean manor house the first English garden city was laid out in 1903. There are printing works and other industries. Pop. (1931) 14,454.

Lethal Chamber Term applied to a device for killing small animals painlessly. It consists of an air-tight chamber in which the animal is placed, a mixture of carbonic acid gas and chloroform vapour being introduced under pressure, causing death within a few seconds.

Lethbridge City of S. Alberta. It is on the Old Man River, 760 m. from Winnipeg and 130 m. S. of Calgary, on both the C.P. and C.N. Rlys. The industries are chiefly concerned with railway work, coal mining and the distribution of goods over an extensive farming area. Pop. (1931) 13,489.

Lethe In Greek legend a river of the underworld. Its waters were supposed to induce utter forgetfulness, so that when the dead drank of them they lost all memory of their past lives.

Leto In Greek legend the mother of the twins Apollo and Artemis. Jupiter became her lover and so Hera, in her jealousy, sent the serpent Pytho to chase her through the world. Poseidon made a refuge for her by putting a peg through the floating island of Delos. The Romans called her Latona.

Letterkenny Market town of Donegal, Irish Free State. It is on the Swilly, not far from Lough Swilly, on which it has a small port, Ballyraine. The chief building is the cathedral of the Roman Catholic Diocese of Raphoe. Pop. 2200.

Letter of Credit Document enabling a traveller to obtain money in foreign countries. The letters are issued by a banker at home to a banker abroad who is asked to pay a certain sum to the person named in the note.

Letter of Marque Document giving authority to the owner of a ship in time of war to attack merchantmen belonging to an enemy nation. The letters were issued by the naval authorities and the ships that received them, called privateers, were recognised in international law.

Letters Patent In Britain a privilege given by the sovereign in a document stamped with the Great Seal. It gives to a person or company the exclusive right of an invention. Peerages are also bestowed by letters patent. *See* PEERAGE.

Lettres de Cachet (or **lettres closes**). Blank orders of arrest issued by French kings, prior to the Revolution, to the governors of prisons. By this practice, abolished in 1789, it was only necessary to insert the name of an individual in such an order to effect his immediate incarceration.

Letts People of Indo-European stock. They inhabited Courland and Livonia when these districts were part of Russia, and are now the dominant people in the Republic of Latvia. They number about 2,000,000, chiefly Protestants, and there are colonies of them in the United States. *See* LATVIA.

Lettuce Hardy annual herb. Cultivated as a vegetable, it was introduced into England from Flanders in the 16th century. The two chief varieties are the cos lettuce, which has an erect, oblong head and is generally crisp, and the cabbage lettuce which has longer leaves and is less compact in appearance.

In 1931 a duty was placed on lettuces imported into Great Britain.

Leu Unit of currency in Rumania. At one time worth a franc, its real value is now ½*d*. It is divided into 100 bani and the plural is leï.

Leucite Rock-forming mineral. It consists of a silicate of potassium and aluminium and is found chiefly in lavas in the vicinity of Vesuvius, Capo di Bove, near Rome, and in the basaltic rock of the Eifel. It occurs as crystals of white or grey colour, having anomalous optical properties, which vary according to the temperature.

Leuctra Village of Greece. Here, in 371 B.C., the Thebans, led by Epaminondas, defeated the Spartans, and ended the Spartan dominance in Greece.

Leuthen Village of Silesia, 10 m. from Dresden. In the battle fought here, Dec. 5, 1757, Frederick the Great utterly defeated an Austrian army, took 12,000 prisoners, and regained Silesia.

Lev Unit of currency of Bulgaria, worth nominally a franc, but really ¼ of a penny. It contains 100 stotinki. The plural is leva.

Levant Name used for the E. part of the Mediterranean Sea, *i.e.*, the coastal regions of Asia Minor and Egypt. A person of Frankish race born in this area is known as a Levantine. A wind blowing from E. Spain is a Levanter.

The **Levant Company** was an English trading company that existed from 1592 to 1825. It was given by charter a monopoly of the trade with Constantinople and the neighbourhood. For a time it flourished, but later its trade was interfered with by pirates.

Levee Name given to the natural mud wall or embankment on the lower Mississippi. It is formed during floods when the river overflows and spreads over a level plain, depositing its sediment against the banks. These levees are strengthened artificially, but are often breached during excessive floods Similar levees are formed on swift, muddy. rivers, like the Hoang Ho in China.

Levee Reception held by a king for men only, in modern times in order that persons who have received official positions, or honours, may be presented to the king. Levees are held in the king's name by the Governors-General in India and the Dominions. The name is due to the fact that at one time the French kings received visitors during the process of rising from bed.

Level Instrument used in surveying for determining the amount of variation from the true level of a surface. It consists of a spirit level attached to a telescope. The spirit level is a cylindrical glass tube so filled with alcohol or water as to allow of the retention of a small air bubble. The complete instrument is mounted on a stand and regulated by a pivot and screws.

Levellers Political party that arose in England during the Civil War. Its members were chiefly soldiers in the army of Oliver Cromwell. Their leader was John Lilburne and their democratic ideas were set out in The Agreement of the People. In

1649, after the king's death, they mutinied, but the rising was quickly suppressed, and by 1660 they had disappeared.

Leven Loch or lake of Kinross-shire. It is 22 m. from Edinburgh and covers nearly 6 sq. m. On Castle Island, connected with the mainland by a causeway, the kings of Scotland had a palace, where Mary, Queen of Scots, was imprisoned in 1567-68. The lake was formerly much larger than it is to-day. It is noted for a special kind of trout.

Another **Loch Leven** is a sea loch between the counties of Argyll and Inverness. It is 12 m. long and is a branch of Loch Linnhe.

Leven Name of several rivers in Great Britain. One flows through some lochs between the counties of Argyll and Inverness to **Loch Leven**. It is 16 m. long and its waters are used for generating electric power at Kinlochleven. Another flows from Loch Lomond through Dumbartonshire to the Clyde. It is 7 m. long and forms the **Vale of Leven**, which is famous for its bleaching and dyeing yards. A third Leven flows from Loch Leven in Kinross-shire to Largo Bay. It is 16 m. long and is partly an artificial waterway. In England there are short rivers of this name in Lancashire and Yorkshire. One flows from Lake Windermere to Morecambe Bay.

Leven Burgh and watering place of Fifeshire, on the Firth of Forth, 11 m. from Kirkcaldy, on the L.N.E. Rly. Leven has some manufactures, while it is becoming increasingly popular as a golfing centre. Pop. (1931) 7411.

Leven **Earl of.** Scottish title held with the earldom of Melville by the Fifeshire family of Leslie-Melville. Alexander Leslie, a soldier, born about 1580. Served in the Netherlands. Later he entered the Swedish Army and after the Thirty Years' War was made a field marshal. In 1638 he commanded the army raised by the Scots to fight Charles I. He won some successes and in 1641 was made Earl of Leven. Later he fought at Marston Moor. He died April 4, 1661.

Leven's title passed to his son and then to two daughters, and in 1682 it was given to David Melville, a great-grandson. In 1707 he became Earl of Melville and since then the two earldoms have been united. The earl's eldest son is called Lord Balgonie, this being the name of his seat in Fifeshire.

Levens Hall Residence in Westmorland. It is 3 m. from Milnthorpe and is one of the finest Tudor houses in the country. Built by Sir James Bellingham it is noted for its exquisite panelling.

Lever District in Lancashire. **Little Lever** is an urban district just outside Bolton. It is a cotton manufacturing and coal mining centre. Pop. (1931) 4944. **Great Lever** is an adjoining area, but is not an urban district.

Lever Simple mechanical power. It consists of an inflexible bar supported at one point (fulcrum) with a weight or resistance at a second point. Power is applied at a third point to overcome the resistance, thus tending to cause the bar to rotate in opposite directions. There are three classes of levers; in the first the fulcrum is between the weight and power; in the second the weight lies between the other two, while in the third the power is between the weight and fulcrum.

Lever **Charles.** Irish writer. Born in Dublin, Aug. 31, 1806, he was educated at Trinity College there and became a doctor. He spent some time in Canada, after which he practised medicine in several Irish towns and then in Brussels and other places abroad. In 1858 he was made vice-consul at Spezia and in 1867 consul at Trieste. His serial, *Harry Lorrequer*, in the magazine of his university proved very successful and other novels followed, including *Charles O'Malley*, *Jack Hinton*, *Tom Burke of Ours*, *Roland Cashel* and *Sir Brook Fosbrooke*. These are stories of social and military life in Ireland early in the 19th century. He also wrote, in another vein, *The Martins of Cro-Martin* and *The Daltons*. Lever died at Trieste, June 1, 1872.

Leverhulme **Viscount.** English title borne by the family of Lever. William Hesketh Lever was born in Bolton, Sept. 19, 1851, his father, James Lever, being a grocer there. He was educated at elementary schools and entered his father's business as a commercial traveller. In 1886 he began to manufacture soap at Wigan, and, aided by effective advertising, he made his Sunlight brand known all over the world. On the Mersey, a model town, Port Sunlight, was built, and the firm of Lever Bros. became the largest of its kind in the world. Many other concerns were amalgamated with it and before its founder died the combine had a capital of nearly £50,000,000. In 1929 there was a further big amalgamation with the Margarine Union and the firm of Unilever, Ltd., came into existence. A new building, Unilever House, Blackfriars, London, was opened in July, 1932, as the headquarters.

Lever had many and varied interests outside his business. He was a Nonconformist, but also a discriminating patron of the theatre. As a Liberal he sat in Parliament for the Wirral Division, 1906-10. As a social reformer he advocated a short working day and introduced a system of profit sharing. To foster the native industries of the Scottish Highlands he bought, in 1918, the island of Lewis, but this was less successful than his other ventures. His interests in Africa were extensive and there, too, he showed practical philanthropy. In 1911 Lever was made a baronet, in 1917 a baron and in 1922 a viscount. He died May 7, 1925, when his only son, William Hulme Lever, became the 2nd viscount.

Leverrier **Urbain Jean Joseph.** French astronomer. Born in Normandy, March 11, 1811, he was educated in Paris. He became a Professor of Astronomy and by his scientific writings became known and was elected to the Academy. His great work was the discovery of the planet Uranus, an honour he shared with John C. Adams. He was made professor in the University of Paris and from 1854-77 was director of the observatory there. He died Sept. 23, 1877.

Leveson-Gower Name of an English family represented by the Duke of Sutherland and Earl Granville. Sir Thomas Gower, a landowner in Yorkshire, was made a baronet in 1620. His descendant, who had taken the additional name of Leveson and owned land in Staffordshire, was made a baron in 1703. In 1746 John, the 2nd baron, was created Earl Gower and the 2nd earl was created Marquess of Stafford in 1786. The 2nd Marquess of Stafford married the Countess of Sutherland, a great heiress, and was made Duke of Sutherland.

The first Earl Granville was a younger son of the first Marquess of Stafford.

Levi Biblical character, the third son of Jacob and Leah and regarded as the ancestor of the tribe of the same name. Levi is also an alternative name for S. Matthew.

Leviathan Old Testament word denoting an aquatic monster, actual or emblematic. In Job xli. it is a crocodile; in Isaiah xxvii. a mythic serpent; and in Psalm civ. a generalised sea monster. Hence, anything immense, *e.g.*, the authority of the sovereign in Hobbes's *Leviathan*, 1651.

Leviathan is the name of a liner built at Hamburg in 1914 for the Hamburg-Amerika line and named the *Vaterland*. At the outbreak of the Great War it was detained at New York until 1917, then renamed the *Leviathan* and used as a transport for American troops.

Levis Town and river port of Quebec, on the S. side of the St. Lawrence, opposite Quebec City. It is on the C.N.R. and Quebec Central Rlys. and steam ferries cross the river. There are docks for shipping, and some manufacturing industries. Pop. (1931) 11,724.

Levitation Term applied to the alleged phenomenon of raising heavy bodies in the air so that they remain suspended without mechanical means. The idea is referred to in many ancient writings. The Neoplatonist, Iamblichus, was said to have been levitated ten cubits from the ground during meditation. In modern times levitation has been claimed by spiritualistic mediums, such as Daniel Home.

Levites One of the twelve tribes of Israel. Its male members were set aside to assist the priests in the service of the temple. Unlike the other tribes, no definite piece of territory was allotted to them when the Promised Land was divided. Instead, they were given 48 cities and were maintained by tithes and alms from the others. In the wilderness they carried the tabernacle and later they acted as singers in the temple and prepared the sacrifices.

Leviticus Book of the Old Testament. It comprises the legal and ceremonial institutions regulating the sanctuary service of the Israelites administered by the tribe of Levi. It is divided into the laws of sacrifice (Ch. i.-vii.); priestly consecration (Ch. viii.-x.); purification (Ch. xi.-xv.); the day of atonement (Ch. xvi.); holiness (Ch. xvii.-xxvi.) and vows and tithes (Ch. xxvii.).

Levy Raising something, either money or men, usually by force in time of emergency. A levee en masse is a term used for calling out the fit male inhabitants of a country to resist an invader, or meet some other emergency. *See* CAPITAL LEVY.

Lewes Borough, market town and county town of Sussex, on the Ouse, 50 m. from London, on the S. Rly. The extensive remains of the Norman castle have belonged to the nation since 1920. Lewes is an agricultural centre and has a racecourse. In the suburb of Southover are some fine old houses, including one that belonged to Anne of Cleves, and the ruined priory of St. Pancras. From 1295 to 1885 Lewes was separately represented in Parliament and in the Middle Ages it was a centre of the wool trade. Pop. (1931) 10,785.

The **Battle of Lewes** was fought on May 14, 1264. An army under Henry III. and his son, Edward, marched against the baronial forces under Simon de Montfort. They met near Lewes and at first the royalists were victorious. Later the scales were turned; Henry III. and Edward were made prisoners and Lewes was occupied.

Lewes **George Henry.** English writer. Born in London, April 18, 1817, he abandoned medicine for literature. His first-hand knowledge of the literature and philosophy of Germany was reflected in his writings. In 1863 Lewes founded *The Fortnightly Review*, which he edited for 15 years, and his best-known book is his *Life of Goethe*. For over 20 years Lewes lived with George Eliot, and her work was much influenced by his advice and criticism. He died Nov. 28, 1878. He is pictured in J. E. Buckrose's book, *Silhouette of Mary Ann*.

Lewis Largest island of the Outer Hebrides. Called Harris in the S., it is 60 m. long, covers 860 sq. m. and is 30 m. from the mainland. Stornoway is the chief town and port. The surface is chiefly peaty moorland with a number of sea lochs, and some hills in the S. rise to a height of 1750 ft. The coast is rugged. The industries are the growing of barley, oats and potatoes, the raising of sheep and cattle, fishing and weaving. There are relics of the Druids, and some stone circles at Callernish. Much of the island was bought in 1918-19 by the first Lord Leverhulme, but in 1924 his estates were sold. Pop. 32,000.

Lewis **Sinclair.** American novelist. He was born in Minnesota, Feb. 7, 1885, the son of a doctor, and was educated at Yale. He became a journalist and acted as editor for several publishers. In 1914, with the publication of *Our Mr. Wren*, he became known as a novelist and his popularity reached Britain with *Main Street*, 1920, and *Babbitt*, 1924. Other novels are *Free Air*, *Martin Arrowsmith*, *Elmer Gantry*, *The Man Who Knew Coolidge* and *Dodsworth*. *It Can't Happen Here* was published in 1935.

Lewis Gun Form of automatic gun. It is constructed on the principle of the machine gun, and can be fired from the shoulder like a rifle or by the use of a mount. Its automatic action is caused by the pressure of the explosion of gases and the action of a powerful spring, giving a forward and backward movement.

Lewisham Borough of the County of London. It is on the S. side of the river, extending to the border of Kent, and covers about 11 sq. m., with several stations on the S. Rly. It includes Catford, Lee, Forest Hill, Bellingham, Hither Green and parts of Blackheath, Downham, Brockley and Sydenham. The town hall was enlarged in 1931 and the S.E. Polytechnic opened in the same year. Some of the land belongs to the Earl of Dartmouth, whose eldest son is called Viscount Lewisham. Pop. (1931) 219,942.

Lexington Village of Massachusetts, 10 m. from Boston. Here, on April 19, 1775, the first battle in the War of Independence took place. A British force was sent from Boston to Concord to seize some stores. It was attacked by colonists, but saved by the arrival of reinforcements.

A town of Kentucky is named **Lexington**. This is 80 m. from Cincinnati and in it is the State University. Pop. 41,500.

Leyden Jar Electrical condenser invented by Cunaeus in 1746 at Leiden University. It consists of a glass jar coated inside and out with tinfoil, and having a brass rod ending in a knob

projecting from the inner coating. The jar is earthed, and a current from an electrical machine is passed into the knob producing a negative charge on the outer foil. To discharge the jar the two foils are connected by the ends of a conductor.

Leyland Market town and urban district of Lancashire, 5 m. from Preston on the L.M.S. Rly. The chief industry is the manufacture of cotton. Pop. (1931) 10,573.

Leys School Public school at Cambridge, founded in 1874, and controlled by Wesleyans. The buildings are modern, with accommodation for 260 boys.

Leyton County borough of Essex, 6 m. from London, on the L.N.E. and L.M.S. Rlys. There are some industries, and a technical institute. It was made a borough in 1926. The ground of the Essex Cricket Club is at Leyton. Pop. (1931) 128,317.

Leytonstone District of the county borough of Leyton (*q.v.*) It adjoins Wanstead Flats and Epping Forest.

Lèse Majesté Crime against the sovereign or the state. It was defined in Rome as any action against the republic, such as assisting its enemies; it also included illegal attempts to secure high office. It is now equivalent to treason.

Lhasa Capital of Tibet. It stands on a plateau, 12,000 ft. above sea level, and 390 m. from Darjeeling. Access to it is by road only. The sacred city of Lamaism, it is called the Forbidden City and until 1904 only one Englishman had visited it. The Potala is the palace of the Dalai Lama, and the centre of his faith. Standing on a hill, with five gilded pavilions, it is one of the most wonderful buildings in the world. The chief temple is the Jokhang, devoted to the worship of Buddha. The streets are narrow and dirty and the houses mean in appearance. Lhasa is much visited by pilgrims and round it is the Ling-kor or Pilgrims' Way. There are native manufactures and some trade. Pop. 20,000.

Near Lhasa are three great monasteries containing between them perhaps 20,000 inmates. They are known as Debung, Sera and Gaden. The monks or lamas in the two first named take an active part in political life. Each is a university as well as a monastery.

Li Chinese weight. It is a thousandth part of a Chinese ounce. Li is also the name of a measure of length, equal to one-third of an English mile.

Liana General name for long climbing and twining plants in tropical and subtropical forests. Usually woody and rooted in the ground, they attach themselves by aerial roots and tendrils to other vegetation, sometimes choking it, and forming festoons and monkey-ropes, occasionally utilised for bridges.

Liao-Tung Peninsula of Manchuria, also the name of the adjoining gulf. It was ceded to Japan in 1895, but was soon returned to China. In 1905 the southern part of the peninsula, leased to Russia, was transferred to Japan and since then has been ruled by that country. It contains Port Arthur and Dairen, which is the capital. Pop. (1930) 1,328,011.

Liao-Yang Town of Manchuria. It is on the railway and is a populous trading centre. Here, in Aug.-Sept., 1904, there was some fierce fighting between the Japanese and Russian armies. In the end the Russians retreated and the Japanese entered Liao-Yang, but the victory was by no means decisive.

Lias Series of strata forming the base of the Jurassic System and occurring in England from Devon and Dorset across to Yorkshire. The beds consist of blue clays, sands, shales and limestone, and are divided into Lower, Middle and Upper Lias. The Cleveland ironstone of Yorkshire is a Liassic formation, and the Whitby beds yield jet.

Libau City and seaport of Latvia. It is on the Baltic Sea, 150 m. from Riga. It has a good harbour and shipping is one of the main industries; there are some manufactures. In the neighbourhood are sulphur springs. Near is the Lake of Libau. Its Latvian name is Liepaja. Pop. 57,238.

Libel Writing or otherwise issuing anything that may damage a person's business or reputation. In English law it is also a libel to publish anything of a blasphemous, seditious or immoral nature.

The law of libel chiefly concerns newspapers and periodicals, although libels are published in other ways. In England the chief law on the subject is the legislation passed in 1843. A person who is libelled, or thinks he is libelled, can bring an action for damages. It is for the defence to prove that the statements made were true and were justified, but even then, if the plaintiff can prove that he has suffered loss by them, he may obtain damages at the discretion of the jury.

If the characters of public persons are attacked, the offender can be prosecuted for a criminal libel. Statements made in both Houses of Parliament and in the courts of law are, however, privileged. *See* SLANDER.

Liberal In politics one who is in favour of greater political liberty. As such the word has been taken by political parties, for example, the National Liberals in Germany.

In England the Liberal party developed from the Whigs and took the name early in the 19th century. In the 50 years that followed the Reform Bill of 1832 it was on the whole the dominant party in the country and was responsible for many social and political reforms. Its leaders were Earl Grey, Earl Russell, Lord Palmerston and above all, W. E. Gladstone.

In 1885 the party was divided over the question of Home Rule for Ireland and was out of office, except during 1892-95, until 1905. It then had a spell of office lasting 10 years and covering the early days of the Great War, while it had a share in the Coalitions which followed. When the war ended the Liberal party was weak and divided, but its work was largely done; many of the reforms on its programme had been carried out, while others, such as the disestablishment of the Church of England, no longer aroused enthusiasm. In a measure its decay was hastened by the growth of the Labour party which, in 1922, supplanted it as the official opposition.

Only a few Liberals were returned to the House of Commons in succeeding elections. In 1931 there were 72, split into three groups, two of which, led respectively by Sir John Simon and Sir Herbert Samuel, were represented in the National Government formed by Ramsay MacDonald, while the third, under Mr. Lloyd George, stood out on the issue of Free Trade.

The Liberal Central Association, which is maintained by a number of Liberal associations

throughout the country, has offices at 21 Abingdon Street, London, S.W. Associated with it is the **National Liberal Federation** which holds a conference every year.

Liberal Unionist Political party now merged in the Unionist or Conservative one. It was founded in 1885, when some members of the Liberal party, who disapproved of Gladstone's plan to give Home Rule to Ireland, left him and founded an organisation of their own. They were led by the Duke of Devonshire, then Marquess of Hartington and Joseph Chamberlain, and included John Bright. Later the Liberal Unionist and Conservative organisations in England were merged in one, but in Scotland the Liberal Unionists retain a separate association. *See* CONSERVATIVE.

Liberator One who liberates or frees. The epithet is given to certain men who from time to time have distinguished themselves in leading their countrymen to freedom, such as Simon Bolivar, after he had taken Caracas from the Spaniards in 1813. It was also the title of a paper published in America from 1831-65 protesting against slavery and edited by W. L. Garrison.

Liberator Name of a building society. It was founded with allied companies by Jabez S. Balfour in 1868, and for a time was a very prosperous undertaking, but in 1892 the group failed with a liability of £8,000,000. Balfour was arrested and imprisoned. There was a good deal of distress and a fund was raised for the victims. The assets, one being the Hotel Cecil, were carefully husbanded, and during the 30 years that followed the collapse something was repaid to the depositors. *See* BALFOUR, J. S.

Liberia Republic of Africa. It is on the west coast between Sierra Leone and the French possessions on the Ivory coast. It covers 43,000 sq. m. and has a coastline of 350 m. Monrovia is the capital and the chief seaport. The main products are rubber and palm oil. Minerals are worked to a small extent. The country has no railways, but there are motor roads.

Liberia was formed to provide a home for freed slaves from America. The Republic dates from 1847 and is governed by a president and a council of ministers with a parliament of two houses. English is the official language. Liberia is a member of the League of Nations. The inhabitants are nearly all negroes, and Protestants. Pop. 2,500,000.

Liberty **Sir Arthur Lasenby.** English merchant. He was born at Chesham, Aug. 13, 1843, the son of a lace manufacturer. In 1875 he opened a shop in London, Liberty's, which specialised in artistic fabrics and gained a great reputation for the beauty and novelty of its wares. Knighted in 1913, he died May 11, 1917.

Libra Weight and monetary unit. The Latin word denoted the steelyard, its fixed-weight counterpoise, a standard copper 12 in. bar of 12 ounces, a copper coin and a gold monetary unit. It still designates a Spanish, Portuguese and S. American weight, and a Peruvian gold coin. Britain's pound is written lb. for weight, £ for value.

Libra Seventh zodiacal constellation, represented by the Roman scale-beam, indicating equal nights and days when the sun's ecliptic crosses the equator at the autumnal equinox.

Library Collection of books; also the room or building which contains them. A library may be a few hundred books in a private house or the 3,000,000 in the British Museum.

Most civilised countries have national libraries. Notable examples are the British Museum in London and the Bibliothèque Nationale in Paris. Scotland and Wales have each a national library, the Scottish one including the Advocates' Library. At Oxford is the Bodleian and at Cambridge the University library. These libraries are entitled to a copy of every book published in the country.

Some libraries are famous for the quality rather than the quantity of their books. One such is the John Rylands Library in Manchester which includes the collection bought from Earl Spencer at Althorpe. There are valuable collections of books and manuscripts in some cathedral and college libraries and in some of the great houses. The legal, medical and other societies have libraries, but each of these is mainly confined to its own subject.

One of the most valuable libraries in the world is in the Vatican, others are in Rome and other continental cities.

The treasures of these libraries are mainly reserved for students, but for the general public there are lending libraries, usually controlled by a city or town council and often supported from the rates. Many were erected with money provided by Andrew Carnegie, whose money has been used to provide village libraries in various parts of the country. Other lending libraries, called circulating libraries, are privately collected, and those who use them pay a subscription for the privilege. In 1932 the Carnegie Trust decided to contribute towards a new building in London for the Central Library for students.

In most cities and towns there is also a reference library where books can be consulted, but not taken away. Manchester has a very good one, and in 1932 one was opened in Norwich. The library of the Patent Office in London belongs to this class.

Special libraries include libraries for the blind. Each government department has a library and they are found in some business houses. In 1928-29 £1,909,607 from the rates was spent on libraries in England and Wales, and in 1927-28 £208,100 in Scotland.

LIBRARIANSHIP AS A CAREER.—This offers a congenial occupation to many men and women, and is well paid in its higher branches. Junior assistants begin at £60-£80 a year, but a senior assistant should receive about £300, and the chief librarian of a public library system anything up to £1000—though about £400-£500 is the average salary.

The recognised professional qualifications are Fellowship and Associateship of the Library Association which are granted upon passing the requisite examinations. Those employed in libraries usually take the Correspondence Courses conducted by the Library Association (25-27 Bedford Square, London, W.C.1). Another method is to attend the School of Librarianship at the University of London (Gower Street, W.C.1), where a two years' course leads to a Diploma which is accepted as a qualification for Fellowship. Graduates can complete this course in one year. Lectures are also given in the evenings for the convenience of those engaged during the day. Courses and Summer Schools are held in connection with other universities.

Libya Italian possession in Africa. The word, sometimes spelt Lybia, was used by the Greeks for the whole continent, but it is now confined to a district in the north. This lies along the north coast from Egypt to Tunis, and is divided into the two districts of Tripolitania and Cyrenaica.

Libya became a Turkish possession in the 16th century and so it remained until 1911. In that year Italy invaded and annexed it, this annexation being recognised by the Treaty of Ouchy, signed in Oct. 1912. In 1928 the area of the country was greatly extended by the inclusion therein of various oases. It has a coastline of about 1100 m. and covers altogether over 800,000 sq. m.

The Libyan desert is the name of the part of the Sahara between Egypt, the Sudan and Tripoli. It has many oases. *See* TRIPOLI.

Licence Permission by the state to enjoy a certain privilege. To-day it is the usual way by which the state controls trades and privileges, and is also a source of revenue. The word has a special connection with the sale of intoxicating liquors, which must be only by licence. Public houses are known as licensed premises and the proprietor is a licensed victualler.. The sale of drink is sometimes called the licensing trade.

Licences are necessary to enable one to keep a dog, drive a motor-car, sell tobacco, possess a wireless receiving set, act as a moneylender, auctioneer or pawnbroker and use a gun. Others who need licences are dealers in patent medicines, keepers of men servants, users of armorial bearings and hawkers. Owners of motor-cars and private carriages must take out a licence. The issuing of licences, except marriage licences (*see* MARRIAGE), is controlled by the Board of Customs and Excise. Most of them can be obtained through a post office and the work of seeing that they are taken out falls to the police. Licences for the sale of intoxicating liquors are granted by the magistrates. *See* LIQUOR CONTROL.

Lichen Compound plant organism consisting of two symbiotic partners, a fungus and an alga. The fungal element belongs, in nearly every instance, to the Ascomycete group and is usually responsible for the external form of the lichen. The green algal cells become enveloped in the felted mass of fungal threads, the two plants mutually benefiting by their association. Lichens form incrustations, foliaceous, or branching masses on rocks, tree-trunks, etc., examples being the Beard Moss and Iceland Moss.

Lichen Form of skin disease commonly known as "dry itch." It consists of an eruption of a cluster of small red pimples on an inflamed area, becoming later a group of dry scaly points accompanied by severe itching and a burning sensation. It occurs usually in persons of nervous or sanguine temperament and may be induced by irritants from certain occupations.

Lichfield City, borough and market town of Staffordshire. It is 117 m. from London, on the L.M.S. Rly. It is a centre for the sale of agricultural produce and has breweries and other industries. The city has one of the most beautiful cathedrals in England, also associations with Johnson. S. John's Hospital dates from 1495. The Three Crowns is an old inn. The war memorial is a garden of remembrance. The house in which Johnson was born is now a museum for his relics and there is a statue of him.

A bishopric was founded at Lichfield about 670 and from 786 to 803 its holder was an archbishop. At one time the city had a castle and until 1885 it sent members to Parliament. Pop. (1931) 8,508.

The title of Earl of Lichfield has been held by the family of Anson since 1831. The earl's seat is Shugborough Hall, Stafford, and his eldest son is called Viscount Anson.

Lichnowsky Karl Marx. German prince and diplomat. Born March 8, 1860, he entered the German Foreign Office in 1884, retiring in 1904. In 1912 he was appointed ambassador to Great Britain, and later was much criticised for his failure to preserve diplomatic relations between Great Britain and Germany in 1914. In 1917 he was exiled on the unauthorised publication of his *Meine Londoner Mission*, a criticism of German policy in the Sarajevo incident of 1914. He died Feb. 27, 1928.

Licinius Roman emperor. He was a peasant who became a soldier and attracted the notice of the Emperor Galerius, who put him in charge of a part of his empire. In 313 he became sole ruler of the eastern part of the empire, the remainder being under Constantine the Great. Rivalry arose and in 324 war broke out between them. Victory fell to Constantine, and Licinius was made a prisoner and later put to death.

Lick Observatory in California. It is on Mt. Hamilton, near the coast of the Pacific, and is controlled by the University of California. In order to secure the least possible amount of interference it is surrounded by a belt of untouched land. The observatory possesses powerful telescopes and ranks as one of the greatest in the world. It was founded by James Lick of San Francisco and was opened in 1885.

Lickey Hills Low range of hills in Worcestershire. They lie between Birmingham and Droitwich and about 500 acres belong to the city of Birmingham.

Lictor Official in ancient Rome. One or more lictors walked in front of the more important magistrates. They carried a bundle of rods, called *fasces*, and an axe, as symbols of the magistrates' power.

Liddell Henry George. English scholar. Born Feb. 6, 1811, the son of a clergyman, he became tutor and lecturer at Christ Church, and in 1846 was appointed headmaster of Westminster School. In 1855 he returned to Oxford as Dean of Christ Church and there he stayed until his death, Jan. 18, 1898. One of his daughters was the original of *Alice in Wonderland*.

Liddell was a prominent figure in Oxford and his name is perpetuated by the great Greek *Lexicon* prepared by himself and Robert Scott. This appeared first in 1843 and the latest of several new editions in 1930.

Liddesdale District of Scotland. It is in Roxburghshire and is the valley of the Liddel Water, a tributary of the Esk. There are border towers in the dale, including Hermitage Castle, and the scenery is most picturesque. The Armstrongs and the Elliotts, famous border families, lived here.

Liddon Henry Parry. English preacher. Born at North Stoneham in Hampshire, Aug. 20, 1829, he was ordained in the Church of England, became Vice-Principal of the Theological College at Cuddesdon and in 1859 Vice-Principal of S. Edmund Hall, Oxford. For the next eleven years he was one

of the leading figures in Oxford, exercising by his sermons and lectures great influence over the undergraduates. In 1870 he was appointed Canon of S. Paul's, a position he held until his death at Weston-super-Mare, Sept. 9, 1890.

Liddon was prominent as a follower of Pusey and a leader of the High Church movement, but he is best known as a gifted preacher. His Lenten sermons in London, long though they were, were attended by vast crowds.

Lido Island and pleasure resort of Italy. It is 8 m. long and is one of the islands that separate the lagoon on which Venice stands from the sea. In the 20th century it became a fashionable resort for English people. The social centre of the island is Santa Elisabetta. At the north of the island is a fortress.

Liebig Justus. German chemist. He was born at Darmstadt, May 12, 1803, and was educated at Bonn, Erlangen and Paris. When only 21 years old he was appointed Professor of Chemistry at Giessen. In 1845 he was made a baron, and in 1852 he moved to Munich, where he was Professor of Chemistry until his death, April 18, 1873.

Perhaps the leading chemist of his day, Liebig discovered various chemical substances, notably chloral and chloroform, and wrote much on chemistry. He also improved the apparatus of the chemist and showed how the soil could be made more productive by the use of fertilisers. He invented the extract of meat which is called after him.

Liechtenstein Small principality of Europe. It is on the east side of the Rhine, between Austria and Switzerland, not far from Lake Constance. It covers 65 sq. m. Vaduz is the capital. Agriculture, notably cattle rearing, is the chief occupation of the people. The land is governed by a prince and a diet of 15 members. Before the Great War it was closely associated with Austria, but now its coinage is Swiss and Switzerland controls its customs, posts and telegraphs. The principality was formed in 1719 and from 1815 to 1866 was part of the German Confederation. Pop. (1930) 10,213.

Liége City of Belgium. It is on the Meuse, 55 m. from Brussels. The buildings include the cathedral, the palais de justice and the museum. There is a university and a broadcasting station (242.7 M.). The city is a centre of the iron and steel industry; others include the making of motor cars and various engineering products. On Aug. 5, 1914, the Germans attacked Liége. The last forts fell on the 16th and the city remained in German hands until Nov., 1918. Pop. (1931) 165,657.

Lien Word used in English law. It describes the right a creditor has to retain property until his debt is paid. Thus, if a man has an overdraft, the bank can take a lien on some shares which he possesses. An innkeeper has a lien on the goods of his guest until the bill is paid, and a carrier on the goods which he carries.

Lieutenant Literally, one who takes the place of another. In the British navy a lieutenant is between a sub-lieutenant, or mate, and lieutenant-commander; in the army he is between a second lieutenant and captain; in the air force a flight-lieutenant is between a flying officer or observer, and a squadron leader. In the army the lieutenant wears a badge of two stars on his sleeve, in the navy he wears two stripes and a curl of gold braid.

Lieutenant-Colonel Rank in the British army, between colonel and major. A lieutenant-colonel commands a battalion of infantry, a regiment of cavalry or a brigade of artillery. The badge of rank is a crown and star.

Lieutenant-Commander Rank in the British navy. He ranks between commander and lieutenant. The badge of rank consists of three stripes and a curl. The equivalent rank in the army is a major and in the air force squadron leader. There are lieutenant-commanders in the various branches of naval work—engineer, paymaster, etc.

Lieutenant-General Rank in the British army. He ranks below a general and above a major-general, and his usual command is an army corps. The badge of his rank is a crown with a sword and baton crossed beneath it.

Life State of activity peculiar to animals and plants in which an organism act upon its environment which in turn reacts upon it. The physical basis of life is protoplasm, a complex mixture of compounds of carbon, hydrogen, oxygen and nitrogen, with usually some sulphur and phosphorus.

These compounds consist of proteins, fats, carbohydrates, mineral salts and about 75 per cent. of water. Protoplasm is an unstable structure as it is subject to constant physical and chemical changes (metabolism) by which the organism grows. These metabolic processes comprise those that build up (anabolism) and those that break down the protoplasm (katabolism). The living activities are expressed in movement, nutrition, growth, sensation and reproduction, and in all these activities a supply of energy is required, set free, in most cases, by oxidation of the protoplasm, the intake and use of oxygen being known as respiration. In the death of an organism, its unity is lost, and the protoplasm breaks up to form new compounds.

Lifeboat Special type of boat designed for saving life at sea. They are designed for stability and buoyancy, and have special valves for discharging the excessive inflow of water. They are operated from the shore or carried on ships, and some have collapsible sides. Shore lifeboats are built of wood, usually with a double skin of mahogany, and are propelled by oars and sails, although many motor driven lifeboats are now in use.

The boats are maintained by the Royal National Lifeboat Institution at 42 Grosvenor Gardens, London, S.W.1. It maintains over 100 lifeboats, and has been responsible for saving over 62,000 lives. Its income amounted in 1931 to £264,039.

Life Guards Regiment of the British army. Part of the household cavalry, it dates from the time of Charles II. and still forms the sovereign's escort on important occasions. For long there were two regiments of Life Guards, but after the Great War they were amalgamated. The Life Guards have a fine record of service which includes some hard fighting during the Great War. The regiment ranks as the senior one in the army.

Liffey River of Ireland, 50 m. long, it rises in the mountains of Wicklow and flows through counties Kildare and Dublin to the sea. The city of Dublin stands on it.

Lifford County town of Donegal, Irish Free State. It is on the Foyle,

opposite Strabane, 15 m. from Londonderry. Pop. 400.

The title of Viscount Lifford has been borne by the family of Hewitt since 1781. The first viscount was Sir James Hewitt, Lord Chancellor of Ireland.

Ligament In anatomy the membrane that connects the movable bones. Especially in the knee, the ligament is very susceptible to strain. *See* KNEE JOINT.

Ligature Term applied to a thread of silk, catgut or other material used for tying up blood-vessels in surgical operations. Ligatures are made in different thicknesses and are sterilised usually with carbolic acid.

In musical notation, a ligature is a tie or line binding together a group of notes requiring a certain length of sound, or when the notes are of different pitch, intended to be sung with one breath or played as a continuous phrase.

Light Form of energy having the properties of vibration or wave motion and traversing space. It causes the sensation of sight by its action upon the eye. The speed at which light travels is about 186,000 m. per second, so that the light of the sun takes nearly 8¼ minutes to reach the earth.

Newton first showed that a beam of sunlight, when transmitted through a prism, is broken up into a coloured band or spectrum, the colours being red, orange, yellow, green, blue, indigo and violet. It is now known that beyond the red end of the spectrum are invisible heat or infra-red rays, and similarly beyond the violet end, other invisible ultra-violet rays, having a chemical or actinic action. The differences in wave-length of the rays are associated with the differences in colour, and in the visible spectrum the longest wave lengths are at the red end, while the shortest are at the violet end. Light, heat and wireless waves are electro-magnetic vibrations of the same form, but differing widely in wave-length.

For measuring the distance of the stars from the earth and for other measurements of the universe, a light year is taken as the unit. This is the distance travelled by light in a year and is calculated at 6 million million miles (6,000,000,000,000). *See* RELATIVITY.

Light Brigade Brigade of light cavalry. It refers particularly to the brigade of light cavalry that charged at Balaclava in 1854. *See* BALACLAVA.

Lighter Large open flat-bottomed boat used in loading and unloading ships in port, and for carrying goods for short distances. They are generally towed but in some cases are steam propelled, and are used instead of barges on English inland waters.

The men in charge of lighters are known as lightermen. On the Thames they require a licence, which can be obtained from the Watermen's and Lightermen's Company, a very old organisation.

Lightfoot Joseph Barber. English theologian. Born in Liverpool, April 13, 1828, he was educated at Trinity College, Cambridge, where he was senior classic, and fellow and tutor of Trinity College. In 1861 he was appointed Hulsean Professor of Divinity and in 1875 Lady Margaret Professor at Cambridge. In 1871 he was made Canon of St. Paul's, London, and in 1879 Bishop of Durham. He remained at Durham until his death, Dec. 21, 1889. Lightfoot was chiefly known as an authority on the New Testament, which he helped to revise.

Lighthouse Building provided with powerful illumination to guide navigation of ships in dangerous waters. Lighthouses are built either on the coast or on a rock, and usually take the form of a tower surmounted by a "Lantern." The Eddystone lighthouse is a well-known example built on an isolated rock, while the Inchcape Rock lighthouse is built on a reef in the Firth of Tay. Usually the illuminant is a mixture of petroleum vapour and air burnt in a form of incandescent mantle, the beam of light being intensified by lenses and mirrors.

In England the maintenance of lighthouses is the business of Trinity House, which obtains an income by levying light dues on shipping. For Scotland there are the Commissioners of Northern Lighthouses in Edinburgh and the Clyde Lighthouses Trust in Glasgow. Other countries have similar organisations.

Lighting For purposes of illumination oil lamps were an early device. In some olive oil was used with a floating wick, in others the wick was confined in a nozzle. Candles of various kinds have been, and still are, used for illumination, the earliest form being the rushlight, where the wick consisted of a peeled rush stem.

With the invention of the Argand burner in 1783 and the introduction of petroleum, greater efficiency in lamps was obtained. From the beginning of the 19th century coal gas became more and more used as an illuminant, the invention of the Welsbach incandescent mantle in 1886 giving a marked increase in lighting power. A further advance came with the use of electric arc lamps and the introduction of the incandescent electric bulb by Edison and Swan in 1879 and 1880. *See* ELECTRICITY; GAS.

Lightning Flash due to an electrical discharge between two clouds or between the clouds and the earth. Lightning may originate either from a positive charge within the cloud and pass downward in a branching path, or it may originate as a positive charge in the earth and branch upward to the cloud. Sheet lightning is a reflection of a distant discharge or of lightning below the horizon. Ball lightning is a slower moving globular form which explodes violently in contact with an object.

Lightning Conductor Appliance attached to buildings for discharging gradually the electric current of lightning into the earth. It consists usually of a copper terminal fixed on the highest part of the building and connected to solid copper tape fixed to the walls by copper staples or gun-metal holdfasts. The tape passes downwards to an earth plate of copper buried in charcoal in damp soil. Tall chimney shafts often have a band near the top bearing four terminal rods.

Lightship Special type of vessel used for giving warning of sand-banks and other dangers to navigation on the coast. The vessel is moored in shoal water and bears at its masthead a form of lantern as a warning signal. Most of these vessels are manned by a crew, but some are entirely automatic in action. Four lightships are placed to mark the Goodwin Sands off the Kentish coast and another well-known lightship is moored off Spithead.

Lignin Essential constituent of woody tissue. Lignin, also known as ligno-cellulose, is a complex organic compound permeating the cell walls and recognised by certain reactions.

Lignite Immature form of coal sometimes known as brown coal, and frequently showing traces of the original wood structure. It is an important fuel in many European countries, especially Germany, where it occurs in beds of considerable thickness. It is also found in Australia. It contains over 45 per cent. of volatile matter, and is used as fuel in the form of briquettes.

Lignum Vitae Tropical American evergreen tree of the *Guaiacum* order (*G. officinale*). It is called "wood of life," because of its medicinal repute. The tough, unsplittable, greenish-black heartwood contains one-fourth resin, used in chronic rheumatism and acute tonsilitis; turners employ it for pestles, pulley-blocks and rulers. An E. Australian acacia furnishes hardwood called **hickory lignum vitae.**

Ligny Village of Belgium. It is famous because here, during the Waterloo campaign, Napoleon defeated the Prussian army on June 16, 1815. *See* WATERLOO.

Liguria Name of a division of Italy in ancient times. In the north of the country adjacent to the French frontier it included Genoa. The name is borne by a modern division of Italy, a range of the Alps and of the Apennines, and an arm of the Mediterranean. The republic of Genoa, when rearranged by Napoleon in 1797, was called the Ligurian republic. It lasted until 1805.

Li Hung Chang Chinese politician. Born Feb. 16, 1823, he came to the front as a soldier. Later he turned to politics and had a considerable share in introducing western ideas into China. In 1875, the ruler being a child, he became practically head of the government and remained so until his death, Nov. 7, 1901.

Lilac Genus of hardy deciduous shrubs of the olive order, natives of S.E. Europe and temperate Asia (*Syringa*). They bear large pyramidal clusters of small flowers, usually fragrant, bluish-purple, reddish or white. The commonly cultivated *S. vulgaris*, 20 ft. high, was introduced into Tudor England. The smaller Persian, Chinese and Rouen lilacs, 4-7 ft., are distinct or hybridised; *S. Josikaea*, from Transylvania, is scentless.

Lilith Female night-monster who passed from Persian into Jewish folklore. Mentioned in Is. xxxiv, R.V. margin, the A.V. name is screech-owl. Rabbinical literature made her Adam's wife before Eve's creation; she became thereafter a nocturnal, wandering demon, especially dangerous to children and women in childbirth, and involving the wearing of protective amulets.

Lille City of France. It is on the River Deule, 155 m. from Paris, and is well served by railways and canals. The buildings are mainly modern, although on the Grande Place are the Grande Garde and the Bourse, both ancient. The city has a university with fine buildings and a Pasteur Institute. Lille is a great manufacturing centre, not only for iron and steel goods, but for textiles, which are produced in great quantities here. It has a broadcasting station (265.4 M., 1.3 kW.).

Owing to its position Lille has often been besieged and it has changed hands several times. It was strongly defended when the Great War broke out, but the forts were soon reduced by the German guns. On Oct. 12, 1914, the garrison surrendered and it remained in German hands until Oct., 1918. Pop. (1931) 201,568.

Lilliput Fabulous island in the Indian Ocean on which Gulliver was wrecked, in Swift's *Gulliver's Travels*, 1726. Its inhabitants did not exceed his finger in height. Garrick personally trained children to act in a play of the name, 1756. Hence anything dwarfish is called lilliputian.

Lillywhite **Frederic William.** English cricketer. Born in Sussex, June 13, 1792, he was a bricklayer who soon won a local reputation as a cricketer. This spread, chiefly owing to his success as a bowler, and he went to London where, in 1844, he was engaged by the M.C.C. He remained a professional in the service of that club until his death, Aug. 21, 1854.

Lily Typical genus of herbs with scaly bulbs of the lily order (*Lilium*). Natives of N. temperate regions, the flowers comprise six free perianth-segments, the anthers being on slender filaments. Many garden forms are trumpet-shaped, sometimes with reflexed or rolled-back segments. One of the oldest in cultivation is the Mediterranean white Madonna lily; the E. Asian dark-spotted, orange-red, tiger lily is either single or double flowered; the Japanese yellow-banded white *L. auratum* may be 6-10 in. across. The S. European purple martagon or turk's-cap and the Bermuda white Easter lily are other favourites. Other genera contain the African, Guernsey, Lent, S. Bernard's and water-lilies. *See* DAFFODIL.

Lily of the Valley (*Convallaria majalis*). Perennial plant of the order *Liliceae*. The spikes of white bell-like flowers spring on erect stems from oval green leaves and have a delicious fragrance.

Lima Capital of Peru. It is 7 m. from the coast of the Pacific Ocean, where is its port Callao and is a railway centre. It is laid out on modern lines and a feature is the large bull ring. There is a university. Lima has some manufactures and is the trading centre of the republic. It has large foreign elements in its population. Pop. (1928) 265,000.

Limasol Seaport of Cyprus. It is on the south coast and the chief industry is exporting the produce of the island. Pop. (1931) 15,349.

Limburg South-eastern province of Holland, area 847 sq. m., pop. (1931) 566,916, capital Maestricht, and north-eastern province of Belgium, area 930 sq. m., pop. 373,228, capital Hasselt. These two, with a small area of the Liége province, formerly constituted an independent duchy.

There is also a town named **Limburg** in Liége province, where **Limburger cheese** was originally made.

Limbus In mediaeval scholasticism, a supposed borderland occupied by departed souls before the final judgment. Also called limbo it included a *limbus patrum*, Abraham's bosom in Luke xvi., the prison to whose spirits Christ preached in Hades (1 Peter iii.), and a *limbus infantium* for unbaptised children. Dante's Inferno makes it the uppermost of hell's nine circles.

Lime Oxide of calcium, or quicklime. It is a white substance obtained by heating to redness limestone or marble. It readily

absorbs water, evolving heat and finally crumbles to a soft bulky powder known as slaked lime or calcium hydroxide, which is soluble in water, forming a solution known as limewater. Lime is used in the making of mortar and cements, as a soil dressing in agriculture, also as a water softener, and in many important manufactures.

Lime Typical genus of timber trees of the lime order (*Tilia*), natives of N. temperate regions. The leaves are heart-shaped, oblique and saw-toothed; the clustered, sweet-scented, nectared yellowish-white flowers attract bees. Small-leaved and taller large-leaved subspecies grow wild in Britain. The common European lime or linden, *T. europaea*, introduced into Tudor England, furnishes whitewood useful for toys, kitchen utensils and carvings; the inner bark or bast makes Russian matting. The N. American basswood, or **American lime**, 80-100 ft. high, is more important.

Lime Fruit Yellow, round or oval, thin-rinded fruit of two cultivated varieties of the citron. It originated in Asia. Sour limes, 1½ in. across, regarded as *Citrus medica*, var. *acida*, yield commercial lime-juice, citric acid and an essential oil, West Indian being preferred. Sweet limes, regarded as *C. medica*, var. *limetta*, are esteemed in India.

Limehouse District of London. It is on the north side of the River Thames in the borough of Stepney. It is largely inhabited by sailors and there are several docks in the district. It has also a large Chinese population. There are several homes and institutes for seamen. **Limehouse Cut** connects the Rivers Thames and Lee.

Lime Juice Liquid squeezed from the fruit of the sour lime. It is used as a preventive of and remedy for scurvy, and also as a source of citric acid.

Limelight Means of illumination obtained by heating quicklime to an incandescent state in an oxy-hydrogen flame. A cylinder of lime slowly rotated in the flame produces the characteristic brilliant white light. Though still used for stage effects and in optical lanterns, it is now largely replaced by electricity.

Limerick City, seaport and market town of the Irish Free State; also the capital of the county. It is on the Shannon, 129 m. from Dublin, and is served by the Gt. Southern Rlys, and by canals. It consists of Irish Town, English Town and Newtown Pery. The chief trade is shipping, for which there are docks, and much dairy produce is exported. Bacon curing and other agricultural industries are carried on and the city is famous for its lace. The river is crossed here by several bridges. Pop. (1926) 39,448.

The famous **siege of Limerick** took place in 1691 and the **treaty of Limerick** was signed after its surrender, on Oct. 3, to the forces of William III.

The title of **Earl of Limerick** has been borne since 1803 by the family of Pery. The earl's eldest son is called Viscount Glentworth.

Limerick County of the Irish Free State. In the province of Munster, it covers 1064 sq. m. It is mainly level, but contains the Galtee Mts. in the N.W. The district called the Golden Vale is one of the most fertile parts of Ireland. The chief rivers are the Shannon, which forms the northern boundary, and its tributaries. Limerick is the county town; others are Newcastle, Rathkeale and Adare. Pop. (1926) 100,895.

Limerick Kind of verse, usually nonsensical and humorous. Said to have been invented by Edward Lear, it consists of five lines. The first, second and fifth lines rhyme, as do the third and fourth, which are shorter. An example is:

There was a young lady of Riga,
Who went for a ride on a tiger;
They returned from the ride
With the lady inside,
And a smile on the face of the tiger.

Limerick competitions, in which the competitor completes an unfinished limerick, have from time to time proved popular.

Limestone General term for rocks whose chief constituent is carbonate of lime. When pure, a limestone is white, but the presence of iron compounds and other impurities give rise to red, brown, green, blue and other tints. Examples of limestones are chalk, dolomite and marble, and most varieties are used in building and allied industries.

Limited Liability Term used in English company law. Since 1855 it has been possible to form companies in which the liability of the shareholders is limited to the amount of their shares. Previously a partner or shareholder was liable to lose everything he had if a business failed, as is the case with private firms to-day. Other legislation, notably acts of 1862, 1908 and 1929, have dealt with the affairs of these limited liability or joint stock companies, but their fundamental position has remained unchanged. The companies are of two kinds (1) liability limited by shares; (2) liability limited by guarantee.

Limoges City of France. It stands on the Vienne, 250 m. from Paris, and is a railway junction. The chief building is the magnificent cathedral. The city is chiefly famous for the porcelain which is made here. This is hard and semi-transparent with a brilliant glaze. The city has a broadcasting station (293 M., 0.7 kW.). Pop. (1931) 92,577.

Limonite Name given to brown haematite, the hydrated sesquioxide of iron, containing about 60 per cent. of the metal and occurring in fibrous, concretionary or earthy masses resulting often from the decomposition of other iron ores. A loose porous form deposited in marshes is known as bog iron ore and occurs in Scandinavia.

Limpet Large, widely-distributed suborder of marine belly-footed molluscs with conical shells. Abundant on European coasts, the common *Patella vulgata*, clings to rocks with its round sucker-like foot, feeding upon seaweed, its lingual ribbon having 1920 rasp-like teeth. Millions are collected annually for bait, and in some parts of Ireland for food. *See* GASTROPODA.

Limpopo River of South Africa, also called the Crocodile. It rises in the Transvaal and enters the sea 100 m. to the north of Delagoa Bay. For part of its distance it forms the northern and western boundary of the Transvaal.

Linacre **Thomas.** English scholar. Born about 1460 he was educated at Canterbury and Oxford. He studied medicine in Oxford and in Italy, and became tutor to Henry VII.'s son, Arthur. Later he was

physician to Henry VIII. He died Oct. 20, 1524.

Linacre is known as one of the group who forwarded the New Learning in England, More and Colet being others of the group. He was one of the founders of the Royal College of Physicians.

Lincoln City, county borough and market town of Lincolnshire, also the county town. It is on the Witham, 130 m. from London, on the L.N.E. and L.M.S. Rlys. Its chief glory is the cathedral, one of the most magnificent Gothic buildings in the world, superbly placed upon a hill. A new palace and an old one, as well as a theological college, are associated with the cathedral.

Other antiquities include remains of the Roman city and of the Norman castle; the old guildhall, part of a gatehouse called Stonebow; and John of Gaunt's stables, also an old guildhall. Two houses are among the oldest specimens of domestic architecture in England. Lincoln's industries include engineering works and flour mills. It has a large trade in timber and farm produce. Races are held here. Pop. (1931) 60,346.

Lincoln **Abraham.** American statesman. He was born in a log hut in Kentucky, Feb. 12, 1809, the son of Thomas Lincoln, who was descended from an emigrant from Hingham, in Norfolk. His mother, Nancy Hanks, died when he was a boy, and in poor circumstances the family moved from place to place, finally settling in Illinois.

Abraham received a little education in school, but more from his own reading. In his rough surroundings he was known as a man of unusual strength and was popular as a story teller. He earned a living on the land, leaving it twice to work on cargo boats that sailed down to New Orleans. He then became a clerk at New Salem, Illinois, and went on a campaign against the Indians in 1832. On his return he and a partner opened a store, but this failed. He then secured a position as postmaster of the town and worked as a surveyor. He qualified as a lawyer in 1836, and began to practice at Springfield in 1837.

In 1834 Lincoln's public life began with his election to the legislature of Illinois, and his talents as a debater won for him the leadership of his party. In 1846 he was elected to the House of Representatives at Washington, but he declined re-election in 1850.

The last period of Lincoln's life began in 1854 when the controversy about slavery became acute. The Republican party was formed to prevent any extension of the slave holding area: Lincoln soon became its leader in Illinois and continued a series of debates with Stephen A. Douglas, begun in 1839-1840. In 1856 he was an unsuccessful candidate for the vice-presidency, but continued to lead the Republican Party, was nominated for the presidency and in 1860 was elected President. In 1861 the Southern States seceded and under his direction the Northern States entered upon the Civil War. Amid circumstances of great difficulty he directed the campaigns and in the end the North was victorious. He had saved the Union, which he always asserted was his aim, although at an enormous cost, and in 1863 he had announced the emancipation of the slaves. In 1864 he was again elected President, his opponent being M'Clellan, and in his inaugural address he spoke of his desire to heal the wounds of the country. On April 14 he was shot in the theatre at Washington by an actor, J. Wilkes Booth, and died on the following day.

In 1842 Lincoln married Mary Todd. Only one of his four sons survived him, **Robert Todd Lincoln,** who was American minister in London, 1889-1893.

Lincoln was the greatest figure in the history of his country. There is a statue of him near the Houses of Parliament at Westminster.

Lincoln Judgment Name given to a decision of the Archbishop of Canterbury on matters of ritual in the Church of England. Edward King (*q.v.*), Bishop of Lincoln, was prosecuted in 1889 for certain acts performed during the celebration of the Holy Communion. The case was heard before E. W. Benson, the Archbishop of Canterbury, and most of the acts declared legal. The decision was confirmed on appeal by the Privy Council.

Lincolnshire Second largest county of England. It has a long east coastline on the North Sea, from the Humber to the Wash. It covers 2665 sq. m. and is divided into three parts, Lindsey, Kesteven and Holland, each with its own county council. Lincoln is the county town: other places are Grimsby, Boston, Grantham and Sleaford. The watering places include Cleethorpes and Skegness. The principal rivers are the Trent, Witham and Welland.

The county is flat, although there are chalk hills in the N.E., and the soil fertile. Wheat, barley and potatoes are grown and cattle are reared. Fishing is another industry. In the north is a coal and iron field. In the S.E. is the fen district and around the Wash is much reclaimed land. Pop. (1931) 624,553.

The **Lincolnshire Regiment,** known as the 10th Foot, dates from 1685. It has a fine record of services. The depot is at Lincoln.

Lincoln's Inn One of the Inns of Court in London. It occupies the site of a house owned by an Earl of Lincoln in the 13th century, between Chancery Lane and Lincoln's Inn Fields. The Old Hall (1506) was restored in 1927.

Lincoln's Inn Fields was laid out as a square by Inigo Jones. It now belongs to the London County Council. In the centre are some gardens and the buildings around include Sir John Soane's Museum and the Royal College of Surgeons. The Fields cover seven acres.

Lind **Jenny.** Swedish singer. She was born at Stockholm, Oct. 6, 1820. After her first successes at the opera-house at Stockholm in 1838-1841 she studied under Garcia in Paris. In 1847 she appeared for the first time in London and later made her home in England, where "the Swedish nightingale" was very popular. A devout Christian, her later appearances were all in oratorios or on the concert platform. She taught singing for a time at the Royal College of Music, London. In private life the wife of Otto Goldschmidt, director of the Bach Choir, she died at Malvern, Nov. 2, 1887.

Lindbergh **Charles Augustus.** American airman. Born at Detroit, Feb. 4, 1903, of Swedish descent, he entered the Air Mail Service of the U.S.A. In May, 1927, he became known by his flight across the Atlantic for a prize of £5000. In a monoplane he did the journey from New York to Paris in 33 hours 50 minutes, the first airman to fly the Atlantic alone. In 1929 Colonel Lindbergh married a daughter of Dwight Morrow, late ambassador to Mexico. The kidnapping of their infant son in 1932 aroused interest all over the world. After a search

lasting ten weeks the child's remains were found in the garden of their house. In 1935 a German, Hauptmann, was pronounced guilty of the murder and condemned.

Lindisfarne Island off the coast of Northumberland, sometimes called Holy Island. In Anglo-Saxon times S. Aidan founded a monastery there. Later it became a Benedictine house, and its ruins remain. About 1500 a castle was built, and restored in the 20th century. At low water Lindisfarne can be reached on foot. The nearest station is Beal. The **Lindisfarne Gospels**, an illuminated MS dating from the 7th century, is in the British Museum.

Lindley **Baron.** English lawyer. Nathaniel Lindley was born Nov. 29, 1828, and educated at University College School and University College, London. He became a barrister in 1850 and in 1875 a judge. In 1881 he was made a judge of the Court of Appeal; in 1897 Master of the Rolls and in 1900 a Lord of Appeal and a life peer. He resigned in 1905 and died Dec. 11, 1921. Lindley's book on the law of partnership is the chief authority on this subject.

Lindley **John.** English botanist. Born at Catton, Norwich, Feb. 5, 1790, he was educated there, and in 1821 entered the service of the Royal Horticultural Society to lay out the garden at Chiswick. He became secretary of the Society and from 1829 to 1850 was Professor of Botany at University College, London. He died Nov. 1, 1865. Lindley wrote *The Vegetable Kingdom* and other books, and edited *The Botanical Register* and *The Gardener's Chronicle*.

Lindrum **Walter.** Australian billiards champion. In 1929 he came to England and beat a number of records, notably when he made a break of 3905 and when he scored 2572 points in a single afternoon. In 1932 he made a record break of 4137. He is left-handed.

Lindsay **Sir Ronald Charles.** British diplomat. A son of the 26th Earl of Crawford and Balcarres, he was born May 3, 1877, and educated at Eton. In 1898 he entered the Foreign Office and gained experience of diplomatic work in Paris and elsewhere. From 1913 to 1919 he was Under-Secretary for Finance in Egypt. In 1924 he went to Constantinople and in 1926, having been knighted, to Berlin as ambassador. In 1930 he was transferred to Washington.

Lindsey District of Lincolnshire. *See* LINCOLNSHIRE. The title of **Earl of Lindsey** has been borne by the Lincolnshire family of Bertie since 1626. The earl's seat is Uffington House, near Stamford.

Linen Textile material made from the fibres of the flax plant, *Linum usitatissimum*. The flax fibres represent the hard bast of the stem and are prepared by retting, a process in which fermentative bacteria in water act upon the cementing substance of the bast separating the fibres. This process is effected by steeping the stems in ponds, tanks or streams. The retted straw is dried, and then broken or scutched in mills to remove all extraneous matter. By passing through hackling mills, the short fibres or tow are separated from the long fibres or line which are then spun into yarn for making linen. Lawn, Cambric and damask are examples of fine textured linen, while sheeting and some grades of tablecloths are made from coarser yarn. The chief seat of the industry is Northern Ireland.

Ling Soft-finned food-fish of the cod family (*Molva vulgaris*), ranging from Iceland to the English Channel. Dark-grey, lighter beneath, 4-6 ft. long, it is a ground-fish, trawled at 50-100 fathoms in the North Sea, and line-fished in winter. Salted or dried as Lenten stockfish for Central and South Europe, it yields inferior "cod-liver" oil.

Lingard **John.** English historian. He was born at Winchester, Feb. 5, 1771, and educated at Douai. He became a teacher in a Roman Catholic college in Durham and there remained until 1811. He died at Hornby in Lancashire, July 17, 1851. He refused to become a cardinal.

Lingard is known by his *History of England* which takes the story up to 1688. It was very popular, and a new edition, edited and extended to 1910 by Hilaire Belloc, appeared in 1914.

Lingfield Town of Surrey, It is 10 m. from Reigate, on the S. Rly. The beautiful collegiate church dates from the 15th century and there is an old prison, now used as a museum. Races are held here.

Link Unit of measurement. Gunter's surveying chain contains 100 links, each 7·92 in. The American engineering chain has 100 links, each 12 in.

Link Torch of tow or hards dipped in pitch: perhaps so called because cut into lengths or links. Before street illumination developed they served for lighting passengers: linkboys plied for hire. Iron link-stands with rings for holding links, and funnel-shaped extinguishers, occasionally survive on old London house doors.

Linlithgow Burgh, market and county town of Linlithgow, or West Lothian, 17 m. from Edinburgh, on the L.N.E. Rly. The palace, the birthplace of Mary Queen of Scots, overlooks Linlithgow Loch and was a residence of the kings of Scotland. It is open to visitors and is second in historic interest only to Holyrood. S. Michael's Church is one of the finest parish churches in Scotland. The town has leather and paper manufactures. Pop. (1931) 3666.

Linlithgow **Marquess of.** Scottish title held by the family of Hope. John Adrian, 7th Earl of Hopetoun, who was the first Governor-General of Australia, was made Marquess of Linlithgow in 1902. He left Australia in 1905 and in that year was Secretary for Scotland. His son, Victor, the 2nd marquess, in 1923 was chairman of the committee that inquired into the price and marketing of agricultural products and issued the Linlithgow Reports. In Aug., 1935, he was appointed to succeed Lord Willingdon as as Viceroy of India. His seat is Hopetoun House, near Linlithgow, and his eldest son is called the Earl of Hopetoun.

Linlithgowshire County of Scotland, also called West Lothian. It covers 120 sq. m. and has a coastline on the Firth of Forth. Linlithgow is the county town; other places are Broxburn, Bo'ness, Bathgate and Queensferry. The Avon and the Almond are the chief rivers and there are hills in the north. Pop. (1931) 81,426.

Linnaeus **Carl.** Swedish botanist, later styled Carl von Linné. He was born at Rashult in Smaland, May 23, 1707, and early studied botany. He was educated at Upsala University for a medical career, but in 1730 was appointed Assistant Professor of Botany. In 1735 he gained his doctor's degree

in Holland, and on his return to Sweden practised for some years as a physician, but from 1741 until his death he was Professor of Botany at Upsala. In his most famous works, the *Systema Naturae*, *Genera Plantarum* and *Bibliotheca Botanica*, Linnaeus laid the foundations of modern botanical nomenclature. He died Jan. 10, 1778. His library and collections became the property of the **Linnean Society**, Burlington House, London, in 1828.

Linnell **John.** English painter. Born in London, June 16, 1792, he turned his attention from portraits to landscapes and engravings. His landscapes are chiefly scenes in Surrey. Examples of his work are to be seen in the National and Tate Galleries, London. He died Jan. 20, 1882.

Linnet Common British resident songbird of the finch family, *Linota cannabina*. Stout-billed, 5½ in. long, it is called grey, brown or rose according to sex or season. Its wool-lined nest shelters 4 to 6 brown-speckled, dirty-white eggs. A favourite cage bird, it ranges Europe and W. Asia, wintering southward, being largely replaced in Scotland by the mountain linnet or twite.

Linnhe Loch or arm of the sea. It is on the W. coast of Scotland, between the counties of Inverness and Argyll.

Linoleum Trade name, meaning linseed-oil fabric, of a kind of floorcloth. Patented 1860 and 1863, it comprises oxidised linseed oil incorporated with ground cork, resins and pigments, pressed upon a coarse canvas backing between steam-heated rollers. It may be self-coloured, printed or inlaid with coloured compositions. It is made in Lancaster, Greenwich and Dunfermline.

Linotype Printing machine which sets up a whole line of type by a series of mechanical operations. In a similar manner to a typewriter the operator depresses a key releasing a matrix or metal plate, bearing a corresponding letter, from a magazine. The matrices are carried along to a compartment on the machine in which molten type metal is forced against the matrices to form casts of the lines of letters, the machine then returning the matrices to the magazine.

Linseed Ripened and dried flax seeds. Oval, compressed, lustrous, brown, the outermost coat contains mucilage: from the cotyledons are expressed, with or without heat, 40 per cent of a valuable drying oil used for paint, varnish, linoleum, soap and printers' ink. The residual 60 per cent. is pressed into oil-cake for cattle food. Of the world's production of 4,000,000 tons Argentina raises half, India, Russia, Canada and U.S.A. the remainder. **Linseed poultices**, of freshly ground meal, are unsuitable for open wounds.

Linthwaite Urban district of Yorkshire (W.R.). It is on the Colne, 3 m. from Huddersfield, a centre for woollen manufacture. Pop. (1931) 9689.

Lion Largest of the cat tribe (*Felis leo*), sometimes reaching 10 ft. overall, and surpassing 500 lb. The shaggy mane on the male's head and shoulders distinguishes it from other large Old World cats; the tufted tail conceals a thorn-like spine. The tawny coat, pale to deep, is uniform; the mottling and striping of the cub's coat disappears at maturity. Barbary, Senegal and Persia furnish varieties; one was contemporary with early man in England. Lions prey on antelope, zebra and other large mammals, also on cattle and pigs; man-eating is rare. They are found in Africa and parts of Asia, including India.

Lion Heraldic charge, especially on royal and princely shields. The earliest attitude, reared on hind legs, was called rampant, distinguished from passant, walking on three paws; statant, walking on four paws; sejant, recumbent; salient, springing; gardant, denoting full-faced. The lions of England, first used on Richard I.'s great seal, 1194, are passant gardant.

Lip Upper and lower muscular border of the mouth, comprising skin, fibrous and glandular tissue, muscle and mucous membrane. The superficial blood vessels impart a rosy colour which anaemia renders pallid and defective oxygenation livid. Lip-ornaments, characterising certain African and American Indian peoples, are made of stone, bone, wood, metal, shell and feathers, usually involving perforation. *See* HARE-LIP.

Lipari Group of 7 islands about 20 m. from the N. coast of Sicily and 46 sq. m. in area. They are volcanic and Stromboli is still active. The town of Lipari, on Lipari Is., is the capital with a good harbour, and a castle built by Charles V. The soil is fertile and the islanders grow olives, currants, etc. Pop. 22,000.

Lipoma Name given to a certain kind of innocent tumour, in which fat is mingled with the tissue. It is found on any part of the body, chiefly in persons of sedentary habits and is harmless. The only real cure is surgical.

Lippe State of N.W. Germany, now a republic. It covers 469 sq. m. and Detmold is the capital. The Weser is the chief river. The soil is fertile, but much of the land is forest. Pop. 163,650.

The **River Lippe** is a tributary of the Rhine. It flows through Westphalia and is 150 m. long.

Lippi **Fra Filippo.** Italian painter. He was born at Florence in 1412 and became a monk, hence the designation Fra or Frater. Living at Padua, Florence, Prato, where he was chaplain in a convent, and elsewhere, he painted a good deal and there are pictures by him in the National Gallery, London, the Louvre and other European collections. He died at Spoleto in Oct., 1469.

His son, Fra Filippino Lippi (1460-1504) was equally famous as a painter and some of his work is in the National Gallery, London.

Lip-Reading Understanding the speech of others by observing the movements of lips and tongue, and the facial expression. Some deaf persons employ it instead of watching finger-spelling. It has proved unsatisfactory for the systematic training of deaf-mutes, except in combination with manual methods. The British National Institute for the Deaf recognises as one of its objects the re-education of the partially deaf through speech-reading. *See* DEAFNESS.

Lipton **Sir Thomas Johnstone.** British merchant. Of Irish parentage he was born in Glasgow May 10, 1850. He began life as an errand boy and about 1865 went to the United States. In 1876 he opened a provision shop in Glasgow. The business prospered; other shops were acquired, and in a few years the firm of Lipton's, Ltd., became one of the largest in the retail provision trade, with interests in Ceylon and elsewhere. In 1898 Lipton was made a knight, and in 1902 a baronet. He died unmarried, Oct. 21, 1931. To the public Lipton was best known as a

yachtsman and a liberal donor to the hospitals. He built several yachts, called *Shamrock*, which competed for the America Cup.

Liquation Metallurgical process for the separation of a metal from its ore. It is used especially in the case of complex ores containing mixtures of lead, silver and copper, by heating the ore in a furnace to a temperature at which those constituents, having lower melting points than the rest, sweat out or liquate from the mass.

Liquefaction Term used in physics. It describes the change of a substance from a solid to a liquid, as ice to water, and also the change from a gas to a liquid. The latter results in liquid gases, such as liquid air, liquid oxygen and others, which are much used in commerce. The processes, which were greatly developed by the researches of Sir James Dewar, are very elaborate. The gases are cooled by allowing them to expand.

Liqueur Potable spirit, usually sweetened with a distinctive flavouring. Well-known varieties include Kirsch and Maraschino, distilled from or flavoured with cherries; Kümmel, flavoured with caraway seeds; Curaçao, with bitter orange peel; Absinthe, with wormwood; Noyau, with fruit-kernels. Benedictine and green or yellow Chartreuse utilise secret monastic recipes. Crêmes are usually thick and oily, *e.g.*, Crême de menthe. Apricot, cherry, orange and peach brandy, and sloe gin, are prepared by steeping the fruits. Vermouth is fortified and aromatised white wine.

Liquid State of matter in which the molecules are held together by cohesion to a less degree than in a solid, and have a greater freedom of movement giving the property of fluidity.

Measures used for liquids are called liquid or fluid measures. In Great Britain the standard measure is the gallon, defined as the measure of 10 lb. of distilled water at 62°F. with the barometer at 30 in., making it contain 277.274 cubic in. of distilled water. The unit in the metric system is the litre. *See* LITRE.

Liquid Fire Weapon introduced by the Germans during the Great War. It was an inflammable oil ignited from a blow pipe called a flammenwerfer, or flame-thrower. Gas was used to eject the oil which then burst into flame.

Liquidation Term generally used for the paying of debts when a limited company is insolvent. It is the equivalent of bankruptcy in the individual. A company, however, may go into liquidation for purposes of amalgamation or reconstruction, or because the object for which it was formed has been attained. There are three modes of liquidation, voluntary, voluntary under the supervision of the court, and compulsory.

Liquor Control Supervision by the state of the sale of intoxicating drink. In Great Britain no one can sell intoxicating liquor, for consumption on or off the premises, unless he obtains a licence. These licences are granted by the magistrates, and an annual charge, dependent upon the value of the public house, is paid. A licence is usually only granted for a year and can be withdrawn if its holder infringes the law. The police are responsible for seeing that the law is observed, and they can object, as can any one else, to the renewal of a licence if they have grounds for complaint. In Scotland there is a system of local option.

Other methods of control, notably the Gothenburg System in Sweden, have been tried, these including a partial control by the State, as in some provinces of Canada.

In England, during the Great War, the State took entire control of the sale of intoxicating liquor in certain areas where munitions were made. After the war this control was retained in the Carlisle district, where it is still managed by a board of control under the Home Office. In 1930 a royal commission was appointed to inquire into the licensing laws as they concern the sale of intoxicating liquor. *See* LOCAL OPTION.

Liquorice Brittle, blackish substance (*glycyrrhiza*). It comprises juice extracted from the long, woody roots of a perennial Mediterranean leguminous herb. Both this stick liquorice and the peeled root serve as a mild laxative, sweetmeat, flavouring for nauseous medicines and demulcent in throat lozenges. It comes from Pontefract, Yorks., but chiefly from Calabria and Spain.

Lira Unit of currency in Italy. It is divided into 100 centesimi and is coined in silver. Paper lire were also issued. The nominal value of the lira is 9¼d., the same as the franc, but it has depreciated since the War. In 1927 it was stabilised at 92·46 to the £.

Lisbon City and seaport of Portugal, on the estuary of the Tagus, about 12 m. from the sea, it has been the capital since 1260. It has a pleasing climate and a fine situation and is much visited by foreigners. The Praça do Commercio is the largest of several fine squares, and there is a huge bull ring. The river makes a magnificent harbour, well equipped with docks, and considerable business is due to its position as the financial and distributing centre of the republic. It is also a fishing port and has two broadcasting stations (31.25 M., 2 kW., and 282.2 M., 2 kW.). The city includes Belem and Alcantara, famous for its marble aqueduct, and covers 50 sq. m. It was almost destroyed by an earthquake on Aug. 1, 1755. Pop. (1930) 594,390.

Lisburn City, urban district and market town of Co. Antrim, N. Ireland, on the Lagan, 8 m. from Belfast, on the G.N. (Ireland) Rly. The principal industry is linen manufacture. Pop. 12,400. The title of Earl of Lisburne has been held since 1776 by the family of Vaughan.

Liscard District of Cheshire. On the River Mersey with a station on the L.M.S. Rly., it is in the county borough of Wallasey. Pop. 16,535.

Lisieux Town of France. In the department of Calvados, it is on the River Touques, 30 m. from Caen by rail and 19 from Honfleur. The church of S. Pierre was once a cathedral. The episcopal palace is now a museum. Pop. 16,000.

Liskeard Borough and market town of Cornwall, 15 m. from Plymouth, on the G.W. Rly. There is a trade in agricultural produce. Pop. (1931) 4266.

Lismore Island of Argyllshire, 9¼ m. long and 1¼ m. broad, at the entrance of Loch Linnhe. There are ruins of a cathedral and a castle, and a collection of Gaelic poems known as the Book of the Dean of Lismore. Agriculture and fishing are the chief occupations, and there is a lighthouse on the S.W. point. Pop. 357.

Lismore Town of Co. Waterford, Irish Free State. It is on the Blackwater, 4 m. from Cappoquin, on the Gt. S. Rlys.

The castle, once the property of Sir Walter Raleigh, is now a seat of the Duke of Devonshire. Pop. 1600.

Lister Baron. English surgeon and scientist. Joseph Lister was born at Upton, Essex, April 5, 1827, the son of a member of the Society of Friends. He was educated in London and became a doctor. Specialising in surgery, he was made professor of that subject at Glasgow in 1860; in 1869 he became Professor of Clinical Surgery at Edinburgh, and in 1877 at London. In 1885 he was made a baronet and in 1897 a baron. His other honours included the Order of Merit and the presidencies of the Royal Society and the British Association. He died Feb. 10, 1912, when his title became extinct.

Lister was one of the greatest surgeons of his time, and is famous as the inventor of antiseptics. The Lister Institute of Preventive Medicine was founded in 1891 and took its present name in 1903. Its headquarters are at Chelsea and it has laboratories at Elstree.

Listowel Market town and urban district of Co. Kerry, Irish Free State, on the little River Feale, 170 m. from Dublin, on the G.S. Rlys. There are ruins of a castle. The town has an agricultural trade. Pop. 2917.

The title of Earl of Listowel has been borne by the family of Hare since 1822. The earl's eldest son is called Viscount Ennismore.

Liszt Franz. Hungarian musician. Born Oct. 22, 1811, the son of Adam Liszt, he began to show his genius when a child. He studied music in Vienna and Paris, and soon became known on the concert platforms, appearing in London and other centres. In 1849 he was made conductor of the opera at Weimar, where he remained until 1861. The rest of his days were passed mainly in Paris and Budapest, and he died at Bayreuth, July 31, 1886. In 1865 he took orders in the Roman Catholic Church, and he is sometimes called the Abbé Liszt.

Litany Form of prayer or supplication in which the responses are said by the congregation. It was first used in the 4th century and since then many litanies have been compiled. The litany of the Church of England is based on the one compiled by Cranmer in 1544.

Litharge Monoxide of lead. It is formed when lead is heated strongly in air, causing slow oxidation of the metal, or by heating lead carbonate to dull redness. As a heavy straw-yellow powder it is known as massicot, but when melted to form a crystalline solid as litharge. It is used as a glaze for pottery and in glass, enamel and rubber manufactures.

Litherland Urban district of Lancashire, 4 m. from Liverpool, on the L.M.S. Rly. The Liverpool overhead electric railway also has a station here. Pop. (1931) 15,967.

Lithgow Town of New South Wales. It is 100 m. from Sydney by rail and is a mining centre, with coal, iron ore and shale. There are some manufactures. Pop. 16,380.

Lithography Process of surface printing taken from stone, zinc or aluminium. It was invented about 1798 by Aloys Senefelder. The process is based upon the antipathy between grease and water, so that when the stone or plate, upon which is a drawing in greasy ink, is moistened with water and an inked roller is passed over the surface, the ink is retained by the drawing, but rejected by the water elsewhere.

Lithosphere Term used to denote the solid mass of the earth. The lithosphere has an irregular surface and has been divided into an abysmal area where the ocean is over 10,000 ft. deep, a transitional area where the water is under 10,000 ft. in depth, and a continental area forming the land surface.

Lithuania Republic of Europe. Formerly part of Russia, it lies between Latvia, Poland and Germany, and has a coastline on the Baltic. Its boundaries with Poland are not absolutely settled as both countries claim Vilna and district. Kovno or Kaunas is the temporary capital, but Vilna, which is in the possession of Poland, is regarded by Lithuanians as the capital. Other places are Grodno or Gardinas, and Suvalki, both still retained by Poland. Memel is the chief seaport, but here Poland has certain rights. The area is 21,489 sq. m., but with the regions in dispute it is about 30,000. Pop. (1932) 2,392,983.

Lithuania is an agricultural country, level and fertile. Oats, wheat, rye, and potatoes are among the crops; cattle, sheep, and pigs are reared and there are large forest areas. Dairy produce, corn, cattle, timber and hides are the chief exports. The army is recruited by compulsory service. The litas, worth about 4d., is the unit of currency. There is a state bank which issues notes.

The constitution of the country consists of a President, elected for seven years, and a cabinet under a Prime Minister. This is responsible to a legislature or diet, elected every five years by all men and women.

Soon after 1300 Lithuania became a grand duchy and in the 15th century was a very large state, stretching from the Baltic to the Black Sea. In 1569 it was united with Poland, although in some respects remaining independent. At the end of the 18th century, like that country, it was partitioned, Russia and Prussia dividing it between them.

In 1918, the Lithuanians, then under Russian rule, proclaimed their independence. Russia recognised this in 1920 and the European powers in 1922. In 1926 military officers overturned the government and appointed a new President who was re-elected in 1932.

Under the Treaty of Versailles a French High Commissioner replaced German rule over the town and territory of Memel, but in Jan., 1923 the Lithuanians invaded it and by a Convention signed at Paris in May, 1924, took over sovereignty. The Nazi sympathies of the Memel Dict have caused high feeling and in Sept., 1935 Hitler invited the League to examine the Memel question.

Litmus Colouring matter obtained from various lichens (*Rocella tinctoria*, etc). Litmus is used as a chemical test for acids and alkalis, as its natural purplish-blue colour is turned red by acids and restored by alkalis. The lichens are treated with ammonia and fermented, then with an alkaline carbonate and lime, the liquor finally being evaporated.

Litre Unit of capacity in the metric system of weights and measures. It is calculated very carefully as the volume of a cubic decimetre, but, roughly speaking, 4½ litres are equal to a gallon.

Litter Portable bed or couch. Used in early Greece, this method of travel improved after the Persian contact. Curtained

and roofed litters supported by poles on men's shoulders spread throughout the Roman Empire and mediaeval Europe until supplanted by travelling coaches. Hand litters for transporting army wounded occur, besides horse, mule and camel litters. *See* SEDAN CHAIR.

Littleborough Market town and urban district of Lancashire, 4 m. from Rochdale, on the L.M.S. Rly. The chief industries are cotton manufacture and coal mining. Pop. (1931) 12,028.

Little Englander Term used for one who is opposed to any expansion of the British Empire. A term of contempt, it was first used about 1890. *See* IMPERIALISM.

Little Entente Name used for the alliance between the countries of Czechoslovakia, Rumania and Yugoslavia. It was founded in 1920 and renewed in 1929.

Littlehampton Seaport, watering place and urban district of Sussex, at the mouth of the Arun, 62 m. from London, on the S. Rly. The sands and bathing are good and there are golf links. On the front is a large green. The river is crossed by a bridge and a ferry. There is a little shipping. Pop. (1931) 10,181.

Littleport Town of Cambridgeshire, on the Great Ouse, 6 m. from Ely, on the L.N.E. Rly. The main industry is marketing the fruit and vegetables that are grown in the district.

Littlestone Village and watering place of Kent, 8 m. from Hythe, on the S. Rly. There are golf links here.

Littleton Village of Middlesex, 3 m. from Staines. The Metropolitan Water Board has one of its largest reservoirs here, opened in 1925.

Littleton **Sir Thomas.** English lawyer. He was born at Frankley, Worcestershire, about 1410. In 1466 he was made a judge, and he died Aug. 23, 1481.

Littleton 's known because he wrote in Norman French a treatise on tenures, which is one of the earliest text books of English law. It has been translated into English and on it Sir E. Coke wrote a famous *Commentary*.

Littoral Term in geography to denote the land adjacent to the coast of a country. The physical configuration of the coastal regions varies greatly ; in some areas it is a belt of low elevation with estuaries or deltas of large rivers, centres of economic production, in others rugged cliffs and a littoral of high elevation, sparsely populated and less productive.

Liturgy Greek word meaning " public service," used in several senses. It refers to any or all of the services in the Book of Common Prayer, which contains the liturgy, or liturgies, of the Church of England. More strictly it applies to the form or office for the administration of the Holy Communion, a use to which it was put as early as the 4th century.

Litvinoff **Maxim.** Russian politician. He was a Jew named Findelstein before taking his present name. He joined the Communist Party in Russia and worked for it in London where he was engaged for a time as a journalist. He became one of the leaders of the Soviet and in 1918 was sent to London as its representative. Soon, however, he was obliged to leave the country, and he then represented his country in Sweden and Norway. In 1930 he was made Commissioner for Foreign Affairs, and as such represented Russia when she entered the League, Sept., 1934, and negotiated the Franco-Soviet Pact on behalf of the U.S.S.R. in 1936.

Liver Largest glandular organ in the body. Normally weighing 50-60 oz., it is situated on the right side, diaphragm above, intestines and right kidney below. Blood from the stomach and intestines enters it through the portal vein, some harmful substances are abstracted, and the food's vegetable starch converted into animal starch or glycogen, which is stored ready for reconversion into sugar and restoration to the blood as required. The hepatic veins receive this as well as that derived from the hepatic artery after circulating through the organ for its own nourishment. Another duty is to form bile, which pours into the duodenum direct or collects in the gall-bladder. *See* BILE, JAUNDICE.

Liver Fluke Worm which is harmful to sheep and occasionally to horses, cattle and dogs. It is about an inch long and obtains its name because its eggs are nourished on the liver of the water snail. As worms they leave the snail and fasten themselves on to blades of grass where they are liable to be eaten by sheep. In this way sheep may contract a serious disease called distoniasis.

Liverpool City and seaport of Lancashire, on the estuary of the Mersey, 201 m. from London, on the L.M.S. Rly. An electric overhead railway serves the city and its suburbs. The area is 33 sq. m. Canals link the Mersey with the trading centres in the N. and centre of England.

The buildings include the cathedral begun in 1904, which occupies a commanding site, and which, when finished, will be one of the finest modern churches in the world. The Roman Catholics have planned to build a cathedral which will rival S. Peter's in size. The university, founded in 1903, has a school of tropical medicine and a technical college. In 1932 a radium institute was opened.

The main industry of Liverpool is shipping, especially the import of cotton. Controlled by the Mersey Docks and Harbour Board there are extensive docks on both sides of the river, the quays being 37 m. in length. Other industries are the manufacture of cement, chemicals, etc. The city obtains its water supply from Lake Vyrnwy in N. Wales. Pop. (1931) 855,539.

Liverpool Town of New South Wales, 22 m. from Sydney ; centre of a sheep-rearing district. Pop. (1931) 6,360.

Liverpool **Earl of.** English title held by the families of Jenkinson and Foljambe. Its first holder was Charles Jenkinson. Born April 26, 1727, he became prominent in politics and held office under Pitt. In 1786 he was made Baron Hawkesbury and in 1796 Earl of Liverpool. He died Dec. 17, 1808.

Liverpool's son and successor, Robert Banks Jenkinson, was born June 7, 1770. He entered the House of Commons in 1790 and in 1801 became Foreign Secretary. As such he helped to make the Treaty of Amiens. In 1804 he became Home Secretary, under Pitt, and Prime Minister. His long term of office of 15 years was marked by a steady resistance to reform. He died Dec. 4, 1828, and the title became extinct on the death of the 3rd earl in 1851.

In 1893 Cecil George Savile Foljambe, a grandson, through his mother, of the 3rd earl, was made Baron Hawkesbury and in 1905, Earl of Liverpool. His son, Arthur, the 3rd

earl, who succeeded in 1907, was Governor-General of New Zealand, 1912-20.

Liverpool Street Thoroughfare in London. It runs from Bishopsgate Street to Blomfield Street, and gives its name to a great railway station, opened in 1875 to serve the G.E. Rly. It is now a terminus of the L.N.E. line. The street, once called Old Bethlehem, was named after the Prime Minister, Lord Liverpool.

Liverwort Flowerless plant of a class closely allied to mosses (*Hepaticae*). They differ in having two-sided stems, spiral threads among the spores, and a simpler organisation. Being chlorophyll-bearing, they are green or brownish-green, usually growing on rocks or trees in marshy situations.

Livery Word meaning "thing delivered," originally denoting the provision of food and clothing for a household. From the sense of a fixed food ration for horses came the term livery-stable, ultimately designating one keeping horses and carriages for hire. From the sense of a fixed supply of household clothing it passed into the uniform adopted by princes, barons and others for their civilian or military retainers; from the distinctive clothing of trade-guilds it came to denote the livery companies themselves.

Living Ecclesiastical benefice, held by a rector or a vicar. He must have been in holy orders for two years, and is presented to the living by the patron. It is a freehold estate and from it he cannot be removed except for a serious moral or ecclesiastical offence. He must reside in the parish for at least nine months of the year unless he gets leave from the bishop for a longer period.

Livingstone **David.** Scottish missionary and traveller. Born at Low Blantyre, Lanarkshire, March 19, 1813, a son of Neil Livingstone, a small trader, he began to work in a cotton mill as a child. He managed to obtain some education and saved enough money to graduate in medicine at the University of Glasgow. In 1840, under the auspices of the London Missionary Society, he went to Bechuanaland, S. Africa, where he was associated with Robert Moffat.

In 1849 Livingstone began his explorations. He travelled down the Zambezi, discovered the Victoria Falls, Nyassa and other lakes, and his last journeys were made to discover the sources of the Nile. In Oct., 1871, he was rescued at Ujiji by Stanley. He died at Ilala on May 1, 1873, and was buried in Westminster Abbey. Livingstone married Mary, daughter of Dr. Moffat. His work is commemorated by the Livingstonia Mission of the Church of Scotland, and there are memorials to him at Blantyre.

Livingstone Capital of Northern Rhodesia, near the Zambezi River, 287 m. from Bulawayo by railway. It has government buildings and an Anglican church. Lusaka has been chosen as the new capital. Pop. 800.

A mountain range about 100 m. long, N. of Lake Nyassa is named after Livingstone, as is a gorge on the Zambezi.

Livy Roman historian. Titus Livius was born in Padua in 59 B.C., and died in A.D. 17. His *History of Rome* was in 142 books, and the 35 books which remain cover the period from the founding of the city (753 B.C.) until 9 B.C. From time to time come reports that some of the lost books have been found. Livy was a lively and vivid, if not always accurate, historian.

Lizard Order of scale-clad reptiles found in all temperate and tropical regions. They differ from snakes by having normally four limbs, movable eyelids, external ears, and mandibles suturally united. New Zealand's lizard-like non-scaly tuatera forms a separate order; newts are smooth-skinned batrachians. The 1700 species are carnivorous or herbivorous, mostly terrestrial and arboreal, producing either eggs or living young. The Gila monster is the only venomous form. Geckos, chameleons and true lizards form sub-orders. Of Britain's four species, the common *Lacerta vivipara*, 7 in. long, and the snake-like blind-worm produce living young; the sand-lizard, 9 in., is egg-laying. Guernsey has the European green lizard, 12 to 16 in. long.

Lizard **The.** Most southerly point of England. It is in Cornwall, 10 m. from Helston, and is reached by motor vehicles. On the headland are a lighthouse and a wireless station and around it are some famous coves and much magnificent scenery. The village near, a popular pleasure resort, is called Lizard Town.

Llama S. American two-toed ruminant. It is related to Old World camels, but smaller, humpless and woolly-haired (*Lama glama*). Pre-Columbian America domesticated two breeds of the wild guanaco. Of the llama, usually white, the males served as beasts of burden, the females providing milk and flesh food. The alpaca, usually black, provided wool.

Llanberis Village of Caernarvonshire, 9 m. from Caernarvon, on the L.M.S. Rly. Called the Chamonix of Wales, it is a good starting place for the ascent of Snowdon. Near are two lakes, one over a mile long, and some slate quarries. The Pass of Llanberis, the wildest in Wales, rises to over 1100 ft. A coach road goes over it.

Llandaff City of Glamorganshire. It is part of the city of Cardiff, on the River Taff, 149 m. from London, on the G.W. Rly. The small cathedral was completely restored in the 19th century. Llandaff has been the seat of a bishop since about 600. It has ruins of a castle.

Llandeilo Market town and urban district of Carmarthenshire, on the Towy, 15 m. from Carmarthen, on the G.W. Rly. Near is Dynevor Castle, the seat of Lord Dynevor, built to replace a castle first erected in the 9th century. The town is named after S. Teilo, a bishop of Llandaff, and has an agricultural trade. Pop. (1931) 1886.

A division of Ordovician rocks is called the **Llandeilo group** by geologists.

Llandovery Borough and market town of Carmarthenshire, on the Towy, 26 m. from Carmarthen, on the G.W. Rly. There are ruins of a castle. Pop. (1931) 1980.

Llandovery College is one of the chief public schools in Wales. Founded in 1848, it has accommodation for about 200 boys.

In geology **Llandovery rocks** are a division of the Silurian. They are much used for making roads and for building purposes.

Llandrindod Wells Urban district and watering place of Radnorshire, on the Ithon, 45 m. from Shrewsbury, on the L.M.S. Rly. In the 18th century its mineral springs became known, and they are visited by sufferers from gout, rheumatism, skin diseases and other complaints. The town stands high, and has many attractions for visitors. Pop. (1931) 2925.

Llandudno Watering place and urban district of Caernarvonshire. It is on the N. Coast, where the Conway falls into the sea, and is on the L.M.S. Rly., 18 m. from Chester and 228 from London. In the 19th century it became a very popular pleasure resort. The sands are good and there is a fine promenade. The Happy Valley is an amusement centre. Steamers go to Liverpool and elsewhere. Pop. (1931) 13,677.

Llanelly Borough, seaport and market town of Carmarthenshire. It is on Burry Inlet, part of Carmarthen Bay, 12 m. from Swansea, on the G.W. Rly. The chief industries are tinplate works, copper refineries and chemical works. There is a good harbour with extensive docks. Pop. (1931) 38,393.

Llanfairfechan Urban district of Caernarvonshire. About 8 m. from Bangor, it is a popular watering place. Pop. (1931) 3162.

Llangammarch Wells Watering place of Brecknockshire, 15 m. from Llandovery, on the L.M.S. Rly. The waters here are suitable for heart troubles as they contain barium chloride, which is not found anywhere else in the British Isles.

Llangefni Market town and urban district of Anglesey, on the River Cefni, 250 m. from London by the L.M.S. Rly. It is an agricultural centre. Pop. (1931) 1782.

Llangollen Market town and urban district of Denbighshire, on the Dee, 202 m. from London, on the G.W. Rly. It is famous for its 14th century bridge, and the house, Plas Newydd, now a museum, in which the "Ladies of Llangollen," Lady Eleanor Butler and the Hon. Sarah Ponsonby, lived. There are remains of a Cistercian abbey called Vallo Crucis, and the scenery around is beautiful. Pop. (1931) 2937.

Llanidloes Borough and market town of Montgomeryshire. It is 14 m. N. of Rhayader, and 198 from London by the G.W. Rly., and is situated on the Severn. It has lead mines and flannel mills. Pop. (1931) 2356.

Llanos Name used in S. America for plains on which cattle graze. They are covered with grass, except in the dry season. They are chiefly in Venezuela. The word, a Spanish one, means "plains."

Llanrwst Urban district and market town of Denbighshire. It is 11 m. from Conway and 234 from London, by the L.M.S. Rly. Malting and tanning are its principal industries. Pop. (1931) 2366.

Llantarnam Urban district of Monmouthshire, 5 m. from Pontypool and 3 from Newport, on the G.W. Rly. Its buildings include Llantarnam Abbey and coal mining is its chief industry. Pop. (1931) 7284.

Llanthony Village of Monmouthshire, 9 m. from Abergavenny, on the Honddu River. Its ruined abbey was a house of the Austin Friars, founded in 1108 and from 1811 to 1814 was the home of Walter S. Landor. Near is a modern abbey founded in 1869 by the Anglican monk, Father Ignatius. It belongs to the English Benedictines.

Llantrisant Market town of Glamorganshire, 10½ m. from Cardiff, on the G.W. Rly. There are numerous collieries in the vicinity. Pop. 21,946.

Llantwit Major Market town of Glamorganshire. It is 5 m. from Cowbridge on the G.W. Rly. Llantwit had a monastery, which was a famous seat of learning in the Middle Ages, and a seaport, Colhugh, on the Bristol Channel.

Llanwrtyd Wells Urban district and spa of Brecknockshire. An inland watering place, it is 11 m. from Llandovery and 231 from London by the L.M.S. Rly. Pop. (1931) 742.

Llewelyn Name of several Welsh princes. **Llewelyn the Great** was a prince in N. Wales from 1194 to 1239. He was constantly at war with King John and his son, Henry III. In 1239 he went into a monastery at Aberconway where he died, April 11, 1240. His grandson was the **Prince Llewelyn II.** who fought against Edward I. He was beaten and made prisoner in 1276, but later released and died in battle near Builth in 1282.

Llewellyn **Sir William.** English artist. Born in Dec., 1863, he studied art in S. Kensington and in Paris. In 1912 he was elected A.R.A. and in 1920 R.A. In 1928 he was chosen President of the Royal Academy. He has painted portraits of Queen Mary and other members of the royal family.

Lloyd **Baron.** English politician. Born Sept. 19, 1879, a member of the banking family, George Ambrose Lloyd was educated at Eton and Cambridge. He travelled a good deal in Asia and Africa, was for a time in the diplomatic service, and became an authority on the politics of the East. In 1916 he was elected to Parliament as M.P. for W. Staffordshire. In 1918 he was appointed Governor of Bombay, and in 1924 he returned to Parliament as M.P. for Eastbourne. In 1925 Lloyd was appointed High Commissioner for Egypt and the Sudan, and made a peer as Baron Lloyd of Dolobran. He retired in 1930 and returned to public life in England.

Lloyd **Edward.** English publisher. He was born Feb. 16, 1815, at Thornton Heath and started in business in London as a bookseller and newsagent. He then became a publisher, and in 1842 founded *Lloyd's News*, a London Sunday paper, which was a great success. He also started the *Daily Chronicle*, and established paper mills at Sittingbourne as Edward Lloyd, Ltd. He died April 8, 1890, and until 1918 his business was conducted by his sons. The newspapers have now been incorporated with others, but the paper-making business, one of the largest in the world, is controlled by Lord Camrose.

Lloyd **Edward.** English singer. Born in London. March 7, 1845, he sang as a boy in the choir of Westminster Abbey, and later in the Chapel Royal. About 1871 he went on the concert platform, and his fine tenor voice made him one of the most popular vocalists in the land. He died March 31, 1927.

Lloyd **Harold.** American comedian. He was born at Burchard, Nebraska, on April 20, 1893. Beginning as an extra with the Edison Company in 1913 he joined Hal Roach a year later, making a reputation with "A Sailor Made Man," "Granny's Boy," etc. In 1923 he organised the Harold Lloyd Corporation whose first picture was "Girl Shy." Lloyd's humour is clean satire of the bespectacled ingenuous American youth.

Lloyd **Marie.** English music hall artist. Born Feb. 12, 1870, she first gained recognition in the east end, but later appeared

at the Oxford music hall, and in pantomime at Drury Lane. She was the embodiment of cockney humour, exploiting the cockney genius for low comedy in turns which placed her among the foremost music hall artists. She died Oct. 7, 1922.

Lloyd's London association of underwriters, engaged in the business of insuring ships and their cargoes. It originated about 1688 in a coffee house kept by Edward Lloyd who issued *Lloyd's List* and *Lloyd's News*, both giving particulars about the movements of ships. In 1774 the association, having been properly constituted, moved into the Royal Exchange. There it remained until 1928, when a fine building in Leadenhall Street was opened. The association, which is governed by a committee, was incorporated in 1871. *See* UNDERWRITER.

Lloyd's Register of Shipping is a society which records particulars of all merchant shipping of 100 tons and upwards, issues standard rules for shipbuilding and supervises construction and compiles statistics of all vessels under construction.

Load Line Plimsoll mark placed amidships on the sides of a vessel to show the limit to which loading may be carried. This mark consists of a twelve-inch circle with a horizontal line drawn through the centre, and in addition a " grid " is marked to show load lines for different seasons and waters.

Loam Term applied to a sandy clay usually containing carbonate of lime, and of sufficiently loose texture to allow of the free percolation of water through it.

Loanda Capital and seaport of Angola, in full San Paolo de Loanda. It stands on a bay protected by the island of Loanda. Connected by railway with the interior, it exports the produce of the land.

Lobby Small hall or waiting room. It is used sometimes for part of a house but more usually in connection with legislative assemblies such as the House of Commons, where voting takes place in two lobbies. Those in favour of a motion go into the " aye " lobby and those against it into the " no " lobby. In other lobbies the legislators interview those who call on them. From this has come the term **lobbying**, which means that outside interests bring pressure to bear on members of Parliament to support or oppose a certain proposal.

Lobelia Large genus of perennial and annual plants. They are mostly herbs, of the *Campanula* order, natives of nearly all temperate and warmer regions. The dwarf, compact tufts grown in garden borders, *L. erinus*, came from S. Africa. Tall Mexican cardinal-flowers and Virginian blue cardinals have yielded handsome hybrids, with carmine, purplish-blue, white and rosy-magenta blooms.

Lobengula King of the Matabele from 1870 until 1894. He is known as the leader of the people in their war with the British in 1894, in which they were defeated.

Lobito Bay Harbour of Portuguese W. Africa. It is 4930 m. from Southampton. The best harbour on the W. coast, it is protected by a spit of sand, and large vessels can anchor close to the shore. The bay is famed for its oysters.

Lobster Name of the larger edible marine long-tailed, ten-footed crustaceans. The foremost thoracic limbs have enlarged pincer-like claws. The common lobster, *Astacus gammarus*, averages 8 to 12 lb.; the American variety sometimes reaches 20 to 23 lb. The larger clawless rock-lobster or crawfish, *Palinurus vulgaris*, has a spiny carapace. The smaller Norway lobster, *Nephrops norvegicus*, has slender pincers.

Lobworm Family of free marine segmented worms living in seashore mud and sands, also called lugworm. The common European *Arenicola piscatorum*, devoured by ground-feeding fishes, is a favourite angler's bait. Greenish or brownish, 8 to 10 in. long, it bears 13 pairs of red tufts or gills. Sand swallowed when burrowing, and ejected, forms surface casts between tides.

Local Government System by which counties, towns and other areas are given power to look after their own affairs. The amount of local government is laid down by law and varies according to the importance of the area.

In England the most important measures regulating local government are those of 1834 (towns), of 1888 (counties), and of 1894 (urban and rural districts). A further important measure was passed in 1929. Local government is controlled by the Ministry of Health, until 1919 called the Local Government Board. Scotland and both parts of Ireland have their own systems of local government, on very much the same lines as England. The areas of the various districts are altered as required by the Ministry of Health, or in the case of large towns and cities, by act of Parliament.

Local Option Term used for the system whereby a county, town or other locality is given the power to decide its own policy. In connection with the sale of intoxicating liquor, local option has been in force in Scotland since 1920. There in every burgh or other area a poll will be taken if one-tenth of the inhabitants ask for it, and the electors vote with three issues before them. They can decide on no licences whatever, but in this case the majority in favour must be at least 55 per cent.; they can decide on no change in the existing system; or on a limitation of 25 per cent. of licences. Another poll cannot be taken until three years have elapsed. Local option has been suggested in connection with the opening of cinemas on Sunday.

Locarno Town of Switzerland. It is on Lake Maggiore and has a station on the route through the St. Gotthard Pass to Italy. Here in Oct., 1925, a conference of the European powers was held and a number of treaties known as the Pact of Locarno were arranged, and signed in London on Dec. 1. One guaranteed the existing frontiers of France. Called the Rhine Guarantee Pact, it was signed by Germany, Belgium, France, Great Britain and Italy. Others were signed between Czecho-Slovakia and Poland and France. Treaties providing for the submission of all disputes to arbitration were made between Germany on the one hand and France, Belgium, Poland and Czecho-Slovakia on the other. It was decided that Germany should become a full member of the League of Nations.

Loch Term applied to lakes in mountainous districts and to fiord-like inlets of the sea on the coast of Scotland. A typical loch is a long narrow rock-basin of considerable depth and characteristic of mountain valleys formerly subjected to glacial action. By submergence of the lower reaches of the valley the loch may become an inlet of the sea.

Lochaber District of Inverness-shire. It is wild and mountainous, and contains Ben Nevis.

Lochaber axe is the name of an axe much used at one time by the Highlanders of Scotland.

Lochgelly Burgh of Fifeshire. A colliery town, it is 7 m. from Dunfermline by the L.N.E. Rly. Pop. (1931) 9297.

Lochmaben Burgh of Dumfriesshire. It is 8 m. north-east of Dumfries by the L.M.S. Rly. Near the town, which is situated on the Annan, are the ruins of a castle of Robert the Bruce. Pop. 1014.

Lochy Lake, or loch and river of Inverness-shire. It is 10 m. long and has been utilised for the Caledonian Canal. The river Lochy runs from the lake to Loch Linnhe.

Lock Mechanical device for securing a door or lid of a box. It usually consists of a sliding bolt moved by a key. Locks have been in use since ancient times especially among the ancient Egyptians, and those of the Middle Ages down to the 18th century were often of great beauty of design. In 1778 the double-acting tumbler lock was introduced and gave greater security than the common single-acting tumbler, then and still used for the cheaper kind of door locks. A further improvement came with the Chubb detector lock with spring-pressed tumblers, the Hobbs type with safety levers, and the Yale cylinder lock, a modern adaptation of the old Egyptian pin lock. Keyless locks are worked by combinations of letters or numbers or open only at a given time.

Lock Engineering device on canals or canalised rivers by means of which vessels may pass from one level of the waterway to another. The lock consists of an enclosure with watertight gates at each end, sluices being provided to admit or discharge water. When a vessel is passing from a higher reach to a lower one, the lower gates are closed and water admitted until the level within the lock rises to that of the upper reach. The upper gates then are opened to admit the vessel and are again closed, while the sluices discharge the water in the lock until the lower level is reached, the vessel passing out on opening the lower gate. The reverse process is followed for raising a vessel to a higher level.

Locke John, English philosopher. Born Aug. 29, 1632, at Wrington, Somerset, the son of a Puritan lawyer, he became a tutor at Oxford, and also studied medicine and practised there as a physician. In 1666 he became secretary and friend to the Earl of Shaftesbury. From 1675 to 1679, and again from 1683 to 1689, he lived abroad, for political reasons, in France first and later in the Netherlands. He was a Commissioner of the Board of Trade from 1696 to 1700, when he retired. He died Oct. 28, 1704. In 1932 the tercentenary of his birth was celebrated.

Locke's philosophical ideas are set out in his *Essay Concerning the Human Understanding*. In this he argues that all our knowledge is the result of experience; our beliefs in good or evil arise largely from the association of ideas. As a political philosopher Locke ranks high also. In his work *On Civil Government*, he developed the principle that sovereignty depends upon contract, and so put the ideas that animated the Whigs in making the settlement of 1688 upon a philosophical basis. His works include a *Letter on Toleration*, his earliest work, written in Latin and translated into English, *Thoughts on Education* and *The Reasonableness of Christianity*. In reply to his critics he wrote further on these subjects.

Locke William John. English novelist. Born in Barbados, March 20, 1863, he was educated at S. John's College, Cambridge. He became an architect, but later turned to literature, and in 1905 scored a success with *The Morals of Marcus Ordeyne*, followed by *The Beloved Vagabond*. His works include *The Joyous Adventures of Aristide Pujol*, *Stella Maris*, *Septimus* and *The Great Pandolfo*. In 1930 he issued a volume of short stories, *The Town of Tombarel*, and after his death appeared *The Shorn Lamb*. He wrote a play *The Man from the Sea*, and adapted some of his novels for the stage. Locke died in Paris, May 16, 1930.

Lockerbie Burgh and market town of Dumfriesshire. It is 10 m. from Dumfries and 76 from Glasgow, on the L.M.S. Rly., and is famous for its lamb fairs held in August. There is an old tower, once used as a prison. Pop. (1931) 1574.

Lockhart John Gibson. Scottish author. Born July 14, 1794, he was educated at the High School, Glasgow, and at Balliol College, Oxford. He became an advocate but earned his living by writing. In 1825 he settled in London and was made editor of the *Quarterly Review*, a post he retained until 1853. Lockhart is known for his association with Scott. In 1820 he married Scott's daughter, Sophia, and in 1837-38 he published his *Life* of the novelist, which is a standard biography. He also wrote lives of Burns and Napoleon. Lockhart died at Abbotsford, Nov. 25, 1854.

Lockjaw Infectious disease, also called tetanus (*q.v.*).

Lockwood William Henry. English cricketer. Born in Nottingham, March 25, 1868, he became known as a cricketer, playing for his own county and later for Surrey. He soon made a reputation, both as a bowler and a batsman, and played for England against Australia in 1893, and again in 1899 and 1902. For some years he was the finest bowler in England, and one of the great all-round players of the game. He retired in 1901, and died April 27, 1932.

Lockyer Sir Joseph Norman. English astronomer. Born at Rugby, May 17, 1836, he entered the Civil Service. He studied astronomy and, while remaining in the service, became prominent as an astronomer. In 1875 he was given a position in the science and art department at South Kensington, and in 1879 was made director of the solar physics observatory there. In 1897 he was knighted, and he died at Sidmouth, Aug. 16, 1920.

Lockyer was the head of eight expeditions that went out to observe solar eclipses and his chief work, as an astronomer, was investigating solar phenomena. He wrote a number of books, one being on the connection between sun spots and the weather.

Locomotive Kind of engine used on railways and mostly belonging to the steam engine type. It has, as general characteristics, simple direct-acting engines on a rigid frame; a square furnace; long fire tubes, with the exhaust steam carried through a blast-pipe within the smoke box to produce a draught through the furnace. In modern locomotives devices for increasing and superheating the steam, heating the feed water supply, together with compound engines and

longer boilers, have been introduced. The "Rocket" of 1829 weighed under seven tons and drew a load of less than 20 tons, while some American locomotives weigh over 200 tons and draw a load of over 3000 tons.

An electric locomotive may consist of a separate carriage containing the motor and control apparatus with either an overhead or track current, or the generator may be housed in a compartment of the carriage, a Diesel oil engine being used for generating the current.

Locomotor Ataxia Disease resulting from progressive degeneration of the nerve tissues of the spinal cord, occasioned by the parasite of syphilis, hereditary or acquired. The muscular movements become unco-ordinated, and the gait and station disordered. Although the disease may not reach this stage for many years after infection, if at all, its presence is shown by the absence of knee-jerks, sluggishness of the pupils and shooting pains in the legs. The sufferer may ultimately become a bed-ridden paralytic.

Locust Name of various short-horned grasshoppers. It usually denotes in Old World use the larger migratory forms of *pachytylus, acridium* and *caloptenus*. In the Mediterranean region and S. Africa large swarms periodically obscure the sun and deafen the ear with their rustling wings. The ground-laid eggs develop wingless forms which devour everything available. The destructive migratory Rocky Mountain locust is a *caloptenus* smaller than many British grasshoppers.

The Imperial Institute of Entomology has done a good deal of work in investigating methods of dealing with the locust. In 1932 it was reported that a scientific mission had discovered their breeding places in northern and central Africa. Methods of destroying them that have been successfully tried include leading them into pits and there killing them by chemicals or fire.

Locust Bean Pod of the carob tree. It grows in Asia Minor and Italy, and is remarkable for the large proportion of sugar it contains. Attempts have been made to grow it in S. Africa. It is ground into meal and is chiefly given to cattle that are being reared for food.

Lode Term applied to a metalliferous vein in a rock. A lode represents a fissure which has become filled with ores and other minerals, or in some cases a lode may be a fault due to rock displacement. Lodes vary in width from a few feet to 100 feet and in length up to many miles.

Lodge **Sir Oliver Joseph.** English scientist. Born at Penkhull, Staffordshire, June 12, 1851, he became Assistant Professor of Mathematics at University College in 1879; Professor of Physics at Liverpool in 1881; and in 1900 he was made first Principal of the new University of Birmingham, a post he held until 1919. In 1902 he was knighted and in 1913 he was President of the British Association.

As a physicist Lodge made important investigations in the field of electricity. His researches on the nature of the sound and electro-magnetic waves were especially valuable, and helped to make wireless telegraphy possible. Later he gave much attention to the phenomena of spiritualism, of which he became one of the leading exponents. His books include *Modern Views of Electricity, Life and Matter, Man and the Universe, Ether and Reality* and *Relativity*. On spiritualism he has written *Raymond, or Life and Death, The Survival of Man* and *Why I Believe in Personal Immortality*, the first of these a memoir of his son Raymond, killed in the Great War

Lodge **Thomas.** English dramatist. He was born about 1558, being a son of Sir Thomas Lodge, Lord Mayor of London. He was educated at Merchant Taylors' School and Trinity College, Oxford, and afterwards studied at Lincoln's Inn. He went on voyages of adventure across the Atlantic, but much of his time was spent in writing. He wrote several romances, one being *Rosalynde* which gave Shakespeare the plot of *As You Like It*, as well as some poems and translations of Latin authors. His other works include a satire. *A Fig for Momus* and a drama, *The Wounds of Civile War*. With Nathaniel Greene he wrote *A Looking Glass for London and England*. Lodge died about 1625.

Lodger One who resides in the house of another and pays for his accommodation. It has two legal significances. A lodger, if of full age, is entitled to vote at parliamentary and other elections provided he has resided in the constituency for a period of three months immediately preceding the preparation of the register. A creditor cannot seize the goods of a lodger if he levies a distress upon his landlord, whether it is for rent or for debts of any other kind.

Lodi City of Italy. It stands on the Adda, 20 m. from Milan, in the centre of a rich agricultural district. The chief building is the cathedral, dating from the 12th century. On May 10, 1796, Napoleon won a victory here over the Austrians, who were driven from their defence.

Lodz Town of Poland. It is on the River Lodka, 75 m. by railway from Warsaw. The large market square is a feature. Lodz is a centre for the manufacture of cotton and other textiles, also machinery. It has a broadcasting station (235 M., 2 kW.). Pop. (1931) 605,287.

Loess Yellowish fine-grained sandy and calcareous loam. It covers large areas in Central and South-Eastern Europe and vast tracts in China, where it occasionally forms deposits 1000 ft. thick. In the Rhine Valley the loess deposits are of fluviatile origin, but those in Northern China appear to be due to the action of wind.

Lofoden Group of islands off the coast of Norway. They cover about 1600 sq. m. and are divided into two groups. Hindö is the largest island. The chief occupation is fishing for cod, but there is some farming, although the islands are mountainous and are within the Arctic circle. Pop. 47,000.

Loftus Urban district of Yorkshire (N.R.). It is 22 m. from Middlesbrough and 259 m. from London, by the L.N.E. Rly. The chief industry is ironworking. Pop. 7631.

Log Nautical term for the appliance used to determine the speed of a vessel. In its older form the log consisted of a piece of wood, triangular in shape, attached to a line with knots at intervals of 50 ft. This was towed behind the vessel and the speed estimated by the amount of line paid out in relation to an hour-glass. The modern type of log has a spinning action which turns a pointer upon a dial.

Logan Mountain in the north-west territory of Canada. It reaches a height of 19,514 ft.



[*Air Views*

THE HEART OF THE EMPIRE

An aerial view of the Thames at Westminster, showing the Abbey and the Houses of Parliament.

Loganberry Hardy, prickly shrub of the rose order. Derived from the European raspberry and a Californian blackberry, it was hybridised by Judge Logan, 1881. It attained swift popularity, reaching Britain about 1900. Cultivated like the raspberry, its 10 to 15 ft. shoots bear in the second year fruits larger, longer and more acid than the raspberry. Loganberries are usually bottled and preserved.

Logan Rock Rounded boulder poised on a rocky base so that it readily oscillates with gentle pressure. A logan rock or stone is the result of weathering *in situ*, or may be a stranded boulder transported by ice. Logan stones occur in Cornwall, in Devonshire, and in Glamorgan at Pontypridd.

Logarithm Index of the power to which a fixed number or base must be raised to be equal to a given number. Thus if 8 is the given number and 2 the base, the logarithm of 8 is 3, as $2^3 = 8$. By the use of logarithms arithmetical calculations may be greatly shortened and for ordinary purposes common logarithms having 10 as the base are used. A logarithm usually consists of a whole number or characteristic, and a decimal fraction or mantissa, the latter only being given in tables of logarithms.

Loggia Roofed, elevated structure open on one or more sides, but forming a part of a building. It is characteristic of Italian architecture, and often incorporated in the design of English country houses.

Logia Greek word, "sayings," used as the title of an ancient collection of oracles or discourses concerning our Lord. Several 2nd-century writers mention such a collection, and the word sometimes denotes the conjectural document, often called Q, apparently used by S. Matthew and S. Luke. The word is also applied, rightly or wrongly, to two Egyptian papyrus fragments discovered at Oxyrhynchus in 1897 and 1903, professedly containing Sayings of Jesus, and two fragments of lost gospels of similar origin.

Logic Science of reasoning, or the science of the laws of thought. The earliest and most influential system of logic was that laid down by Aristotle in his *Organon*. The study was revived by Abelard and other early scholars and logic has been taught in the universities since their day. A new direction was given to it by the *Novum Organum* of Francis Bacon.

Logic may be divided into inductive and deductive. Induction is reasoning from the particular to the universal; deduction is reasoning from the universal to the particular. The products of thought are the term, the proposition or premise and the inference or conclusion. Reasoning takes the form of the syllogism which is in three parts, two statements and a conclusion. Thus a syllogism may be

All men have beards.
A is a man.
Therefore A has a beard.

All men have beards.
A has a beard,
Therefore A is a man.

The first syllogism is correct, but the second is incorrect, the fallacy being what is called an undistributed middle. A may be a monkey because the first premise does not say that all men, but no other animals, have beards.

Logogram (1) Word-sign, *e.g.*, £ and *lb.* for *pound*, *s.* for *shilling*, *d.* for *pence*; sometimes pictorial, *e.g.*, ♂ for *male*. (2) Versified puzzle comprising several words synonymously representing others derived anagrammatically from the word to be guessed. Thus from *curtain* the word *cur* may be replaced by *dog*, *run* by (a mole's) *burrow*.

Logos Greek term, "word," employed in ancient philosophy and theology. Heraclitus and the Stoics used it for the manifestation of the godhead in reason. Later Jewish thought regarded Wisdom as a divine attribute; both streams nourished the Logos doctrine of Philo. S. John defined the Logos as the Word of God incarnate (John 1.).

Logue Michael. Irish prelate. Born in Co. Donegal, Oct. 1, 1840, he was educated for the priesthood of the Roman Catholic Church and was ordained in 1866. He was made Bishop of Raphoe in 1870. In 1887 he was chosen Archbishop of Armagh and Primate of all Ireland, a post he retained until his death, Nov. 19, 1924. In 1893 Logue was made a cardinal.

Logwood Heartwood of a Central American evergreen leguminous tree (*Haematoxylon campechianum*). Imported in large billets, brownish-red externally, it contains a glucoside forming with metallic mordants blue and black dyes, used in textile dyeing and printing, and in ink-making. Its tannic acid is medicinally a mild astringent.

Lohengrin Hero of German legends. The son of Parsifal, he was one of Arthur's knights. Arthur sent him on a swan to rescue a maiden named Elsa. He did this and then married Elsa, but was taken from her by the swan, because, contrary to command, she had persuaded him to tell her whence he came. The story is the subject of a 13th century poem and around it Wagner wrote an opera.

Löhr Marie. Australian actress. Born in Sydney, July 28, 1890, she made her first appearance on the stage in 1894. In 1901 she came to London and made a reputation by acting with the Kendals, Sir H. B. Tree and Sir John Hare. From 1918 to 1925 Miss Lohr managed The Globe Theatre, London, where she produced *A Marriage of Convenience* and other plays.

Loire River of France, the longest in the country. It rises in the Cévennes and flows past Orleans, Blois, Tours, Nantes and other places to the sea at S. Nazaire. It is over 600 m. long and is famous for the chateaux that have been built on its banks. Its tributaries include the Allier, Indre and Vienne. It gives its name to two departments of France, Loire and Loire Inférieure.

Loki In Norse mythology, a giant personifying destructive fire. His offspring were the Midgard serpent, the wolf Fenris and the evil Hel. After he had caused Balder's death the gods bound him to a rock; freed at Ragnarok, he and Heimdal slew each other.

Lollards Name given to the followers of John Wycliffe. They arose towards the end of the 14th century, objected to prayers for the dead, celibacy and other church ordinances, attacked the wealth and indolence of the clergy and became a political party. Laws were passed against them and, during the reigns of Richard II. and of Henry

IV., they were persecuted and a number of them were put to death. The party died out towards the end of the 15th century, but undoubtedly its teaching prepared the way for the Reformation. The word comes from the Dutch lollen, " to sing in a low voice."

Lombard **Peter.** Italian scholar. Born at Novara about 1100, he studied at Bologna and Paris. He was influenced by Abelard and became a teacher of theology in Paris. In 1159 he was made a bishop of Paris and he died there, July 20, 1160.

Lombard is known as the author of an early work on theology, *Libri quatuor Sententiarum* or *Four Books of Sentences.* It was very popular in the Middle Ages.

Lombards People of Europe, also called the Langobardi, or long axes. Their first home was in Germany, but about 470, under Alboin, they invaded Italy and conquered much of it, including the district still called Lombardy. They had their own dukes or kings and formed an independent duchy or kingdom, the kings wearing the famous iron crown. They were in general hostile to the popes and in 774 they were defeated and subdued by the Pope's ally, Charlemagne.

Lombard Street Street in the city of London. It goes from the Bank of England to Gracechurch Street. It is named from the Lombards who lived here in the 12th century and since then has had a close connection with finance and banking. At present several of the great banks have offices in the street and the name is sometimes used for the money market.

Lombardy District of Italy. In the north of the country, it lies between Piedmont and Venetia and covers over 9000 sq. m. Milan is the capital. Except in the north, Lombardy is flat and very fertile, with much beautiful scenery, especially around Como, Garda and other lakes. Its chief rivers are the Po, the Oglio and the Ticino. Named after the Lombards, it was ruled by the dukes of Milan, but later passed to Spain and then to Austria. In 1859 it was given to Sardinia and in 1861 was included in the new kingdom of Italy.

Lombardy Poplar Tall ornamental tree of the willow order (*Populus fastigiata*). Inhabiting Persia and N.W. India from remote ages, reaching 100-150 ft., Lombardy apparently received it in post-classical times, and it spread thence. Its thin, erect branches occasion a cypress-like aspect much appreciated as a contrast to flatter vegetation. It has no economic value.

Lombok Island of the Dutch East Indies. It lies to the east of Java and covers 3060 sq. m. On it are some high mountains, but the soil in the valleys is fertile and produces rice, maize, tobacco, etc. Mataram is the chief town. It is governed from the island of Bali, separated from it by the **Strait of Lombok.** Pop. (with Bali), 1,802,146 (1930).

Lombroso **Cesare.** Italian scholar. Born at Verona, Nov. 18, 1836, he studied medicine, and in 1862 was made Professor of Mental Diseases at Pavia. Later he was director of an asylum at Pesaro and Professor of Forensic Medicine at Turin. He died Oct. 19, 1909.

In 1875 Lombroso published a book, *L'Uomo Delinquente,* which started the science of criminology and on which his fame rests. Later came *The Man of Genius, The Female Offender* and *Crime, its Causes and Remedies.* These have been translated into English. He also wrote on spiritualism.

Lome Seaport of Togoland, the capital of the French colony. There are facilities for shipping. Formerly under German rule, on Aug. 7, 1914, it was taken by the British.

Lomond Loch or lake of Scotland. The largest in the country, it lies between the counties of Stirling and Dumbarton and covers about 27 sq. m. The Leven and then the Clyde take its waters to the sea. The scenery on and around the lake is very beautiful, and it is much visited by tourists. On the loch are many islands, the largest being Inchmurrin. **Ben Lomond** overlooks the lake on the east side.

London Capital of England and of the British Empire, also a seaport and a financial, manufacturing and trading centre. It stands on the Thames, the city proper being on the north bank. It covers a good part of the County of Middlesex and extends into Surrey, Kent, Hertfordshire, Essex and Buckinghamshire.

The original London, still called the City, occupies about a square mile (677 acres) on the north side of the river. Around it is the County of London, created in 1899, consisting of the city and 28 other boroughs, and covering 116 sq. m. Outside this is another district vaguely called Greater London. The boundaries of this are uncertain and it is continually extending. It may be regarded as the district within a radius of 15 m. each way from Charing Cross, covering something like 700 sq. m. The area served by the Metropolitan Water Board covers 574 sq. m.

London possesses many buildings of historic and other interest, among them St. Paul's Cathedral, Westminster Abbey, Southwark Cathedral, the Roman Catholic Cathedral at Westminster, The Temple Church and St. Margaret's, Westminster. The Houses of Parliament are a fine pile overlooking the Thames, and near is the hall of the London County Council. The Tower of London is unique. Buckingham and St. James's palaces are in the heart of London. On its outskirts are Kew and Hampton Court palaces; Kensington is midway; Lambeth and Fulham are episcopal palaces. Greenwich and Chelsea hospitals and the group of buildings in and around the Temple have great historic interest.

The headquarters of the Bank of England, the Guildhall, the Mansion House, the Charterhouse and other historic buildings are in the city. The principal theatres are near Charing Cross. Other places of amusement include the Crystal Palace, Madame Tussaud's in Baker Street, and various fine cinema halls in and around Leicester Square and the Strand.

The largest of the central open spaces is Hyde Park and near it are the Green and St. James's parks. Richmond Park and Greenwich Park are crown property, and Hampstead Heath is the largest of scores of open spaces under the control of the London County Council. In Regent's Park are the zoological and botanical gardens. A series of bridges cross the Thames, the lowest being the Tower Bridge, below which are the docks for the shipping controlled by the Port of London Authority.

Although the great public schools have nearly all been removed to the country, London is a great educational centre. It has a university, connected with which are colleges of every kind. The London County Council maintains hundreds of schools and many endowed schools are in the suburbs. For more specialised education there are several polytechnics.

The city of London is governed by a lord mayor and corporation, as it has been for 600 years and more. The county has a county council, comprising chairman, 20 aldermen and 124 councillors. The councillors are elected every three years. The term of office for aldermen is 6 years and 10 retire every 3 years. Outside its area are many boroughs and urban districts such as Croydon, Richmond, Walthamstow, Tottenham and others.

The greatest manufacturing and distributing city in the world, London's factories and workshops produce goods of almost every kind. Fancy goods, furniture, clothing and foodstuffs are prominent, but motor cars and other heavy articles are also made. The city of London is the headquarters of the world's financial system and in it the banks and financiers of every nation are represented.

London is the centre of the country's railway system and contains the great termini of Paddington, Waterloo, Charing Cross, Euston, Marylebone, St. Pancras, King's Cross and Liverpool Street. The electric railways are chiefly underground tubes. There are canals and the river below the Tower Bridge has tunnels for foot passengers and vehicles. There are airports at Waddon and Hanworth. London is the broadcasting centre for the British Isles. London Regional broadcasts are made on a wave-length of 342.1 M.; London National on a wave-length of 261.1 M. The population of the county in 1931 was 4,396,822 and of Great London, 8,202,818.

London City of Ontario. It is on the Thames, 120 m. from Toronto and is served by the two transcontinental lines, C.N.R. and C.P.R. There are a number of manufactures and here are railway repairing shops. It has two broadcasting stations (62.56 M. and 34.68 M.). Pop. (1931) 71,022.

London Declaration of. International naval agreement. It was drawn up at a conference held in London in 1908-09 and dealt with the law about blockade and other matters that arise in time of war. All the great naval powers signed it, but as it had not been ratified when the Great War began, its provisions never became operative.

London Port of. Term used for the part of the Thames used as a seaport. It is controlled by a body called the **Port of London Authority**, which has its office in Trinity Square, E.C.3. It consists of a chairman, vice-chairman and members chosen by various interests, such as the London County Council and the Board of Trade. It controls the tidal waterway of the Thames between Havengore Creek in Essex and Teddington.

The authority was created in 1909 when it bought the London docks from various companies for about £32,000,000. It has added to these and the dock area is now about 4200 acres. The largest docks are the Surrey Commercial, the West India, the Millwall, the East India, the Royal Victoria and Albert, the King George V. and those at Tilbury.

London University of. Educational centre in London. It was founded in 1836 and was at first an examining body only. Later it became a teaching body also and in 1900 it was reorganised. The university consists of 36 colleges and schools, the chief being University College, Gower Street, and King's College, Strand. Others are the Imperial College of Science and Technology, the London School of Economics, Birkbeck College, East London College, Bedford College and the Royal Holloway College. Recent additions are the Constauld Institute of Art and the Institute of Historical Research. The organisation also includes several medical schools and theological colleges. It is governed by a chancellor, and vice-chancellor, chairman of convocation and senate. The headquarters are in the Imperial Institute, South Kensington, but new buildings are planned on a site in Bloomsbury. The university has athletic grounds at Motspur Park, near Worcester Park, Surrey.

London Jack. American novelist. Born in San Francisco, Jan. 12, 1876, he started upon a career of adventure by digging for gold in Klondike. Afterwards he travelled over a good part of North America on foot, worked as a seaman and, in 1904-05, London served as a war correspondent in Manchuria. About 1900 he began to write and his books became very popular. He put into them much of his own adventurous career and a remarkable knowledge of certain forms of animal life. They include *A Daughter of the Snows, The Call of the Wild, White Fang, Martin Eden, The Mating of the Elsinore* and *Night Born.* He died Nov. 22, 1916.

London Gazette The. Official organ of the British government. It appears twice a week, on Tuesday and Friday, and contains proclamations and official announcements generally. For Scotland a similar purpose is served by *The Edinburgh Gazette*, and for Northern Ireland by *The Belfast Gazette*.

London Museum Collection of objects relating to the history of London. The objects are arranged in chronological order and begin at very early times. They cover every phase of London life, not excluding dress, toys and the like. The Museum was founded in 1912 and is housed in Lancaster House, presented to the nation by the 1st Viscount Leverhulme.

Londonderry County of Northern Ireland. In the province of Ulster, it has a coastline on the north and covers 816 sq. m. The land is fairly level except in the south. The Roe, Foyle and Bann are the chief rivers. The chief town is Londonderry. Other places are Coleraine, Limavady and Dungiven. Castlerock, Port Stewart and Downhill are watering places. The old name of the county was Derry, still frequently used. London was prefixed to it in 1609 when the corporation of the city acquired large estates therein. Pop. (1926) 94,511.

Londonderry City, seaport and market town of Co. Londonderry, Northern Ireland, also the county town. It stands on the Foyle where it falls into Lough Foyle, 95 m. from Belfast. There are some industries, among them flour milling, bacon curing and linen manufacturing, but shipping also is important. From here produce is sent to the ports of England and Scotland.

Derry, as it is called, is a city of great historic interest. It was a fortified town and its gates and walls still stand. The chief event in its history is the heroic defence against the

troops of James II. in 1689, an event still commemorated in the city. Pop. (1926) 45,159.

Londonderry Marquess of. British title held by the family of Vane-Tempest-Stewart. In 1789 **Robert Stewart,** an Irish landowner, was made a baron and in 1816 Marquess of Londonderry. His son was the politician known as Viscount Castlereagh (*q.v.*), who became the 2nd marquess. His half brother, **Charles William,** the 3rd marquess, married the heiress of the families of Vane and Tempest and secured their estates in Durham and Yorkshire. **Frederick William,** the 4th marquess, who succeeded in 1854 had been an M.P. for over 20 years.

In 1884 **Charles Vane-Tempest-Stewart** became the 6th marquess. He was Lord Lieutenant of Ireland, 1886-89, and as a Unionist politician was Postmaster-General, 1900-02, and President of the Board of Education, 1902-05. He died Feb. 8, 1915, when his son, **Charles Henry,** became the 7th marquess. He was an M.P., 1906-15. In 1921 he became Minister of Education for Northern Ireland, a post he held until 1926. In 1928-29 he was in the Unionist ministry as First Commissioner of Works and in 1931 he became Secretary for Air in the national government. The seats of the marquess are Wynyard Park, Durham, and Mount Stewart, Co. Down. His eldest son is called Viscount Castlereagh.

London Pride Hardy perennial herb of the saxifrage order, native in Ireland and S.W. Europe (*Saxifraga umbrosa*). Naturalised throughout Britain, an old favourite in cottage-gardens and rockeries, especially in moist situations, its rosettes of tough, ovate, coarsely-toothed, stalked leaves, 1½-2 in. across, surround a single leafless 6-12 in. stalk bearing small white ¼ in. flowers, sometimes red-spotted.

London Stone Fragment of an ancient carved stone preserved in the wall of S. Swithin's Church, Cannon Street, London. It is supposed to be a portion of a Roman *milliarium,* or the centre from which distances were measured on the roads in Roman Britain. In support of this hypothesis there is, however, no direct evidence.

Long Lake or loch of Scotland. It is a sea loch, opening on the west coast between the counties of Argyll and Dumbarton. It penetrates for 17 m. into the land.

Long Viscount. English politician. Walter Hume Long was born July 13, 1854, at Bath, was educated at Harrow and Christ Church, Oxford, and inherited estates in Wiltshire. He began his parliamentary career in 1880 as Conservative member for North Wiltshire, and although he changed his constituency several times, he retained his seat in the House of Commons until 1921, when he was created a peer. He was President of the Board of Agriculture, 1895-1900 and of the Local Government Board, 1900-05. In 1905 he was for a short time Chief Secretary for Ireland. In 1915, under the Coalition ministry, he was again President of the Local Government Board, in 1916 Colonial-Secretary, and in 1919-21 First Lord of the Admiralty. He died Sept. 26, 1924, having been created Viscount Long of Wraxall in 1921. He lost his elder son, Brig.-Gen. Walter Long, C.M.G., D.S.O., in the Great War, and was succeeded in his title by his grandson.

Longbenton Urban district of Northumberland, also known as Benton. It is 4 m. from Newcastle and 273 m. from London by the L.N.E. Rly. Here are stone quarries and coal mines. Pop. (1931) 14,072.

Longchamps Racecourse of Paris. It is in the Bois de Boulogne and here the race called the Grand Prix is run. There are slight remains of an abbey here.

William de Longchamps was chancellor of England in the time of Richard I. He died Jan. 31, 1197.

Longcloth Plain cotton fabric. It was woven originally in long pieces, hence its name. Longcloth usually is bleached and is of heavier quality than cambric. It is used chiefly for making shirts and underclothing, the lower grades being woven from American cotton and the finer qualities from the best Egyptian cotton.

Long Eaton Urban district and market town of Derbyshire. It is 7 m. from Nottingham, on the L.M.S. Rly. The town is a centre of the lace manufacture and has engineering works and other industries. Pop. (1931) 22,339.

Little Eaton is a village 3 m. from Derby, on the L.M.S. Rly.

Longfellow Henry Wadsworth. American poet. Born at Portland, Maine, Feb. 27, 1807, the son of a lawyer, he was educated at Bowdoin College, New Brunswick. There, in 1829, he became Professor of Languages, after three years' study in Europe. In 1836 he moved to Harvard to become Professor of Modern Languages and Belles-Lettres. There he remained until 1854 when he retired. He died at Cambridge, Mass., March 24, 1882.

Longfellow is America's most popular poet, and enjoyed almost equal popularity in Britain. He excelled in narrative poems, expressed in simple and exquisite language. His greatest work is probably the unique *Song of Hiawatha, Evangeline* and *The Golden Legend* coming next. *Tales of a Wayside Inn* may also be mentioned. His short poems include such favourites as *A Psalm of Life, Excelsior* and *The Village Blacksmith.* He translated Dante's *Divine Comedy* and pieces from German poets.

Longford County of the Irish Free State. In the province of Leinster, it covers 420 sq. m. The Shannon forms its western boundary. Longford and Granard are the chief towns. The soil is fertile except in the north where there are bogs; cattle and horses are reared. The Royal Canal passes through the county. Pop. (1926) 39,847.

The title of **Earl of Longford** has been borne since 1785 by the family of Pakenham. The fifth earl was killed in Gallipoli in 1915. The Earl lives at Pakenham Hall in Westmeath and his eldest son is called Lord Silchester.

Longford Market and county town and urban district of the county of the same name, Ireland. It is 75 m. from Dublin, on the River Camlin and is served by the Gt. Southern Rlys. Here are tanneries and corn mills. Pop. 3760.

Longford Village of Wiltshire. It is on the River Avon, 3½ m. from Salisbury. Here is a castle built in the 16th century and restored in the 19th. It contains a wonderful collection of pictures and is the seat of the Earl of Radnor.

Longhorn English breed of cattle with long down-curved or up-

turned horns. Especially developed in 18th-century Leicestershire they became widespread in Britain, being gradually displaced as short-horns improved. The prevailing colour is black or brown, with a white stripe down the back. They are good beef cattle, and the cows fair milkers.

Long Island Island of the United States. It lies close to the east coast and is part of the state of New York. The East River divides it from Manhattan on which the city of New York stands and Long Island Sound is an opening on its north side. It is 118 m. long and covers 1680 sq. m. Long Island has become practically a suburb of New York. On it are Brooklyn, which is part of the city, also Coney Island and other pleasure resorts. It contains golf courses, race-courses, country clubs, motor tracks, and aviation grounds. Some part of it is cultivated, but much of it is woodland. It has two broadcasting stations (62.5 M. and 34.68 M.).

Longitude Term applied to the angular distance of the meridian of a place from some given meridian. That of Greenwich Observatory is the usual one adopted. For geographical purposes the earth's surface is divided into circles of longitude, and distances in degrees are numbered east or west of the meridian of Greenwich.

Longleat Residence of the Marquess of Bath. It is in Wiltshire, 3 m. from Warminster, and is one of the finest houses in the country. It is in the Italian style and dates from the 16th century, but additions were made in the 19th. Features of the house are the hall and a picture gallery which contains a priceless collection of portraits.

Long Parliament Name used for the parliament that carried on the Civil War. It met on Nov. 3, 1640, and was responsible for the policy that led to the war, for the appointment and dismissal of the generals and the execution of the king. It instituted many constitutional changes, but most of them were temporary only. In 1649 the Presbyterian members were expelled, but the others remained sitting until April, 1653, when Cromwell turned them out. In May, 1659, the surviving members were again called together and the parliament sat until dissolved on March 16, 1660. William Lenthall was speaker of the parliament from 1640 to 1653. The acts of the Long Parliament after 1642, being unconstitutional, are not on the statute book.

Longport Variety of English chinaware. It takes its name from Longport, near Burslem, where it was made in the 18th and 19th centuries. It is a porcelain with a hard transparent body beautifully decorated.

Longridge Urban district of Lancashire. It is 7 m. from Preston, on the L.M.S. Rly. The main industry is cotton spinning. Pop. (1931) 4158.

Longton District of Stoke-on-Trent. On the L.M.S. Rly., it is a centre of the pottery industry, and was a separate borough until it was incorporated in 1910 with Stoke-upon-Trent (*q.v.*).

Lonsdale **Earl of.** English title borne by the family of Lowther. In 1696 Sir John Lowther, a rich baronet in Cumberland, was made a viscount, but the title became extinct in 1750. His estates came to Sir James Lowther who, in 1784, was made Earl of Lonsdale, but this title became extinct when he died in 1802. In 1807 Sir William Lowther was made Earl of Lonsdale and from him the present earl is descended. **Hugh Cecil Lowther,** who, in 1882, became the 5th earl, has won a great reputation as a sportsman. His seat is Lowther Castle, Penrith.

Lonsdale **Frederick.** English dramatist. Born, Feb. 5, 1881, he began to write for the stage and soon became known as a dramatist. His successes include *The King of Cadonia, The Best People, Maid of the Mountains, The Last of Mrs. Cheyney* and *Canaries Sometimes Sing.*

Looe Urban district, seaport and watering place of Cornwall. It stands where the River Looe flows into Looe Bay, 16 m. from Plymouth, on the G.W. Rly. There is shipping and fishing; the sands and bathing are good and there is some yachting. Looe Island in the river was once famous for its smugglers. Pop. (1931) 2878.

Loofah Vegetable bath sponge. It is derived from the cylindrical fruit of various species of tropical annual climbing herbs of the gourd order, notably in Egypt and Japan. Sometimes 2-3 ft. long, a tough fibrous network encases the seeds. These having been macerated and the cuticle removed, the fibre serves as a flesh brush.

Loom Machine used for weaving textile fabrics. In the simplest form of weaving one set of threads running the whole length of the fabric and known as the warp, is manipulated so as to pass alternately over and under a crosswise set known as the weft. The simple handloom has been replaced by the power loom first introduced by Cartwright in 1785-87, and a further improvement was effected when automatic action was introduced by Jacquard, about 1801.

Looping Term in aeronautics for a manoeuvre used chiefly for display. In it, after the aeroplane has dived, it turns over in a circle or loop, the pilot sitting on the inside of the circle. In a variation of this feat, the **inverted loop,** the movement is in the opposite direction with the pilot on the outside.

Loos Village of France. It is 3 m. from Lens and is a coal mining centre. It was destroyed during the Great War, but has since been rebuilt.

Battle of Loos. The village gives its name to a battle of the Great War, fought Sept. 25-Oct. 13, 1915. The object of the Allies was to recover Lens and the surrounding coal mines from the Germans. The main attack was made between Lens and La Bassée, by a British and a French army, with subsidiary movements elsewhere. The advancing troops were at first very successful, Loos itself was entered by a London division and the German front was broken, but for several reasons the gains could not be held. On the next day (Sept. 26) German reserves arrived and there was some fierce fighting, which continued on the 27th. Incidents were the attack of the Foot Guards on Hill 70 and the French attempts to take Souchez. The battle proper ended on the 28th, but there was a good deal of fighting until Oct. 13. Some of the gains, including Loos, were retained by the Allies, but at a tremendous cost. The British lost perhaps 60,000 out of 250,000 engaged.

Loosestrife Perennial herbaceous plant of the order *Lythraceae.* The purple loosestrife (*L. salicaria*) is common

on river banks and in marshy places. It is 4 or 5 ft. in height with branching stems, lance-shaped leaves and spikes of brilliant purplish flowers. Another variety is *L. vulgaris* which bears clusters of yellow flowers.

Lorca City of Spain. It is 41 m. from Murcia and has some old buildings, including a Moorish castle. Lead and silver are found in the neighbourhood. Murcia is a manufacturing and trading centre, and around the old town are modern suburbs. Pop. 74,700.

Lord Title of honour. In Great Britain it is used for all peers; earls, viscounts and barons are addressed informally as Lord so-and-so. Another kind of lords are the law lords, who hold life peerages. Bishops as lords of parliament are also addressed as "my lord."

In Scotland judges of the upper house of the court of session are known as lords, although they do not sit in Parliament, and the younger sons of dukes and marquesses are addressed as lord with the Christian name. Lord of the manor is a territorial distinction, not a title; a variant is the Scottish laird. The feminine of lord is lady.

Lord Advocate Chief law officer of the crown in Scotland. He is usually an advocate of distinction and corresponds to the attorney-general in England. He is a member of the ministry, usually with a seat in the House of Commons. His office is in Edinburgh and he is responsible for public prosecutions in Scotland.

Lord Chamberlain Officer in the royal household of Great Britain. He has charge of the king's household above stairs and ranks immediately next to the lord steward. He is invariably a peer, and until the time of George V. was a member of the ministry. The lord chamberlain also acts as the censor of plays, a duty he took over in 1624 from the master of the revels. The symbols of his office are a white wand and a key. The queen's household also has a lord chamberlain.

Lord Chief Justice Name given to the president of the king's bench division of the high court of justice. He ranks next to the lord chancellor and is usually made a peer on appointment. A similar office exists in other English speaking countries; in the United States the supreme court is under a chief justice.

Lord Great Chamberlain Officer of state in Great Britain. He is the sixth great officer of state, but his duties have mainly passed to others. He is the keeper of the palace of Westminster and has duties at the opening of parliament and the coronation. The office was long held by the great family of de Vere. It is now held by the Earl of Ancaster, the Marquess of Cholmondely and the heirs of the Marquess of Lincolnshire, each acting for a reign. The Marquess of Lincolnshire was lord great chamberlain when George V. became king; on his death it was decided that his son-in-law, Viscount Lewisham, should undertake the duties.

Lord High Chancellor High official in Great Britain. The keeper of the great seal, ranking just after the Archbishop of Canterbury, he is a member of the government of the day, and by virtue of his position is president of the House of Lords, both as a legislative and as a judicial body. He reads the king's speech when the king is not present and is the head of the judicial system. His duties are to advise the king about the appointment of judges and magistrates and on matters concerning the administration of justice. The office originated in very early times. *See* CHANCELLOR.

Lord High Steward In England a great officer of state. The office is a very old one. He was originally concerned with looking after the royal table, but now has duties only at a coronation or the trial of a peer. There is no regular holder of the office, but when either occasion arises a lord steward is chosen.

Lord in Waiting Nobleman in attendance on the king. They are six in number and take it in turns to be in attendance. Until 1924 they were members of the political party that was in power and were changed with every change of government. To-day three of them are politicians and three are not.

Lord Keeper In England, until the 18th century, one of the great officers of state. He was the keeper of the great seal and as such acted as the deputy, or assistant, to the lord chancellor.

Lord Lieutenant Official who represents the sovereign in each of the counties of England, Wales, Scotland and Northern Ireland. Formerly they raised men for defending the country and later they were given charge of the militia. When the army was remodelled in 1907 the lord lieutenant became the president of the county association of the territorial force. He is appointed for life and appoints deputy lieutenants to assist him. He is also the keeper of the records, or *custos rotulorum*, for the county. The appointment is for life. There was a lord lieutenant of Ireland until 1922.

Lord Mayor Title of the chief magistrate in London, York, and other cities of England and Wales. London has had a lord mayor since early times; he is elected every year from among the aldermen, and is usually made a baronet on retirement. During his term of office he lives at the Mansion House. The day of his installation, Nov. 9, is marked by a procession through the streets of London, called the Lord Mayor's Show, which has been held since 1215. In the evening there is the banquet at the Guildhall at which leading statesmen usually speak.

York has had a lord mayor for several centuries, but the other holders of this title have been granted it by the king since 1887. These include Birmingham, Burford, Bristol, Hull, Leeds, Liverpool and Manchester, Norwich and Sheffield. Leicester, Nottingham, Portsmouth and Stoke were given the honour in 1928. In Scotland the corresponding title is lord provost.

Lord President of the Council. In Great Britain one of the great officers of state. He presides over meetings of the privy council, but has few other duties. He is usually a politician and a member of the Cabinet, and the custom has grown up of giving the office to a senior member of the ministry who is free to undertake duties of a general nature. In the Labour ministry of 1929-31 Lord Parmoor, leader of the Government in the House of Lords, was lord president; in the National Government formed in 1931 the

post was given to Mr. Stanley Baldwin, and in the reconstructed Cabinet of June, 1935, to Ramsay MacDonald who retained it after the Election in Nov. 1935.

Lord Privy Seal In Great Britain a high officer of state. He was the keeper of the king's privy seal and his duty was to affix this to the necessary documents. These were then passed on to the lord chancellor, or the lord keeper, for the great seal to be impressed upon them. These duties ended in 1884.

To-day the lord privy seal is a member of the Cabinet without departmental duties. In the Labour ministry of 1929-31, the lord privy seal was given the task of dealing with unemployment. Viscount Halifax was appointed Lord Privy Seal in 1935.

Lord's Cricket ground in London. It is in S. John's Wood, belongs to the M.C.C. (Marylebone Cricket Club) and is regarded as the headquarters of the game. Middlesex home matches are played here: also test and other important matches such as Oxford and Cambridge, and Eton and Harrow. It takes its name from Thomas Lord, who founded it in 1814.

Lords **House of.** Upper house of the legislature of Great Britain; also the supreme court of law. It arose from the council of barons summoned by the king to advise him on affairs of state. After a time the greater barons separated from the lesser barons and the commons, and with the bishops and abbots became the House of Lords, but the term itself was not used for it until 1544.

To-day the house consists of two classes, the lords temporal and the lords spiritual. The former number some 700 and are divided into five classes, dukes, marquesses, earls, viscounts and barons. The latter consists of the 2 archbishops and 24 bishops. In addition there are a few law lords who are peers for life only.

The basis of membership is heredity. Each member, save only the bishops and the law lords, is the holder of an hereditary title, which carries with it the right to a seat in the House of Lords. Peeresses in their own right are not allowed to sit. The speaker, or chairman of the House, is the lord chancellor and his deputy is the chairman of committees. Its procedure is very like that of the House of Commons. Some members of the Cabinet sit in the House of Lords, but of late years the number of these has decreased.

For a long time the houses, Lords and Commons, were equal in power, but, in the time of Charles II., the power of the Lords over finance was definitely curtailed. In 1911, by the Parliament Act, the House was made subservient to the House of Commons. Now it can only delay, not utterly reject, legislation passed by the Commons. From time to time proposals for reforming the House of Lords, generally by introducing an elective element, have been put forward, but, so far, none has been accepted.

Lord's Day **Observance Society.** *See* SABBATH.

Lord's Prayer Model of prayer given by Jesus to his disciples (Matthew vi., Luke xi.). The Revised Version omits Matthew's doxology, a liturgical addition of Jewish origin, adopted in the 1st-2nd century *Teaching of the Twelve Apostles*. The prayer appeared in early Christian liturgies. The Anglican Prayer-book version, with or without the doxology, follows the Great Bible of 1539.

Lord Steward Official of the royal household. He is responsible for the management of the household below stairs, *i.e.*, all that concerns the catering and domestic arrangements of the royal residences. Until 1924 the office was held by a politician and the holder resigned with other members of the ministry. Many of the duties formerly discharged by the lord steward are now undertaken by the master of the household.

Loreburn **Earl.** British politician. Robert Threshie Reid was born April 3, 1846, a son of Sir J. T. Reid, and was educated at Cheltenham College and Balliol College, Oxford, where he played cricket for the university. He became a barrister, was elected Liberal M.P. for Hereford (1880) and in 1886 was returned for his own county, Dumfriesshire. In 1894 Reid was made solicitor-general and then attorney-general, but he was out of office from 1895 until 1905. In that year he was chosen lord chancellor and created a baron. In 1911 he was made an earl and in 1912 he retired from active political life. He died Nov. 30, 1923, when his title became extinct.

Loreto City of Italy. It is near the coast 15 m. from Ancona, and is a famous place for pilgrimage. The object of veneration is the Santa Casa, or "sacred house," a building said to have been the home of the Virgin Mary at Nazareth, miraculously transported here. The building is protected by a marble screen. Over it a fine Renaissance church has been built. Pop. 8000.

Loretto Scottish public school. It is at Musselburgh, 6 m. from Edinburgh, and was founded by H. H. Almond in 1861. There is accommodation for about 200 boys. The school is famous for its output of Rugby footballers and its Spartan régime.

Lorient Seaport and naval station of France. It stands on the coast of Brittany, 30 m. from Vannes, and has yards for building and repairing warships, works for making guns and armour, barracks and other establishments. Lorient was formed in 1664 by the French East India Company, hence the name, which means "the East." Pop. 42,853.

Lorimer **John Henry.** Scottish painter. Born at Edinburgh in 1856, the son of Professor James Lorimer, he was educated there and studied art at the Royal Scottish Academy. He began as a portrait painter, but later made a reputation with his subject pictures. In 1900 he was made a member of the Royal Scottish Academy.

Lorimer **Sir Robert Stodart.** Scottish architect. Born Nov. 4, 1864, he was educated at the University of Edinburgh, became an architect and won a reputation chiefly in domestic works. His later genius is well seen in the national war memorial in Edinburgh Castle and the chapel of the Knights of the Thistle in S. Giles Cathedral, Edinburgh. His honours included a knighthood (1911) and membership of the Royal Scottish Academy. He died Sept. 13, 1929.

Loriner Old name for a seller of harness and trappings for horses, also spelt lorimer. The **Loriners' Company** is one of the London livery companies. Its offices are at 13 S. Swithin's Lane, E.C. 4.

Lorne District of Argyllshire. It lies between Loch Awe and the sea coast. The Firth of Lorne separates it from the Island of Mull. The eldest son of the Duke of Argyll is called the Marquess of Lorne.

Lorraine District of France. It is in the east of the country between Luxembourg and Alsace, and formed part of the district of Alsace-Lorraine which was a German possession from 1871 to 1919.

Lorraine owes its name to Lothair who was its first king in the 9th century. Soon it was seized by France, but later became part of Germany. It was ruled by dukes who were vassals of the German king until 1542, when one of them made himself independent. Soon, however, it passed under the control of France and its dukes were subject to the King of France. Their line died out in 1736, when Stanislaus, the exiled King of Poland and the father-in-law of Louis XV., was made duke. In 1766 he died and the duchy passed to France who retained it until 1871.

The old duchy was much larger than the present district. Until 1871 it included Nancy, which was its capital. In the early Middle Ages it included Brabant, then called Lower Lorraine. Its chief town is now Metz. Its chief river is the Moselle and it is mainly covered by the department of Moselle.

Lory Subfamily of Austromalayan brush-tongued parrots. Pigeon-sized and smaller, of brilliant plumage, sometimes broad-tailed, they have sharply-pointed wings. The purple-capped, red-tailed *Lorius domicella* of the Moluccas, with yellow gorget, fruit-eating and honey-eating, is frequently tamed for its unrivalled ventriloquism. The New Guinea black-capped lory lacks the yellow gorget.

Los Angeles City and seaport of California. In the south of the state, it is 350 m. from San Francisco and covers nearly 500 sq. m. It is well served by railways and air services and is laid out on modern lines with wide thoroughfares and high buildings in the central part. In the city is the University of Southern California. A huge stadium was erected for the Olympic Games of 1932. Water is brought by an aqueduct from the hills 230 miles away and electric light and power are generated. The city has a service of electric railways.

Los Angeles is known for its association with the film industry which is centred mainly in the districts known as Hollywood and Culver City. There is a harbour at the mouth of the river and a large trade in fruit. The manufactures include motor vehicles, while oil refining is another important industry. There are large railway shops and printing works. Pop. (1930) 1,238,018.

Lossiemouth Burgh, seaport and watering place of Moray, Scotland. It stands where the River Lossie enters the Moray Firth, 5 m. from Elgin, on the L.N.E. Rly. There is a harbour, and fishing is the principal industry. The burgh consists of three villages, Lossiemouth, Branderburgh and Stotfield. Pop. 4166.

Lost Tribes **The.** Ten Tribes of Israel. They were carried into captivity by the Assyrian King Sargon at the fall of Samaria, 722 B.C. The other two tribes, deported to Babylon at the fall of Jerusalem, 586 B.C., returned 50 years later, but the ten disappeared from history.

Lostwithiel Borough and market town of Cornwall. It stands on the Fowey, 21 m. from Truro, on the Gt. W. Rly. Lostwithiel was at one time a centre of the tin mining industry. The stannary courts were held here, and here was the stannary prison. Pop. (1931) 1325.

Lot Son of Abraham's brother, Haran (Gen. xiii., xiv., xix.). Accompanying his uncle from Mesopotamia, he chose as his land the Jordan valley near Sodom. The story of the flight from the doomed cities of the plain and his wife's death became a favourite warning in Jewish domestic life.

Lothian District of Scotland. It stretched from the Cheviot Hills to the Forth, and was at one time part of the English kingdom of Northumbria. In 1018 it was taken by Malcolm II., King of the Scots, and was thenceforth a part of Scotland. The Lothians now include the three counties of Linlithgow or West Lothian, Edinburgh or Midlothian and Haddington or East Lothian. The Royal Scots was formerly called the Lothian Regiment.

Lothian **Marquess of.** Scottish title borne by the family of Kerr. In 1606 Mark Kerr, a lord of session, was made Earl of Lothian. Robert, the 4th earl, was made a marquess and from him the present marquess is descended. Philip Henry Kerr, the 11th marquess, was born, April 18, 1882, and educated at the Oratory School, Birmingham and at New College, Oxford. He was editor of *The Round Table*, 1910-16, and secretary to D. Lloyd George, 1916-21. In 1930 he succeeded a kinsman in the title. In Aug., 1931, he was made Chancellor of the Duchy of Lancaster in the National Government, but he only held office for a few weeks. He went to India as chairman of one of the committees appointed to deal with matters concerning the future government of that country. His seats are Newbattle Abbey, near Edinburgh and Blickling Hall, Norfolk. The fine library at Blickling was sold in 1931.

Loti **Pierre.** Name taken by the French writer, Louis Marie Julien Viaud. Born Jan. 14, 1850, he entered the navy in 1867. In 1879 he appeared as a novelist, and he made a reputation in 1880 with *Le Mariage de Loti*. Many others, stories of adventure, followed, one of the most popular being *Le Pêcheur d'Islande*. Others are *Le Roman d'un Spahi*, *La Galilée* and *L'Inde* (*sans les Anglais*). In 1891 he was elected to the Academy and he died, June 10, 1923.

Lotion Fluid preparation for cleansing or healing the body's outer surface. Distinct from a liniment because not oily, and from a fomentation because not hot, it is usually applied on lint. It may be antiseptic, *e.g.*, boric acid; cleansing, *e.g.*, black-wash; astringent, *e.g.*, Goulard's water; soothing, *e.g.*, baking soda; cooling, *e.g.*, vinegar and water.

Lottery Award of money or other prizes as the result of lot or chance. Since 1826 lotteries have been illegal in Great Britain; before that time they were used to obtain money for the state, as they still are in several European countries. Sweepstakes and raffles come under the heading of lotteries, and are, therefore, strictly speaking, illegal in Great Britain, though not in the Irish Free State. A competition is a lottery only if chance is the deciding factor in awarding the prizes. Most of the competitions conducted by the newspapers and periodicals are arranged so that they contain an element of skill and are therefore, technically, legal.

Lotus Classical name of various plants. It includes the jujube-tree associated with the lotus-eaters, and the sacred water lilies, *Nymphaea lotus*, of Egypt and *Nelumbaum speciosum* of India.

The lotus is also the name of a large cosmopolitan genus of leguminous herbs and undershrubs. Four British species include the yellow bird's foot trefoil, sometimes red-streaked, of which a cultivated double-flowered form occurs.

Loubet Émile. French statesman. Born, Dec. 31, 1838, at Marsanne, he was the son of a small farmer who was, for many years, mayor of the town. He became a lawyer at Montélimar and soon took part in local affairs. In 1876 he was elected a deputy and in 1885 he was made a senator. Having been Minister of Public Works, 1887-88, he became Premier in 1892. In 1895 he was elected President of the Senate and from 1899 to 1906 he was President of the Republic. He died Dec. 20, 1929.

Loudoun Earl of. Scottish title. In 1633 John Campbell was created Earl of Loudoun. James Mure Campbell, the 5th earl, died in 1786, when the title passed to his daughter, Flora, who later married the Marquess of Hastings. Until 1868 the earldom was held by succeeding Marquesses of Hastings. In 1868 the marquessate became extinct, so the earldom of Loudoun passed to a woman, as it did again in 1920 when Charles Edward Hastings, the 11th earl, died.

Loudoun is a parish near Kilmarnock in Ayrshire. Therein is Loudoun Castle, the old seat of the earls and countesses.

Loud Speaker Apparatus for converting the electric energy in a wireless receiver into generally audible sound vibrations. Two main types are made, the cone type being a megaphone attachment to a telephone, the moving-coil type having permanent magnets between which the coil carrying the current moves. Loud speakers are used in broadcast reception and generally for announcements in public.

Lough Word used in Ireland for a lake, or loch. There are both inland loughs, as Lough Neagh, and loughs that are arms of the sea, as Carlingford Lough.

Loughborough Borough and market town of Leicestershire. It stands on the Soar, 10 m. from Leicester and 110 from London, on the L.N.E. and L.M.S. Rlys. The war memorial is a bell tower in Queen's Park with a fine carillon. The chief industries are the making of hosiery and electrical goods and bell founding. Pop. (1931), 26,945.

Loughrea Market town of Co. Galway, Irish Free State. It stands on Lough Rea, 118 m. from Dublin, on the G.S. Rlys., and has a trade in agricultural produce. Pop. 2800.

Loughton Urban district of Essex. It is 12 m. from London, on the L.N.E. Rly. In former times the inhabitants had the right to cut firewood in Epping Forest, which adjoins the town, and the Lopping Hall, built in 1883, is a reminder of this practice. **Loughton Hall** stands on the site of a famous Tudor mansion. Pop. (1931), 7390.

Louis Old French coin, in full the Louis d'or. A gold coin, it was first coined in 1640 and named after Louis XIII. It was worth about 16s., and was coined regularly until 1787. Later the napoleon of 20 francs was sometimes called the Louis.

Louis Name of four rulers of the mediaeval or Holy Roman Empire, called by the Germans, Ludwig. **Louis I.**, a son of Charlemagne, succeeded to a vast inheritance when his father died in 814. His reign was troubled by quarrels between his sons, who divided his realm at his death, June 20, 1840. **Louis II.**, a son of Lothair I., was emperor from 855 to 875: and **Louis III.**, a grandson of Louis II., from 901 to 905. He was then deposed and blinded, and lived at Arles until his death in Sept., 928.

Louis IV. was Duke of Bavaria when he was elected Emperor in 1314. He was crowned Emperor in Rome in 1328, and in spite of much opposition held his own until his death, Oct. 11, 1347.

Louis Name of eighteen kings of France. The first five were descendants of Charlemagne. The next Louis, **Louis VI.**, called the Fat, was a king of the Capetian family. He reigned from 1108 to 1137. His son, **Louis VII.**, reigned from 1137 to 1180. He was the rival of Henry II. of England who married his divorced wife, Eleanor of Aquitaine, and so became ruler of a good deal of France. **Louis VIII.**, a son of Philip Augustus, reigned from 1223 to 1226. Before his accession he had invaded England in the reign of King John. The other kings of this name are noticed separately.

Louis IX. King of France, called S. Louis. Born April 25, 1214, he was a son of Louis VIII. and Blanche of Castile. In 1226 he became king, and for a time his mother was regent. When he came of age he carried on a war against Henry III. of England, and did a good deal to strengthen the position of the throne. From 1248 to 1254 he was absent on a crusade. In the next eighteen years he won his reputation as a lawgiver and a saint, having established the Sorbourne in Paris, issued a new code of laws, set up courts of justice and effected many other improvements. In 1270 he went on his second crusade, but as soon as he reached Tunis he died of the plague, Aug. 25, 1270. In 1290 he was canonised and his life was written by the historian Jean de Joinville.

Louis X. King of France. A son of Philip IV., he was born Oct. 4, 1289. In 1314 he became king, but he only reigned for two years as he died June 5, 1316. His successor was his brother, Philip V.

Louis XI. King of France. A son of Charles VII., he was born at Bourges, July 3, 1423. In 1461 he became king and reigned for 22 years. At home he did a great deal to make the crown stronger and the nobles weaker; abroad he was occupied with wars and intrigues with Charles the Bold and Edward IV. of England. In 1468 he was taken prisoner by Charles, but released three days later.

Louis has won fame as one of the craftiest of kings, using cunning rather than arms to discomfit his foes. In his later years he became very superstitious and lived in retirement at Plessis les Tours. He died there Aug. 30, 1483. His successor was his son, Charles VIII. Louis is pictured by Scott in *Quentin Durward*.

Louis XII. King of France. A son of Charles, Duke of Orleans, he was born in 1462. He became Duke of Orleans, married a daughter of Louis XI.,

and took some part in politics and in war. Later he was recognised as heir to the childless king Charles VIII., whom he succeeded in 1499. Louis reigned for 15 years, some of which were spent warring in Italy, where he conquered, but could not hold, a good deal of the country. He died Jan. 1, 1515, having gained the title of father of his people. Louis married, as his second wife, Anne, Duchess of Brittany, and as his third, Mary, daughter of Henry VII. of England. He left no sons, and his successor was Francis I.

Louis XIII. King of France. A son of Henry IV. and Mary de' Medici, he was born Sept. 27, 1601, and became king nine years later. For some years his mother acted as regent, but in 1617 he himself took control. His personal reign of over 25 years was overshadowed by his minister, Richelieu, who took office in 1624 and henceforward directed the affairs of state, and was disturbed by risings of the Huguenots, which were put down firmly, and by intrigues against Richelieu, engineered by the king's brother Gaston, Duke of Orleans. In its later period France went to help the Protestants in the Thirty Years' War. Louis married Anne, daughter of Philip III. of Spain. Their sons were Louis XIV. and Philip, Duke of Orleans. He died May 14, 1643.

Louis XIV. King of France. A son of Louis XIII. and Anne of Austria, he was born Sept. 5, 1638, and began to reign in May, 1643. He reigned for the long period of 72 years, and was by far the most prominent figure in the Europe of his day, exercising enormous influence, not only upon politics, but also upon art, literature and fashion. During the earlier part of his reign he greatly extended the area of France, although in 1697 and 1713 he was obliged to return many of his gains. He had a great sense of his own importance, surrounded himself with pomp and was called "le roi soleil" and "le grand monarque." He built Versailles and other splendid edifices. Louis married Maria Theresa, an Austrian princess, and after her death Madame de Maintenon. His son and his grandson died before him, and he was succeeded by his great-grandson Louis XV. He died Sept. 1, 1715.

Louis XV. King of France. A son of Louis, Duke of Burgundy, who was a grandson of Louis XIV., he was born Feb. 15, 1710. In 1715 he succeeded his great-grandfather on the throne, and he reigned over France for nearly 60 years. His reign began with the making of peace, but for much of it France was at war with Great Britain and other European powers. Weak and sensual the king exercised little influence on affairs of state, so contributing in a negative fashion to the revolution. In 1725 he married Maria Leszczynska, a daughter of the exiled King of Poland, but he had also many mistresses, notably Madame de Pompadour. He was called the well beloved (bien aimé) because, when he was ill in 1744, the people showed great concern. He died May 10, 1774, and was succeeded by his grandson.

Louis XVI. King of France. Born at Versailles, Aug. 23, 1754, he was a son of the dauphin Louis and a grandson of Louis XV. In 1765 his father died, and in 1774 he succeeded his grandfather as king. Four years before he had married Marie Antoinette, a member of the great Hapsburg family and a daughter of Maria Theresa, the empress. He began to reign at an unfortunate time. The state of the country gradually became worse, and in 1789 the revolution began and he had to pay for the sins of his fathers. In June, 1791, he escaped from Paris to Vincennes, but he was captured and brought back. From then until Sept., 1792, he reigned as a constitutional king, but the office was then abolished and Louis was put upon his trial. He was found guilty and guillotined as Louis Capet, Jan. 21, 1793. The king left a son, known as Louis XVII., and a daughter.

Louis XVII. King of France, but in name only. A son of Louis XVI., he was born March 27, 1785. In 1789 he became dauphin on the death of his elder brother. He was put in prison with the other members of the royal family, and kept there after the execution of his parents. He was reported to have died in the Temple, Paris, then a prison, June 8, 1795, perhaps of poison, but some thought the report was untrue. Several pretenders came forward, claiming to be the dauphin, the most notable a German, Karl Wilhelm Naundorff, who appeared in France in 1833. He died in 1845.

Louis XVIII. King of France. He was born at Versailles, Nov. 17, 1755, and was a son of the dauphin Louis and a grandson of Louis XV. At the outbreak of the Revolution he expressed some sympathy with the new order, but after the capture of his brother, Louis XVI., he escaped from the country. In 1795, when the dauphin, nominally Louis XVII., died, he proclaimed himself king, but it was an empty title only. He lived a life of hardship and sometimes want until 1807, when he settled in England. In 1814 Louis, as the head of the Bourbons, was recalled to France and became king, but was soon forced to flee; in 1815, however, he returned and reigned until his death, Sept. 16, 1824. His successor was his brother, Charles X.

Louis Name of three kings of Bavaria, also known as Ludwig. **Louis I.**, a son of the first king, Maximilian Joseph, was born Aug. 25, 1786. He became king in 1825 and ruled, on the whole wisely, until compelled to abdicate in 1848. He died Feb. 28, 1868. One of his sons was King Maximilian II. Another was Otto, King of Greece.

Louis II., a son of Maximilian II., was born Aug. 25, 1845, and became king in 1864. Interested in art and music, he neglected affairs of state. He was the patron of Wagner, and spent enormous sums of money on buildings to carry out the great composer's ideas. Later his mind gave way, and in 1886 a regent was appointed. Three days later the king and his medical attendant were drowned.

Louis III., a son of the regent, Luitpold, was born Jan. 7, 1845. In 1912 he succeeded his father as regent for the insane king Otto, and in 1913 Otto was deposed and Louis became king. He reigned until compelled to abdicate in 1918, and died Oct. 21, 1921.

Louisburg Seaport of Cape Breton Island, Nova Scotia. It has a railway station and is 40 m. from Sydney. There is a good harbour and fishing is an industry.

In 1714, when the French surrendered Nova Scotia to Great Britain, they kept Cape Breton and on it built a great fortress which they called Louisburg. In 1745, after a long siege, this was taken by the British, but it was

restored in 1748. In 1758 it was again taken by the British with a combined army and fleet, and this time it was destroyed.

Louise Name of two British princesses. One was the fourth daughter of Queen Victoria. Born March 18, 1848, in 1871 she married the Marquess of Lorne, afterwards 9th Duke of Argyll. He died in 1914. The princess is childless.

Another Princess Louise was the eldest daughter of Edward VII. She was born Feb. 20, 1867, and married in 1889 the Duke of Fife, who died in 1912. Known as the Princess Royal, she died Jan. 4, 1931, leaving two daughters.

Louisiana State of the United States. It covers 48,500 sq. m., and has a coastline on the Gulf of Mexico of some 1500 m. Baton Rouge is the capital, but New Orleans is the largest town. It is a fertile area, although liable to floods in the S. where there are many swamps. Cotton, rice and sugar are grown, and there are vast forests. The fisheries are valuable, and there are rich sulphur mines. The state is governed by a legislature of two houses and sends eight representatives and two senators to Congress. It became a state in 1812. Pop. 2,101,593.

Louisiana is the name given by the French to a great district which they acquired in 1682. It included the whole of the central part of the present United States, from the Great Lakes to the Gulf of Mexico and from the English colonies to the Rocky Mountains, Texas being excluded. In 1763 it was ceded partly to Great Britain and partly to Spain, but in 1800 the Spanish portion, lying to the W. of the Mississippi, was given back to France. In 1803 this area, over 1,100,000 sq. m. in extent, was sold by France to the United States for £3,000,000.

Louis Philippe King of the French. Born Oct. 6, 1773, he was the eldest son of the Bourbon, Philip, Duke of Orleans, known as Egalité. When the French Revolution began he followed his father in renouncing his titles and joined the revolutionary army. In 1794, however, having displeased the authorities, he fled from the country, and until the restoration of 1815 lived in Switzerland, the United States and England. In 1815 he returned to France, and in 1830 on the deposition of Charles X., was chosen King of the French. He was known, partly owing to his homely ways and partly to his declared opinions, as the Citizen King. At first his rule was successful, but gradually he became unpopular, and unwise repressive measures added to his enemies. The trouble came to a head in 1848 when the king abdicated and fled to England. He lived at Claremont, Surrey, until his death, Aug. 26, 1850. His only surviving son was known as the Comte de Paris.

Louisville City of Kentucky, United States. It stands on the Ohio, 110 m. from Cincinnati, and is an important railway junction. There are many manufactures, including tobacco, while the shipping is important, as Louisville is a great river port with extensive docks. Formerly a settlement known as "The Falls of the Ohio," it became a town in 1780 and was named after Louis XVI. of France. Pop. (1930) 307,745.

Lourdes Town of France. It is on the Adour in the district of the Pyrenees, 22 m. from Pau. It is famous for its grotto, visited every year by thousands of pilgrims, as it contains a spring reputed to possess miraculous powers of healing. The buildings include the basilica, the chapel of the rosary and a hospice for pilgrims. Overlooking the town is a chateau. The pilgrimages began in 1858 when the Virgin appeared to a peasant girl. It is said that about 500,000 persons visit the shrine each year, and many cures have been reported. Emile Zola's great novel *Lourdes* deals with the pilgrimage. Pop. (1931) 42,779.

Lourenço Marques City and seaport of Portuguese East Africa and capital of Mozambique. It is on Delagoa Bay, 347 m. from Pretoria, and is the nearest outlet for the produce of the Transvaal. There is a large harbour and extensive docks. The city has a botanic garden. Pop. (1931) 42,779.

Louse Name denoting unrelated groups of small invertebrate animals, especially: (1) wingless parasitic suctorial bugs infesting the hair of human and mammalian hosts; (2) another wingless order having biting mouth-parts, parasitic on birds and mammals, called bird-lice; (3) degraded parasitic crustaceans called fish-lice and whale-lice; (4) plant-sucking bugs and their larvae, called plant-lice. *See* WOODLOUSE.

Lousewort Large genus of herbs. Mostly perennial, of the figwort order, they are natives of N. temperate regions (*Pedicularis*). Parasitic on roots, the common British heath lousewort, *P. sylvatica*, so-called because long supposed to encourage lice in browsing sheep, bears rose-coloured, two-lipped flowers. The marsh lousewort, *P. palustris*, is an annual, with dull-pink flowers.

Louth County of the Irish Free State. It is in Leinster with a coastline on the Irish Sea, and its area is 316 sq. m. Dundalk is the county town; another town is Drogheda, while Carlingford and Greenore are coastal towns. The Boyne forms its southern boundary, and is the only navigable river. There are hills in the N., but the surface is usually flat and the soil fertile. Agriculture is the chief industry. The county contains the famous ruins of Monasterboice. It takes its name from a village near Dundalk, once a place of importance. Pop. (1926), 62,739.

Louth Borough and market town of Lincolnshire. It is 31 m. from Lincoln and 141 from London, on the L.N.E. Rly. The town is an agricultural centre and has works for making agricultural implements: other industries are brewing, malting and milling. Near are the ruins of a Cistercian abbey. Pop. (1931), 9678.

Louvain City of Belgium. It is on the Dyle, 19 m. from Brussels, has some industries and is a railway junction. It contains some of the finest buildings in Belgium, notably the Hotel de Ville, which was unharmed during the German occupation. The cathedral, however, was damaged, but has been restored.

Louvain is chiefly famous for its university, founded in 1423 and long one of the chief intellectual centres of Europe. Its chief glory was its library, which was burned down in Aug., 1914, the books and manuscripts lost being irreplaceable. It has been rebuilt by the U.S.A. and the library furnished with gifts from universities and learned societies all

over the world. The new building was opened in 1928. Pop. (1931) 38,734.

Louvre The. Museum and art gallery in Paris, probably the richest in the world. The building stands on the right bank of the Seine and was long one of the chief palaces of the kings. Built on the site of an older palace, the present building was begun in the 16th century by Francis I. and added to by Louis XIV and Napoleon. The famous Apollo Gallery was rebuilt, 1845-51, and in 1906 two new galleries were added.

The palace has been a museum since the time of Napoleon, who brought here many of the works of art he collected during his campaigns. The richness of the collection defies description. The paintings and sculptures are representative of the art of almost every age and school. The pictures include Leonardo da Vinci's "Mona Lisa" and "the Virgin of the Rocks." The sculptures include the "Venus of Milo" and the "Winged Victory of Samothrace."

Lovage Genus of smooth perennial umbelliferous herbs (*Ligusticum*) natives of N. temperate regions. Scotch lovage, *L. scoticum*, also found in Northumberland and N. Ireland, on rocky coasts, with small white or pink flowers, has a stout, branched, aromatic and pungent rootstock; its much-divided leaves are eaten as a pot-herb.

Lovat **Lord.** Scottish title held by the family of Fraser. Hugh Fraser, the 1st lord, lived in the 15th century, and owned vast lands in the county of Inverness which passed to his descendants. When Simon Lovat, the Jacobite, was executed in 1747, the title and estates were forfeited, but they were restored to his son, Simon. In 1815 the title became extinct, but the estates passed to a distant relative and in 1837 their owner was created Baron Lovat with the precedence of the earlier title.

Simon Joseph Fraser, who in 1887 became the 14th baron, was born Nov. 25, 1871. For service against the Boers he raised Lovat's Scouts, and he served in France and Gallipoli during the Great War. His seat is Beaufort Castle, Beauly, around which are his large estates.

Lovat **Lord.** Scottish nobleman. Simon Fraser, 12th Baron Lovat, was born about 1667, a grandson of the 7th baron and a cousin of the 10th. For his outrageous treatment of his wife, a daughter of the house of Argyll, he was prosecuted by her kinsfolk, but escaped and lived in France as a Jacobite. In 1715 he helped the government and was pardoned, and later secured the family estates, and had his title confirmed. In 1745 he sided with the Jacobites, with whom he had regularly kept in touch, and took the field. After Culloden he was captured, found guilty of treason and beheaded in London, April 9, 1747.

Love Sentiment of sympathetic or pleasurable attraction felt towards certain individuals, classes or things. Though regarded as ultimately derived from the parental instinct, shared by the lower animals, it tends to acquire in man moral and spiritual elements which, in its highest expression, lack all thought of self-interest. The Christian ideal makes love to man the unvarying method of manifesting love to God. In the supreme synthesis of the beloved disciple, God is Love (1 John iv., 8).

Lovebird Name denoting various small parrots who habitually perch closely together. They include the African short-tailed genus *Agapornis*, of which the rosy-faced, 6½ in. long, is a favourite cage-bird, and some tropical American and Papuan pygmy parrots. The Australian budgerigar or love-bird, *Melopsittacus undulatus*, is a long-tailed grass-parrot formerly much used for street fortune-telling.

Love-in-a-Mist (*Nigella damascena*). Annual ranunculaceous plant popular in gardens. The flowers are blue or white, surrounded by filmy leaves, giving the appearance which gives rise to the name. It is hardy and easily grown from seed which should be planted where the flowers are required to bloom, in April or May. Other names for it are Jack-in-Prison or Devil-in-a-Bush.

Lovelace **Earl of.** English title borne by the family of King. **William King,** Lord Ockham, a title given to his ancestor, Sir Peter King, the Lord Chancellor, was made Earl of Lovelace in 1838. The title is still held by his family. The earl's eldest son is called Viscount Ockham.

Lovelace **Richard.** English poet. A son of Sir William Lovelace, he was born at Woolwich in 1618. In 1642 he was put in prison for a political offence. Later he fought on the Royalist side in the Civil War, and served in the French Army, then came back to England where he was again in prison in 1648-49. He died in London in poverty in 1658.

Love-Lies-Bleeding (*Amaranthus*). Annual plant bearing red flowers on long drooping stems. Prince's feather (*Amarantus hypochondriacus*), of the same genus is of slightly taller growth with red flowers borne on an erect stem. It grows to a height of 2 or 3 ft.

Loving Cup Drinking vessel ceremoniously passed from hand to hand at state and civic banquets. Like the grace cup of university gatherings, it is often a gold or silver-gilt chalice or goblet, with or without cover, sometimes many-handled. It appears at mayoral and livery-company banquets in the city of London and elsewhere.

Low Countries Name used for the Netherlands because of their situation, on or below the level of the sea. It includes the modern kingdoms of Belgium and the Netherlands.

Lowe **Sir Hudson.** British soldier. He was born in Galway, July 28, 1769, entered the army and served in Egypt, afterwards being Governor of the Ionian Islands. He served with the Prussian Army in 1814-15 and in 1815 was made Governor of St. Helena and therefore responsible for Napoleon. From 1825-31 Lowe commanded the troops in Ceylon, and he died Jan. 10, 1844.

Lowell City of Massachusetts. It is 26 m. from Boston, where the rivers Merrimac and Concord meet. An important industrial town, Lowell has manufactures of woollen goods, clothing, machinery, etc. Pop. (1936) 100,234.

Lowell **James Russell.** American poet. Born at Cambridge, Massachusetts, Feb. 22, 1819, he was educated at Harvard and became a lawyer, but soon left this profession to edit *The Pennsylvania*

Freeman. From 1857 to 1861 he edited *The Atlantic Monthly*, and from 1862 to 1872 was part-editor of *The North American Review*. From 1855 to 1877 he was Professor of Modern Languages and Literature at Harvard. In 1877 he became ambassador in Madrid, and in 1880 in London. He left the service in 1885 and died Aug. 12, 1891.

Lowell is best known, perhaps, as a poet. Some of his shorter pieces, for example *The Present Crisis*, are among the finest in American literature, and his gift of humour is well seen in *The Biglow Papers*. Equally notable are *The Vision of Sir Launfal* and *A Fable for Critics*. His critical works include *My Study Windows*, *Among My Books* and *The Old English Dramatists*. He also wrote a life of Hawthorne and *Fireside Travels*.

Lowell Percival. American astronomer. Born in Boston, March 13, 1855, he spent his life in the study of astronomy, first at the Lowell Observatory, Flagstaff, Arizona, and later as Professor of Astronomy in Boston, and conducted very valuable researches. He wrote *Mars and its Canals* and *Mars as the Abode of Life*. Lowell died Nov. 13, 1916.

Lowestoft Borough, seaport, market town and watering place of Suffolk. It stands at the mouth of the Waveney, 118 m. from London, on the L.N.E. Rly. The narrow streets in the old town are called scores. With inner and outer harbour, Lowestoft is a great fishing port and has a large fish market. Near is Lowestoft Ness, the most easterly point of England. Pop. (1931) 41,768.

On June 3, 1665, there was a sea fight off Lowestoft between the English and the Dutch fleets. The Dutch were defeated.

On April 25, 1916, a German fleet, aided by some Zeppelins, bombarded Lowestoft and did some damage. There was another bombardment on Nov. 26, 1916, and the town was several times attacked from the air.

Low Sunday First Sunday after Easter. Variously explained as being so-called to distinguish it from the great festival whose octave it ends, or as the "Laudes Sunday" on which the sequence *Laudes Salvatoris* was sung, it is the Roman Catholic Alb or Quasimodo Sunday, and the Greek Antipascha or New Sunday.

Lowther Village of Westmorland. It is 4 m. from Penrith and gives its name to the family of which the Earl of Lonsdale is the head. Here is the earl's seat, Lowther Castle, built in the style of the 14th century and containing some valuable treasures.

Lowther Range of hills in Scotland. They are in the counties of Lanark and Dumfries. The highest points are about 2400 ft. high.

Loyalty Group of islands in the Pacific Ocean. They belong to France and are governed from New Caledonia, which is 100 m. away. The largest are Lifou, Mare and Uvea. Copra, rubber and coconuts are the main products. They cover 800 sq. m.

Loyola Ignatius. Spanish saint and founder of the Society of Jesus. He was born at Loyola, a castle in the Basque Provinces, Dec. 24, 1491, and passed his youth at the court of Ferdinand and Isabella. He then became a soldier, and while recovering from wounds he read some devotional books, with the result that in March, 1522, he dedicated himself to the service of the church. He wrote about this time the wonderful book of devotion called *Spiritual Exercises*.

Loyola next made two journeys to Jerusalem, then studied at several universities, where he found some kindred spirits. In 1534 he and six others of them took vows in a church at Montmartre which marked the foundation of the great order. The intention of its members was to work for the conversion of the heathen. In 1540, when the order was formally founded by the pope, Loyola became its first general. The rest of his life was passed in Rome in organising the society, which in a few years became large and influential. He died July 31, 1556. In 1622 Loyola was canonised. *See* JESUITS.

Lozenge Diamond-shaped figure. Forming a subordinary in heraldic charges, it is a rustre if pierced with a round opening, a fusil if elongated. Shields so shaped bear the arms of spinsters and widows. The word also denotes a small medicated or flavoured tablet, originally diamond-shaped, for slow solution in the mouth, *e.g.*, cough lozenges.

Lübeck City and seaport of Germany. It stands on the Trave, 10 m. from its mouth in Lubeck Bay, and is one of the most important of the Baltic seaports. It is connected by railway with Berlin, 180 m. away, and is also a centre for air services. The river channel has been deepened so that the largest vessels can reach the city.

As one of the chief towns of the Hanseatic League, Lübeck is historically a place of much charm. The 13th century town hall on the market place is one of the finest in Germany. Equally fine is the Gothic cathedral, enlarged in the 15th century, and there are many other notable old buildings. In the newer part of the town are some fine modern ones. Shipping and shipbuilding are carried on, while there are blast furnaces and manufactures of various kinds. Pop. 125,000.

Lübeck State of the German republic. It is a district along the river Trave, and includes the city of Lübeck and the town of Travemunde. The area is 115 sq. m. and the population 150,000. It is governed by a senate and a house of burgesses, the 12 members of the senate forming the executive.

Lubitsch Ernst. German actor. He was born in Berlin, Jan. 29, 1892, and from 1911 to 1922 gained experience as an actor in Germany. In 1922 he went to America to direct Mary Pickford's work for the films, and since 1927 he has produced for the Famous Players-Lasky Corporation.

Lubrication Act of insinuating between two surfaces, such as parts of machines pressing and rubbing against each other, substances called lubricants, designed to lessen friction and prevent serious abrasion. These substances may be solid, semi-solid or liquid, ranging from metallic alloys and graphite to animal, vegetable and mineral greases and oils.

Lucan Roman poet. He was born in Spain in A.D. 39, and was named Marcus Annaeus Lucanus. He went to Rome and his uncle, Seneca, secured for him entrance to the court of Nero. There his abilities made him conspicuous, and aroused the jealousy of the Emperor. In 65 he was concerned in a plot to murder Nero, and on this being discovered he committed suicide. His sole extant poem is called *Pharsalia*; it deals with the

civil war between Caesar and Pompey and the end of the republic.

Lucan Earl of. Irish title held by the family of Bingham. In 1632 Henry Bingham was made a baronet. In 1776 his descendant, Sir Charles Bingham, was made a baron, and in 1795 Earl of Lucan. His grandson, George Charles Bingham, who became the 3rd earl in 1839, was the soldier who commanded the cavalry division at Balaclava, where his share in the disaster led to a good deal of controversy. He died Nov. 10, 1888, and the present earl is his descendant. The earl's estates are chiefly in Co. Mayo, where is his seat, Castlebar House. His eldest son is called Lord Bingham. Lucan is a village on the Liffey, just outside Dublin.

Lucas Edward Verrall. English author. Born in 1865, he was educated privately. He began to write, and in 1902 joined the staff of *Punch*. He made a reputation as a humorist by the skits written with C. L. Graves, including *Wisdom While You Wait* and *Hustled History*. Some of his works are travel books, such as *A Wanderer in London*, and others are anthologies such as *The Open Road*. Some deal with art and others are novels of a somewhat discursive kind. A selection shows his versatility: *Highways and Byways in Sussex*, *Over Bemerton's*, *Mr Ingleside*, *A Boswell of Baghdad*, *John Constable the Painter* and *A Wanderer among Pictures*. About 1924 he became chairman of the publishing firm of Methuen & Co., Ltd. He was made a Companion of Honour in 1932.

Lucas John Seymour. English painter. Born in London, Dec. 21, 1849, he was apprenticed to a wood carver, but later studied painting at the Royal Academy schools. His paintings of historical scenes won for him a considerable reputation, notable ones being "The Armada in Sight" and "After Culloden." He also painted a panel for the Royal Exchange, London. Lucas was made A.R.A. in 1886 and R.A. in 1898. He died May 8, 1923.

Lucca City of Italy, 15 m. from Pisa. Notable buildings are the 11th-century cathedral and the town hall, once a ducal palace. There are the remains of a Roman amphitheatre and aqueduct and of the town walls. From 1369 to 1797 Lucca was a republic. It is now a flourishing town with textile and other manufactures and an agricultural trade. Near the city are the famous hot baths of Lucca. Pop. (1931) 81,807.

Luce Bay Opening of the sea off the coast of Wigtownshire. It is between the Mull of Galloway and Burrow Head, and goes about 16 m. into the land.

Lucerne Perennial leguminous herb of the Mediterranean region, also called purple medick (*Medicago sativa*). Cultivated in antiquity, and reaching Tudor England, it grows widely nowadays in temperate climates, including western N. America which calls it alfalfa. Its trefoiled leaves and clusters of yellow or blue clover-like flowers yield several pasture and fodder crops annually. *See* ALFALFA.

Lucerne Lake of Switzerland. It is about 24 m. long and covers 45 sq. m. It is famed for its beauty and has associations with William Tell. The River Reuss runs through it.

Lucerne City of Switzerland. It stands just where the River Reuss leaves the Lake of Lucerne, 59 m. from Basel. Lucerne is the capital of the canton of the same name. Near is the famous Axenstrasse, a road cut out of the rocks.

Lucerne is a popular tourist centre and from it many famous beauty spots can be visited. It is a calling place for steamers on the lake, and has some industries. Pop. (1930) 47,066.

Lucian Greek writer. He was born in Syria and became a teacher, travelling from place to place and lecturing. Later he lived in Antioch and in Athens, and he died in Egypt in A.D. 180. The most popular of his many writings are his satires, in which he holds up to ridicule the gods and the old customs. They have been translated as *Dialogues of the Dead*, *Dialogues of the Gods*, and other titles. He also wrote a *True History*.

Lucifer Latin name, light bearer, for the planet Venus as morning star. The Hebrew word, "shining-one," denoting figuratively the King of Babylon in Isa. xiv. 12, and translated Lucifer in the Authorised Version becomes "day star" in the Revised Version. With this passage early Christian theologians incorrectly connected Luke x. 18 and Rev. xi. 1; hence Lucifer came to denote Satan before his fall.

Lucknow City of India. It stands on the River Gumti, 560 m. from Calcutta, and is an important railway junction. The city has many industries, some being traditional Indian crafts, while others are engineering works, railway shops and the like. From 1732 to 1857 Lucknow was the capital of the rulers of Oudh. It is now the capital of a division of the province of Agra and Oudh. Pop. (1931) 274,659.

The **Siege of Lucknow** was one of the outstanding incidents of the Indian Mutiny.

Lucretia Roman heroine. The wife of Lucius Tarquinius Collatinus, a member of the Tarquin family. Another member of the family outraged her, whereupon she stabbed herself to death on the next day. A revolt followed and the Tarquins were driven from Rome. Her story is told by Livy, and Shakespeare described the act in his poem, *The Rape of Lucrece*.

Lucretius Latin philosopher and poet. Titus Lucretius Carus was born in 98 B.C. Very little is known about him except that he wrote, and that he died in 55 B.C. His great work is *De Rerum Natura*, a poem in which he expounds his philosophy, that of the Epicureans.

Lucullus Roman epicure. Lucius Licinius Lucullus was born in 110 B.C. and became a soldier. He made a reputation by his nine years' campaign against Mithridates, and became praetor in 77 and consul in 74. In 65 he retired from active service and during the next nine years gave feasts of unsurpassed profusion and splendour at his villa at Tusculum and at his house in Rome. He died in 57 B.C.

Lucy Sir Henry William. English humorist. Born in Liverpool in 1845, he was there educated. After a period in business, he became a reporter on a journal in Shrewsbury in 1864. In 1873, having been for a time in Paris, he joined the staff of *The Daily News*, and in 1881 became a member of the *Punch* staff. He was knighted in 1909 and retired in 1916. Lucy made his reputation as a reporter of debates in Parliament and by the

skill with which he obtained information of value for his papers. The sketches of the proceedings in Parliament which he wrote for *Punch*, signed Toby M.P., were a feature of that journal. Lucy wrote a number of books, including *Memories of Eight Parliaments* and *The Diary of a Journalist*. He died Feb. 20, 1924.

Luddites Men who caused disturbances in the Midland counties of England in 1811-12. The name is taken from that of Ned Ludd, an idiot living in a village of Leicestershire. The Luddites, believing that machinery was the cause of their unemployment and distress, went about destroying it. They were chiefly men connected with the making of hosiery in the counties of Nottingham and Leicester, where most of the damage was done. The rising was put down, but in 1816 there was another outbreak which extended into Yorkshire and Lancashire.

Ludendorff **Erich.** German soldier. Born in Posen, April 9, 1865, he entered the army in 1882. He secured an appointment on the staff, lectured to the students at the military academy and in time rose to the rank of major-general. In Aug., 1914, he took part in the attack on Liège, but was soon sent to the east to serve as chief of the staff to Hindenburg. When, in August, 1916, Hindenburg took command of all the German forces, he remained his chief adviser.

Ludendorff was responsible for the defeat of Rumania, but his chief energies were directed to the western front. He directed the German campaigns of 1917 and 1918, and in the former year introduced new methods of attack and defence. He was in control until the end came, but he could not avert the final defeat. In Oct., 1918, he resigned, and after a time in Sweden settled in Munich. Now and again he appeared in public life, once as an opponent of the republic. He wrote books on the war: *My War Memories, The General Staff and its Problems* and *Warfare and Politics*.

Ludgate One of the old gates of the city of London. It was near where the Old Bailey now stands and owed its name to the legend that it was built by King Lud. It was used as a prison for debtors and was pulled down in 1760. The name is now borne by Ludgate Circus, where Fleet Street meets Farringdon Street and New Bridge Street, and Ludgate Hill, which leads from the Circus to St. Paul's Cathedral.

Ludlow Borough and market town of Shropshire. It stands on the River Teme, 27 m. from Shrewsbury and 162 from London. The ruined castle is the chief object of interest. Tanning and milling are the chief industries. Interesting buildings include the old collegiate church in the Perpendicular style and The Feathers Inn.

Ludlow was a very important place in the Middle Ages, chiefly because of its position on the Welsh border. The president of the Council of the Marches lived in the castle and the Court of the Marches was held there. Milton's *Comus* was first played in the castle, which was destroyed in 1646. Ludlow sent members to the House of Commons from 1471 to 1885. Pop. (1931) 5642.

Ludlow **Edmund.** English politician. He was born about 1617, went to Trinity College, Oxford, and in 1642 joined the Parliamentary army. He was made governor of Wardour Castle which he defended until 1646. In the same year Ludlow became M.P. for Wiltshire. He commanded the troops in Ireland, 1651-52, but became suspicious of Cromwell and lived for a time in retirement. In 1659 he was again an M.P., a member of the Council of State and commander of the troops in Ireland. He lived chiefly at Vevey until his death in 1698, the last of the regicides. Ludlow's *Memoirs* are a useful authority for the history of his time.

Ludwig **Emil.** German writer. Born in Breslau, Jan. 25, 1881, he was the son of a professor of ophthalmology named Cohen. He was educated at the universities of Breslau and Heidelberg and began his literary career by writing plays. He then did journalistic work and produced some novels, but his reputation rests upon his biographies. The first was a life of Bismarck, which he followed with lives of Napoleon, William II., Goethe and Abraham Lincoln, all described as psychological studies. He also wrote a life of Christ. His biographies have been translated into English.

Ludwigshafen Town and river port of Bavaria. It is on the Rhine, just opposite Mannheim. There is a good harbour and shipping is an important industry, while the town has manufactures of chemicals and beer, flour mills and iron foundries. The town was founded in 1843 by Louis, or Ludwig, King of Bavaria, and all its buildings are modern. Pop. 101,900.

Lugano Lake of Italy and Switzerland. It lies between Lakes Maggiore and Como, is 22 m. long and covers some 20 sq. m. The River Tresa carries its waters to Lake Maggiore. The scenery around is very beautiful and on the lake shores are many spots visited by tourists.

The city of Lugano is in Switzerland. At the north end of the lake, it is 51 m. from Milan on the main railway line. It is a tourist centre and a calling place for steamers on the lake. Pop. (1930) 15,184.

Lugard **Frederick John Dealtry, Baron.** British administrator. Born Jan. 22, 1858, and educated for the army, he first saw service in the Afghan War, 1879-80. With the exception of five years' governorship of Hong-Kong, 1907-12, his work has been confined to Africa, first in establishing and protecting British interests, then as High Commissioner of Northern Nigeria, 1899, Governor of Northern and Southern Nigeria, 1912, and finally Governor-General of all Nigeria. He has always sought to improve the conditions of the natives, doing much to abolish slave trading. He retired in 1919, was made Privy Councillor, 1920, and was appointed to the permanent mandates commission of the League of Nations, 1922. He was created a baron in 1928.

Lugg River of England and Wales. Rising in Radnorshire it flows through Herefordshire, entering the River Wye below Mordiford.

Lugger Vessel carrying lug-sails. Two-masted or three-masted, often with running bowsprit and 2-3 jibs, the quadrilateral sails are bent upon yards hanging obliquely to the mast.

Luke Traditional author of the third gospel and the Acts of the Apostles in the New Testament. He is commonly identified with the non-Jewish physician of Antioch mentioned by S. Paul, whose missionary journeys he sometimes accompanied.

Traditionally he died in Bithynia when 74 years old. As saint and evangelist he is commemorated on October 18.

Luke The Gospel of. Third book of the New Testament. Written after the Matthew and Mark gospels, and addressed to the Gentile world, it is remarkable for its tender interest in the sick and outcast, its sympathy with womanhood, its intimate details of the infancy, perhaps derived from the Virgin Mary, and its full treatment of our Lord's last journey to Jerusalem. Its literary charm betokens a versatile and cultivated intellect. Its sequel, The Acts of the Apostles, displays similar qualities.

Lully Jean Baptiste. French composer. He was born in Italy in 1633, but when a young man settled in France and became a Frenchman. He spent his life at the court of Louis XIV., first as a violinist, and finally as music master. He died in Paris, March 22, 1687.

Lully was a very successful composer. He wrote many operas in which he made the ballet an essential part and with him Molière was associated. His works include, *Alceste, Atys, Thésée* and other operas.

Lully Raymond. Spanish writer. Born in 1235 in the Island of Majorca, he was the son of a nobleman, and passed his youth at the court of the King of Aragon. About 1265 he devoted himself to missionary work among the heathen, to study and to writing. In 1315 he went to Algeria where his preaching against the Mohammedans irritated the people and he was almost stoned to death at Bougie. He was rescued by some sailors, but died on their ship, June 30, 1315. Lully had a great scheme for acquiring knowledge which he explained in his *Ars Magna*.

Lulworth Name of two villages of Dorset. **East Lulworth** is about 5 m. south-east of Wareham. **West Lulworth** is 2½ m. distant. Near is Lulworth Cove, a holiday resort.

Lumbago Painful muscular affection in the lower part of the back, due to inflammation of the connective tissue. It usually arrives as a sudden seizure, sometimes following exposure to cold and damp, or straining of the muscles of the loins.

Treatment.—During the acute phase of this type of rheumatism, local rest for the affected muscles of the back is essential. The application of heat in the form of poultices, and counter-irritants such as mustard or turpentine, may relieve the pain and diminish the inflammation. In chronic cases, massage, baths and spa treatment are most likely to be effective.

Lumber Word denoting: (1) useless discarded furniture, especially if cumbersome; (2) N. American timber sawn or split into logs, beams, boards, etc., for transportation. The latter use originated in 17th century New England, and the important activities long carried on in Canada and the United States, in the felling, preparing and transporting of timber constitute the lumber industry. The labour is performed by lumberers, lumberjacks or lumbermen. Similar operations enter into the collection of pulpwood for paper manufacture.

Lumley Castle Residence of the Earl of Scarborough. It is on the Wear near Chester-le-Street in Durham. The original building dates from the 13th century, but the present one is largely modern. A fine pile, it has been for six centuries the seat of the Lumley family, which takes its name from here.

Lumpsucker Class of fish found round the coasts of Great Britain and the northern parts of Europe generally. It is about 12 ins. long, and has a power of attaching itself to the rocks by means of its sucker. The male is red and yellow in colour which varies according to conditions. In the breeding season the male watches over the eggs for several weeks.

Lunacy State of being unable to control one's actions, or as popularly understood, out of one's mind. A mental condition, it is not always easy to define. Many persons possess eccentricities or mental weaknesses, but it is not always easy to decide when these pass into lunacy.

In Great Britain a lunatic must be certified as such by two medical men. In a rate-aided case, only one medical certificate is necessary. He or she can then be put under control and his or her property managed by some one else. This is usually done by an application to the courts of law when a committee, as it is called, is appointed to manage the lunatic's estate.

To care for lunatics there are many private asylums which must be inspected, while the councils of counties and county boroughs must provide asylums. For criminal lunatics there is a special asylum at Broadmoor. To look after lunatics and mentally deficient there is a board of control at Caxton House West, Westminster. This consists of three senior commissioners, legal and medical, and a chairman. Under them are assistant commissioners. There is a similar board for Scotland at 25 Palmerston Place, Edinburgh.

Lund City of Sweden. It is 13 m. from Malmo and is famous for its university. In the 12th century Lund was a flourishing seaport, but the sea has receded from it. In 1676 a treaty between the Swedes and the Danes was signed here. Pop. (1932) 25,138.

Lundy Island in the Bristol Channel. It is off the north coast of Devonshire, 12 m. from Hartland Point, and covers 1000 acres. Here are two lighthouses. Pop. about 50.

Lune River of Westmorland and Lancashire. It rises between Ravenstonedale and Lonsdale and flows through Lancashire to Lancaster Bay. Lancaster stands on it and its port, Glasson, is near the mouth. It is about 45 m. in length.

Lunenburg Town and seaport of Nova Scotia, 70 m. from Halifax. The industries are fishing and shipping. Pop. 2792.

Lunette Architectural term for the vertical wall space enclosed by a vault. It is often used for mural painting, or the space may be filled by a circular or oval window. The term is extended also to a round or oval window in a ceiling, and to a painting within a circular border and similarly placed.

Lunéville Town of France. It stands on a tributary of the Meurthe, 20 m. from Nancy. It is a manufacturing town with engineering works, railway works, motor-car works and textile mills, and has an agricultural trade. It is also a military station and has large barracks. Pop. 25,000.

The **Peace of Lunéville** was signed here, Feb. 9, 1801. It was made between France and Austria and was a complete humiliation for

the latter. The Rhine was fixed as the boundary of France, and Napoleon was dominant in Italy and Switzerland where he set up several republics.

Lung Organ of respiration. In man it comprises two elastic spongy masses, each enclosed in a serous membrane or pleura, almost filling the chest cavity, and weighing in healthy adults 40 oz. Communicating with the outer air through the windpipe, the right lung is three-lobed, the left two-lobed. At their roots the bronchi are subdivided into innumerable branches which ultimately reach tiny air-cells, furnished with capillaries through whose walls the carbon dioxide of venous blood is replaced by the oxygen of inhaled air. *See* PLEURISY, PNEUMONIA, TUBERCULOSIS.

Lung Fish Fish found in the rivers of the tropical parts of Africa, Australia and South America. They are the surviving descendants of what may have been the transitional stage between fishes and amphibians.

The South American lung-fish is shaped rather like a conger eel. Its home is in the marshes along the Amazon and its tributaries, and the fish wriggles through the thick aquatic vegetation, using its hind limbs in an irregularly bipedal way. It comes to the surface to take air into its lungs. In the dry season it hibernates.

Lungwort Perennial rough-haired herb of the borage order (*Pulmonaria angustifolia*). Locally called beggar's basket and Joseph-and-Mary, and occasionally found wild in Hants and Dorset, its lance-shaped leaves bear pale-green lung-shaped spots; the funnel-shaped flowers change from pink to blue. *P. officinalis*, growing in old gardens, has broader root-leaves, and the blooms are sometimes white. It is a native of Europe and an alternative name is Jerusalem cowslip.

Lunn Louise Kirkby. English singer. Born in Manchester, Nov. 8, 1873, she studied music in London. In 1893 she appeared on the concert platform and became one of the leading singers of the day. For three years she was with the Carl Rosa Company, and she has sung much at Covent Garden, London, and has made frequent tours abroad.

Lupercalia Roman festival. It was held every year on Feb. 15 in honour of Mars and the wolf (*lupus*) and was a festival of fruitfulness. Sacrifices were offered by the priests, and with thongs cut from the skins of the dead animals they passed in procession. The women, anxious to be fruitful, came forward to be touched with the thongs. The festival was held on the Palatine Hill.

Lupin Genus of annual and perennial leguminous herbs and undershrubs. They are natives of the Mediterranean region and temperate America. Some were cultivated in antiquity for human food and cattle fodder. Gardeners have developed many attractive hybridised forms, annuals being derived from both eastern and western species, perennials from American only.

Lupus Disease of the skin occurring in two forms. Lupus vulgaris, due to the tubercle bacillus, develops nodules, usually about the nose, cheeks or ears, which may persist for years, ulcerate, and produce unsightly scars. A milder form, lupus erythematosus, whose cause is unknown, develops red, scaly patches which do not ulcerate. These may be treated with soothing ointments, but the more serious form may need stronger caustics, or the application of Finsen-light or X-ray treatment.

Lurcher Dog that is a cross between a greyhound and a collie or other kind of sheep dog. They are usually very useful for hunting hares and rabbits and for retrieving game, and are therefore frequently kept by poachers.

Lurgan Urban district of Co. Armagh, Northern Ireland. It is 20 m. from Belfast on the G.N. (Ireland) Rly. The chief industries are the making of linen and the preparing of tobacco. Lough Neagh is near the town. **Lurgan Castle**, a fine modern building, is the seat of Baron Lurgan, a title dating from 1839. Pop. (1926) 12,553.

Lusatia District of Germany. It is in the east of the country, partly in Prussia and partly in Saxony. In the Middle Ages it was divided into two parts, Upper and Lower. It was part of Bohemia and then of Hungary before it passed to Saxony and Prussia.

Lusitania Name used in Roman times for a province that included Portugal and part of Spain. It is sometimes used to-day for Portugal.

The **Lusitania** was a Cunard steamship that was sunk by a German submarine off the coast of Ireland, May 7, 1915; 1,198 persons lost their lives. The vessel was one of 31,500 tons.

Lute Stringed instrument. It is long-necked, with fretted finger-board and pear-shaped back, and was introduced into Europe by the Crusaders. As an orchestral instrument it persisted until 1741, as a solo instrument until 1760, but it was in its prime in the Middle Ages.

Lutetia Latin name for Paris (*q.v.*). The town which in the time of Julius Caesar stood where is now the centre of the city was called by this name. It was the chief town of a tribe called the Parisii.

Lutecium Rare metallic element of the yttrium group of rare earths. It has the symbol Lu and atomic weight 175. Lutecium was isolated by Urbain in 1907 from ytterbium by fractional crystallisation. It occurs along with ytterbium and other metals of the same group in the mineral gadolinite from Ytterby in Sweden.

Luther **Hans.** German statesman. Born in Berlin, March 10, 1879, he studied law and became a public official, first at Charlottenburg and then in Magdeburg. During the war period he was secretary of the association of German and Prussian towns, and from 1918-22 was burgomaster of Essen. In Dec., 1922, he returned to Berlin to become minister of food, and in Oct., 1923 minister of finance under Stresemann. He restored the German currency and in 1925 became Chancellor, in which capacity he was the German leader at Locarno. In May, 1926, he resigned and became associated with the management of the state railways. Hitherto without definite party ties, in 1927 he joined the People's Party.

Luther **Martin.** German reformer. He was born at Eisleben, in Saxony, Nov. 10, 1483, the son of a slate cutter. His parents were poor, but he was well educated at Magdeburg, Eisenach, and Erfurt. He entered a monastery there and became a

monk. In 1508 he went to Wittenberg as a lecturer at the university and made a reputation as a preacher.

By now he had worked out a doctrine of salvation, different from that taught by the church, and in 1517 he became a national figure. He challenged John Tetzel, a friar who was selling indulgences, to a discussion on the subject and drew up 95 theses as a basis for the debate. These he fixed on a church door at Wittenberg on Oct. 31, 1517, an event which is usually regarded as marking the opening of the Reformation.

Luther's action created a great stir in Germany, where people were becoming alive to the scandals in the church, and he soon had a considerable following, which was strengthened by his writings. In 1520 the pope issued a bull condemning his views, but this was publicly burned by the reformer at Wittenberg and his breach with the church was complete. He did, indeed, when summoned, attend the diet at Worms in 1521, but again he refused to give way in his famous sentence, *Ich kann nicht anders* (I can do no other). To save him from violence he was carried off to a fortress, the Wartburg, and there he lived for about a year under the protection of the Elector of Saxony. The Reformation had been started and much of Luther's later life was passed in organising the Reformed Church in Germany. He took little part in politics, but in 1525 and at other times showed himself hostile to the peasants and their grievances. In 1526 he married an escaped nun, Catherine von Bora. He died at Eisleben, Feb. 18, 1546.

Luther's great literary work was his translation of the Bible. He also wrote some popular hymns. His three chief theological works are, *On the Duty of a Christian Man*, *An Address to the Nobility of the German Nation* and *On the Babylonian Captivity of the Church of God*.

Lutheranism Form of religion founded by Martin Luther. Its creed is contained in the confession of Augsburg, but, like other churches, it does not demand to-day a literal acceptance of all the doctrines stated therein. Lutheranism is strong in Germany where, after being divided into many churches, it now forms a united church, to which more than half of the population nominally belong. Before the foundation of the republic it was the state church.

Lutheranism is the state religion in Norway, Sweden and Denmark, and is strong in the United States. Its adherents, altogether, may number 60,000,000 or 70,000,000. It is governed by its ministers, by elected courts called consistories and by synods. In many ways it is rather like the Presbyterian churches, retaining a certain amount of ceremonial, including the keeping of the church festivals. The singing of hymns occupies a prominent place in its worship.

Luton County, borough and market town of Bedfordshire. It is 30 m. from London and is served by both the L.M.S. and L.N.E. Rlys. Luton was once noted as the centre of the straw plaiting industry. The chief industries to-day are the making of motor cars and engineering products. In 1928 the borough was enlarged. Pop. (1931) 68,526.

Lutsk Town of Russia, on the River Styr. At one time it was the capital of an independent state, but it became Russian in 1791. The Russians made it into a strong fortress. Pop. 30,000. In 1915 it was captured by the Germans. In June, 1916, the Russians in their great offensive regained it and captured a great deal of war material. Later in the year it again changed hands and the Germans retained it until peace was made with Russia in 1917.

Lutterworth Market town of Leicestershire. It stands on the little River Swift, 90 m. from London, on the L.M.S. and L.N.E. Rlys. The chief building is the fine old parish church which is associated with John Wycliffe, who was rector here, 1374-84.

Lutyens **Sir Edward Landseer.** English architect. He was born in London, March 20, 1869, and was trained as an architect. His designs soon attracted attention and he became in time one of the outstanding figures in his profession. He was employed on the planning of Delhi, and was responsible for Government House and other buildings there. He also designed the Cenotaph in Whitehall, London, and several other war memorials, as well as Britannia House, London, for the Anglo-Persian Oil Company. He was made A.R.A. in 1913, a knight in 1918, and R.A. in 1920.

Lutzen Town of Germany. It is in Prussian Saxony and is famous because near here two decisive battles have been fought.

On Nov. 16, 1632, the Swedes under Gustavus Adolphus, fighting for the Protestants in the Thirty Years' War, met here the army of Wallenstein. Each army was about 20,000 strong. After a stern fight, in which Gustavus was killed, the Swedes were victorious. Memorials mark the site. On May 2, 1813, there was a battle here in which the French under Napoleon defeated the Russians.

Luxembourg Palace in Paris now a museum. On the left bank of the Seine, it was built early in the 17th century on land bought from the Duke of Luxembourg-Piney as a residence for Marie de Medici, widow of Henry IV. After a time it fell into decay, but it was restored in 1836 and converted into an art gallery. It contains a fine collection of modern paintings. There are some magnificent rooms decorated in the most sumptuous style, while the gardens are large and beautiful.

Luxembourg **Marshal.** French soldier. Born January 8, 1628, François Henri de Montmorenci-Bouteville was related to the Condé family. He left France, after taking part in the civil war, and went to Spain where he served in the army. His brilliant career in the French army began in 1659; in 1672 he took command of an army and during the war against the Netherlands made his reputation. In the war that began in 1689 he won victories over William III. at Steinkirk and Neerwinden. He was made Duke of Luxembourg in 1661, a marshal in 1675, and died, Jan. 4, 1695.

Luxembourg Country of Europe. It is a grand duchy lying between Belgium, France and Germany, and covers 999 sq. m. Luxembourg, a town with 53,791 inhabitants, is the capital. The Ardennes cover much of the land, which is mainly an agricultural area, although iron ore is mined in the south. The chief river is the Sure. The government is conducted by a small cabinet and there is a council of state and

an elected house of 52 members. The land was occupied by the Germans from 1914-18, and in 1919 a referendum took place to decide its future. In 1922 an economic union with Belgium was made, and in July, 1932, Luxembourg joined that country and the Netherlands in a treaty for the mutual lowering of tariffs.

In the Middle Ages Luxembourg was a county and its counts made themselves powerful rulers. In 1354 their land became a duchy, and in 1443 a part of Burgundy. Later it belonged to Spain and then to Austria. In 1815 it was made a grand duchy, and in 1839 it was divided between Belgium and the Netherlands, the part assigned to the latter country being the present Luxembourg. In 1890, when the king of the Netherlands died, Luxembourg again became a separate state with Adolph, Duke of Nassau, as grand duke. He was succeeded by a son, William, after whose death in 1912 his daughter, Marie, became grand duchess. In 1919 Marie abdicated in favour of her sister, Charlotte. She is married to a prince of Bourbon-Parma.

Luxor Town of Egypt. It is on the east bank of the Nile, 418 m. from Cairo. It is a tourist centre and is also visited by invalids. Luxor occupies the site of the old city of Thebes, and adjacent to it is Karnak with its temple. Pop. 12,600. *See* KARNAK, THEBES.

Luzon Second largest island of the Philippine group. It is about 300 m. long and covers 40,814 sq. m. There is a mountainous area in the north and centre, and several active volcanoes. Much of the soil is fertile, and tobacco, sugar and hemp are grown. Minerals are abundant. Manilla, the capital of the group, is in the south-west of the Island.

Lyautey **Louis Hubert.** French soldier. Born at Nancy, Nov. 17, 1854. he passed through the college at S. Cyr into the army. He saw a good deal of service in Algeria and Madagascar and was in Indo-China for a time. He rose to the rank of general and in 1912 was appointed administrator of Morocco. In 1916 he was minister of war for a short time, but in 1917 he returned to Morocco, where he remained until 1928. Lyautey's work in bringing peace and prosperity to Morocco is one of the outstanding successes of the French rule in Africa. In 1921 he was made a marshal. Died July, 1934.

Lycanthropy Term denoting in folk-lore the power attributed by popular superstition to certain human beings of being transformed, temporarily or permanently, into an animal, wolf, dog, tiger, hyena or jaguar. Pathologists recognise a form of hysteria, called lycanthropy, in which the patient, believing himself to be an animal, acts accordingly.

Lycaon In Greek legend a king of Arcadia. He was turned into a wolf because he offered human flesh to Zeus when the god came to visit him. Of his 50 sons 49 shared his fate.

Lycaonia was the name of a district in Asia Minor. Iconium was the capital; other places being Lystra and Laodicea.

Lyceum Grove outside Athens near a temple sacred to Apollo Lycius. As Aristotle and other philosophers taught here, the word was used later for a place of learning and this use has persisted, especially in France where lycées are very common.

The **Lyceum Theatre** in London is in Wellington Street, Strand. It was built in 1765, rebuilt in 1816 and burned down in 1830. In 1834 the present theatre was built. From 1878 to 1902 it was used by Henry Irving and Ellen Terry. Later it became associated with melodrama.

The **Lyceum Club** is a club for women, chiefly professional and artistic. It was founded in 1904 and its house is 9 Chesterfield Gardens, London, W.1.

Lych Gate Covered gate at the chief entrance to a churchyard and usually having a gable roof. It was the old custom at a funeral for the coffin to rest at the gate until the arrival of the clergyman, hence the sheltering roof. The oldest lych gate in England is said to be the one at Bray, Berks., dated 1448.

Lyck Town of East Prussia. It stands on the River Lyck, 118 m. from Konigsberg. Near the borders of Germany, Lyck was an important place in the Middle Ages. Pop. 13,400.

During the Great War Lyck was occupied by Russian troops in Aug., 1914, and again in Oct. On Sept. 12, there was a battle near the town, the Russians being defeated and driven back.

Lycurgus Spartan lawgiver. He lived about 800 B.C. He is regarded as the creator of the constitution of Sparta, which he reformed on returning from a period of travel.

Another **Lycurgus** was an Athenian. He lived in the 4th century B.C., and did a good deal to improve the finances, strengthen the navy and beautify the city. He was also an orator and 15 of his speeches remain.

Lydd Borough of Kent. It is 71 m. from London, on the S. Rly. The town is now an inland one as the sea has receded. It was a Cinque Port in the Middle Ages. The explosive, **lyddite**, was tested near here; hence its name. Pop. (1931) 2778.

Lyddite Explosive closely resembling melinite in composition, and named from Lydd in Kent. It is a mixture of picric acid and trinitrotoluold in varying proportions.

Lydford Village of Devonshire. It stands on the River Lyd, 7 m. from Tavistock on the S. Rly. It is on the edge of Dartmoor and in the Middle Ages was a borough and market town. As a stannary town the courts were held in Lydford and here was the stannary prison. **Lydford gorge** is one of the beauty spots of the district.

Lydgate **John.** English poet. Born at Lydgate, Suffolk, about 1370, he became a priest of the Benedictine order. He spent some time abroad. Henry IV. made him court poet. From 1423 to 1434 he was prior of a religious house in Essex. He died about 1451, and was buried at Bury St. Edmunds. Lydgate was an imitator of Chaucer. His chief works are *The Storie of Thebes*, *The Troy Book*, *The Fall of Princes* and *The Temple of Glass*, all based on older romances.

Lydia Kingdom that existed in Asia Minor before the Christian era began. It came into existence after 700 B.C., and was most flourishing under the rule of Croesus, when it included a good part of Asia Minor. In 546 Croesus was defeated by the Persians and Lydia became subject to the Persian kings. It recovered its independence in 334, but only for a brief time. In 133 B.C.

it was included in the Roman Empire. Its capital was Sardis. It is said that metallic coinage was first used in Lydia.

Lydney Town of Gloucestershire. It is in the Forest of Dean, 8 m. from Chepstow, and is reached by the G.W. Rly. There are coal mines in the neighbourhood. In Lydney Park, the seat of Lord Bledisloe, Roman remains have been found.

Lye Term applied to a solution of caustic potash or soda or the alkaline carbonates. It was originally prepared by the extraction with water of impure carbonate of potash from wood ashes for use in soap-making. Lyes are used for cleansing purposes and the removal of grease from fabrics, etc., also for refining petroleum and in tanning.

Lyell **Sir Charles.** British geologist. He was born in August, Nov. 14, 1797, the son of Charles Lyell, a botanist, and went to Exeter College, Oxford. He became a barrister, but gave his time to travel and the study of geology. In 1832-33 he was professor of King's College, London, and in 1864 was president of the British Association. In 1848 he was made a knight, and in 1864 a baronet. He died Feb. 22, 1875.

Lyell's work had a great influence on the modern study of geology. His chief book is *The Principles of Geology*, a standard work on the subject. He also wrote, *The Geological Evidences of the Antiquity of Man*, and left *Letters and Journals*, which were published in 1881.

Lyly **John.** English writer. He was born in Kent in 1553, and studied at Oxford and Cambridge. He entered the service of Lord Burghley, and for 20 years was responsible for the entertainments at the queen's court. In 1589 he was elected an M.P. Lyly is known as the author of *Euphues*, the publication of which in 1579-80 is an important event in English literature. It is a prose romance, the first of its kind in English, in two parts, *The Anatomy of Wit* and *Euphues and his England*. Euphues was an Italian gentleman whose adventures are related. The book, which was very popular, created the word euphuism for a style of writing in which simile, allusion and antithesis are used to excess. Lyly wrote eight plays, or masques for the court; among them are, *Sappho and Phao, Endymion, Mother Bombie* and *The Woman in the Moon*. He died in London in Nov. 1606.

Lyme Regis Borough, seaport and watering place of Dorset. It is on Lyme Bay, 150 m. from London, on the S. Rly. There is a harbour and some shipping, while quarrying is an industry, but the place is less prosperous as a seaport than it was in the Middle Ages. From 1295 to 1817 Lyme Regis, which was in early times the king's property, was separately represented in Parliament. The place is mentioned by Jane Austen and here the Duke of Monmouth landed in 1685. Pop. (1931) 2620.

Lymington Borough, seaport and market town of Hampshire. It stands at the mouth of the Lymington River 18 m. from Southampton, and 90 from London on the S. Rly. The place is a yachting centre and from here steamers go to the Isle of Wight. Until 1885 it sent members to Parliament. Pop. (1931) 5157.

The **Lymington River** rises in the New Forest and flows into the English Channel just beyond Lymington.

Lymm Urban district of Cheshire. In the north of the county, it is situated on the Bridgewater Canal, and is practically a suburb of Manchester. It is 187 m. from London by the L.M.S. Rly. Pop. (1931) 5642.

Lymph Name given to the colourless fluid consisting of a plasma identical with blood plasma. It is conveyed through lymphatic vessels to the lymphatic glands, where leucocytes or white blood corpuscles are added to the plasma, and finally to the capillaries. The work of the lymph is to carry nutriment to the tissues and to return waste products to the blood. The lymph glands not only form white blood corpuscles but also aid in destroying the toxins of microbes.

Lympne Village of Kent. It is 2 m. from Hythe, and is chiefly known as an air station. This was established in 1915 and until the end of the Great War was used for military purposes. It was then converted into a station on the route from the Continent to London.

Lynch Law Name given to the system by which people take the law into their own hands. It was very usual in North America in the 19th century, as it was also in various parts of Europe, while it is not unknown to-day. It appears to flourish where racial antagonism is strong and authority somewhat weak, and crimes against women make a special appeal to it. The name is that of a farmer in Virginia named Charles Lynch, who, in the 18th century, was a leader of those who took summary vengeance on black men for offences against the whites.

Lynd **Robert.** British writer and critic. Born in Belfast, the son of a Presbyterian minister, April 20, 1879, he was educated there. After graduating at Queen's College, he settled in London and joined the staff of *The Daily News*. After a time he became the literary editor of that paper, a post he retained when it became *The News Chronicle*. He wrote also a good deal for weekly and other periodicals, chiefly reviews of books and essays. His many published books include, *Home Life in Ireland, The Art of Letters* and *The Peal of Bells*. His wife, Sylvia, is also a writer both in prose and verse.

Lyndhurst Town of Hampshire. It is in the New Forest, 9 m. from Southampton, on the S. Rly. It is a centre for visitors to the Forest. In August there is a sale of forest ponies here. The church contains frescoes by Lord Leighton.

Lyndhurst **Lord.** English lawyer. John Singleton Copley, a son of the artist, John S. Copley, R.A., was born at Boston, U.S.A., May 21, 1772. He was educated at Trinity College, Cambridge, where he was second wrangler and became a barrister. In 1818 he entered the House of Common as M.P. for Yarmouth, and in 1819 he was made solicitor-general; in 1824 he became attorney-general. In 1827 Copley, now a leading figure among the Tories, was made lord chancellor and a baron. He left office in 1830, but was again lord chancellor, 1834-35 and 1841-46. From 1830-34 he was chief baron of the exchequer. He died Oct. 12, 1863, when his title became extinct.

Lynmouth Watering place of Devonshire. It stands where the East Lyn and the West Lyn meet, 18 m. from

Barnstaple. A cliff railway runs from here to Lynton, which stands much higher. There is a harbour and steamers go from here to Bristol and Ilfracombe. Near is the beauty spot called Watermeet.

Lynton Urban district and watering place of Devonshire. It is on the north coast, 17 m. from Barnstaple. Pop. (1931) 2012.

Lynx Class of animals belonging to the cat family (*Felis*). It is found in Europe, Asia and North America, though it is not so common as it was formerly. At one time it lived in England. The animal is larger and heavier than the cat and has a short tail and bearded cheeks. There are several species, and the fur varies in colour from white to quite dark. All are savage and feed on birds and small mammals, but will attack larger ones, such as sheep and goats.

Lyon Word used in Scottish heraldry. It is a form of lion. The herald's office for Scotland is called the **Lyon Court** and its head is the **Lyon King of Arms** who is registrar of the Order of the Thistle. He is assisted by three heralds, Marchmont, Albany and Rothesay, and three pursuivants, Carrick, Falkland and Unicorn. His office is in the Register House, Edinburgh.

Lyonesse Name of a country now supposed to be submerged. It was off the north coast of Cornwall and may have included that county. Breton and Cornish folklore contain many references to it. It was the land of Arthur and his knights, and Camelot was its chief town.

Lyons City in eastern France. First founded in 59 B.C., and later occupied by the Romans, it is now the capital of the Rhône department, with a population of 579,763. It stands where the Rivers Saone and Rhône meet, and has fine bridges, quays, and some docks. The cathedral of S. Jean was begun in the 12th century.

Lyons is the seat of an archbishopric, and the headquarters of an army corps. Its educational facilities include a university and the earliest veterinary school in Europe. Silk is the foremost industry, and has developed rapidly since 1450. Artificial silk is also manufactured; there is a large dye industry, and trade in cloth, coal and metals, wines and chestnuts. Excavations in 1933 uncovered extensive Roman remains, including a magnificent amphitheatre. It has two broadcasting stations (465.8 M., 1.5 kW.; and 287.6 M., 0.7 kW.).

Since 1916, an International Fair has been held annually at Lyons.

Lyons **Sir Joseph.** British business man. The son of Nathaniel Lyons, he was born in London. He was educated by the Jews and studied art. In 1894, having foreseen the possibilities of the catering business, he opened a tea shop in London, and this was the first of many. Hotels were added and the firm opened factories to produce many of the products sold, the result being that it became the largest business of its kind in the land. In 1911 Lyons was knighted and he died June 22, 1917.

Lyons **Joseph Aloysius.** Australian politician. Born in Tasmania, Sept. 15, 1879, he finished his education at the university of Tasmania and became a teacher. In 1909 he was elected to the legislature of the state in the Labour interest and from 1914-16 he was treasurer and minister of education. From 1923 to 1928 he was prime minister of the island. In 1929 Lyons was elected to the House of Representatives of the Commonwealth and at once joined the ministry of Mr. Scullin as postmaster-general and minister of works. He was acting treasurer during Mr. Scullin's absence in London in 1930, but in Jan., 1931, he resigned as he differed from some of his colleagues on the vital question of handling the grave financial situation. He came forward as the leader of the party that stood for meeting all obligations, and at the end of the year he and his followers scored a great success at the general election. Lyons then became prime minister (1931). He formed a Coalition Ministry Nov., 1934, and visited England for the Jubilee in May, 1935.

Lyre Musical instrument. From a hollow sound chest rise two curving arms (sometimes hollow) connected by a cross-bar, from which seven or more strings run to another cross-bar on the sound chest. These are touched by the left hand. The instrument was much used by the Greeks who sometimes played it with a small stick or plectrum.

Lyre Bird Genus of perching birds allied to the scrub bird. Resembling in size the domestic fowl, the males, after the third year, develop in the breeding season handsome tails, much longer than themselves, which are displayed peacock-wise in the form of stringed lyres. Some species imitate the notes of other birds. They are found in Australia only.

Lyric Originally a song sung to the accompaniment of the lyre, but to-day a form of poetry. It is opposed to epic or narrative poetry and is much more an effort of the imagination. The lyrics in the great Greek plays are among the finest in existence, notably those in *Hippolytus* and other plays of Euripides translated into English by Gilbert Murray. Pindar, Anacreon, Alcaeus, Sappho and other Greek poets also wrote beautiful lyrics.

In English poetry the lyric has a firm place. There are some in the plays of Shakespeare, for instance in, *As You Like It*, and writers of the lyric flourished in Tudor times from Thomas Campion to Edmund Spenser. But apart from Shakespeare, the greatest writers of the lyric belong to the 17th century, and those written by Sir John Suckling, Robert Herrick, Lovelace and others are an imperishable part of English literature. Only less notable are the religious lyrics of George Herbert and Henry Vaughan. As a lyrist the name of John Donne should be mentioned.

The 18th century was not favourable to the lyric, but the poets of the 19th made good use of it. Perhaps Shelley is the supreme genius in this form of verse, but Keats, Tennyson and Swinburne, Wordsworth and Browning also wrote some wonderful lyrics.

Lys River of Europe. It rises in France and soon passes into Belgium. It is 120 m. long and falls into the Schelde at Ghent; it is connected by canal with the Yser.

There was a good deal of fighting along the course of the river during the Great War, especially when, in October, 1914, and again in April, 1918, the Germans made efforts to control the Channel ports.

Lysander Spartan statesman. He lived in the 4th century B.C., and became prominent during the war with Athens as commander of the fleet. He secured aid from the King of Persia, but his greatest exploits were his victory over the Athenian

fleet at the battle of Aegospotami and the capture of Athens, events which ended the Peloponnesian War in favour of Sparta. He was killed when fighting the Thebans in 395 B.C. His life was written by Plutarch.

Lystra City of Asia Minor. It is now called Khatyn Serai. S. Paul visited it on his travels there. He and Barnabas were taken by the people for Jupiter and Mercury (Acts xiv.).

Lytham-St.-Anne's Borough, watering place and market town of Lancashire. It stands on the estuary of the Ribble 6 m. from Blackpool, on the L.M.S. Rly. The place, which has two piers, promenade and gardens, consists of Lytham and St. Annes which, until 1922, were separate urban districts. Pop. (1931) 2576.

Lyttelton Town and seaport of New Zealand. It is in South Island, 7 m. from Christchurch and has a fine natural harbour, around which docks have been built. Much of the produce of the Canterbury district is exported from here. Pop. 3800.

Lyttelton **Alfred.** English politician and athlete. The youngest son of the 4th Lord Lyttelton, he was born Feb. 7, 1857, and went to Eton and Trinity College, Cambridge. He became a barrister and a K.C. and in 1895, as a Liberal Unionist, was elected M.P. for Warwick and Leamington. In 1902 he went to the Transvaal on public business and on his return to England in 1903 succeeded J. Chamberlain as colonial secretary. He held office until 1905, being chiefly concerned with the question of Chinese labour in the S. African mines. In 1906 he lost his seat at Warwick, but was soon elected for S. George's, Hanover Square, and was in the House of Commons until his sudden death, July 5, 1913. His only son is **Captain Oliver Lyttelton, D.S.O.** His first wife was Laura, a daughter of Sir Charles Tennant, Bart., and sister of the Countess of Oxford; the second was Miss Edith Balfour who wrote his *Life*.

Lyttelton was a superb athlete. At cricket he was captain of Eton and Cambridge and played for England against Australia. He represented Cambridge and England at association football, and he was the amateur racquets champion, 1882 to 1895.

Of Alfred Lyttelton's seven brothers, the most notable perhaps were, **Sir Neville Gerald Lyttleton,** the fourth, and **Edward Lyttleton,** the seventh. The former entered the army and held high commands in the South African War (1899-1902). From 1904-12 he was commander-in-chief in Ireland and from 1912 until his death, July 6, 1931, was governor of Chelsea Hospital.

Edward was captain of the Cambridge cricket eleven. He became a schoolmaster and a clergyman. From 1890 to 1905 he was head master of Haileybury and from 1905 to 1916 of Eton.

Lyttelton **Baron.** English title borne by the family of Lyttelton. **George Lyttelton, an M.P.,** was made a baron in 1756. He was related to the Temple family and was associated politically with Chatham. When his son, Thomas, who succeeded him, died, Nov. 24, 1779, the title became extinct.

In 1794 the barony was revived for William Henry Lyttelton, an uncle of the last holder. He was succeeded in turn by his two sons. In 1837 a grandson, George William Lyttelton, became the 4th baron. He was a fine scholar, having been senior classic at Cambridge, and a politician. He was known, too, as the brother-in-law of W. E. Gladstone and the father of eight sons, who won fame in various fields of activity, not least as cricketers. He died April 10, 1876. His eldest son, who succeeded, inherited in 1889 the title of Viscount Cobham (*q.v.*). Hagley Hall in Worcestershire has been the seat of the Lyttletons for some 800 years.

Lytton **Earl of.** English title held by the family of Lytton. Edward Robert Lytton, a son of Baron Lytton, was born in London, Nov. 8, 1831. He went to Harrow and entered the diplomatic service in 1849. Having gained experience in Paris, Vienna and elsewhere, he was made ambassador to Portugal in 1874. From 1876 to 1880 he was governor-general of India and from 1887-91 was ambassador in Paris. In 1873 he became a baron and in 1880 an earl. He died in Paris, Nov. 21, 1891. Lytton wrote verse under the name of Owen Meredith.

Victor Alexander George Robert Lytton, who became the 2nd earl in 1891, was a grandson. Born Aug. 9, 1876, and educated at Eton and Trinity College, Cambridge, he held positions in the coalition ministry between 1916 and 1921 and from 1922 to 1927 was governor of Bengal. He wrote the *Life* of his grandfather, Lord Lytton. In 1932 he went out to Manchuria as head of a mission sent by the League of Nations. Lord Lytton's seat is Knebworth House, Hertfordshire. His eldest son, Viscount Knebworth, lost his life flying in May, 1933.

Lytton **Lord.** English novelist. Edward George Earle Bulwer-Lytton was born in London, May 25, 1803. His father, Earle Bulwer, was a soldier and his mother a member of the old family of Lytton. He was educated privately and at Cambridge, and in 1831 became M.P. for St. Ives and in 1832 for Lincoln; he lost his seat in 1841, but from 1852 to 1866 was M.P. for Hertfordshire. In 1858-59 he was secretary for the colonies and in 1866 he was made a baron. Lytton died at Torquay, Jan. 18, 1873, and was buried in Westminster Abbey.

Lytton's fame rests solely upon his novels and plays, although to-day these are rather neglected, as being too sentimental and perhaps too tedious. In their time, however, they enjoyed great popularity. The best are: *The Last of the Barons, The Last Days of Pompeii, Rienzi* and *Harold.* Others are: *Paul Clifford, Pelham, The Caxtons, Zanoni, Eugene Aram, Ernest Maltravers, Night and Morning* and *The Parisians.*

MAARTENS Maarten. Name taken by the Dutch novelist, Joost Marius Willem van der Poorten Schwartz. He was born in Amsterdam, Aug. 15, 1858, and was educated in England and Germany. He became a lecturer in law at the University of Utrecht, but soon adopted the career of a writer. His novels, stories of Dutch life, were published in both English and Dutch. The best of them are: *The Sin of Joost Avelingh, A Question of Taste, God's Fool, My Poor Relations, The Woman's Victory, The New Religion* and *Brothers All.* He died Aug. 5, 1915.

Maastricht Town and river port of the Netherlands. It is on the Meuse near the frontier of Belgium, 16 m. from Liége. The town has some manufactures and a trade along the river where there are large docks. Pop. (1932) 61,763.

Mabinogion The. Title given by Lady Charlotte Guest to her English translation of eleven Welsh prose tales from the 14th-century Red Book of Hergest. They include four Irish mythological romances, called the four branches of the Mabinogi, the ancient stock-in-trade of young bardic aspirants, associated with old Welsh tales and Arthurian romances. The Mabinogion was first published in 1838.

Mablethorpe Urban district and watering place of Lincolnshire. It is 13 m. from Louth, on the L.N.E. Rly. There are good sands and bathing. Pop. (1931) 3928.

Mabuse Jan Gossaert De. Flemish painter. He was born about 1472 and took the name of Mabuse from his birthplace, Maubeuge. He became a painter and passed some time in Italy. He was in the service of the Duke of Burgundy for some years and died Oct. 1, 1532, at Antwerp. Mabuse is represented in the National Gallery, London, by "The Adoration of the Kings."

Mac Scottish word meaning "son". It has become part of a large number of surnames common in Scotland and N. Ireland. In these it is sometimes spelled simply M. or Mc. In all cases the rule is to vocalise them as if they were all spelled out Mac.

McAdam John Loudon. Scottish engineer. He was born at Ayr, Sept. 21, 1756, and is famous for his introduction of the use of firmly embedded layers of small pieces of granite or similar material for road surfaces, a method since known as macadamising. He was appointed Surveyor-General of Roads in the Bristol area in 1815, and of the Metropolitan area in 1827. He died Nov. 26, 1836.

Macao Colony in China belonging to Portugal. It consists of the island of Macao in the Canton river and the smaller islands of Taipa and Colôane. The total area is about 10 sq. m. The transit trade is mostly in the hands of Chinese. The Portuguese settled here in 1557. Pop. (1928) 157,175.

Macaroni Form of farinaceous food, chiefly prepared in Italy. Made from the hard wheat, rich in gluten, habitually cultivated in S. Europe, the flour is kneaded into paste, inserted in a cylinder with perforated ends, pressed out in tubular form and stove-dried.

Macaroni Travelled exquisites who introduced extravagant modes as well as macaroni into late 18th-century England. Forming the **Macaroni Club** (Charles James Fox being a member) they wore towering perukes, diminutive hats, striped or spotted breeches with beribboned ends, frilled shirt-fronts and large white cravats. **Macaroni women** outrivalled them in extravagance of head-dress.

Macartney Earl. British administrator. George Macartney was born in Co. Antrim, May 14, 1737, and was educated at Trinity College, Dublin. In 1764, having joined the public service he went to Russia where he made a commercial treaty. From 1769-72 he was Chief Secretary for Ireland, and from 1780-86 Governor of Madras. He was the first ambassador to China, 1792-94, and from 1796-98 Governor of the Cape of Good Hope. He was made a baron in 1776 and an earl in 1792. He died May 31, 1806, when his titles became extinct.

Macassar Seaport and capital of Celebes, Dutch E. Indies. Situated on the S.W. coast, it exports timber, coffee, copra, rubber and other forest products. Pop. 86,662.

Macassar Strait, about 550 m. long, with a maximum breadth of 87 m., separates Celebes from Borneo by a deep oceanic channel E. of the Sunda continental shelf.

Macassar Oil is the trade name of a hair oil originally made from a Mauritius iron-wood or from the Indian kosumba tree. Pale or golden, its ingredients sometimes include coconut or safflower oils.

Macaulay Lord. English historian. **Thomas Babington Macaulay** was born at Rothy Temple, Leicestershire, Oct. 25, 1800, his father being Zachary Macaulay, a London merchant. His early home was at Clapham where his parents were members of the Evangelical sect. In 1818 he entered Trinity College, Cambridge, where he had a very brilliant career, and in 1824 he was made a fellow. He became a barrister, but earned a living by writing, chiefly for the *Edinburgh Review.*

A convinced Whig, Macaulay was, in 1830, returned as M.P. for the pocket borough of Calne. In 1833 he was elected for Leeds, but in 1834 he left Parliament to become legal advisor to the Council of India. There he remained for four years, and left his mark upon the legislation of the country. In 1839 he was elected M.P. for Edinburgh, and joined the Whig ministry as Secretary of War. He left office in 1841, but returned as Paymaster-General in 1846. In 1847 he lost his seat but was given one of the members for Edinburgh, 1852-56. In 1856 he was made a baron and on Dec. 28, 1859, he died unmarried and was buried in Westminster Abbey.

The chief of Macaulay's writings are his *Essays,* his *History of England* and his poems,

especially *The Lays of Ancient Rome.* The *Essays* show him as a descriptive writer of the first rank, but are more remarkable for the wealth of his knowledge and the fulness and aptness of his allusions. As exercises in criticism they are also notable, especially, perhaps, the one on Milton. The first volume of the *History* appeared in 1848, but it was unfinished when the author died, the fifth and last volume being published in 1861. As a poet Macaulay wrote vivid, swinging verse, full of lines that linger in the memory, as do some of his great prose passages. In their own sphere *The Lays of Ancient Rome* and *The Armada* are unrivalled.

Macaulay **Rose.** English novelist and essayist. She spent her childhood in Italy and was educated at Oxford. Her publications, which are marked by a lively humour, include *What Not*, 1919; *Potterism*, 1920; *Dangerous Ages*, 1921; *Mystery at Geneva*, 1922; *Told by an Idiot*, 1923; *Orphan Island*, 1924; *Crewe Train*, 1926; *Keeping up Appearances*, 1928; *Staying with Relations*, 1930; two books of verse, 1914 and 1919, *A Casual Commentary*, essays, 1925; *Some Religious Elements in English Literature*, 1931; *They Were Defeated*, 1932; *Milton*, a biography, *Going Abroad*, and *The Minor Pleasures of Life*, 1934; *Personal Pleasures*, 1935.

Macaw Genus of long-tailed S. American parrots (*Ara*). They range from Mexico to Paraguay. The commonest are the blue-and-yellow, the red-and-yellow and the hyacinthine. Distinguished by their gorgeous plumage, some of them 3 ft. long, including tail, they are gregarious forest denizens and incorrigible screamers.

Macbeth King of the Scots. He became king in 1040, securing the throne by murdering Duncan. He reigned for 17 years, and was killed during a battle with Duncan's son, Malcolm, and his English ally, Siward, Earl of Northumbria. The story as told in Holinshed's *Chronicle* is the basis of one of Shakespeare's greatest tragedies.

McBey **James.** Scottish painter and etcher. Born at Newburgh, Aberdeenshire, Dec. 23, 1883, he entered a bank at 15, but studied art privately, and began etching at 17. His first exhibition was in London in 1911. He has made etchings of Scotland, Wales, Holland, Spain, Venice, Morocco and France, and 1917-18 was official artist to the Egyptian Expeditionary Force.

Maccabees Jewish family distinguished in the revolt against Syrian tyranny, 2nd century B.C. Attempts under Antiochus Epiphanes to establish pagan altars in Palestine were forcibly resisted by Mattathias, an aged priest of the Hasmonean family, who fled to the mountains with his five sons, John, Simon, Judas, Eleazar and Jonathan, 168 B.C. After his death the war was continued under his son, Judas Maccabacus, whose name, "hammer," came to designate the family. After protracted struggles he retook Jerusalem, restored the Temple service and was slain in battle 161 B.C. The revolt ended in a Jewish monarchy under Roman sanction. The Old Testament Apocrypha include two historical books on this period, 1 and 2 Maccabees. *See* HYRCANUS I.

McCardie **Henry Alfred.** British judge. Born in Edgbaston, July 18, 1869, he was called to the Bar in 1894, and in 1916 became a Bencher of the Middle Temple and a judge of the High Court. His advanced views and outspoken comment on social affairs made the "bachelor judge" a famous figure. He died in 1933.

McCarthy **Lillah.** English actress. She was born at Cheltenham, Sept. 22, 1875, and educated there. She has played leading parts in England, Australia and the United States with Wilson Barrett: and in Shaw plays between 1905-08. She assumed management of the Little Theatre in 1911, playing Margaret Knox in *Fanny's First Play*, and later played with Sir Herbert Beerbohm Tree and Sir Martin Harvey. She became manager of the Kingsway Theatre in 1912 and 1919 and produced plays by Eden Phillpotts and Arnold Bennett, afterwards playing with Matheson Lang in *The Wandering Jew.* In 1920 she married Sir F. W. Kebble.

Macclesfield Borough and market town of Cheshire. It stands on the little river Bollin, 18 m. from Manchester, and 166 from London, on the L.M.S. Rly. A canal connects the town with the Grand Union system. The chief industry is the manufacture of silk. Pop. (1931) 34,902.

McClintock **Sir Francis Leopold.** British sailor. He was born at Dundalk on July 8, 1819, and entered the navy in 1831. For tracing of the fate of Sir John Franklin's expedition to the Polar Regions he was knighted in 1860. He wrote *The Fate of Sir John Franklin.* He later sounded the North Atlantic for the electric cable, and was created a K.C.B. in 1891. He died Nov. 17, 1907.

McCormack **John.** Irish vocalist. Born at Athlone, June 14, 1884, he was educated in Dublin, where he sang in the choir of the Roman Catholic cathedral. He then went to Milan for study, and in 1907 appeared for the first time in opera in London. Possessing a beautiful tenor voice, he sang for several seasons at Covent Garden, also in concerts in London, New York, Napies, Melbourne and elsewhere. His singing of Irish folk songs was also noteworthy. In 1917 he became an American citizen, and in 1924 the pope made him a count and an official at the papal court.

Maccunn **Hamish.** Scottish composer. Born at Greenock, March 22, 1868, he studied music in London. From 1888-94, he was Professor of Harmony at the Royal Academy of Music, London. His works include the operas *Jeannie Deans* and *Diarmid*, some cantatas and the popular overture *Land of the Mountain and the Flood.* Maccunn died Aug. 2, 1916.

Macdonald Name of a famous Scottish clan. They were powerful in Argyllshire and the islands in the 12th century, or earlier, and claimed the position of honour on the right in battle. Their chieftain was the Lord of the Isles. Later Macdonalds settled in other parts of Scotland and there were Macdonalds of Glencoe and other branches.

Macdonald **Flora.** Scottish heroine. She was born in 1722 and came into notice in 1746. In that year Prince Charles Edward escaped to the Hebrides after Culloden. Flora secured a passport for herself and her servants, one of whom was the disguised prince, and succeeded in taking him to Portree and so enabling him to escape to France. She was later put in prison, but was released in 1747. In 1750 she married

Allan Macdonald, and went with him to America where he served in the British Army against the colonists. She came home in 1779, and died at Kingsburgh, March 5, 1790.

MacDonald **George.** Scottish writer. Born Dec. 10, 1824, at Huntly, Aberdeenshire, he was educated at the University of Aberdeen, and was minister at Arundel and Manchester. For reasons of health he soon gave up the ministry and devoted himself to writing and lecturing. He lived a good deal at Bordighera, but died at Ashtead, Surrey, Sept. 18, 1905.

MacDonald was a popular author, although the dialect in his novels makes them irksome to some readers. They include: *David Elginbrod*, *Alec Forbes of Howglen*, *Robert Falconer*, *The Marquess of Lossie*, *Sir Gibbie* and *Salted with Fire*, and reflect Scottish life and ideas of the time. For children, with almost equal success, he wrote *At the Back of the North Wind* and *The Princess and the Goblin*. His many poems include *Where do you come from, baby dear*, and the *Diary of an Old Soul*.

MacDonald **James Ramsay.** British politician. He was born at Lossiemouth in humble circumstances, Oct. 12, 1866, and educated at the elementary school there. Settling in London he worked as a clerk and then as a journalist. He became identified with the Fabian Society and the Labour Party and was soon an influential member of the group that inspired this movement. He edited *The Socialist Review* and wrote a good deal on Socialism. In 1900 he was made Secretary of the Labour Party, a post he held for twelve years, and for the next twelve he was its treasurer. From 1900 to 1904 he was a member of the London County Council.

In 1895 MacDonald stood for Parliament for Southampton, but failed to secure election, as he did at Leicester in 1901. In 1906 he was returned for Leicester and he held the seat until 1918 when, owing to his pacifist ideas during the Great War, he was defeated. He was absent from Parliament until 1922, when he was returned for the Aberavon division of Glamorganshire, a seat which he exchanged in 1929 for the Seaham Harbour division of Durham.

Having been from 1906 to 1909 Chairman of the Independent Labour Party, MacDonald was, in 1911, chosen leader of the Labour Party in the House of Commons. He held this position until 1914, and returned to it in 1922, when the Labour Party was the official opposition in Parliament. As leader he was called upon in Jan. 1924, to form a ministry and he became the first Labour Prime Minister in Great Britain. He also filled the office of Foreign Secretary until the ministry fell before the end of the year. Having been leader of the Opposition for a period of nearly five years, he was called upon, after the general election of 1929, to form the second Labour Ministry. This was in office under his premiership until a financial crisis led to its break-up in Aug. 1931. With a few colleagues and followers MacDonald acted with the other two political parties and a National Government was formed, with himself as premier. This was confirmed in office when the general election of Oct. 1931, sent an immense majority to its support in the House of Commons. MacDonald himself won a signal victory at Seaham over a Socialist opponent. In 1932 he underwent two operations on his eyes, but was able to preside over the Lausanne conference in July.

In June 1935 for reasons of health he resigned the premiership in favour of Mr. Stanley Baldwin and took over the Lord Presidency of the Council. Defeated at Seaham Harbour at the General Election of Nov., 1935, he was elected to represent the Scottish Universities in Feb., 1936, retaining his Cabinet post.

MacDonald has travelled very widely and is a man of considerable culture. His books include *Socialism and Society*, *Labour and the Empire*, *The Awakening of India*, *The Socialist Movement*, *Parliament and Revolution*, *Wanderings and Excursions*, and a *Memoir* of his wife. In 1912-14 he was a member of the royal commission that inquired into the public services of India, and he has received numerous academic and other honours.

MacDonald married, in 1896, Margaret Ethel, daughter of J. H. Gladstone, the eminent scientist, a woman of unusual gifts. She died in 1911, leaving five children. One son, Malcolm, was returned as M.P. for the Bassetlaw division in 1929 and again in 1931. In 1931 he was appointed Under-Secretary for the Colonies and in June, 1935, Secretary of State for the Dominions. Though defeated in the Election of Nov., 1935, he was returned for Ross and Cromarty in Feb., 1936, and continued in office.

Macdonald **Sir John Alexander.** Canadian statesman. Born in Glasgow, Jan. 11, 1815, he went to Canada as a child, his parents settling at Kingston. In 1836 he became a barrister and was elected to the legislature of Ontario in 1844, becoming prominent as a politician. In 1856 he was made Premier of Ontario and Attorney-General, and he was the leader of those who worked for the confederation of Canada. When, in 1867, the Dominons came into being, Macdonald was selected as the first Prime Minister. He retained this office until 1873 and returned to it in 1878, remaining Prime Minister until his death at Ottawa, June 6, 1891.

Macdonald, the leader of the Conservative Party, was responsible for enlarging the federation by adding British Columbia to it. He was knighted in 1867, and on his death his widow was made a baroness. His residence, Earncliffe, Ottawa, is now public property.

Macduff Thane of Fife. He is said to have lived in the 11th century and to have taken part in the rising against Macbeth. He appears in Shakespeare's plays.

Macduff Burgh, market town and seaport of Scotland. It stands at the mouth of the river Deveron, 50 m. from Aberdeen, on the L.M.S. Rly. There is a modern harbour for the shipping and the fishing. Pop. (1931) 3276.

The eldest son of the Duchess of Fife is called the **Earl of Macduff.**

Mace Spice prepared from the fleshy covering of the nutmeg. It is dried in the sun and possesses aromatic properties, which render it of use for flavouring.

Mace Staff with a massive head, formerly a weapon of war but now used as a symbol of authority. In early times its use as a weapon was allowed to mediæval clerics who were forbidden to shed blood by the sword. As it came into ceremonial use it became more ornate and was often richly decorated. In the House of Commons the mace is laid on the table while the Speaker is in the chair.

Macedonia Territory in the Balkan Peninsula. It stretches from the western frontier of Bulgaria to the Gulf of Salonika.

Western Macedonia is mountainous and contains three large lakes, Ochrida, Presba and Ostrovo; Eastern Macedonia has two valleys, watered by the rivers Varda and Struma. Agriculture is the chief occupation, and there is much iron ore and magnesite, so far scarcely developed. The chief towns are Salonica, Monastir, Uskub and Adrianople. Agriculture is the staple industry.

Macedonia became strong after 359 B.C. under Philip and Alexander the Great, and held sway over the rest of Greece until conquered by Rome in 168 B.C. Peopled later by Slavonic races, it was part of the Bulgarian empire from 800-1000, and after a hundred years of Serbian rule, fell to the Turks in 1689. From 1875 there were constant revolts of the Christian Bulgarians against the Turks, culminating in a great massacre in 1903.

Macedonia was a field of battle during the Balkan wars, and after 1913 was divided between Greece and Serbia, but when the World War broke out in 1914, Allied troops were sent to Salonica, and, Bulgaria being eventually defeated, Macedonia was divided after 1919 between Greece and Yugoslavia.

McEvoy **Ambrose.** English portrait-painter. Born at Crudwell, Wiltshire, Aug. 12, 1878, he was encouraged by his father to take up art, and entered the Slade School in 1893. He became friendly with Augustus John, and soon gained a reputation for clever portraits in line and wash, and became a fashionable portrait-painter. He was elected A.R.A. in 1924, and died Jan. 4, 1927.

Macfarren **Sir George Alexander.** British musician. Born in London, March 2, 1813, he was the son of George Macfarren, a writer of plays. He studied at the Royal Academy of Music, where, in 1837, he was made professor. In 1875 he was made principal of the college, and he was also Professor of Music at Cambridge, but he was perhaps better known as the conductor of the orchestra at Covent Garden Theatre from 1845 to 1875. In 1883 he was knighted, and he died Oct. 31, 1887. Macfarren composed many operas, several cantatas and oratorios as well as many other pieces. He wrote books on harmony and other subjects. In 1865 he became blind.

Macgill **Patrick.** Irish novelist and poet. He was born in Donegal in 1890, and was educated at a mountain school. He worked between the ages of 12 and 19 about the farm and as a navvy, and joined the staff of the *Daily Express* in 1911. He served in the British Army during the Great War. His books include *Songs of a Navvy*, *Songs of the Dead End*, *The Great Push*, *Soldier Songs*, *Glenmornan*, *Moleskin Joe* (a play), *Fear* and *Suspense* (a play produced in London in 1930).

McGill University University in Canada. It was founded at Montreal by money left by James McGill and dates from 1821. Since then it has had other benefactors including Lord Strathcona. The university has a fine range of buildings on Mount Royal at Montreal and facilities in the shape of laboratories, libraries, etc., for every branch of study. There are residential halls and several theological and other colleges are affiliated to the university. It is open to women equally with men.

Macgillicuddy's Reeks Chain of mountains in Co. Kerry, Irish Free State. Carrantuohill (3414 ft.), the highest of the range, is also the highest peak in Ireland.

Machiavelli **Niccolo.** Italian writer. He was born in Florence, May 3, 1469, his father being a lawyer. He entered the service of the city and from 1498 to 1512 occupied a high position, being sent on several missions to foreign rulers. In 1512, on the return of the Medici to power, he lost his position and was for a short time in prison. He then went to live in the country, and remained there until his death, June 20, 1527. He was buried in Santa Croce, Florence.

Machiavelli's masterpiece, dedicated to Lorenzo the Magnificent, is *Il Principe* or *The Prince*, one of the world's great manuals of statecraft. It is based on the theory that the ruler, or prince, is justified in taking any steps that will maintain his supremacy. The state under his control is neither moral nor immoral: it acts without regard to morality, and thus the ruler may, if necessary, resort to deceit and treachery. He also wrote *A History of Florence*, *The Art of War* and *Discourses on the First Decade of Titus Livius*.

Machicolation Series of corbels or brackets supporting the parapet or battlements in mediaeval castles or fortifications. Openings between the corbels were left in the overhanging stone floor of the rampart to allow of the discharge of missiles upon an attacking force.

Machine Gun Firearm provided with a mechanism for the rapid discharge of rifle bullets or small shells. The mechanism increases the rapidity of charging, the firing and the ejection of spent cartridges.

In the mitrailleuse type, the gun was worked by turning a handle, the Gatling gun by means of a crank, the Nordenfelt by a lever action, the Gardner by use of a winch. In the Maxim gun automatic action was introduced, a spring recoil being used, and a similar action is seen in the Vickers type. The Hotchkiss gun is worked by the action of the propellant gases upon a piston mechanism.

In 1915 a **Machine Gun Corps** was formed. It was divided into four branches: infantry, cavalry, heavy and motor. In 1919 a school for training officers was opened at Sleaford, but in 1921 the corps was disbanded. There is a memorial at Folkestone to those of its members who fell in the Great War. Machine gun detachments are now attached to each battalion of infantry.

Machynlleth Urban district and market town of Montgomeryshire. It stands near the Dovey, 21 m. from Aberystwyth, on the G.W. Rly. It is visited by tourists and for the fishing. Pop. (1931) 1892.

Mackail **John William.** British scholar. Born in 1859, he was educated at Balliol College, Oxford, and became an inspector under the Board of Education. His works include a fine verse translation of Homer's *Odyssey*, a valuable primer on *Latin Literature*, *Lectures on Greek Poetry* and *Lectures on Poetry*. He edited *Select Epigrams from the Greek Anthology*, and wrote lives of

William Morris and George Wyndham. He was Professor of Poetry at Oxford, 1906-11. In 1932 he was chosen president of the British Academy.

Mackail married Margaret, daughter of Sir E. Burne-Jones, and their son, **Denis George Mackail**, won fame by his humorous stories. These include *Bill the Bachelor, According to Gibson, Greenery Street, How Amusing, The Square Circle* and *David's Day*. He was born June 3, 1892, and was educated at S. Paul's School and Balliol College, Oxford.

Mackay Town and seaport of Queensland. It stands on the coast, at the mouth of the river Pioneer, 625 m. to the N.W. of Brisbane. It has a fine modern harbour, and from it much of the produce of the state is exported. Pop. (1931) 9230.

McKenna **Reginald.** English financier. Born in London, July 6, 1863, he was educated at King's College, London, and Trinity Hall, Cambridge. He rowed against Oxford in 1887. He was called to the bar in 1887, but soon turned his attention to politics, and was elected Liberal M.P. for N. Monmouthshire in 1895. In 1905 he was appointed Financial Secretary to the Treasury. From 1907-08 he was President of the Board of Education: from 1908-11, First Lord of the Admiralty: from 1911-15, Home Secretary: and in 1915-16, Chancellor of the Exchequer. He introduced the war loan of 1915 and was responsible for the duties on certain imports called the **M'Kenna Duties.** He lost his seat in Parliament in 1918, and in 1919 was made Chairman of the Midland Bank, assisting the Government in an advisory capacity on several occasions.

McKenna **Stephen.** British novelist. Born Feb. 27, 1888, he was educated at Westminster School and Christ Church, Oxford. From 1915-19 he served in the War Trade Intelligence Department, visiting the U.S.A. in 1917. The first of his many novels, *The Reluctant Lover*, appeared in 1912. Others include *Sonia*, 1917; *Midas & Son*, 1919; *Vindication*, 1923; *An Affair of Honour*, 1925; *The Secretary of State*, 1927; and *The Datchley Inheritance*, 1929. In 1932 appeared *The Way of the Phoenix*.

Mackennal **Sir Bertram.** Australian sculptor. Born in Melbourne in 1863, he was educated in Australia afterwards studying art in Paris. His work soon attracted attention, and he was selected to carve several statues of Queen Victoria and later to design the coinage issued after the accession of George V. His other work includes memorials to Edward VII. in S. George's Chapel, Windsor, and elsewhere, and the national memorial to T. Gainsborough. In 1909 MacKennal was made A.R.A., and in 1922 R.A. He was knighted in 1921 and died Oct. 10, 1931.

Mackensen **August von.** German soldier. Born in Saxony, Aug. 6, 1849, he was educated at Torgau and Halle and entered the Saxon Army in 1869. After this became part of the army of the new empire in 1871 he rose rapidly in rank, becoming, in 1908, head of an army corps. He came into notice by his services against the Russians, and for his work on the E. front in 1914-15 was made a field marshal. He led the armies that conquered Serbia and later crushed Rumania, for the administration of which he was responsible until Nov., 1918. For a time he was interned, but in 1919 he was allowed to return to Germany.

Mackenzie River of Canada. Rising near Mt. Brown in British Columbia, for the first 680 m. it is the Athabasca: from Lake Athabasca and the Great Slave Lake for about 600 m. it is the Great Slave River, with the Peace and the Finlay as its tributaries. The Mackenzie River proper flows from Great Slave Lake to Mackenzie Bay in the Arctic Ocean. It is 1000 m. long.

One of the districts of the N.W. Territories is called the **Mackenzie.** It covers over 560,000 sq. m., reaching from British Columbia to the Arctic Ocean.

Mackenzie **Sir Alexander.** Scottish explorer. Born about 1755 in Inverness, he went to Canada in the service of one of the trading companies in 1779. For the next 20 years he did a great deal of exploring. He found the mouth of the river named after him, the **Mackenzie**: he crossed the Rocky Mts. to the Pacific coast: and journeyed along the St. Lawrence. In 1801 he published an account of his travels. Knighted in 1802, he died March 11, 1820.

Mackenzie **Compton.** British author. He was born at West Hartlepool, January 17, 1883, and was educated at S. Paul's School, London, and at Oxford. He served in the South African and Great Wars, and directed the Aegean Intelligence Service with great distinction in 1917.

He has written *The Passionate Elopement*, 1911; *Carnival*, 1912; *Sinister Street*, 1913-14; *Poor Relations*, 1919; *Rich Relatives*, 1921; *Rogues and Vagabonds*, 1927; *Gallipoli Memories*, 1929; *More Athenian Memories*, 1932 and three plays. In 1933 he published *Reaped and Bound*, a volume of essays, and *Literature in My Time*, the first of a series of books on current activities by authoritative writers. He was elected Rector of Glasgow University in 1932.

Mackenzie **Sir Morell.** British surgeon. Born at Leytonstone, July 7, 1837, he was educated in London and studied at the London Hospital, in Paris and in Vienna. He won a prize for an essay on diseases of the larynx and soon became one of the leading specialists in that branch of surgery. He was one of the founders of the Hospital for the Throat, was one of the first to use the laryngoscope and wrote a standard book, *Diseases of the Throat and Nose.* To the general public he became known in 1887 when he was consulted by the Crown Prince of Germany, later the Emperor Frederick, on whom he wrote a book, *Frederick the Noble.* Knighted in 1887, he died Feb. 3, 1892.

Mackenzie **William Lyon.** Scotsman and Canadian politician. He was born in Angus, March 12, 1795, and in 1820 settled in Canada. He made his home in Toronto, where, in 1824, he started *The Colonial Advocate*. In 1834 he secured a seat in the legislature and, as the leader of an influential party, declared for a republic. He took part in the rising that broke out in 1837 and when this was crushed, escaped to the United States where he was arrested and imprisoned. In 1849 he was allowed to go back to Canada and was re-elected to the legislature. He died Aug. 29, 1861.

Mackerel Marine food-fish related to the tunny, abundant in the N. Atlantic (*Scomber scombrus*). The slightly compressed body, commonly 10-12 in. long,

rising to 18 in., mostly covered with minute scales, is black-barred, bluish-green above and silvery beneath. Shoals move between the open sea and coastal water, and are mostly taken in drift-nets, especially off Cornwall and the E. coast of Britain, in May-June and Sept-Oct. The Spanish mackerel, *S. colias*, differs in being big-eyed, with larger scales, and an air-bladder.

McKinley **William.** American president. Born in Ohio, Jan. 29, 1843, he was educated to become a lawyer. After serving in the Civil War, he practised law at Canton. In 1877 he was sent to Congress by the electors of Ohio, and he had a good deal to do with the introduction of the high tariff of 1890, sometimes called the **McKinley Tariff**. In 1896 he was the Republican candidate for the presidency and he succeeded in defeating W. J. Bryan, who advocated bimetallism. There was another contest between them in 1900 and again McKinley was the victor. During his first term of office the war with Spain took place: his second had only just begun when he was shot by an anarchist at Buffalo, Sept. 6, 1901. He died on the 14th, when Roosevelt became president.

Mackintosh **Sir James.** Scottish writer. Born, Oct. 24, 1765, he was educated for the medical profession in Aberdeen and Edinburgh, but he settled in London and became a barrister. He became known by his *Vindiciae Gallicae*, a defence of the French Revolution, written in answer to Burke, which won for him the honour of French citizenship. In 1804 he went out to Bombay as a judge and in 1813, after his return to England, was elected M.P. for Nairn and made Professor of Law at the East India College, Haileybury. From 1830-32 he was a member of the Board of Control for India. He died May 22, 1832.

Maclaren **Archibald Campbell.** English cricketer. Born in Manchester, Dec. 1, 1871, he was educated at Elstree and Harrow. For four years he played cricket for Harrow against Eton and in 1891 he was made captain of the Lancashire county team. For the next 20 years or so he was one of the outstanding figures in the game, a superb batsman and fieldsman and a captain of unusual discernment. He played many times in test matches in England and Australia and was captain of the English team at home in 1899, 1902 and 1909 and in Australia in 1897-98 and 1901-02. In 1895 he scored 424 runs at Taunton, the highest score in first-class cricket. He wrote *Cricket, Old and New*, 1924.

Maclaren **Ian.** Name taken by the Scottish writer, Rev. John Maclaren Watson. Born at Manningtree, Essex, Nov. 3, 1850, he was educated at Stirling and in Edinburgh. He became a minister of the Free Church of Scotland in 1874, his first church being in Edinburgh. He was at Logiealmond and in Glasgow before becoming minister of the influential church in Sefton Park, Liverpool, where he was from 1880 until just before his death, May 6, 1907.

As Ian Maclaren, he wrote in 1894 some sketches of Scottish life called *Beside the Bonnie Brier Bush*. The book had an extraordinary success and was followed by others including *The Days of Auld Lang Syne* and *Kate Carnegie*. He also wrote *The Mind of the Master*, and other theological books.

Maclean **Sir Donald.** Scottish politician. Born in Tiree, he became a solicitor in London. In 1906 he entered the House of Commons as Liberal M.P. for Bath. From 1910-18 he represented the counties of Peebles and Selkirk and from 1918 to 1922 Peebles and Midlothian. In 1929 and 1931 he was elected for a division of Cornwall. From 1911 to 1916 he was Deputy Chairman of Committees and in 1917 he was knighted. In 1919 Mr. Asquith, having lost his seat, Sir Donald was chosen the leader of the Liberal group in Parliament, a position he retained until 1922. In Aug., 1931, he joined the National Government as President of the Board of Education. He died suddenly, June 15, 1932.

Macleod **Norman.** Scottish writer and preacher. Born at Campbeltown, Argyllshire, June 3, 1812, and educated for the ministry, his first churches were at Loudoun and Dalkeith. From 1851 till his death, June 16, 1872, he was minister of the Barony Church, Glasgow, and author of the popular *Reminiscences of a Highland Parish*, 1867. He edited *Good Words* from 1860 to 1872 and was a friend of Queen Victoria.

Maclise **Daniel.** British painter. Born in Cork, the son of a Highland soldier, Jan. 25, 1806, he became a clerk in a bank there. He soon left this to study art and showed such promise that he was helped to study in London. He was elected A.R.A. in 1835 and R.A. in 1840, and in 1866 was offered the presidency of the Royal Academy. He died in Chelsea, April 1, 1870.

Maclise's great pictures include "The Banquet Scene in Macbeth," "The Ghost Scene in Hamlet," in the Tate Gallery, "Snap Apple Night," "Caxton's Printing Office," "Malvolio and the Countess" and "Shakespeare's Seven Ages." He helped to decorate the House of Lords, painted a portrait of his friend, Charles Dickens and illustrated books.

Macmahon **Marie Edmé Patrice Maurice.** French soldier. He was born June 13, 1808, being descended from an Irish soldier who had settled in France after 1688. He served in Algiers and in the Crimean and was head of the army that, in 1864, defeated the Austrians at Magenta, after which he was made a Marshal and a Duke and appointed Governor-General of Algeria. He returned home in 1870 to command an army corps in the war with Prussia. At Worth he was defeated and at Sedan he was made prisoner. After his release he put down the Commune and established the authority of the republic. This led, in 1873, to his election as president. His actions aroused a good deal of hostility and in 1879 he resigned. He died Oct. 17, 1893.

McNeill **James.** Irish politician. Born Aug. 27, 1869, in Co. Antrim, he was educated at Blackrock College, Dublin, and at Emmanuel College, Cambridge. In 1890 he won a position in the Indian Civil Service and he remained in India until 1921. Returning to Ireland he was made Chairman of the Dublin County Council and took part in drawing up the constitution of the Irish Free State. From 1923 to 1927 McNeill was High Commissioner for the Free State in London, and in 1928 he was made Governor-General.

Mâcon City of France. It stands on the Saône, 45 miles from Lyons, and is the capital of a department. The city gives its name to a popular variety of Burgundy. Pop. (1931) 18,495.

Macquarie River of New South Wales, Australia. It is formed by a union of the Fish and the Campbell rivers and flows through New South Wales for about 350 m. until it joins the Darling. It waters a rich agricultural district and on its banks are Bathurst and Wellington.

An island in the South Pacific also bears this name. It belongs to New Zealand and on it is a meteorological station. Its area is 170 sq. m.

Macquarie Bay is on the west coast of Tasmania. It forms a good harbour.

Macramé Trimming made by knotting together long fringe-threads into geometrical patterns. Presumably of Arabian origin, it reached Moorish Spain, where "Morisco fringes" are still made, and N. Italy, whose knotted lace experienced a 19th-century revival of fashion in **macramé lace**, for wedding gifts in Latin America and for recreative lace making in Victorian England.

Macready **William Charles.** English actor. Born in London, March 3, 1793, and educated for the law, he took to the stage and made a great reputation in Shakespearean parts. Other successes were won with Helen Faucit in Lytton's plays, *The Lady of Lyons* and *Richelieu*. From 1837-39 he was manager of Covent Garden: from 1839-41 of the Haymarket and from 1841-43 of Drury Lane. He went three times to the United States. In 1851 he retired, and he died at Cheltenham, April 27, 1873, leaving some interesting diaries.

His son, **Sir Cecil Frederick Nevil Macready**, was a soldier with a long record of active service. In 1918-20 he was commissioner of the metropolitan police and in 1920-22 he was in command of the troops in Ireland.

Macrinus Roman emperor whose full name was Marcus Opelius Severus. Born in 164, he became an officer of the Praetorian Guard and, having induced the soldiers to murder Caracalla, was proclaimed emperor in 217. He made war on Parthia, but this being unsuccessful, the soldiers turned on him and he was put to death in 218.

MacWhirter **John.** Scottish artist. He was born near Edinburgh in 1839 and studied art at the Edinburgh School of Design. He exhibited at the Royal Scottish Academy and, was elected as Associate in 1864, also at the Royal Academy, becoming R.A. in 1893. MacWhirter was chiefly a landscape painter, many of his works being studies of scenery in the Highlands and in Italy. He was the author of *Landscape Painting in Water Colours*. He died Jan. 28, 1911.

Madagascar Island in the Indian Ocean. It has a tropical climate, high mountains (Amboro, 9490 ft.), large rivers flowing west, extensive lakes and valuable forests and minerals.

The natives are of Melanesian and Polynesian stock. Education is compulsory from 8 to 14. The chief industry is agricultural and the chief towns are Antananarivo in the highlands and Tamatave on the east coast. Madagascar became a French possession in Jan., 1896, the last native sovereign being Ranavalona III. (1861-1916). The area is about 241,094 sq. m. and the pop. (1931) 3,701,770, of whom some 23,076 are French and 13,460 foreigners.

Madden **Sir Charles Edward.** British admiral. Fourth Sea Lord of the Admiralty (1910-11), he served in the Battle of Jutland in 1916, and was mentioned in despatches. He was Admiral of the Fleet in 1924, and First Sea Lord of the Admiralty (1927-30) retiring in 1930. He was created a baronet in 1919, and awarded the O.M. in 1931. He also holds many foreign decorations. He died June, 1935.

Madder Pigment obtained from the roots of the madder plant, *Rubia tinctorum*. This is a perennial plant, growing in Southern Europe and Asia Minor. Formerly it was the source of the dyestuff, turkey red, replaced now by alizarin derivatives. Madder forms a series of richly-coloured, transparent lakes used as water colours.

Madeira Island group in the North Atlantic Ocean belonging to Portugal. The principal island, which gives its name to the group, is a favourite health resort, mountainous and fertile, producing wine, sugar and fruit.

The chief town is Funchal, the shipping centre, and a seat of a Roman Catholic bishopric. Pop. (1930) 210,220.

Madeira River of South America, a tributary of the Amazon. It is formed by a union of the Mamoré and the Beni and flows for 900 m. until it falls into the Amazon near Manaos. The greater part of its course is navigable. It is about 2 m. wide where it joins the Amazon.

Madison **James.** American president. Born in Virginia, March 16, 1751, he became a member of the legislature and helped to frame the American constitution. At first he acted with Alexander Hamilton, but later adopted the views of Hamilton's opponents and with Jefferson tried to limit the power of the central government. When, in 1801, Jefferson became president, Madison was made Secretary of State and held that post until 1809. He was then elected president, was re-elected in 1812, retired in 1817, and died June 28, 1836.

Madoc Second son of Owen Gwynedd, Prince of Wales. According to a 15th-century Welsh poem, after disputes over the succession to the Welsh crown, he sailed westward with ten ships. In Tudor days the legend arose that he had discovered America; this, unsupported by evidence, is the theme of Southey's poem, *Madoc*, 1805.

Madonna Italian word, "my lady," specifically reserved to denote the Virgin Mary when represented in art. Representations in 3rd-century catacombs inaugurated a practice to which artists have devoted their highest powers in all ages. Madonnas occur as paintings on canvas, wood and fresco, works in Mosaic, or sculptures in wood, ivory, metal and stone. Of the many madonnas painted by the great Italian artists, pride of place is usually given to Raphael's Sistine Madonna, now in Dresden. *See* LILY.

Madras Capital of Madras Presidency and chief port on the east coast of India. It extends for 9 miles along the coast, and for 4 miles inland, and was founded in 1640 by the East India Company. There are cotton mills, iron foundries, engineering works and cigar factories, hides, cotton and oil seeds are exported, and timber, coal, grain and machinery are imported. Pop. (1931) 647,230, mostly Hindus.

Madras Presidency of British India. Occupying the entire south of the Indian peninsula, it is divided into the high interior tableland, the long, broad east coast,

and the short west coast, and its climate varies with the height. Its chief industry is agriculture. It is governed by a system which extends from a British Governor through various boards to village committees.

Madrid Capital of Spain. On the left bank of the river Manzanares, it was taken by the Moors in the tenth century, but became the capital of Philip II. in 1560. It stands on a plateau, and has a bracing, if variable climate. Originally the chief residence of the king, it is now the seat of the republican parliament. The Prado picture gallery and the university are among its most important buildings. Among its many products are leather, pottery, carpets, jewellery, soap, paper and ironwork. Of its three broadcasting stations, the principal has a wavelength of 424.3 M. and operates on 2 kW. Pop. 896,511.

Madrigal Polyphonic vocal composition. It comprises at least three (usually five or six) independent voices, proceeding in imitative counterpoint, to be sung as an unaccompanied chorus. Derived from the adaption of ecclesiastical modes and descant to secular use the Flemish and Italian Madrigal appeared in the 15th century. In England the madrigals of the 16th and 17th centuries marked the transition from vocal to instrumental chamber music. Arcadelt, Josquin de Près, Marenzio, Morley, Edwardes and Weelkes were composers of madrigals.

Madura City of India. It is in Madras Presidency, on the river Vaigai, 270 miles by railway from Madras city. The city is now a centre for the manufacture of cotton goods and other textiles. Pop. 182,018.

Madura Island of the Dutch East Indies. Covering 1770 sq. m., it is a dependency of Java. The island has some hot springs. The people live mainly by rearing cattle and fishing. Pop. 1,630,000.

Maeander River of Asia Minor now called Mendere. It rises in the highlands of the interior and flows mainly south into the Aegean Sea. Its winding course is the origin of the English word "meander."

Maecenas **Gaius Cilnius.** Roman patron. A man of great wealth, he lived at Rome in the time of Augustus, with whom he was on friendly terms. In 42 B.C. he helped to arrange the peace with Mark Antony and later was employed on public duties of importance. His name and fame, however, rest upon his munificence as a patron of men of letters, notably Virgil and Horace, who were often at his hospitable villa on the Esquiline Hill. He died in 8 B.C.

Maelström Name given to a famous whirlpool. It is situated between the Islands of Lofotodden and Vaero, in the Lofoden group, off the north-east coast of Norway. The maelstrom is the result of opposing tidal currents sweeping through a narrow channel at certain states of the tide.

Maentwrog Village of Merionethshire. It is 3 m. from Festiniog amid beautiful scenery. Near here an artificial lake, 4 m. long, has been constructed. This provides power for generating electricity which is distributed from Crewe and Wrexham.

Maes **Nicholas.** Dutch painter. Born in Dordrecht, in 1632, he studied under Rembrandt, worked as a portrait painter, and died at Amsterdam in 1693. His "Card Players," "The Idle Servant." and "The Dutch Housewife" are in the National Gallery, London.

Maesteg Urban district of Glamorganshire. It stands on a little river, the Llyfnu, 8 m. from Bridgend, on the G.W. Rly. The chief occupation is found in the coal mines. Pop. (1931) 25,552.

Maeterlinck **Maurice.** Belgian dramatist. Born at Ghent, Aug. 29, 1862, he was educated by the Jesuits and at the university of his native city. He studied law in Ghent, but soon gave up law for literature. In 1889 he published a volume of verse and in 1890 a play, *Princesse Maleine.* Other plays followed, one being *L'Oiseau Bleu,* which, as *The Blue Bird,* made his name known in Great Britain. *Les Aveugles, Pelléas et Mélisande, Monna Vanna* and *La Mort de Tintagiles* all show the mystical and fatalistic strain that is the distinctive feature of his work He also wrote some volumes of prose, including *Le Trésor des Humbles* and *La Vie des Abeilles,* and made translations of some of the English dramatists. In 1911 he received the Nobel Prize for literature. He was made a Count in 1932. Most of his books have been translated into English by A. Teixeira de Mattos.

Mafeking Town of Cape Province, S. Africa. It is 189 m. from Johannesburg, the chief town of British Bechuanaland and an important railway station. Pop. (Eur.) 1931, 2553.

During the war against the Boers the town was defended by a few soldiers and civilians under Col. R. S. S. Baden-Powell from Oct. 13, 1899, to May 17, 1900, when it was relieved. The event caused great excitement in England and **Mafeking Night** became notable.

Mafia Secret society in Sicily. It arose early in the 19th century and soon became very powerful. The members, called Mafiusi, were pledged to carry out ruthlessly the orders given to them and were responsible for a great number of outrages. They were most formidable about the middle of the century and attempts to suppress them failed. After 1925, however, the Fascist authorities took the task in hand and were more successful.

Magadi Lake of British East Africa. It is in Tanganyika and Kenya and is famed for its vast deposits of soda. The lake is 30 m. long and covers about 250 sq. m.

Magazine Building or chamber in a fort or on board a warship for the safe storage of ammunition and explosives in bulk. The magazine either forms a chamber in the body of the slope or parapet, or a separate fireproof and well drained building against the inner side of the slope. The magazine on a warship is placed well below the water line. The cartridge holder in a modern rifle is called a **magazine.**

Magazine Name used for a periodical publication. In 1731 *The Gentleman's Magazine* was first issued and later every large publishing house had its magazine. Of these only *Blackwood's* and the *Cornhill* remain.

Magdala Town of Abyssinia. It is 250 m. from Jibuti on the Gulf of Aden and stands at a height of 9000 ft., on a fortified hill. Here, in 1860, some British subjects and others were imprisoned. To release them a force was sent out and the fortress was captured and destroyed, April 13, 1868. The leader of the force, Sir Robert

Napier, was made Baron Napier of Magdala. Afterwards the fortifications were rebuilt.

Magdalena River of Colombia, South America. It rises in the mountains in the south-west of the country and flows across it to the Caribbean Sea. Its length is about 1000 m. and it is navigable for the greater part of that course. A department of Colombia is named after the river. **Magdalena Bay** is an opening of the Pacific Ocean on the coast of Mexico. It forms one of the finest natural harbours in the world.

Magdalen College College of the University of Oxford. It was founded in 1458 by William of Waynflete and has a fine pile of buildings in the High Street. Its tower is a landmark and its chapel is noted for its choir. The grounds are extensive and include a deer park. The hall is worthy of mention, as are the cloisters. The head is the president and the scholars are called demis. The college includes Magdalen Hall. Notable members include Addison and the Prince of Wales.

Magdalene College at Cambridge dates from 1542. The buildings are in Magdalene Street, and the head is the master. The college is famous for its connection with Pepys: the manuscript of his *Diary* belongs to it.

Magdalenian Uppermost stage of the palaeolithic period in Europe. Named from La Madeleine rock-shelter near Les Eyzies, Dordogne, where many engraved bone and horn implements were found, it exhibits man in association with the reindeer under subarctic conditions, and developing prehistoric art to its highest. It extended from south Britain to Russia.

Magdeburg City of Germany. Capital of the Prussian province of Saxony, it is on the left bank of the river Elbe. It flourished during the Middle Ages, and after belonging to France in 1806, became Prussian again in 1814. It is the central market in Germany for sugar and chicory, and exchanges also groceries, horses, wool, coal, cereals and books. It has a broadcasting station (283 M., 0.5 kW.). Pop. (1925) 297,151.

Magee **William Connor.** British prelate. Born in Cork, Dec. 17, 1821, he was the son and the grandson of clergymen, his grandfather being Rev. W. Magee, Archbishop of Dublin, 1822-31. He was educated at Kilkenny and at Trinity College, Dublin, but began his ecclesiastical career in England, becoming an incumbent at Bath in 1848 and moving later to London. In 1860 he was made Vicar of Enniskillen, in 1864, Dean of Cork and in 1866 Dean of the Chapel Royal, Dublin. In 1868 he was appointed Bishop of Peterborough, where he was, until chosen Archbishop of York just before his death, May 5, 1891. Magee was a great orator and was regarded as one of the finest speakers in the House of Lords.

Magellan **Ferdinand.** Anglicised name of the Portuguese sailor, Fernao de Magalhaes. Of good family, he was born about 1470 and lived for a time at court. In 1504 he went to India. He served as a soldier in Morocco. In 1517 he took service with the King of Spain and in 1520 discovered the strait which was named after him. He was the first European to enter the Pacific Ocean, which owes its name to him. He was killed in a fight on one of the Philippine Islands, April 27, 1521. Magellan's ships were the first to complete a voyage round the world.

Magellan **Straits of.** Arm of the sea, linking the Atlantic and Pacific Oceans. At the extremity of South America, it is between Chile and Tierra del Fuego and is 360 m. long.

Magersfontein Spot near the Modder River in the Orange Free State. On Dec. 10, 1899, a British force, advancing under Lord Methuen to relieve Kimberley, was met by a Boer army entrenched among the hills. The British moved forward to the attack, but the Highland Brigade was beaten back with heavy loss and other attempts failed.

Maggiore Lake of Italy and Switzerland. Famous for its beauty, it is 40 miles long, and covers over 80 sq. miles. In the lake are the Borromean Islands. The northern or Swiss part of the lake is called Locarno. The Ticino and other rivers flow into the lake.

Maggot Popular name applied indefinitely to a grub or insect larva, especially when pale hued and legless. It often denotes the larva of the blow fly and others found in decaying animal and vegetable matter, *e.g.*, the rat-tailed maggots of drone flies, or destructive pests such as those infesting cheese, beet-leaf, seed-corn and plant-galls. *See* HOUSE FLY.

Magi At first a priestly Persian caste of exorcists and soothsayers. Later they expounded Zoroastrianism, the state religion under the Sassanids from A.D. 227-651 and finally degenerated into magicians. The name is used for the three men who offered gifts to the infant Jesus (Matt. ii.).

Magic Practice of attempting or claiming to control events by non-natural processes. The word, associated with the ancient Persian magi, extends to a wide range of practices observable in the lower levels of culture. It is distinguishable from religion, which involves submission to a higher power, by its use of the assumed power of the spell, especially over supernatural beings. Magical powers, exercised by act or word, may be altruistic in intention and socially respectable, as with professional rain-makers. When turned to private ends they tend to become antisocial and illicit. **White magic** is associated with beneficient spirits, **black magic** with baleful ones. *See* CONJURING.

Magic Lantern Popular name for the optical lantern used for projecting pictures upon a screen. It has a box-like body made of wood or metal, and in the simpler kinds an oil lamp is used, but in the more effective lanterns greater illuminating power is obtained by the use of limelight or an electric arc. The body is fitted with lenses for projecting and focusing purposes.

Magistrate Official appointed to administer justice. In Great Britain magistrates are of two kinds—unpaid and paid. The unpaid magistrates are appointed for the counties and certain boroughs and collectively form the commission for the peace. They sit in the police courts and courts of quarter sessions. Oaths can be taken before them and they can sign warrants, but a single magistrate cannot hear a case. Certain officials, *e.g.*, a mayor or the chairman of an urban district council, are magistrates because of their office. **Paid or Stipendiary Magistrates**

sit in the London police courts and in certain large towns, such as Birmingham. They can sit alone as they have the powers of two ordinary magistrates. They must be barristers of at least seven years' standing.

Magna Carta Charter of privileges signed by King John at Runnymede, near Staines, June 15, 1215. He was forced to sign it by the barons led by the Archbishop of Canterbury, Stephen Langton. It was a statement of the laws or customs of the land and was confirmed by Henry III. and Edward, but with some of its most important clauses left out.

Magnesia Name given to magnesium oxide. This is a white, bulky powder formed when magnesium is burned in air, or when the carbonate is calcined. It is used in medicine, and in making crucibles, cupels, and firebricks.

The carbonate, or a mixture of the carbonate and hydroxide, used in pharmacy, is termed magnesia alba.

Magnesite Mineral consisting of magnesium carbonate and occurring in massive fibrous or granular form. Its colour varies from white, greyish-white to brown, and it is associated usually with serpentine and allied rocks occurring in Silesia, Norway and North America. Magnesite is used in preparing Epsom Salts, and in paint, paper, and firebrick manufacture.

Magnesium Metallic element having the symbol Mg, atomic weight, 24.32, and melting point 651°C. Its compounds, chiefly the carbonate, are distributed widely as magnesian limestone, dolomite and magnesite. It is extracted chiefly by electrolysis of the fused chlorides from the mineral carnallite in Prussian Saxony. Magnesium is a white metal burning with a dazzling white light when heated to redness in air. In ribbon, wire or powder it is used in photography and pyrotechny, and with aluminium forms a valuable alloy, magnalium.

Magnet Substance having the property of attracting iron, and in a lesser degree, nickel and certain other metals. This attractive property was observed first in the lodestone or magnetite, an oxide of iron.

A permanent magnet is a straight or horseshoe shaped steel bar magnetised by contact with a similar magnet or an electro magnet, the latter consisting of a soft iron bar surrounded by insulated wire coils and then temporarily magnetised by an electric current.

Electro-magnets, which can lift many times their own weight, are widely used in industry, particularly for handling such materials as scrap-iron. Their lifting power is determined by the number of ampere turns, the strength of the current employed, multiplied by the number of turns in the coils.

Magnetic Poles Areas on the earth's surface to which the mariner's compass points. They do not coincide with the geographical poles, north being found about 97° W. 70°½ N., south estimated about 155°.16′ E., 17°.25′ S. They are subject to regular seasonal variations and to sudden irregular "magnetic storms."

Magnetism Form of energy exhibited in iron and a few other metals. The study of magnetic forces constitutes the science of magnetism. It invariably has a directive character. A bar magnet freely suspended and rotating about a vertical axis, tends to come to rest in a definite position, that is, approximately north and south. It is found also that the north poles of two magnets repel each other, and the same is true of the south poles. When iron filings are sprinkled upon the poles of a horse shoe magnet they become magnetised and arrange themselves in curved "lines of force."

The earth has the properties of a magnet, with poles lying near the ends of its rotational axis. Lines of force are not regular on the surface, the necessary corrections to compass observations are taken from charts issued for practically all parts of the world.

Magnetite Black mineral with metallic lustre. It consists of the magnetic oxide of iron, containing, when pure, about 72.5 per cent. of iron. It occurs in veins and beds in schists and other metamorphic rocks, also in the form of magnetic iron sands. Magnetite, the lodestone of the ancients, is a natural magnet.

Magneto Machine or generator for converting mechanical energy into electrical energy by the rotation of an armature in the magnetic field of a horseshoe magnet. Magnetos are used for the production of an electric spark for ignition purposes in internal combustion engines.

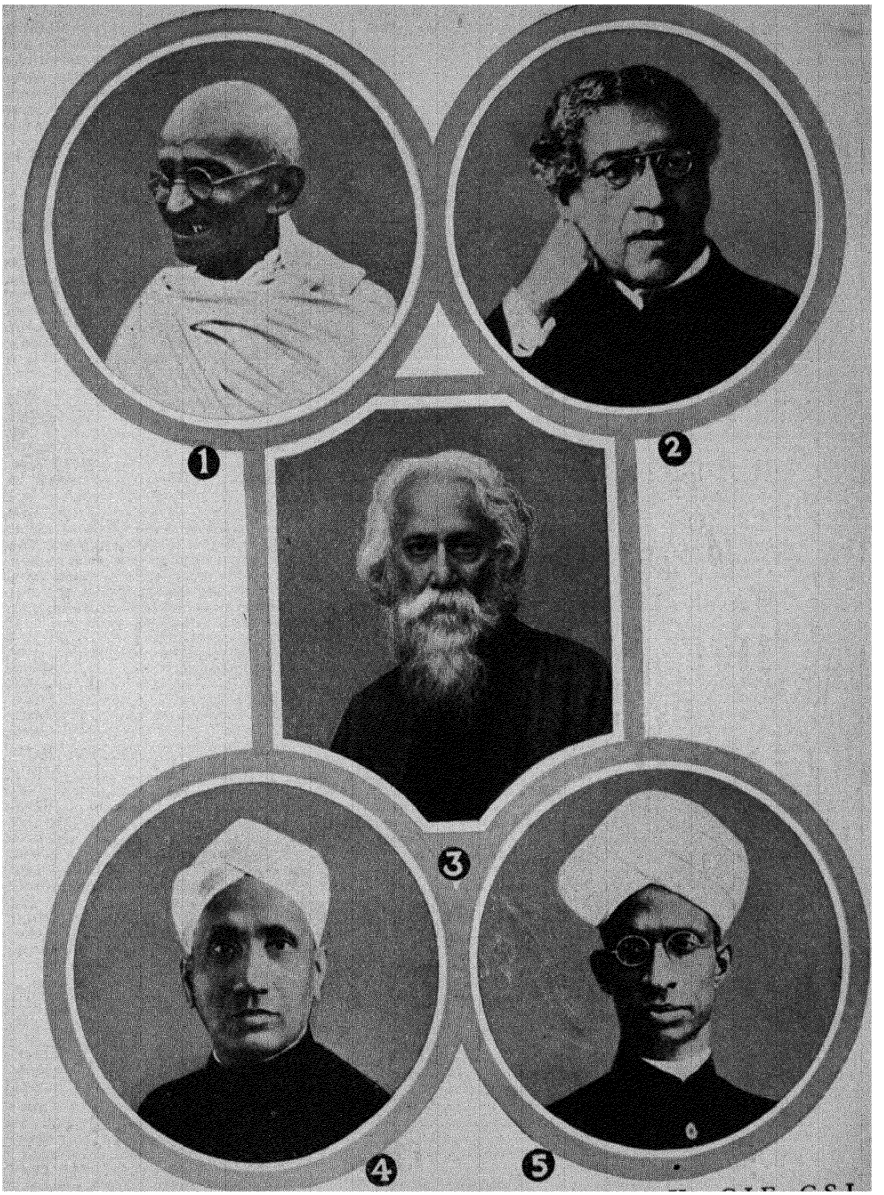
A magneto consists essentially of two coils of wire, primary and secondary, wound upon a core of soft iron, and rotated between the poles of a magnet. The current in the primary coil is regularly interrupted by the action of a contact breaker, inducing in the secondary coil a current which passes across the electrodes of the sparking plug producing a spark.

Magnificat Opening word of the Latin canticle, translated as: *My Soul Doth Magnify the Lord* in the Book of Common Prayer. It is taken from S. Luke's Gospel (i. 46-55) and has been used since the 6th century in Christian churches.

Magnolia Genus of hardy and half-hardy trees and shrubs related to the tulip tree. They are indigenous to subtropical Asia and N. America, bearing large, fragrant, solitary flowers. The earliest to reach Britain was the American evergreen shrub *M. glauca*, introduced in 1688. During the 18th century several others came from both east and west, including the handsome American bull bay, *M. grandiflora*, 70 ft. high, from whose seeds the free-flowering Exmouth variety was established, and the Chinese yulan, *M. conspicua*, of which there is a purple-tinged, double-flowered variety.

Magpie Genus of perching birds of the crow family (pica). Stout-beaked, lustrous-black, relieved by white on wings and breast, the common *P. pica*, 18 in. long, is wary when wild, and a sad thief when domesticated. Massively-built nests protect the 6-7 spotted and blotched bluish-white eggs.

Magyar Dominant people of the Hungarian republic. Descended from Altaian nomadic horsemen of Turkic stock who took Ugrian wives and adopted their language, they came westward into the Hungarian plains in the 9th century, assimilated other ethnic elements, entered the Roman Catholic communion in the 11th century, and have preserved their identity against Teutonic and Slavic pressure through their national language and tradition. After the changes of 1919 the republic's population became almost entirely Magyar. *See* HUNGARY.



1. Mr. M. K. Gandhi. 2. Sir Jagadis Chandra Bose, Kt., C.I.E., C.S.I
3. Mr. Rabindranath Tagore. 4. Sir C. V. Raman, Kt., M.A.
5. Sir S. Radhakrishnan, Kt., M.A., D. Litt. (Hon.)

Mahábhárata Hindu sacred book, first printed in Calcutta, 1834-39, this ancient Indian epic is probably the longest in the world, and is the work of many hands, Vyása, its supposed author, being undoubtedly a generic name. Its main story describes the conflict between Kurus, spirit of evil, and Pandus, spirit of good.

Mahaffy **Sir John Pentland.** Irish scholar. Born Feb. 26, 1839, the son of a clergyman, he went to Trinity College, Dublin. He was made a fellow and from 1869 to 1900 was Professor of Ancient History there. In 1914 he was chosen provost, a post he held until his death, April 30, 1919. He had been in holy orders since 1864 and in 1918 he was knighted.

Mahaffy was known as "the General" because of his knowledge of many subjects. He was an accomplished musician, a good cricketer and a fine shot, as well as a scholar of unusual attainments. He wrote several books on ancient history including *Greek Life and Thought* and *The Empire of the Ptolemies*, and his public positions included the presidency of the Royal Irish Academy.

Mahan **Alfred Thayer.** American historian. He was born Sept. 27, 1840, his father being a professor at West Point Military Academy. In 1886 he was chosen President of the Naval War College and he retired from the service in 1896. He died Dec. 1, 1914.

Mahan is known for his books on sea power, which attracted world attention. These are, *The Influence of Sea Power on History* (1660-1783), which appeared in 1900, and *The Influence of Sea Power upon the French Revolution and Empire*, 1892. He also published a biography, *Nelson, the Embodiment of the Sea Power of Great Britain*, 1897, and a volume of lectures called *Naval Strategy*, 1911.

Mahatma Sanskrit word, "great-souled," applied by modern Western theosophists to men said to be endowed with preternatural powers acquired by ascetic or astral means. The word became associated by the Indian populace with the Hindu nationalist leader, Mohandas Gandhi (*q.v.*), because of his asceticism.

Mahdi Name for the messiah expected by the Mahommedans. His coming was first preached in the 10th century and several men since have claimed to be the Mahdi. The best known was Mohamed Ahmed, who was born in the Sudan in 1848. He set out to conquer the Sudan and met with a certain amount of success. He died in 1885 and in 1898 his tomb near Khartoum was destroyed by British troops.

Mah Jongg Chinese gambling game. It is played with 136 counters or tiles, not unlike dominoes. Four players usually take part, but it can be played by two. The tiles are divided into three suits and there are four sets of each. Each player plays for himself and tries to secure the tiles representing the highest score.

Mahogany Compact timber, distinguished as Spanish or Cuban. It is derived from a Central American and W. Indian tree (*Swietenia mahagoni*). Reaching Britain early in the 18th century it acquired favour for domestic furniture; although less esteemed since Victorian times it is still used for cabinet work and aeroplane propellers. Honduras and Mexican mahogany come from an allied species; both grow also in India.

Mahomet Founder of Mahommedanism. An Arab, he was born in Mecca about 570, a posthumous child, and soon lost his mother. He lived with an uncle and was employed in looking after camels and sheep, varying this occupation with one or two trading journeys. In 595 he married a wealthy widow and became rich and prosperous.

In 610 Mahomet began to regard himself as chosen by God to preach a new faith. He lived in a cave where he had visions and where, he believed, the angel Gabriel visited him. He denounced idolatry and declared there was only one God, Allah, and that Mahomet was his prophet. His few followers were persecuted, his wife died and he himself, in 622, was obliged to leave the city. He went to Medina, where the new faith was soon firmly established and the movement became a crusade. Mahomet raised an army and soon proved himself a conqueror. He entered Mecca as a victor in 630 and before he died in 632 had subdued all Arabia. He died in Medina, where he was buried. Although married to several wives, including Ayesha, he left no son. His sayings were collected together to form the Koran which contains the creed of his millions of followers.

Mahommedanism Religion founded by Mahomet. Its adherents are sometimes known as Moslems, or collectively as Islam. When Mahomet died in 632 his faith had a considerable hold on the inhabitants of Arabia and Asia Minor. His successor as caliph was Abu Bekr, who carried on his policy of converting the unbelievers by force. In 654 Mahomet's son-in-law, Ali, became caliph, and the adherents were divided into two great branches, Sunnites and Shiites. The latter believed in the right of Ali to succeed, but the Sunnites did not.

During its first two centuries, or thereabouts, Mahommedanism made great progress. It spread into Africa and Europe, where in Spain it has left a great mark. In the 11th and 12th centuries, Asia Minor being almost completely Mahommedan, the faith spread over India. It was accepted by the Turks and inspired them to the conquests which were such a menace to Europe in the 15th, 16th and 17th centuries. In the 18th century they lost ground and at the end of the Great War, Turkey almost ceased to be a European power.

The faith of the Mahommedans is contained in the sentence coined by Mahomet, "There is no God but Allah, and Mahomet is his prophet." Its creed, which in some points is interpreted differently by its two great sects, is contained in the Koran. It enjoins prayer with the face turned to Mecca five times a day, fasting from sunrise to sunset during the month of Ramadan, and a pilgrimage once during a lifetime to Mecca. It places women in a very inferior place compared with men. Its worship is held in mosques which are found in all its cities, some of them being buildings of great splendour.

Its adherents number over 200,000,000, of whom 160,000,000 are in Asia. India contains a large Mahommedan element.

Mahratta *See* MARATHA.

Maiden Castle Earthwork just outside Dorchester,

set. It was formed in the neolithic age and covers 160 acres, being perhaps the largest of its kind in the country. The hill is 430 ft. high and is protected by concentric ramparts of earth.

Maidenhair Fern (*Adiantum*) Large genus of ferns of the polypody tribe, natives of temperate and tropical regions. The common *A. capillus-veneris*, whose fronds have spreading hair-like branches, occasionally occurs wild in the west of England, Wales and Ireland. There are several hothouse and greenhouse favourites, mostly preferring damp and shade; some furnish a sweet syrup called capillaire.

Maidenhair Tree (*Gingko biloba*). Tall gymnospermous tree, the single species of its genus. It is a native of China and Japan, and has beautiful fan-shaped foliage. The golden plum-like fruit borne on the female tree is edible, the male tree bears a catkin-like spike for fertilisation.

Maidenhead Market town and urban district of Berkshire. A popular boating centre on the Thames, it is 24 m. from London, on the G.W. Rly. The industries include brewing. Pop. (1931) 17,520.

Maid of Orleans *See* JOAN OF ARC.

Maidstone County town, borough and market town of Kent. It is on the Medway, 41 m. from London, on the S. Rly., and the centre of several road services. Here is the former palace of the Archbishops of Canterbury. The industries include the making of agricultural implements, paper, cement and toffee and there is a trade in hops and farm produce. It is also a military centre. Pop. (1931) 42,259.

Main River of Germany. It rises in the mountains in the east of the country and flows for some 300 m. to Mainz where it joins the Rhine. On it are Frankfort, Nuremberg, Wurzburg and other places and most of its course is navigable. The Saale and the Regnitz are tributaries and a canal unites it with the Danube.

A small river of Co. Antrim, Northern Ireland, is called the **Main**. It is 30 m. long and flows into Lough Neagh.

Maine Province of France before the Revolution. It lay to the south of Normandy, around the town of Le Mans, which was its capital. It had its own counts for a time, but about 1100 became part of the territory ruled by the counts of Anjou, one of whom was Henry II. of England. In 1204 it was taken from King John by the King of France and was ruled by counts who were members of the royal family. At the Revolution it was divided into the departments of Sarthe and Mayenne.

Maine State of the United States. In the N.E. of the country, its northern boundary is formed by New Brunswick and it has a long coastline on the Atlantic Ocean. Its land area is 29,895 sq. m. and its interests are chiefly agricultural. The state capital is Augusta, but Portland is the largest place. Other towns are Lewiston and Bangor. Pop. (1930) 797,423.

Maine **Sir Henry James Sumner.** British historian. Born Aug. 15, 1822, he was educated at Christ's Hospital and Cambridge. He was senior classic at Cambridge in 1844 and in 1847 was made regius professor of civil law there. In 1852 he was appointed reader in jurisprudence at the inns of court and in 1862 he went to India as legal member of the viceroy's council. In 1869, on his return to England, he was made professor of comparative jurisprudence at Oxford and in 1877 master of Trinity Hall, Cambridge. In 1871 he was knighted, and was Whewell professor of international law at Cambridge from 1887 until his death at Cannes, Feb. 3, 1888.

Maine wrote books which had a great influence on the study of jurisprudence and are still valuable. The most important is *Ancient Law*; hardly less so are *The Early History of Institutions* and *Early Law and Custom*.

Maintenance Word used in English law. A maintenance order is one which a wife can obtain from a magistrate if her husband fails to support her. The amount varies according to the husband's income, but will not exceed £2 a week, with an additional 10s. a week for each child under 16. A maintenance order differs from a separation order. *See* ALIMONY; SEPARATION.

Maintenon **Madame de** Wife of Louis XIV. of France. Francoise d'Aubigné was born Nov. 27, 1635, her parents being then in prison as Huguenots. She lived in Martinique for a few years, but in 1645 returned to France, and in 1651 she was married to the poet Scarron. He died in 1660 and his widow, forced to earn a living, became governess to the children of Louis XIV. and Madame de Montespan. Her wit and beauty attracted the attention of Louis and she became king's mistress about 1678, when she was made a marquise. She retained her position until Louis died in 1715, being for the last 30 years of that time his wife, and exercised a remarkable influence over him. Her last years were passed at St. Cyr, where she died April 15, 1719. leaving behind her a reputation for piety.

Mainz City and river port of Hesse-Darmstadt, Germany. It stands on the Rhine, where that river is joined by the Main, 22 m. from Frankfort. There is a trade along the river, and Mainz is a railway junction and has a number of manufactures. The wine trade is important. The cathedral is one of the finest in Germany. The French spelling of the name is Mayence. Pop. 110,000.

In the Middle Ages Mainz was the seat of a bishop and then of an archbishop. He became the primate of Germany and an elector and ruled over an extensive district around the city. The office was abolished in 1803 and the city itself then became part of Hesse.

Maisonneuve City of Quebec, Canada. A manufacturing centre, it is on the island of Montreal, and adjoins the city of that name. Maisonneuve is named after Paul de Chomedy, Sieur de Maisonneuve, a French officer who, in 1642, founded the city of Montreal. He was the governor until 1665 and died in 1676.

Maitland Town of New South Wales. It is on both banks of the Hunter River, 120 m. north of Sydney. East Maitland is an important railway junction and an agricultural and colliery centre. At West Maitland are pottery and brick works. Pop. (1931) 11,940.

Maitland **Frederic William.** English historian. Born May 28, 1850, he was educated at Eton and Trinity College, Cambridge. In 1884 he was made reader in English law at Cambridge and in 1888 Downing professor of laws. He died Dec. 19, 1906.

Maitland's researches into the early history of our laws and institutions marked him out as a scholar of unusual power. His chief works are, *The History of English Law*, written with Sir F. Pollock and the suggestive volume, *Domesday Book and Beyond*. He wrote *Township and Borough* and *Canon Law in England*, and was one of the founders of the Selden Society.

Maiwand Village of Afghanistan. It is 30 m. from Kandahar. Here, on July 27, 1880, a British force was attacked by an army of Afghans who routed the native troops. The retreat was covered by a battalion of the Berkshire Regiment which lost 300 officers and men.

Maize Stout, annual grass. Next in importance to rice as a cereal food, it is probably indigenous to tropical America. Besides enormous crops in the United States, it is raised in Canada, Mexico, Argentina and Brazil, and is naturalised in S. Africa, India, China, S. Europe and Australia. The grain is roasted or boiled; coarsely milled it becomes hominy or polenta, deprived of gluten it yields cornflour. It is also a valuable cattle food, and the leaves furnish green fodder.

The world's production of maize in 1932 was 520,000,000 quarters and is only slightly less than that of wheat.

Majolica Name properly restricted to tin-enamelled pottery of the Italian Renaissance. On it decorative designs were painted and fired. First developed by Luca della Robbia, it reached its zenith when associated with metallic lustre, in emulation of that displayed on Hispano-Moresque ware, which reached 15th century Italy in Majorcan ships; hence the name. Supreme examples were produced at Pesaro, Faenza, Castel Durante, Urbino, Gubbio and other famous 15th-17th century pottery centres. Clever modern imitations abound.

Major Rank in the British army. It is below that of lieutenant-colonel and above that of captain. A major wears a crown as the badge of his rank. In the infantry a major is usually the second in command of a battalion and commands a company.

Major Name meaning greater, applied in music to seconds, thirds, sixths and sevenths. **A major semitone** is a diatonic semitone and a **major triad** consists of a note with its major 3rd and perfect fifth above it. A diatonic scale progressing by tones but with 3rd and 4th and 7th and 8th degrees only a semitone apart, is said to be in **major mode.** The **major tone** in acoustics is that in the ratio 9.8 and the organ stop **major bass** is a 16 ft. diapason stop.

Majorca Island in the Mediterranean Sea. It is one of the Balearic Islands and belongs to Spain. It is 115 m. from Barcelona and covers 1325 sq. m. The interior is mountainous, but the soil is generally fertile and much fruit is grown including oranges and figs. Wine, glazed pottery, coal and stone are produced. Palma is the capital and there are many small places and good harbours around the coast. There are many wonderful stalactite caves. *See* BALEARIC ISLANDS.

Major-General Rank in the British army. It is above that of colonel and below that of lieutenant-general. The badge is a sword and baton crossed with a star above. A major-general's usual command is a division.

Majuba Hill Hill of Natal. At the north-eastern end of the Drakenberg Mountains, it is 7000 ft. high. On Feb. 27, 1881, a small British force under Sir G. Colley seized the hill. Early next morning the British were attacked by the Boers and defeated, Colley being killed.

Malabar District of India. It is in Madras and covers about 6000 sq. m. Calicut is the chief town. The Malabar coast is a strip of land about 40 m. wide between the hills and the sea.

Malacca Largest of the Straits Settlements. Occupying about 637 sq. m. in the Malay Peninsula, it extends for 42 m. along the Malacca Strait opposite Sumatra, the capital of the same name being 110 m. N.W. of Singapore. Captured by Portuguese in 1511, it became Dutch in 1641, and British in 1795. It was finally exchanged for Britain's Sumatra settlement in 1824. Pop. (1932) 191,335.

Malachi Name assigned to the last book of the Old Testament in the English Bible. Meaning "my messenger," it may be the personal name of a prophet otherwise unknown, or the title of a prophet whose proper name is unrecorded. Written after the rebuilding of the Temple, 6th century B.C., the book rebukes priestly degeneracy and various social evils.

Malachite Green mineral composed of the basic carbonate of copper. It is rarely crystallised but occurs in compact or nodular masses often of great size in the Ural Mts., Australia, France and the British Isles. When cut and polished it is used for decorative purposes or as a gemstone. It is also the basis of a pigment, malachite green.

Malacology Branch of zoology devoted to the study of the anatomy of animals of the molluscan type. It is distinguished from conchology which is concerned with the study and classification of molluscs based primarily upon the characters of the shells.

Malaga City and seaport of Spain. Situated on the Mediterranean coast 65 m. N.E. of Gibraltar, it comprises a complex of old buildings commanded by a 13th century Moorish castle, with well-built modern suburbs. The climate is mild and equable; wine is produced and there is much shipping activity. Founded by Phoenician merchants, it passed into Roman, Visigothic and Moorish hands, becoming Christian in 1487. Pop. 191,611.

Malakand Pass on the Indian frontier, also the name of a frontier post. The pass is in the North-West Frontier province and extends from the valley of the Kabul to that of the Swat River. Dargai is at the mouth of the pass. In 1897 there was trouble with the Swats here and the force sent against them was called the Malakand field force. *See* DARGAI.

Malar Lake of Sweden. Just outside Stockholm, it covers 650 sq. m. and its waters are carried to the Baltic. There are over 1000 islands on the lake, which is the centre of magnificent scenery.

Malaria Italian term, "bad air," for a group of fevers. Formerly called ague, they are intermittent fevers and are caused by minute animal parasites (*plasmodium*). Malaria is found to be transmitted from infected persons by the sunset bite

of the bloodsucking females of certain mosquitoes (*Anopheles*). The parasites, after a life-cycle in the female mosquito, pass through her salivary glands when biting, undergo a second life-cycle in man, and then attack his red blood-corpuscles. The specific remedy is quinine. *See* BLACKWATER FEVER.

Malay People of Mongoloid stock dominant in the Malay Peninsula and Archipelago. The true Malays are a shortish, round-headed, straight-haired, olive-brown race, with small hands and prominent cheekbones, of an easygoing, impassive temperament. First arriving in Sumatra and Malacca, they became islamised in the 13th-16th centuries, developed seafaring practices, and underwent ethnic admixture with their Indian and Melanesian neighbours. Their language, the *lingua franca* of the East Indies, has widespread affinities, traceable from Easter Island to Madagascar.

Malaya Political term for the greater part of the Malay Peninsula, south of the Siamese boundary and constituting the British sphere, it embodies the Straits Settlements, Federated Malay States and Non-Federated Malay States, including the Johore Protectorate and four native states which passed from Siamese to British suzerainty in 1909. Occupying 51,605 sq. m., it has an estimated population of 4,000,000 including Malay tillers of the soil, primitive jungle-dwellers, and Chinese and Tamil immigrants.

Malay Archipelago World's largest group of islands, variously called also the East Indies, Indonesia and Malaysia. Common usage includes the Sunda islands, Celebes, the Moluccas, Borneo, New Guinea, the Philippines, and Netherlands India.

Malay Peninsula Strip of land forming the southernmost extremity of Asia. Connected with the rest of Farther India by the Kra isthmus, and projecting southward between the China Sea and the Malacca Strait, it extends for 750 m. to Cape Romania, the extreme point being sheltered by the island of Singapore, which has railway connection with Bangkok. The area is 70,000 sq. m., traversed by a mountain ridge with peaks up to 8000 ft., densely forested, and fringed here and there with coastal swamps.

Malcolm Name of four kings of the Scots. **Malcolm I.** was king from 943 to 954, and **Malcolm II.** from 1005 to 1034. **Malcolm III.**, a son of Duncan, killed Macbeth in battle and was made king in 1057. He was killed at Malcolm's Cross near Alnwick in Nov., 1093. He married Margaret, an English princess, and was known as Canmore, or big head. **Malcolm IV.** succeeded his grandfather, David I., in 1153. He reigned until his death, Dec. 9, 1165. All four Malcolms ruled over the southern part of Scotland only, and held part of their land as vassals of the English kings.

Malden District of Surrey. It is 3 m. from Kingston-on-Thames, and 10 from London, on the S. Rly. To the north is **New Malden**, a residental district, and the two are part of the urban district of the Maldens and Coombe. Pop. (1931) 23,412.

Maldive Islands in the Indian Ocean. They belong to Great Britain and are controlled from Ceylon, but have their own sultan and government. Of coral formation they are 400 m. to the south-west of Ceylon. Malé, or King's, is the largest island and there are 12 others. Copra, millet, fruit and nuts are grown, and many of the inhabitants are fishermen. Pop. (1931) over 79,000.

Maldon Borough, seaport and market town of Essex. It stands at the head of the Blackwater estuary, on the L.N.E. Rly. The industries include shipping, engineering works, brewing and milling. Pop. (1931) 6559.

Malesherbes **Chrétien Guillaume de Lamoignon de.** French politician. Born in Paris, Dec. 6, 1721, he became a lawyer and notable censor of legal abuses. After his retirement in 1771 he undertook to defend Louis XVI., was arrested, and sent to the guillotine, April 22, 1794.

Malherbe **Françoise de.** French poet. Born at Caen in 1555, he was a protégé of Cardinal Du Perron, and became a favourite at the court of Henry IV. He wrote odes, songs, epistles, translations, and criticisms, and had a vigorous, if somewhat cold, style. He started a reaction against the artificialities of Ronsard and the Pléiade. He died in Paris, Oct. 16, 1628.

Malines Alternative name for the Belgian city of Mechlin (*q.v.*).

Malingering Feigning illness or incapacity to work in order to secure a benefit. Cases occur under the national scheme for sickness benefit and in connection with workmen's compensation. Most cases are easily detected by experienced medical men.

Mall **The.** Thoroughfare in London. It runs from the Admiralty Arch near Trafalgar Square to the Victoria Memorial before Buckingham Palace. It is overlooked by the gardens of St. James's Palace and the adjacent houses. The name, like that of the parallel Pall Mall, is taken from the game of pell-mell which was played here in the 17th century.

Mallard Common wild duck of Great Britain and the northern hemisphere (*Anas platyrhymhos*). The name properly denotes the drake only, 24 in. long, with glossy-green head and neck, white-ringed, purplish breast and greyish-white underparts. The wild drake, unlike the domesticated forms, is content with one mate, which lays 8 to 12 greenish-white eggs in down-lined grass nests. *See* DUCK.

Malleability Capability of certain plastic metals of being constrained into new forms by mechanical methods, such as hammering or rolling, without fracture. The most malleable metal is pure gold. *See* CASTING.

Malling Two villages of Kent. **West Malling**, or Town Malling, is 5 m. from Maidstone and 36 from London, on the S. Rly., and **East Malling** is about 2 m. away. A fruit-packing station has been opened at the former place.

Mallow Genus of herbs, natives of the northern hemisphere (*Malva*). The common blue-flowered mallow, the lilac-flowered dwarf, or round-leaved, and the rosy-flowered musk-mallow grow wild in Britain; the last is returning to favour with gardeners. They, however, commonly designate mallows varieties of the hardy annual tree-mallow (*Lavatera*) with rose or white blooms. *See* MARSH MALLOW.

Mallow Urban district, market town and watering place of Co. Cork,

Irish Free State. It is on the Blackwater, 21 m. from Cork, and is a junction on the G.S. Rly. It is an agricultural centre and has a mineral spring. Pop. 4562.

Malm Geological term for one of the three divisions into which the Jurassic System is divided in Germany. An alternative name is White Jurassic, and it corresponds to the Upper and Middle Oolite in England.

Malm stone is an old name given to a calcareous sandstone occurring in West Surrey, Hampshire and Sussex.

Malmédy Town and district of Belgium. The town stands on a little river, and is 25 m. from Aix-la-Chapelle. Pop. 5000.

The district covers 318 sq. m. From 1815 to 1918 it was part of Germany. In 1920 the people, by a plébiscite, decided to become part of Belgium.

Malmesbury Borough and market town of Wiltshire. It is on the Avon, 94 m. from London, on the G.W. Rly. To-day an agricultural and brewing centre, Malmesbury was once a centre of cloth manufacture. Its abbey church has a beautiful Norman porch. Pop. (1931) 2334.

Malmesbury **Earl of.** English title borne by the family of Harris. James Harris was born at Salisbury, April 21, 1746, and was educated at Winchester and Oxford. He had a long career in the diplomatic service, and in 1788 was made a baron. In 1800 he was made an earl, and he died Nov. 21, 1820. His *Diaries and Correspondence*, also his *Letters*, are valuable to historians.

James Edward, the 2nd earl, was succeeded by James Howard as 3rd earl. He was born March 25, 1807, and became earl in 1841. In 1852 and 1858-59 he was Foreign Secretary, and he was Lord Privy Seal, 1866-68 and 1874-76. He died May 17, 1889, when his titles passed to a nephew. The family seat is Heron Court near Bournemouth, and the earl's eldest son is called Viscount Fitzharris.

Malmö Seaport of Sweden. It is on the Sound, beyond which is Copenhagen, 16 m. away. There is a good harbour and the place is well served by railways. Apart from shipping, for which there is ample accommodation, the industries are connected with the production of tobacco, sugar and other commodities. It has a broadcasting station (231 M., 1.25 kW.). Pop. (1932) 129,927.

Malmsey Sweet high-flavoured wine produced from grapes grown in the Middle Ages in the Ægean, and exported from Monemvasia in the Morea. The French name, Malvoisie, is also used. Its modern representative, produced at Santorin, mostly goes to Russia. White wines of Malmsey type come from Cyprus, Sicily, Sardinia, the Canaries, Madeira and the Azores.

Malory **Sir Thomas.** English writer. He appears to have come from Warwickshire to London, to have been a politician and a soldier, to have died in 1471, and to have been buried in the Grey Friars near Newgate. His *Morte d'Arthur* is one of the treasures of English literature. He evidently collected from various old writers the legends about Arthur and his knights and arranged them in an orderly way. The book was finished in 1469 and was first printed, by Caxton, in 1485.

Malpas Town of Cheshire. It is 13 m. from Chester, on the L.M.S. Rly. Pop. 1100.

Another **Malpas** is a village in Cornwall. It is on the Fal, 2 m. from Truro.

Malplaquet Village of France. It is 10 m. from Mons and is famous for the battle fought here Sept. 11, 1709, between British and Austrian armies under Marlborough and Prince Eugène and a French army under Villars. The French were utterly routed, but the allies were too weak to pursue them. About 90,000 men were engaged on each side; the British and their allies lost 20,000 men and the French 12,000.

Malt Partially germinated grain of various cereals, chiefly barley. The process by which it is prepared is termed malting. In Britain barley is used generally in brewing, spirit and vinegar manufactures, but in Germany and other countries wheat, rice and other cereals also are used. The barley is steeped first in water, then the soaked grain is spread on a floor or in revolving drums and allowed to germinate up to a certain stage. During this process the ferment diastase is formed and converts the starch present into maltose (*q.v.*) and dextrin. The "green malt" is dried in a kiln and finally cured at a greater heat without free circulation of air until the mass becomes friable, brown in colour, and develops a distinctive flavour. A watery infusion of malt is known as "sweet wort," and a thick syrupy extract is used medicinally. *See* BREWING.

Malta Island of the Mediterranean Sea. It is about 55 m. from Sicily, is 17 m. long, and covers 95 sq. m. It is an important British naval base. Valletta, which succeeded Città Vecchia as the capital, is the chief harbour. The interior is hilly, but there are fertile valleys where oranges, figs, olives, grapes and other fruits grow freely. Horses, sheep and goats are reared and many mules come from Malta, which is also famous for its honey and lace. The fisheries are valuable.

Malta was ruled in turn by the Phœnicians, Greeks, Carthaginians, Romans and Arabs. It was then attached to Sicily and to Aragon. It was part of the empire of Charles V. and that ruler gave it to the knights of S. John, who fortified it and ruled it until 1798, when it was seized by Napoleon. It was formally handed over to Great Britain in 1814.

In 1921 a constitution was given to Malta. This provided for a legislature of two houses, the members of the lower house being elected. Matters of imperial concern, such as defence, trade and coinage are under the control of the governor, who is assisted by two councils. English is the official language and British coins are the legal tender, but the islanders have their own tongue, a Semitic one, which is in general use. The island has an order of nobility consisting of 29 families, and there is a university.

In 1929 there was a serious dispute between the state, represented by Lord Strickland, and the Church of Rome, to which most of the people belong. The interference of the priests in secular matters led to a crisis, and after negotiations for a settlement had failed, the constitution was suspended on June 26, 1929. A royal commission visited the island to inquire into the matter in 1931 and in 1932 the constitution was restored and an election held. Pop. (including Gozo and Comino) 241,621.

Malta Fever Variety of fever found in the Mediterranean

countries; also in other parts of the world. It takes very much the same course as other fevers, but the illness lasts longer than in most of them, sometimes as long as six months. It is caused by a parasite which is conveyed by the milk of goats.

Maltese Terrier Breed of dog. It is an ancient form of lap-dog, traceable for 2000 years; the inaccurate name terrier is becoming obsolete. It resembles a toy Skye terrier, averaging 5 to 6 lb., dark-eyed, black-nosed, with long, white, silky coat and thickly-haired tail curling over the back. It is intelligent, affectionate and good-tempered.

Malthus Thomas Robert. English economist. He was born near Dorking on Feb. 17, 1766, and became curate of Albury, Surrey, in 1797. In 1798 he published anonymously his *Essay on the Principle of Population*, which set out to prove that increase of population was dependent upon the presence of warmth and food, and would only be checked by the lack of these things, or by such positive checks as disease, epidemics, wars and plagues. In 1805 he was appointed Professor of Political Economy in the East India College at Haileybury. He wrote *Principles of Political Economy* in 1820. He died near Bath on December 23, 1834.

Malton Urban district and market town of Yorkshire (N.R.). It is situated on the Derwent, 21 m. from York, on the L.N.E. Rly. The industries include brewing, milling and tanning. The town is a centre for the breeding and sale of horses and has racing stables. Pop. (1931) 4418.

Maltose Name given to malt sugar, a carbohydrate belonging to the group of disaccharoses containing twelve atoms of carbon. It is formed by the action of the ferment diastase, present in malt, upon starch of which 80 per cent. is converted into sugar. It undergoes fermentation by yeast, producing alcohol.

Malvern Inland watering place and urban district of Worcestershire. It consists of Great Malvern, Little Malvern, Malvern Link and other places on the Malvern Hills. Great Malvern is 128 m. from London, on the G.W. and L.M.S. Rlys. The town has medicinal waters. Pop. (1931) 15,632.

Malvern Hills Range of hills in England. They are chiefly in Worcestershire and Herefordshire and the highest points are 1400 ft. high. The chief hills are Worcester, Hereford and Gloucester Beacon and they are best visited from Malvern. Some part of the region is national property and in 1930-31 steps were taken to protect them from disfiguration by quarrying. The district was once a hunting ground and was called Malvern Chase.

Mamelukes Body of slaves trained to arms. They were utilised by Saladin's successors in 13th century Egypt as a mounted bodyguard. Their leader made himself sultan, 1250; a Bahri and then Circassian dynasty of Mameluke sultans followed. The Turkish domination, 1517, enthroned a Turkish pasha, who ruled through 24 provincial Mameluke beys. Napoleon I. defeated the Mamelukes, 1798, but they retook the country, until Mohammed Ali, with French support, became pasha, treacherously assassinating the surviving beys and their followers in 1811.

Mametz Village of France, 5 m. from Albert. During the Great War it was captured by the British in the Battle of the Somme, July 1, 1916, but it was lost in March, 1918.

Mammal Highest division of the animal kingdom. Mammals are air-breathing and warm-blooded vertebrates, which, with the exception of the lowest group, the monotremes, are viviparous and suckle their young. The foetus undergoes a gestation period during which it is nourished by an organic connection between the foetal membranes and the uterine wall or placenta. The spinal column is characterised by having intervertebral discs between the centra, the skull possesses two condyles and articulates directly with the lower jaw. A hairy covering is usually present, and the brain differs from that of the lower vertebrates by having a band of transverse fibres, the *corpus callosum*.

Mammon Aramaic word for riches, used in the Sermon on the Mount (Matt. vi.), and the parable of the Unjust Steward (Luke xvi.). Personifying inordinate love of gain, mediaeval Europe gave the name to a demon, as figured in Milton's *Paradise Lost*.

Mammoth Extinct member of the elephant family. It was found in N. latitudes in glacial and preglacial times. In build it closely resembled the Indian elephant, but was provided with a thick, hairy coat over a woolly undercoat, and its long, slender tusks were curved upwards and outwards. Remains still retaining the flesh have been found in the icy gravels of Siberia, and its bones are present in many deposits as well as drawings by primitive man upon ivory fragments.

Mammoth Cave Large cavern in the limestone rock S. of Louisville, Kentucky. It has more than 150 m. of passages with subterranean lakes and streams. The chambers and passages present many different forms such as grottoes, domes, galleries and avenues, some having masses of stalactites and stalagmites, or a covering of calcite crystals. The chief chamber is 4 m. long, 125 ft. in height, and in places 300 ft. wide.

Man Genus of biped mammals of the order of primates (*Homo*). Biologically related to the other members of the order, the apes, monkeys and baboons, man presents peculiar differences of structure and aptitude, physical and mental. These include perfectly opposable thumbs on the hands, erect posture, gracefully curved spinal column, arms relatively shorter and legs relatively longer and stronger, progression on the soles of the feet, brain relatively larger and more complex than in any other animal, and capacity for articulate speech and education, whence came human civilisation. Man-like precursors, intermediate and incomplete, lived in earlier geological ages. Modern man is regarded as a single species, *Homo sapiens*. See ANTHROPOLOGY, ETHNOLOGY.

Man Island off the N.W. coast of Great Britain. It is 33 m. long and covers 221 sq. m. At the S. end is a small island called the Calf of Man. The island, a popular pleasure resort, lies about an equal distance from England, Scotland and Ireland (27 m.). Douglas is the capital; other places are Peel, Ramsey, Castletown, Port Erin and Laxey, connected by railway or electric tramways with Douglas and one another. The highest

point, Snaefell, is 2034 ft. high, and there are some beautiful glens. Oats and barley are grown, and dairy farming, lead mining and fishing are other industries.

The attractions of the island include a mild climate in which fuchsias grow freely in the open. In the summer steamers ply regularly to Douglas from Liverpool, Barrow, Glasgow and other ports.

Man is a part of the British Empire, but has its own constitution. This consists of a Council and a House of Keys, an elected body of 24 members. A Lieut-Governor represents the King. It has its own legal system, but its church, under the Bishop of Sodor and Man, is part of the Church of England. The island is divided into six sheadings, and its two judges are called deemsters. The coat of arms is three legs. The Manx language, a Celtic one, is still spoken by a few of the people. Manx cats are tailless.

The island was inhabited by Celts who became Christians in the 6th century. From the Kings of Norway it passed in 1263 to the Kings of Scotland. Edward I. secured it for England, and in 1406 Henry IV. gave it to Sir John Stanley. The Stanleys were Lords of Man until 1736, and their successors, the Dukes of Atholl, from 1736 to 1765, when the sovereign rights were acquired by the English Government. The rest of the Duke's rights were bought in 1827. Pop. (1931) 49,338.

Managua Capital of the republic of Nicaragua. Connected by rail with Granada, it stands on the S. side of the Lake of Managua, and has a university and an air station. There is a trade in coffee, sugar, bananas and other products, and some manufactures. The city was damaged by an earthquake in 1931. Pop. 33,000.

Manáos City and river port of Brazil. On the Rio Negro, a tributary of the Amazon, it has a university and is the capital of the state of Amazonas. There are large docks and steamer connection with Europe. Pop. (1930) 83,736.

Manasseh Elder son of the patriarch Joseph, but less important than Ephraim. His descendants were established N. of Ephraim in Samaria, and also in Gilead and Bashan, E. of Jordan. Another Manasseh was a king of Judah, 697-642 B.C. A son of Hezekiah, whose reforming policy he abandoned, his persistent idolatry contributed to Jerusalem's destruction and the Jewish exile.

Manatee Genus of aquatic mammals of the sea-cow order. They inhabit estuaries and rivers on the tropical Atlantic coasts of America and Africa. They are inoffensive, thick-skinned, 8 ft. long, with hand-like fore-paddles and no hind limbs, and feed on aquatic herbage. Amazonian natives eat the flesh.

Manche Name used by the French for the English Channel (*q.v.*). It is also the name of a department which has a coastline on the channel and includes the Cotentin Peninsula. St. Lo is the chief town and Cherbourg the chief port.

Manchester City of New Hampshire. The largest city in the state, it is 16 m. from Concord, on the River Merrimac. The chief industry is the manufacture of cotton. Pop. 76,834.

Manchester City of Lancashire, on the Irwell, 189 m. from London by the L.N.E. and L.M.S. Rlys. The city area covers 34 sq. m.

The Chetham Hospital is one of the few old buildings in the city. The Rylands Library, in a fine modern building, is a priceless collection of books and manuscripts. The cathedral, formerly the parish church, dates from the 15th century. The grammar school, nearly as old, occupies a fine new building at Fallowfield. The public parks include Heaton Park. In 1932 arrangements were made to build a new City Hall.

Manchester is the headquarters of the cotton manufacture in England and a great distributing centre. Other industries are engineering and chemical works, and the manufacture of clothing. The university grew out of Owens College, and the city is famous as a musical centre, with a Royal College of Music and the fine Hallé Orchestra. Its leading newspaper, the *Manchester Guardian*, is known throughout the civilised world. The city is governed by a lord mayor and council, and sends 10 members to Parliament. The sporting facilities include a racecourse and the ground of the Lancashire cricket club at Old Trafford. It has two famous association football clubs; Manchester United which won the cup in 1909, and Manchester City which won it in 1904. There is an aerodrome on Chat Moss. It has two broadcasting stations, North Regional (480 M., 50 kW.) and North National (301.5 M., 50 kW.). Pop. (1931) 766,333. *See* MANCHESTER SHIP CANAL.

Manchester Duke of. English title held by the family of Montagu. Sir Henry Montagu, a judge, was made Earl of Manchester in 1626. His son, the 2nd earl, was a Parliamentary leader in the Civil War. In 1719 Charles, the 4th earl, was made a duke. The family seats are Kimbolton Castle, Huntingdonshire, and Tanderagee Castle, Armagh. The earl's eldest son is called Viscount Mandeville. The title is taken from Godmanchester, near Huntingdon.

Manchester Ship Canal Canal connecting Manchester with the estuary of the Mersey. The work was begun in 1887 and the canal opened for traffic in 1894. It cost about £20,000,000. It is 35¼ m. long and goes from Trafford Park, Manchester, to Eastham on the Mersey. Well provided with docks and warehouses, it is 28 ft. in depth, and steamers of 12,500 tons can navigate it. It passes by Runcorn and Ellesmere Port.

Manchu People of Tungus stock in E. Asia. Tall, slender, medium-headed, level-eyed, they effected contact with early Caucasoid migrations, peopled Manchuria, and imposed a dynasty on China in A.D. 1644, which the Republican Revolution ended in 1912. Largely displaced in Manchuria by Chinese immigrants, their Altaic speech and script linger only in scattered groups.

Manchukuo District of E. Asia, formerly Manchuria but since 1932 an independent state. It is between the Amur, which divides it from the territory of the Soviet Republic, and China, to which it formerly belonged. Its 3 provinces cover 363,610 sq. m., and are served by the S. Manchuria and Chinese Eastern Rlys. The soil is very fertile and the population has recently increased greatly. The soya bean is the chief product, but wheat, barley and millet are grown. Mukden is the largest city and the old capital; but Changchun was made the capital of the new state in 1932. Other towns and ports are Newchwang, Antung, Dairen or Dalny, and Port Arthur.

The possession of Manchuria was often a matter of dispute. Russia obtained a footing in the country, but in 1905 her rights therein were transferred to Japan. After the Great War there was a considerable amount of lawlessness in the province, in which Japanese troops remained. They were employed to crush the marauders, while from time to time came reports that the Soviet authorities were anxious to take some share in the affairs of the country. The control of the railway system was another cause of friction.

In 1932 Manchuria was proclaimed independent as Manchukuo, and the former Emperor of China, Mr. Pu-Yi, as he was named, was installed in March, as ruler of the state of the Manchus. He was called the Administrator, and his office declared elective. The new government expressed its desire to meet the obligations which it formerly owed as part of the Republic of China. Just before this event the League of Nations had sent out a commission to investigate the circumstances of Japanese control and to inquire into the formation of Manchukuo. The report of this commission was accepted by the League in Feb., 1933. In Jan., 1933, however, it was decided to make Mr. Henry Pu hereditary Emperor of Manchukuo and he was crowned March 1, 1934. The State is nominally independent but is actually under the domination of Japan. Pop. 25,000,000.

Mandaeans Eastern religious sect, resembling the Gnostic Christians of the second and third centuries. Their belief, derived from the New Testament, but containing Jewish and Parsic elements, reveres John the Baptist. They are therefore sometimes called Christians of Saint John, or Subbâ (Baptists) and identified by Mohammedans with the Sabaeans of the Koran Very few now remain and those mostly in Iraq.

Mandalay City and river port of Burma, on the Irawadi, about 400 m. from Rangoon. The old city was burned down in 1892, but two of the palaces and the walls remain. It is now the British quarter, and is called Fort Dufferin. In the new city the finest building is the group of several hundred pagodas which compose the great temple named Kuthodaw. The city does a large trade in the products of the country. From 1837 to 1885 Mandalay was the capital of the kingdom of Burma. Pop. (1931) 147,932.

Mandamus In English law the name of a writ. The word in Latin means "we command." It is issued by the King's Bench division in cases where a public body, or occasionally a private person, fails to perform an obvious duty.

Mandarin Name, derived by Portuguese navigators from Hindu, in general European use for any public official in China, civil or military, who wears a button. The native name is *kwan*. Nine grades are indicated by the material and colour of the button-knobs and girdle-clasps, and the devices embroidered on the robes.

Mandarin Duck Small freshwater duck indigenous to E. Asia (*Aix galericulata*), It is also called the Chinese teal. The drake has purple, green and chestnut plumage, with long, silky, erectile crest. One of the shoulder feathers expands into an upturned purple-banded chestnut fan.

Mandate Command. When a person is elected to Parliament, or some other body, on a particular question, he or his party is said to receive a mandate.

Since the Great War the word has been used for the authority given by the League of Nations to a country to administer the affairs of another country. Countries responsible for **Mandated Territories**, as they are called, receive their directions from the League, and reports about their work are issued from time to time. Great Britain governs Tanganyika and Palestine, and until 1931 governed Iraq, under mandate. France governs Syria, and British Dominions govern S.W. Africa and certain islands in the Pacific.

Mandeville **Sir John.** English author. He is regarded as the author of a book of travel written about 1360. The information is taken from earlier books and contains much legendary matter, as well as a certain amount of actual travel details. One theory is that the author was a certain John de Bourgoyne, but this may have been a name taken by Mandeville. Mandeville died at Liège, Nov. 17, 1372.

Mandoline Musical instrument of the lute family still popular in Italy. The **Neapolitan mandoline** has four pairs of metal strings tuned in fifths. It is played with a tortoiseshell plectrum, and 17 frets mark the stoppings. The larger **Milanese mandoline** has five or six pairs of strings tuned like the lute. Handel, Paisello, Mozart and Beethoven composed for the mandoline occasionally.

Mandrake Genus of perennial herbs of the potato family, (*Mandragora*). They are stemless plants with thick, fleshy roots, whose forked growth simulates man's lower limbs. Fantastic superstitions have pertained to them since the days of Rachel (Gen. xxx.). Long credited with narcotic and other properties, they are of no economic importance. They grow around the Mediterranean Sea.

Mandrill Species of the baboon family, (*Papio maimon*), a native of W. Africa, where it is found in communities. It is remarkable for its bright colouring, the muzzle being bright red with blue on either side, and the hinder parts purplish. The fur is brown and the beard yellowish.

Manet **Edouard.** French painter. The greatest exponent of the Impressionist school, he was born in Paris, Jan. 23, 1832, and studied under Couture. His work, notably "The Garden," first of the "plein air" school, and "Olympia," aroused much hostility and was frequently excluded from the Salon, causing Manet and his followers to exhibit independently. He died in Paris April 20, 1883.

Manganese Metallic element having the symbol Mn, atomic weight 54·93, and melting point 1898° C. It is a brittle steel-grey metal which oxidises rapidly in moist air. In its commercial form manganese usually contains up to 5 per cent of silicon, which increases the hardness and resistance to corrosion. Its alloys are of great economic value, especially those with steel, and its compounds enter into many industries. Its chief ores are pyrolusite, wad and manganite.

Mange Transferable skin complaint in various domestic animals. It is due to minute parasitic mites. Sarcoptic mange, caused by burrowing itch-mites, occurs in dogs, horses, pigs, goats, cats and others. Psoroptic mange, caused by skin-boring mites, occurs in horses, cattle and sheep. Follicular mange, caused by worm-like mites (*Demodex*), affects the hair follicles of dogs.

Mango Tall, evergreen tree of the cashew family. It is native in the E. Indies and Malaya (*Mangifera indica*). Reaching 30 or 40 ft. in height, it is cultivated in tropical Asia, Africa and America for its fleshy, reddish-yellow, kidney-shaped fruit. This, when unripe, is a favourite ingredient of chutney. Cultivated forms of luscious flavour are esteemed for dessert.

Mangold Wurzel Coarse, over-grown field-beet, a biennial herb of the goosefoot family (*Beta vulgaris*). Red and yellow forms, of varying shape and solid content, serve as winter fodder for livestock. Sugar develops during storage, only old roots being palatable. The so-called root includes the original stem; the so-called seeds are fruit-clusters.

Mangosteen Evergreen tree (*Garcinia mangostana*). It grows in Malaya and the E. Indies and produces a luscious fruit, the size of a small orange. The thick purplish rind encloses a white or reddish pulp of delicate flavour. The juice of the rind is very astringent and is used medicinally in cases of dysentery.

Mangotsfield Urban district of Gloucestershire. It is a junction on the L.M.S. line from Bath and Bristol, 5¼ m. from Bristol and 122 from London. There are collieries in the neighbourhood. Pop. (1931) 11,251.

Mangrove Name denoting various trees abounding in tropical coastal swamps. The common mangrove (*Rhizophora mangle*) with thick, smooth, leathery leaves and large four-petalled flowers, sends down from the trunk and branches spreading stilt-like roots which, in conjunction with new growths from seeds germinated in the still hanging fruit and then falling, form interminable forests. Bark extracts are made for tanning. The central American courida or black mangrove (*Avicennia nitida*) is allied to the white mangrove of Queensland and elsewhere.

Manhattan Island of the United States. It is at the mouth of the Hudson River, and most of New York City stands on it. The island is 13 m. long and about 2 m. wide in the centre, narrowing at either end.

Mania Form of insanity characterised by over-activity of the brain. Simple mania is marked by much loquacity and instability of conduct or emotion. In acute mania speech becomes incoherent and will-power disappears, the sufferer becoming "raving mad." The onset is usually gradual, possibly due to toxic changes in the blood of the brain. Sometimes fatal through sheer exhaustion, most cases recover, either abruptly or after relapses, but it may pass into chronic mania, and this into dementia.

Manichaeism Religious system founded by the Persian Mani, or Manichaeus, in the 3rd century, A.D. Based upon Magian dualism, with Buddhist, Gnostic and Chaldean features, it regarded the world as resulting from a conflict of light and darkness, man as engendered by Satan, and Mani himself as the last and greatest prophet. Confronting Christianity and Mithraism, it spread to Mesopotamia, Central Asia, W. Christendom and N. Africa, long resisted Islamic opposition, acquired at times Christian elements, and influenced the Albigenses.

Manicure Term applied to the treatment of the finger nails to preserve their healthy condition and appearance. The nails are cleaned in soapy water and shaped with a flexible steel file. Orange wood sticks are used for pressing back the cuticle, the loose portions of which are removed by a cuticle knife or fine scissors.

Manila Capital and seaport of the Philippine Islands. It stands on the W. side of Luzon where the River Pasig falls into Manila Bay. The old town is surrounded by a wall, and the cathedral dates from the 16th century. There is a university dating from 1857 and organised on modern lines. The older one, founded in 1585, was closed in 1730. N. of the old city, across the Pasig, are modern suburbs. There is a good harbour and water supply. Pop. (1932) 341,034.

In Manila Bay on May 1, 1898, a Spanish fleet was sunk by the Americans under Commodore Dewey, and on Aug. 13 the city was taken.

Manila Hemp Fibre having great strength, tenacity and lightness. It is obtained from the leaf-bases of *Musa textilis*, a plant of the banana family growing in the Philippines. It is used for making ropes and cordage, and the finer grades for muslins and other fabrics, also as a binding material for plaster.

Maniple Division of the Roman legion. From the 4th century B.C. onwards the 3000 heavy-armed infantry formed 20 maniples of 120 and 10 of 60, each with two centurions and a standard-bearer.

Maniple Eucharistic vestment. A narrow stole-like strip about 30 in. long, originally of linen, afterwards of other materials embroidered and fringed, it is looped over the left wrist. Disused by the English Church at the Reformation, it tends to reappear, sometimes for wiping the chalice rim.

Manipur Native state of India. It is in Assam and covers 8456 sq. m. The ruler is a rajah, and the capital is Manipur or Imphal. The Indian Government, which put down a rising here in 1891, receives tribute from the state and has some control over its affairs. Pop. (1931) 445,606.

Manitoba Lake of Canada. In the province of Manitoba, it lies 60 m. to the S.W. of Lake Winnipeg. It covers 1500 sq. m. and is 120 m. long. Its waters are carried by the Little Saskatchewan River to Lake Winnipeg.

Manitoba Province of the Dominion of Canada. Between Ontario and Saskatchewan, it is one of the prairie provinces and covers 251,832 sq. m. Winnipeg is the capital. The chief rivers are the Red and the Nelson and its lakes cover 20,000 sq. m. The largest are Winnipeg, Winnipegosis and Manitoba. Wheat, barley, maize and oats are produced in large quantities and there is a good deal of dairy farming. Coal is mined. The province is governed by a legislature of one House and a Cabinet responsible to it, and is represented also in the Parliament at Ottawa.

The province was formed in 1870 from land bought from the Hudson Bay Company. It was enlarged in 1881 and again in 1912. Before 1870 it was called the Red River Settlement. The University of Manitoba was founded in 1877 and owns large tracts of land. It consists of colleges in Winnipeg and the neighbourhood. Pop. (1931) 700,139. *See* CANADA.

Mann **Thomas.** German writer. Born at Lübeck, June 6, 1875; at the age of

19 his family removed to Munich, and while working in insurance, he devoted himself to literature. He published *Buddenbrooks* in 1903, a massive story of a family of Lübeck merchants, such as his own. He wrote short stories and a novel, and in 1925 another long novel, *Der Zauberberg* (English translation, *The Magic Mountain*, 1926), the story of the people in a tubercular convalescent home in Davos. He has written essays and one play, and he was awarded the Nobel Prize for Literature in 1929.

Mann Tom. English politician. Born at Foleshill, Warwickshire, April 15, 1856, he worked on a farm and in a coal mine as a boy. Later he became an engineering apprentice in Birmingham. Prominent in the trade union and Socialist movements, he was a leader of the dockers' strike in 1889. He was first secretary of the Independent Labour Party, 1894-96, of the London Reform Union and of the National Democratic League; and became associated with the syndicalist movement. He was active as a Labour leader in Australia between 1902 and 1908, and in S. Africa. In 1918-21 he was general secretary of the Amalgamated Society of Engineers. He has written *A Socialist's View of Religion*, *Russia in* 1921, *Tom Mann's Memoirs* and *What I Saw in China*, 1927.

Manna Saccharine exudation, obtained from incisions in the stems of *Fraxinus ornus*, the manna ash, a native of S. Europe. It is used in the form of yellowish-brown fragments or flakes in medicine as a mild laxative. Similar exudations are derived from a number of trees, the manna of the Bible probably being that from the tamarisk.

Mannheim Town and river port of Baden, Germany. It is 40 m. from Karlsruhe, where the Neckar flows into the Rhine. It is a modern town with a number of manufactures and a large harbour. The palace, once the residence of the Margraves of Baden, has a museum, picture gallery and library. The National theatre has associations with Schiller. From 1720 to 1778 Mannheim was the capital of Baden. Pop. 247,500.

Manning Henry Edward. English cardinal. Born at Totteridge, July 15, 1808, he was made rector of Lavington in 1834. Manning was attracted by the Oxford Movement and in 1851 joined the Church of Rome. He was ordained priest and worked as chief of the oblates of S. Charles at Bayswater. He acted as assistant to Cardinal Wiseman and succeeded him in 1865 as Archbishop of Westminster. In 1875 he was made a cardinal, and he died Jan. 14, 1892. He is buried in Westminster Cathedral.

Manning was a prominent figure in his day and did a great deal for his Church in England. He was a social reformer, keen on housing and temperance. In *Lothair* he is portrayed as Cardinal Grandison. He wrote *The Eternal Priesthood* and other books.

Manningham Industrial district N.W. of Bradford, on the L.M.S. Rly. Here are large mills of Messrs. Lister and Company, and Manningham Park.

Manningtree Market town of Essex, on the estuary of the Stour, 8 m. from Colchester, on the L.N.E. Rly. The industries include malting and a trade in agricultural produce.

Manoel Two kings of Portugal. Manoel I. was king from 1495 to 1521. He encouraged Vasco da Gama and others to go on voyages of discovery.

Manoel II. was born in Lisbon, Nov. 15, 1889, the son of King Carlos I. and a Bourbon princess. He became king on Feb. 1, 1908, on the murder of his father and his elder brother. In 1910 he was deposed and settled in England. In 1913 he married a princess of the Hohenzollern family. He died July 2, 1932.

Manometer Instrument for measuring the pressure of gases. Its principle is illustrated by a U-shaped tube partially filled with liquid. If the pressure on both surfaces is equal, the height in both limbs remains the same, but with increasing pressure the liquid rises in one limb. The barometer and steam gauge are forms of manometers.

Manor Name used for a landed estate. In the Middle Ages the manorial system was in force over a considerable part of England. The lord, who held the land from the king or a great noble, lived in the manor house; some of it he let out to tenants, who paid him by working for him on certain days. Other parts of the land, called the desmesne, he cultivated by the aid of this labour and a further part was woodland or common where the tenants grazed their animals. The arable land was divided into strips, and each tenant, called a villein, had a share in each of the common fields of the manor.

The manors varied in size, and the poorer tenants were called borderers and cotters. None of the tenants was free to leave the estate. The lord held courts and a record or manorial roll was kept of the services due from the tenants for their land.

F. W. Maitland in *Domesday Book and Beyond* thinks the manor was an estate assessed separately for the geld or tax paid to the king. The system began to decay in the 14th century and had disappeared by the 16th, although traces of it remained, copyhold in land for example, and the remaining manorial rights were bought and sold until finally abolished by legislation in 1925. It is estimated that there were 20,000 manors in England.

Mansard Type of roof, named after its French inventor, François Mansard (1598-1666). The lower part of the roof is steeply pitched while the upper part is but slightly inclined. The Mansard roof was suitable for large buildings and provided ample space without unduly increasing the height.

Mansfield Borough and market town of Nottinghamshire, on the Maun, 139 m. from London and 13 from Nottingham, on the L.M.S. and L.N.E. Rlys. It owes its early fame to its association with Sherwood Forest. In the 19th century it expanded a good deal owing to the opening of coal mines, and there are now factories for making hosiery, machinery, silk and cotton goods, boots and shoes. The town has a technical school for the mining industry. Pop. (1931) 46,075.

Mansfield Earl of. Scottish title borne by the family of Murray. The first earl was William Murray, a famous lawyer. Born March 2, 1705, he became a barrister and an M.P., was Solicitor-General and then Attorney-General, and in 1756 was made Lord Chief Justice and a baron. He was one of the leaders of the political group that carried on the government in the interests of George III. He retired in 1788 and died March 20, 1793.

Mansfield gave some famous legal decisions,

including the one that slaves who land on English soil are free. His London house was burned in 1780 during the Gordon riots; another of his residences was Ken Wood at Hampstead.

The earl's seat is Scone Palace near Perth, and his eldest son is called Lord Scone.

Mansfield Katherine. British writer. She was born in New Zealand in 1880, the daughter of Sir Harold Beauchamp, and educated at Queen's College, London. In 1911 she published her first volume of stories *In a German Pension*, and she wrote for *The Athenaeum*. In 1920 a volume of stories, entitled *Bliss*, made her reputation, and this was followed by *The Garden Party*, *Prelude* and *The Daughters of the Late Colonel*. In 1913 she married the critic, J. Middleton Murry. She died Jan. 9, 1923, after a long illness. In 1924 *The Journal of Katherine Mansfield* and in 1928 her *Letters* appeared.

Mansfield Woodhouse

Urban district of Nottinghamshire, 2 m. from Mansfield, on the L.M.S. Rly. Coal mining is the chief industry. Pop. (1931) 13,707.

Manship Paul. American sculptor. Born Dec. 25, 1885, he studied art in Philadelphia and Rome. He soon came to be regarded as one of the leading sculptors of the day. He executed the Morgan Memorial in the Metropolitan Museum of Art in New York and other exquisite pieces there and in Paris.

Mansion House Official residence of the Lord Mayor of London. It stands opposite the Bank of England, was built between 1739-53 from designs by George Dance, and restored and extensively improved in 1930-31, when a fine roof garden was added. The finest room is the Egyptian Hall, wherein the banquets are held. Attached to it is the police court.

There is a mansion house for the Lord Mayor in York, and another in Grafton St., Dublin. Bristol also has a mansion house.

Manslaughter In English law the unlawful killing of another without premeditation. It may be due to an accident or done in the heat of the moment, or as an act of self-defence. It may be the result of neglect, as when a failure to call in a doctor results in death. The maximum punishment is penal servitude for life. Manslaughter is not recognised in Scots law.

Manston Village of Kent, on the coast between Margate and Ramsgate. Here in 1920 a camp was opened for teaching trades to men who had served in the Royal Air Force.

Mansurah City of Egypt. It stands on one of the branches of the Nile, and is a prosperous trading and cotton growing centre. Here, in 1248, St. Louis of France was imprisoned when retreating at the head of his crusading army from Damietta. The fortress which was his prison has been restored. Near are the ruins of a temple dedicated to Isis. Pop. 63,076.

Mantegna Andrea. Italian painter. Born at Vicenza in 1431, he settled in Mantua and soon won a position in the front rank. Nine of his pictures, a series called "The Triumph of Julius Caesar," are in Hampton Court Palace, and he is represented in the Louvre. Much of his work took the form of decorations for churches, among them the Belvedere chapel in the Vatican, Rome. He died Sept. 13, 1506.

Mantilla National headdress of women in Spain and Spanish countries. Sometimes supported by a lofty head-comb, and draped over the head and shoulders, it may serve as a veil, being made of black or white lace and other material, often costly. It developed from the light cloak thrown over the dress.

Mantis Genus of insects of the orthopterous order. They are not unlike locusts and are sometimes called the praying mantis because the forelegs assume an attitude of prayer.

Mantling In heraldry, the mantelet, lambrequin or scarf, represented as floating from the helm or crest. It is usually jagged as if tattered in conflict, or tasselled. It degenerated into a foliated scroll, or became a mere ornamental appendage to an escutcheon, comprising a background of flowing drapery adjusted in folds, sometimes lined with ermine.

Mantua City of Italy, on the Mincio, 100 m. from Milan. The city was for 400 years the capital of the duchy ruled by the Dukes of the Gonzaga family. It is chiefly interesting as the birthplace of Virgil (*q.v.*). Pop. (1931) 42,939.

Manu Mythical Hindu being. Springing from the self-existent Brahma, he divided himself into male and female, whence came in process of time the present human race. A Manu deluge-legend recalls the Biblical story of Noah. Sanskrit law books, recast about the Christian era, contain digests of primitive law, cited as the Code of Manu.

Manure Name given to the various fertilisers used for enriching the soil. The oldest is farmyard manure which contains all the essentials required by plants. Guano, the excrement of sea-birds, and bone, blood, fish and other organic refuse are valuable fertilisers. To supplement the many organic manures inorganic substances such as sodium nitrate, ammonium sulphate, basic slag, and superphosphate are employed. In certain cases, special fertilisers are used, such as shoddy for hops.

Manuscript Anything handwritten. Specifically the word denotes an ancient or mediaeval writing produced before the general adoption of printing in the 5th century; usually abbreviated to MS., plural MSS. Such writings, once made on waxed tablets fastened together, came to be made on papyrus, parchment or paper, forming a volume or roll, or a codex in book form, and multiplied by copying singly. Some contain illuminations of great beauty and historic value. *See* PALAEOGRAPHY, PALIMPSEST.

Manvers Earl. English title borne by the family of Pierrepont. Charles Medows, M.P., inherited the estates of the Duke of Kingston in 1788 and took the name of Pierrepont. In 1806 he was made Earl Manvers, and his descendants have since held the title. The family seat is Thoresby, near Mansfield, and the earl's eldest son is called Viscount Newark.

Maori People of Polynesian stock in New Zealand. Estimated (1932) at 69,893, mostly in North Island, one-fifth being half-caste, they are tall and muscular, black-haired, with oval faces of Caucasian type. Traditionally arriving from Rarotonga c. 1350, they encountered still earlier Polynesian im-

migrants intermingled with indigenous Papuasians. Remarkable cultural developments occurred, marked by jade-adzed timber houses, decorative wood carving and flax weaving. The ruling chiefs practised face tattooing; jade amulets, *tiki*, simulating human embryos, were worn. When Great Britain undertook sovereignty, 1840, conflicts with the natives developed, 1843-47 and 1861-71. Since then the Maoris have become law abiding and nominally Christianised. They have a native representative on the executive council, and four elected members in the Parliament of New Zealand.

Map Representation upon a plane surface of the earth or some part of it. As the earth's surface is curved, its true form and proportion cannot be shown on a map without some degree of distortion. To reduce this distortion as far as possible various "projections" are adopted. Mercator's projection is cylindrical, with parallels of latitude shown as straight lines; other projections are the stereographic, showing less distortion; and the conical, suitable for small areas. **Contour maps** show the contour of a district by lines running through points of equal elevation.

Maple Genus of deciduous trees and shrubs of the soapwort order (*Aceræ*). They are natives of N. temperate regions. The fruits are ash-like two-winged "keys." Many species are planted for their valuable timber, sugary product or richly-tinted and variegated foliage. Britain's indigenous small-leaved maple is *A. campestre*; the false sycamore or great maple, *A. pseudoplatanus*, 40 to 60 ft. high, has long been naturalised. The spring sap of the still taller American sugar or bird's-eye maple and red-flowered or curled maple regularly yields maple sugar.

Maple **Sir John Blundell.** English business man. Born in London, March 1, 1845, he joined his father in business as a seller of furniture. Under his control the firm became one of the largest of its kind. It still flourishes in Tottenham Court Rd., London. In 1887 Maple entered the House of Commons as Conservative M.P. for Dulwich, and in 1892 he was knighted. He was made a baronet in 1897 and died Nov. 24, 1903. A well-known racehorse owner, his stables at Childwickbury were famous. He rebuilt University College Hospital, near Tottenham Court Road.

Mar **Earl of.** Scottish title held by the family of Erskine. Mar is a district in Aberdeenshire and in early times was under one of the 7 Scottish earls, but the line became extinct in the 15th century. In 1565 the title was given to John Erskine, but his descendant lost his lands and titles for siding with the Pretender in 1715. In 1824 the earldom was revived for a member of the Erskine family, who, in 1835, became also Earl of Kellie. In 1866 he died, and there was a long dispute about the title. It was given in 1875 to the Earl of Kellie, and its holder is now known as the Earl of Mar and Kellie. His eldest son is called Lord Erskine.

In 1885 the title of Earl of Mar was given to J. F. Goodeve-Erskine, and his descendant still holds it. Owing to this unusual procedure there are two Earls of Mar. The one held by the family of Goodeve-Erskine was given precedence from 1405; the earl's eldest son is called Lord Garioch (pron. Gherry).

Marabou Central African stork (*Leptoptilus*). Its undertail coverts were formerly collected for millinery and scarf trimmings. Marabou feathers come also from the allied Indian adjutant bird.

Maracaibo City and seaport of Venezuela. It stands on the strait that leads from Lake Maracaibo to the Gulf of Maracaibo, part of the Caribbean Sea. It has a small harbour and is the chief seaport in the republic, oil and sugar figuring among the exports. Pop. 74,800.

Marachesti Town of Rumania. It is in Moldavia, 12 m. from Focsani, on the River Screth and is an important railway junction. It has two broadcasting stations (76 and 48.95 M.).

In Aug., 1916, an army of Austrians and Germans, then invading Rumania, was met by a defending army near this town. A battle began on Aug. 13 and continued for some days. A succession of German attacks continued until the 19th, when the battle ceased without decisive result, but the Germans did not advance further into the country.

Maraschino Liqueur, made from a cherry that grows in Yugoslavia and Italy. From this the liqueur is distilled and sugar or honey is added to it.

Marat **Jean Paul.** French revolutionary leader. Born at Boudry, Neuchâtel, he studied and practised medicine, optics and electricity in France, Holland and England. In 1773 he published a *Philosophical Essay on Man*, and in 1789 started a political paper, *L'Ami du Peuple*, which attacked those in authority. He was forced to leave France, but returned in 1792, and was elected to the Assembly. He then engaged in a bitter struggle with the Girondins, which led to his assassination in his bath by Charlotte Corday, July 13, 1793.

Maratha Hindu people inhabiting extensive tracts in W. and Central India. Formerly containing the mediaeval Maharashtra kingdom. They number about 6,500,000; the complex of castes and tribes speaking the Marathi dialects about 21,361,000. Besides Maratha Brahmans of pure descent, there are more or less Aryanised aboriginals descended from non-Brahman camp followers in the Maratha armies. British conflicts with the 17th-18th century Maratha confederacy and early 19th-century campaigns constituted the Maratha wars, which increased the area of the British Empire in India. Maratha units gained distinction during the Great War, especially in Mesopotamia.

Marathon Plain of Greece, 22 m. from Athens. It is famous for the battle fought here in 490 B.C. The Persians had invaded Greece and were encamped on a plain near the sea. There they were attacked by a Greek army, chiefly composed of Athenians, directed by Miltiades. The Greek victory, after an initial repulse, was complete.

Marathon Race Name given to a long distance foot race, so named because after the Battle of Marathon a certain Pheidippides ran the 22 m. to Athens to announce the victory of the Greeks On his arrival he fell dead. The chief Marathon race is at the Olympic Games, the course being 26 m. 385 yds., covered in 1929 in the record time of 2 hours 30 minutes 57.6 seconds. There is a Marathon race for coaches.

Marazion Market town and seaport of Cornwall, also called Market

Jew. It stands on Mounts Bay, 4 m. from Penzance, on the G.W. Rly, and the chief industry is fishing. Until 1835 Marazion had its own mayor and corporation. There is a causeway from here to St. Michael's Mount, and in the Middle Ages the town was much visited by pilgrims.

Marble Term loosely applied to any rock capable of taking a high polish. Strictly it means a hard limestone used for ornamental purposes, and more especially those of a crystalline and granular character. The colour varies from white to black, and in some, such as the Devon and Derbyshire marbles, the markings are due to their fossil contents. Statuary marble is quarried at Carrara, Italy, onyx marble in Algeria, green serpentinous marbles in Ireland, Italy and Greece.

Marble Arch Gateway near the N. entrance to Hyde Park. A copy of a Roman arch, it was designed by George Nash in 1828 as an entrance to Buckingham Palace. In 1851 it was removed to its present site. In 1930-31 new buildings made great changes near the Arch, which gives its name to a station on the Central London Tube Rly.

March Market town and urban district of Cambridgeshire, 30 m. from Cambridge on the L.N.E. Rly. Pop. (1931) 11,276.

March **Earl of.** Scottish title now borne by the eldest son of the Duke of Richmond and Gordon. The first earls were so named because they were the guardians, or wardens, of the march districts. It was held by the family of Dunbar until forfeited in 1434. In 1675 it was given to the Duke of Lennox and it has since been held by his descendants.

From 1697 to 1810 there was another earldom of March, its first holder being William Douglas. His descendant, William, 3rd Earl of March, was made Duke of Queensberry (*q.v.*).

The English title of Earl of March was held by the family of Mortimer from 1328 to 1425. Later, Richard, Duke of York, the father of Edward IV., was Earl of March.

March **Earl of.** English soldier. Roger Mortimer, born about 1287, was the eldest son of Edmund Mortimer. The holder of great estates on the borders of Wales, he was prominent in the time of Edward II. He was made Governor of Ireland and was one of the group that followed Thomas, Earl of Lancaster, in his rebellion against the king. He was put in prison, but in 1324 he escaped and went to France. There he became the lover of Isabella, the wife of Edward II., and in 1327 the pair returned to England, took the king prisoner and had him put to death. Mortimer then helped the queen to rule in the name of her son, Edward III., for three years. In 1330 the king took him prisoner at Nottingham and he was hanged at Tyburn, Nov. 29, 1330.

Marchand **Jean Baptiste.** *See* FASHODA.

Marches Word used for a borderland, as those between England and Scotland and between England and Wales. In the Middle Ages there was continuous warfare in the former district, the governors of which were called Wardens of the Marches. The march district between England and Wales was governed by Lords Marchers, and castles were built to defend it, among them Ludlow and Wigmore. The authority of the Lords Marchers was taken away in 1536.

Marconi **Guglielmo.** Italian inventor. Born at Bologna, April 25, 1874, he took out the first wireless telegraph patent on June 2, 1896. In 1899, wireless telegraphy was first used for saving life at sea. In 1901 Marconi succeeded in transmitting and receiving signals between Newfoundland and Cornwall, and since then has taken a leading part in the scientific and commercial development of wireless telegraphy, telephony and broadcasting. In 1914 he began experiments with short waves, which led to the "beam" system of long distance and directed wireless transmission.

He was awarded the Nobel Prize for Physics in 1909, made a Senator in 1915 and a Marquess in 1929. He served with the Italian forces during the Great War and after Mussolini became virtual dictator in Italy Marconi supported his cause, offering his scientific services in the conduct of the Abyssinian war.

Marcus Aurelius Roman emperor and Stoic philosopher. Born in Rome April 26, A.D. 121, the son of Annius Verus, he became co-emperor in 161 with his adopted brother, Lucius Verus. He re-established discipline, ameliorated the conditions of slaves, reformed the civil laws and kept back the barbarians, who menaced the empire in the north and east.

His *Meditations*, written mostly in camp, and in the midst of public business, show him to have been a man who, at a time of universal corruption and self-indulgence, was self-denying and just. He died March 17, 180.

Mardi Gras Shrove Tuesday, or Fat Tuesday, so-called because of the fat ox paraded through the streets in France, the day before Ash Wednesday. It is celebrated in Catholic countries with feasting, processions and merrymaking, and is the last day of a carnival before Lent begins.

Marduk God of Babylon, where he had a splendid temple. He became god of the sun and of war and healing, and took the attributes of the old Sumerian deities.

Maree Loch in Ross and Cromarty. About 20 m. from Dingwall, it is 13 m. long and covers about 11 sq. m. It is almost surrounded by mountains and some of the finest scenery in Scotland.

Marengo Village of Italy, about 5 m. from Alessandria. Here on June 14, 1800, Napoleon gained one of his earliest and greatest victories. With 40,000 men he crossed the Alps into Italy and, at Marengo, came face to face with an Austrian army much larger than his own. The French were retiring when Napoleon arrived. He ordered an advance, brought up all his reserves and the Austrians were quickly routed.

Mare's Tail (*Hippuris vulgaris*). Water plant of the natural order *Haloragaceae*. It has a creeping root stock and the whorls of narrow leaves encircle the joints of the slender stems. The small green flowers are stalkless and have red anthers. It is found in shallow pools and lakes.

Margam District of the borough of Port Talbot, Glamorganshire. It is a coal mining centre. The chief building is the restored church, once a Cistercian abbey, of which some ruins, including the chapter house, remain. Near is Margam Abbey, long the seat of the Mansel and Talbot families. The estate was sold in 1921.

Margaret Saint and Queen of Scotland. A granddaughter of Edmund

Ironside, she was born in Hungary about 1045, but came to England with her brother Edgar Atheling. The King of Scotland offered them a home, and in 1067 Margaret was married at Dunfermline to Malcolm III. In 1093 her husband was killed, and the same year the queen died leaving three sons, Edgar, Alexander I. and David I., who all became kings. In 1250 she was canonised.

Margaret Queen of Scotland, called the Maid of Norway. She was the daughter of Eric, King of Norway, and through her mother, a granddaughter of Alexander III., King of Scotland. She was born in 1283, and in 1284 was declared heir to the throne of Scotland. In 1290 Alexander died and she became, in name, queen. She crossed over from Norway, but died on arriving at the Orkneys in Sept., 1290.

Margaret Queen of Henry VI. A daughter of René, Duke of Lorraine, and known as Margaret of Anjou, she was born March 23, 1430. In 1445 she was married to Henry VI. at Titchfield Abbey in Hampshire. She was remarkable for the energy which she put into her husband's cause during the Wars of the Roses, although she was partly responsible for his difficulties with his subjects. From 1463 to 1470 she was in France dependent upon the benevolence of her kinsfolk. She returned to England in 1471 with her only son Edward, but the defeat of the Lancastrians at Tewkesbury put an end to her hopes of recovering the throne. She was then made prisoner, and was not released until 1476. Her concluding years were passed in France. She died at Angers, April 15, 1482.

Margarine Name given to a butter substitute. It was made originally from beef fat digested in a weak alkaline solution with pepsin, but afterwards improved by churning the fat with milk. In its modern form margarine is made from animal or vegetable fats. Usually hydrogenated or hardened coconut fat, or palm kernel oil is used with liquid cotton seed or arachis oils, and churned with soured milk. Like butter, margarine must not contain more than 16 per cent of water and no preservatives except salt. There are heavy penalties for adulterating margarine or selling it without it being clearly labelled.

Margarita Island in the Caribbean Sea. It is separated by the Strait of Margarita from the mainland of Venezuela, to which country it belongs. Asuncion is the capital. The area is about 400 sq. m. Off its shores are pearl fisheries.

Margate Borough, pleasure resort and seaport of Kent. It is on the E. coast, near the North Foreland, 74 m. from London, on the S. Rly. It has attractions of every kind, including winter gardens, pier and golf links. The bathing and sands are good. The eastern part is known as Cliftonville. In 1931 a new general hospital was opened. Pop. (1931) 31,312.

Margay Brazilian name of a small tiger-cat, *Felis tigrina*. It ranges from Mexico to Paraguay. A forest dweller, 24 in. long, with 12 in. tail, its harsh grizzly-grey fur is variously spotted and ringed; the cheeks have three black stripes. It preys on small mammals and birds, and is sometimes tamed for destroying rats in houses.

Margrave German title now extinct. It meant count of the mark, or march, and was equivalent to marquess. It was given at first to those who looked after the march or border districts and later became the title of certain rulers, *e.g.*, the Margraves of Brandenburg and Baden.

Marguerite Name loosely applied to the composite flowers of various hardy perennial herbs of the type of the ox-eye daisy, *Chrysanthemum leucanthemum*. A shrubby form from Teneriffe, *C. frutescens*, and a yellow variant, are favourite garden marguerites. The half-hardy blue marguerite, *Agathaea coelestis*, is quite distinct. *See* DAISY.

Marguerite of Valois. *See* VALOIS.

Maria Theresa Empress of the Holy Roman Empire. A daughter of Charles VI., she was born in Vienna, May 13, 1717. As her father had no sons, he named her as his successor on the imperial throne, and ruler of Austria, and persuaded the Powers to agree to this. When he died, however, a Bavarian prince was elected emperor, and Frederick the Great invaded Silesia, which he claimed by virtue of an old treaty. The result was a European war which lasted until 1748, and then, after a period of peace, came the Seven Years' War, 1756-63. Maria Theresa lost Silesia, but in 1748 she secured the election of her husband, Francis, Duke of Lorraine, whom she had married in 1736, as emperor. On his death, her son, Joseph II., was elected, but Maria Theresa remained the real ruler until her death, Nov. 29, 1780. Her large family included the Emperor Leopold II. and Marie Antoinette.

Another Maria Theresa, also an Austrian princess, was the wife of Louis XIV.

Marie Antoinette Queen of Louis XVI. of France. A daughter of the Empress Maria Theresa and the Emperor Francis I., she was born in Vienna, Nov. 2, 1755. In May, 1770, she married the dauphin, who in 1774 became King of France. She soon became unpopular, and was regarded as responsible for much of the misery in the land and as the evil genius of her husband. Although by no stretch of imagination could the terrible condition of France before the Revolution be charged against the queen, her conduct was foolish, or worse, and she seems to have possessed neither ability nor tact. Her relationship with Austria was another cause of mistrust, especially when the Revolution began. In 1792, with Louis, she was arrested. Attempts to release her failed. At her trial in Oct., 1793, she defended herself with dignity and spirit, but sentence of death was passed Oct. 16, 1793, and on the same day she was guillotined. *See* LOUIS XVI.

Marie de Medici Queen of France, and wife of Henry IV. She was born at Florence in 1573 and married Henry in 1600. After the murder of her husband in 1610, ten years after their marriage, she was made Regent for Louis XIII. She was greatly influenced by the Italian Concini and his wife. After Concini's murder in 1617 she was at war with her son Louis XIII. from 1617 to 1620. In 1630 Richelieu exiled her to Compiègne, whence she escaped to Brussels. She is said to have died in poverty at Cologne, July 3, 1642.

Marie Louise Empress of the French. A daughter of the Emperor Francis I., she was born Dec. 12, 1791. In 1810 she became the second wife of Napoleon. In 1814 she returned to

Austria, but the rest of her life was passed in Italy where Parma and other territories were given to her. She had a son, the Duke of Reichstadt, by Napoleon and several children by her lover, Count von Neipperg, whom she married in 1822. She died in Vienna, Dec. 18, 1847.

Marienbad Spa in Czechoslovakia. Attractively situated 2090 ft. high among pine woods, it became popular in the 19th century owing to the curative properties of its mineral springs for gout and diabetes. The old abbey of Tepla nearby originally owned the springs. The buildings are modern. Pop., about 7000.

Marigold Annual composite herb with orange or lemon-coloured flowers. The common pot-marigold is *Calendula officinalis*, from S. Europe: an allied Cape marigold, white-rayed with purple disk, now called *Dimorphotheca*, yields also hybridised black-eyed orange sorts. Mexican species of *Tagetes* furnish so-called African and French marigolds; double-flowered sort varieties occur. The corn marigold is *Chrysanthemum segetum*. *See* MARSH MARIGOLD.

Marine Soldier who serves on board ship. Marines were first raised in England in 1664, but the Royal Marines in its present form dates from 1755 when the Admiralty took over the force. It has a long record of service, and its motto is *per mare per terram*. From 1859 to 1923 it was divided into two branches, the R. Marine Artillery and the R. Marine Light Infantry. The men are known popularly as the jollies, and officers and men wear white helmets. They are organised in three divisions, Chatham, Portsmouth and Plymouth, and have a depot for recruits at Deal. The Royal Marine Police Force dates from 1922.

Marine Ministry of. Department of State. Some countries, *e.g.*, Canada and France, call the department that is responsible for the navy by this name. It is the equivalent of the British Admiralty, and like it its head is a politician.

Mariners' Compass Instrument for directing the course of a vessel. It consists of a case containing a circular card or dial fixed upon a magnetised steel needle. The dial is marked out into 360 degrees, and the four cardinal points, the north coinciding with the north point of the needle. Each quadrant is divided further into eight points, north-north-east, etc. The compass is contained in a case or binnacle and is placed usually on the highest part of the deck.

Mariolatry Term deprecatory of the Roman Catholic doctrine and practice concerning the Virgin Mary. Apologists claim that while *latreia*, worship, is due to God alone, the Virgin is entitled to *hyperdulia*, a lesser form of veneration, invoking her aid in human intercessions. Hence the repetition of the *Ave Maria*, with or without the rosary, and the veneration of images and pictures. The doctrine, abandoned by the Protestant Reformation, is reprobated by the 22nd Article of Religion of the Church of England.

Marionette Miniature figure of wood, cardboard, leather or other materials manipulated on a mimic stage by wires or strings. Puppets with movable limbs were used in ancient Egypt, Greece and Rome. In 16th-18th century Europe, especially France and Italy, they were employed to depict Biblical stories and other incidents of dramatic interest, and survive in Punch and Judy.

Maris Jacob. Dutch painter. Born at the Hague in 1837, the eldest of three artist brothers, he is known mainly as a painter of landscapes, in which the subject is subordinate to the effect. He painted "Landscape near Dordrecht," "Seaweed Carts," and "Scheveningen." He died in 1899. The work of his brother Matthew (1839-1917) has a touch of mediaevalism. "Bride of the Church," "Four Mills," and "Girl Feeding Chickens" are among his best works. William (1844-1910) lived mainly in London. His work is modern in treatment. "Cows Beside a Ditch" is an example.

Marists Roman Catholic congregation of priests and laity. Its members conduct educational, sick-nursing and missionary enterprises. Founded at Belley, France, in 1816, the Marist fathers and associated lay brothers and lay sisters, maintain a novitiate at Paignton, Devon, and several missions in New Zealand, Fiji and other Pacific islands.

Marius Gaius. Roman soldier and statesman. Born in 157 B.C., he gained his early experience of war in Africa against the Carthaginians. In 119 he was chosen tribune and in 107 consul: as consul he ended the war against Numidia by capturing its king, Jugurtha. He next crushed the hordes of barbarians who had invaded the Roman realm. During this period he was elected consul four times in succession and at the end was hailed as the third foundor of the city.

Marius was again chosen consul in 100. Between 100 and 85, although not consul, he did good work in putting down rebellions. When Sulla was preferred to Marius as the commander in the war against Mithridates, a furious quarrel broke out between them and Marius only saved his life by escaping to Africa. Soon, however, he returned to Rome and with Cinna captured the city. He then ordered a massacre of his enemies, and for five days, it is said, 4000 slaves revelled in the task of slaughter. A few weeks after being chosen consul for the seventh time, Marius died (85 B.C.).

Marjoram Genus of perennial aromatic herbs or undershrubs (*Origanum*). They are indigenous to N. temperate regions. Wild marjoram, 1 to 3 ft. high, is purple-flowered. Sweet or knotted and pot marjoram are two cultivated culinary forms whose leaves are used for stuffing and soup-flavouring. Hop-marjoram or dittany of Crete (*O. dictamnus*), introduced into Tudor England, preferably grows under glass.

Mark German unit of currency. Divided into 100 *pfennig* and coined in silver from 1876 it was worth, in English currency, just under 1s. After the Great War its value depreciated, and in 1924 a new mark, called the Reichsmark, was introduced and given the value the mark had before the war. It is coined in silver and is issued in notes for ten marks, 20 marks, and other denominations.

There have been other coins of this name. The Anglo-Saxons had a mark and there was a Scottish mark worth 13s. 4d. In the Middle Ages the mark was also a unit of weight.

Mark One of the four evangelists. He was a Jew, probably from Cyprus, and the son of a Christian named Mary. Known as John Mark, he accepted Christianity and went on a missionary journey with S. Paul, and

his own cousin, Barnabas. He left them at Perga and later was in Rome with S. Peter, who, it is believed, supplied him with much of the information contained in his gospel. He is said to have died in Egypt. His day is April 25. He is patron saint of Venice (*q.v.*).

Mark The Gospel of. Second book of the New Testament. As early as A.D. 130 Papias recorded that Mark, having become Peter's interpreter, wrote down all he remembered. This apparently occurred at Rome. The work is a brief, rugged narrative, a transcript of life, dealing with the acts rather than the sayings of our Lord. It was utilised by Matthew and Luke as the framework for the other two synoptic gospels. The last 12 verses are usually considered an addition by another pen.

Mark Antony Roman statesman, properly, Marcus Antonius. Born about 83 B.C. he was a kinsman of Julius Caesar with whom he was closely associated. He helped Caesar to defeat Pompey at Pharsalus in 48 B.C., and the two were consuls in 44. After Caesar's murder, Antony was the leader of his followers, and with Octavian, the future emperor, and Lepidus, formed the triumvirate to restore order. They acted with great thoroughness, and no little injustice and cruelty; Antony and Octavian destroyed the army of Brutus and Cassius at Philippi, and divided the Roman realm between them. Antony, as ruler of the eastern portion, went to Egypt, where he became the lover of Cleopatra. More than once he quarrelled with Octavian, and the final struggle came in 31 B.C. The naval fleets met off Actium. Antony's ships were scattered or destroyed, but with Cleopatra he managed to get back to Egypt. There in 30 B.C. he committed suicide. Antony is known largely through the character drawn by Shakespeare in *Julius Caesar* and *Antony and Cleopatra*.

Market Place where goods are sold. In olden times the right to hold a market was conferred by a king or lord. For the privilege money was paid, and market rights became very valuable. Until recently the Duke of Norfolk owned the markets in Sheffield, and the Duke of Bedford owned Covent Garden market in London. To-day nearly all the markets are owned and controlled by the city or borough councils. The great London markets are controlled by the corporation of the city or the London County Council.

Many towns, Nottingham for instance, had a large open square or market place in which the market was held, traders erecting their stalls and displaying their wares there. Some of them remain. Cattle markets are still held in uncovered places, but these are now usually distinct from ordinary markets.

Market Bosworth Village of Leicestershire. It is 12 m. from Leicester, on the L.M.S. Rly. There is an old grammar school, and the town has an agricultural trade. Near is the field on which the battle was fought in which Richard III. was killed, Aug. 22, 1485. Pop. 886.

Market Deeping Village of Lincolnshire. It is on the Welland, 8 m. from Peterborough, in the fen district. There is a station on the L.N.E. Rly. at Deeping St. James, 3 m. away. Pop. 888.

Market Drayton Market town of Shropshire. It is on the River Tern, 18 m. from Shrewsbury, on the G.W. Rly. The parish church is Gothic. At the grammar school Robert Clive was educated. There is a trade in agricultural produce.

Market Garden Land on which fruit and vegetables are grown for sale. It is defined by law as "a holding wholly or partially cultivated for growing produce for market." Market gardens are found in nearly all parts of the country, but especially around Worthing, the valley of the Lea in Hertfordshire, and areas in Middlesex, Kent, Derbyshire, Worcestershire, and Cambridgeshire. In Scotland there is a market gardening district in Lanarkshire. Fruit and vegetables are grown under glass for the early market, particularly in the Channel Islands. Market producers are legally entitled to compensation from their landlords for improvements made on their holdings.

Of late years more attention has been paid to the grading and packing of market garden produce. Under the national mark scheme a system of grading has been introduced and packing stations for fruit have been established at Cottenham in Cambridge and in Kent.

Market Harborough Urban district and market town of Leicestershire. It stands on the Welland, 16 m. from Leicester and 81 from London, and is served by the L.M.S. Rly. and a canal. There is a beautiful old church with a broach spire and an old grammar school, the latter a quaint building standing on wooden pillars. Boots and tyres are made, and the preparation of foodstuffs is a leading industry. Pop. (1931) 9312.

Market Rasen Urban district and market town of Lincolnshire. It is 13 m. from Lincoln, on the little River Rasen, and is reached by the L.N.E. Rly. Pop. (1931) 2048.

Market Weighton Market town of Yorkshire (E.R.). It is 22¼ m. from York and 192 from London by the L.N.E. Rly. A canal goes from here to the Humber. The town has a trade in agricultural produce.

Markinch Burgh of Fifeshire. A coal mining centre, it is 33 m. from Edinburgh, and is served by the L.N.E. Rly. There are paper mills. Pop. (1931) 1988.

Mark Lane Street in London. It runs from Great Tower Street to Fenchurch Street. It contains the new and the old corn exchange.

Marl Name given to many clays which contain varying proportions of calcium carbonate. They are used as a dressing for soils deficient in lime. Many so-called marls of the Old Red Sandstone, Permian and Triassic systems are devoid of calcium carbonate, being simply friable clays containing more or less sand.

Marlborough Borough of Wiltshire. It is on the Kennet, 76 m. from London, on the G.W. Rly. There are two old churches, and some ancient inns and houses. The Castle Inn is now part of the college. There is an agricultural trade. Pop. (1931) 3492.

Marlborough College is on the edge of the town. Founded in 1843 for the sons of the clergy it was thrown open to sons of laymen in 1853. It stands in extensive grounds. Its fine range of buildings includes a chapel and a war memorial. It has accommodation for about 700 boys.

The hills near Marlborough are known as

the Marlborough Downs and are famous for their sheep.

Marlborough Duke of. English title held by the family of Churchill. In 1626 John Ley was made Earl of Marlborough, and the title was held by three of his descendants. In 1689 John Churchill was made earl, and in 1702 duke. In 1722 his title passed to his daughter, Henrietta, Countess of Godolphin, and on her death to Charles Spencer, 5th Earl of Sunderland, a son of the duke's other daughter.

John Spencer-Churchill, the 7th duke, was Lord Lieutenant of Ireland, 1876-80. In 1892 his grandson, Charles Spencer-Churchill, born Nov. 13, 1871, became the 9th duke. He was under-secretary for the colonies in 1903-05. His eldest son became 10th duke on his father's death in June, 1934. His eldest son is called the Marquess of Blandford, and his seat is Blenheim, near Oxford.

Marlborough John Churchill, Duke of. English soldier. Born at Ashe, Devon, June 24, 1650, and educated at S. Paul's School, London, he became a page at court and then entered the army. He first served James II., but after the revolution of 1688 he joined William of Orange, who gave him an earldom and appointed him commander-in-chief. In 1702 he was created duke and given the command of the English forces in the war of the Spanish Succession. The greatest soldier of his age, Marlborough saved Austria from invasion by the French by his victory at Blenheim in 1704, and foiled Louis XIV.'s schemes for the invasion of Holland by the victories of Ramillies (1706), Oudenarde (1708) and Malplaquet (1709). His wealth and unscrupulousness gained him many enemies who seized the opportunity afforded by the failure of his wife's influence with Queen Anne to obtain his recall in 1711. He was accused of peculation, and dismissed from his offices. Reinstated for a time by George I., whose accession he did much to secure, he died on June 16, 1722.

Marlborough House Royal residence in London at the western end of Pall Mall. It was built by Wren for the 1st Duke of Marlborough in 1709-10, became a royal residence in 1817, and later was the home of two Princes of Wales, afterwards Edward VII. and George V. From 1910 until her death it was the residence of Queen Alexandra. In 1932 a sculptured monument to the late Queen-Mother was erected here and was unveiled by King George.

Marlinspike Iron instrument used on board ship. 10 or 12 in. in length, it is employed for unfastening knots and loosening rope strands when splicing.

Marlow Urban district of Buckinghamshire. It is on the Thames, 32 m. from London, on the G.W. Rly. The grammar school dates from the 17th century. A suspension bridge crosses the river. Marlow has breweries and other industries and is much visited for its boating. It is called Great Marlow to distinguish it from Little Marlow, a village 2 m. away. Pop. (1931) 5087.

Marlowe Christopher. English dramatist. Born at Canterbury in 1564, he was educated there and at Cambridge. Having taken his degree he went to London where he associated with Shakespeare and other writers of the time. He was killed near Greenwich during a quarrel in 1593, just when he had been summoned before the privy council to answer a charge of heresy. He was buried in the churchyard at Deptford, and in 1891 a memorial to him was unveiled at Canterbury.

Marlowe wrote several plays of outstanding merit, notably *Tamburlaine the Great*, *The Tragical History of Doctor Faustus*, *The Jew of Malta* and *Edward II.* He also left translations from Musaeus, Ovid, and Lucan and wrote some excellent lyrics. His unfinished play, *Dido, Queen of Carthage*, was finished by Thomas Nashe.

Marmalade Preserve originally made of quinces, now usually of Seville oranges. The fruit is cut up, pips and inner pith are removed, sugar is added, and the whole is then boiled. Lemon and apple marmalade are varieties of jam. The Central American marmalade tree, *Lucuma mammosa*, bears plum-shaped fruit whose quince-like pulp is called natural marmalade. The story goes that marmalade was first made for Mary, Queen of Scots, who referred to it as a pleasing food for *ma malade*. The preserve is largely made at Dundee and Paisley.

Marmont Auguste Frédéric Louis Viesse de. French soldier. Born July 20, 1774, at Châtillon-sur-Seine, he became Napoleon's aide-de-camp and ably supported him in many campaigns. He was made Duke of Ragusa in 1808 and Marshal of France in 1809, and in 1811 he succeeded Masséna in the chief command in the Iberian Peninsula. After the capture of Paris by the Allies in 1814, he attached himself to the Bourbons, was given many honours, and went into exile with Charles X., dying in Venice March 2, 1852. He is remembered for his *Esprit des Institutions Militaires*, 1845, and nine volumes of *Mémoirs*, published posthumously.

Marmora Sea of. Inland sea between Europe and Asia Minor. The Dardanelles lead from it to the Aegean Sea and the Bosphorus to the Black Sea. It is 175 m. long, and covers 4500 sq. m. Its waters are Turkish and its old name was Propontis. In the sea are a number of islands. One, called Marmara, is noted for its marble.

Marmoset Smallest of the monkeys. It is about the size of a squirrel, with a long tail and thick fur. There are two genera, *Midas* and *Hapale*, inhabiting tropical America. Easily tamed, they make attractive pets. The name "ouistiti" is applied to some from the whistling noise they make when disturbed.

Marmot (*arctomys*). Genus of rabbit-like rodents inhabiting N. temperate regions. They are stout, thick-set, burrowing vegetable-feeders, generally hibernating. Besides the Alpine marmot, 15 to 25 in. long, with short, bushy tail, inhabiting the Pyrenees, Alps and Carpathians, the bobac, 15 in. long, ranges from Germany's eastern frontier into Siberia; other species occur in the Himalayas and Central Asia. N. American marmots include the woodchuck, 14½ in. long, with 7 in. tail, ranging from Manitoba to Carolina, and often a farmer's pest.

Marne Department of N.E. France. It has an area of 3167 sq. m. and a population of 397,773. The western part, near Reims, is hilly, with chalky cliffs, and here and at Épernay and Châlons are the famous vineyards of Champagne. Oats, rye, barley and potatoes are grown. Reims carries on an old woollen industry, besides the manufacture of casks and cases for wines, and also glass and metal works. The chief towns are Châlons, the capital, Reims, Épernay and Vitry.

The River Marne runs through the department. It forms a canal from Paris to Dizy, and has canal connections with the Saône, the Rhône and the Aisne. Communication between the departments is largely by means of these canals.

Marne **Battles of the.** Decisive battles of the Great War. The first battle, Sept. 6-9, 1914, effectively checked the great German advance. The German right wing, under Von Kluck, having crossed the Marne and exposed their right flank, Joffre launched an attack under Maunoury, which made Kluck turn westwards, leaving a gap between his left and Bülow's right. The British attacked here, driving the Germans beyond the Grand and Petit Morin, and disorganising their front. Kluck began to retire on Sept. 9, exposing Bulow still more, and allowing Foch to attack. The British crossed the Marne with the Germans in full retreat.

The second Battle, July 15, 1918, marked the limit of Germany's last big offensive. Pushing on to reach Paris, they crossed the Marne east of Rheims, making a salient in the Allied lines. Foch sent a Franco-American force against the west of this curve, which drove the Germans across the Marne and, after stubborn fighting, defeated them at Seringes.

Marochetti **Carlo.** Italian sculptor. Born in Turin in 1805, he studied art in Paris and there made his reputation. In 1848 he settled in London and in 1866 was made an R.A., but he was again in France when he died June 4, 1868. His work includes a relief on the Arc de Triomphe in Paris, the statue of Richard I. at Westminster, the Inkerman memorial in St. Paul's cathedral, London, and a statue of Queen Victoria in Glasgow.

Maronites Community of Syrian Christians. Originating in Lebanon in the 4th or 7th century they have belonged to the Roman communion since 1445. *See* DRUSES.

Maroon Twine-bound pasteboard box of gunpowder with quick-fire priming. It simulates cannon firing. During the Great War maroons gave warning of immineut air raids.

Marple Urban district of Cheshire. It is 12 m. from Manchester, on the little River Goyt and is served by both railway and canal. The chief industry is the manufacture of cotton goods. **Marple Hall,** a Jacobean house, was once the seat of the families of Vernon and Bradshaw. Pop. (1931) 7390.

Marquesas Group of 13 volcanic islands N. of the Low Archipelago, S. Pacific. They are under French protection. Occupying 480 sq. m., the largest are Nukahiva, 70 m. round, and Hivaoa, 60 m. round; six are inhabited. The people are Polynesians. The S. or Mendaña group was discovered in 1595, the N. or Washington group in 1791. France took formal possession in 1842. Pop. 2283.

Marquess Title in the British peerage, ranking next below that of duke. It is a form of the German margrave. It was used in France in the form of marquis, and as marchese is still used in Italy. In England the first marquess was created in 1385. The senior marquess is the Marquess of Winchester. The coronet bears four strawberry leaves and four pearls. A marquess is styled "the most honourable." His younger sons and his daughters have the courtesy title lord or lady prefixed to the Christian name. The wife of a marquess is a marchioness.

Marquetry Form of flat-surface inlay work of ornamental woods, ivory, bone, tortoiseshell, mother-of-pearl or metals used for decorating furniture, cabinets and small articles. Early Italian marquetry consisted of geometrical wood-inlays, but in later Italian work pictorial designs became common. In Holland and France in the 17th century, and in England in the 18th, some fine work was done.

Marquette **Jacques.** French explorer. Born at Laon in 1637, he became a Jesuit. In 1666 he was sent to Canada on missionary work and for 7 years he worked among the Indians who lived around the Great Lakes. In 1673 he went on a journey down the Mississippi which he was one of the first to explore. He died May 18, 1675, and left a *Journal.*

Marrakesh City of Morocco, sometimes called Morocco. It is 250 m. from Fez and 90 m. from the coast. There are many mosques, the most notable being the Kutubia. Leather goods and carpets are made and the city is an important trading centre. Pop. (1931) 193,582.

Marriage Union between man and woman recognised by law or custom. It arose at a very early stage in human society, as without something of the kind it was impossible to fix or enforce the responsibilities of parentage. It was also necessary in the interests of the woman and for determining the ownership of property.

Marriage may be monogamous or polygamous. Among many primitive peoples polygamy was, and is, recognised. But in Christendom monogamy was gradually established, and today the laws of all Christian countries forbid polygamy. Another form of early marriage was the group marriage, a union of men and women indiscriminately, but only within a certain circle. Polyandry, the union of one woman with two or more men, is also known to have existed in certain early societies.

The customs which attend marriage are extremely old and varied. Among many peoples there is a pretence that the woman is captured. In other cases she is purchased and payment is made for her to her father or other relative. On the other hand, in some cases money or property is given with her. In almost all states of society her legal position is inferior to that of her husband, and in quite a number she is regarded merely as his property. From this idea even the most advanced communities have only broken away in recent years.

LAWS AND REGULATIONS. Every community has its own marriage laws. In England no one under 16 years of age can be legally married, and before the age of 21 the consent of the parents must be obtained. Marriages between near relatives are forbidden. There is a table of prohibited degrees drawn up by the church, but the secular law now allows marriage between a man and his deceased wife's sister, and other unions between persons of similar degrees or relationship. These were legalised by acts passed in 1907, 1921 and 1931, but such unions are still disliked by the church.

In England marriages can be celebrated either in the registrar's office or in church, either by certificate, licence, or banns. Of civil marriages the simplest form is by certificate. The parties must give personal notice to the registrar of the district in which they have

lived for at least 7 days. If they have lived in different registration districts notice must be given in each. In the case of marriage by licence, only one of the parties need give notice, but he or she must have lived in the district for at least 15 days; the other party must reside in England or Wales at the time. In the case of marriage by certificate, the registrar will issue the certificate 21 days after the notice has been given, and the marriage can take place within three months. In the case of a marriage by licence he will issue it on the following day, and the marriage can take place within six months. A certificate costs a few shillings, but a licence costs about £2 10s.

Religious marriages are either by banns or by licences. If the former, the names must be read out on three consecutive Sundays in a church of the parish in which the parties reside or in which they habitually worship. If they live in different parishes the names must be read in both. The clergyman can then marry them at any time. If a licence is preferred to banns this can be obtained from a surrogate of any archbishop or bishop.

Another method is to secure a special licence from the office of the Archbishop of Canterbury at 23 Knightrider St., London, E.C. This costs about £25 and allows the parties to be married at any time and at any place without previous residence therein.

SCOTS LAW. The law of Scotland on the subject differs a good deal from that of England. No person can marry under the age of 16, but the requirement of English law that the consent of the parent is required to the marriage of any person under 21 has no place in the law of Scotland. No valid marriage can take place in Scotland unless one of the parties has his or her usual residence in Scotland, or has resided in Scotland for 21 days immediately preceding the marriage.

In Scotland a marriage may be either regular or irregular. Both are fully binding, and only differ in the manner in which they are constituted. A regular marriage must be celebrated by a minister of religion after the banns have been proclaimed or a proper notice of the marriage has been given, but it need not take place in a church. An irregular marriage may be contracted in one of three ways. (1) The parties may consent to marry one another, and this is sufficient to constitute the marriage.

(2) If a woman has allowed a man to have intercourse with her on the faith of a promise previously made to marry her, a valid marriage is constituted by the intercourse.

(3) The third method is by habit and repute. In this the consent necessary for the marriage may be inferred from the fact that the parties have lived together as man and wife for some considerable time, and that the woman has occupied the position of a wife in the man's household and has been regarded as his wife by general repute.

All regular marriages must, by law, be registered within three days. Irregular marriages need not be registered, but the parties may have the marriage registered by applying jointly to the sheriff substitute at any time within three months of the marriage. Failure to register a marriage will not affect its validity.

Marrow Soft tissue in the interior of bones. Red marrow, in spongy bones, contains delicate cells from which the red corpuscles are largely recruited; yellow marrow, comprising about 95 per cent. of fat-cells, fills the cavities of tubular bones. The so-called spinal marrow, occupying the cavity running through the vertebrae, is the nervous system's central axis.

Marryat **Frederick.** English author. Born at Westminster, July 10, 1792, he entered the navy and was on active service during the latter part of the war with France. In 1830, having just begun to write novels, he retired from the service as a captain. He devoted some of his time to improving the system of signalling at sea, for which he was made an F.R.S. He died at Langham, Norfolk, Aug. 9, 1848.

Captain Marryat's many books, in which he embodied his experiences of the sea, were, and still are, among the most popular of boys' stories. The first was *Frank Mildmay*, and some of the best are *Peter Simple*, *Jacob Faithful*, *Mr. Midshipman Easy*, *Masterman Ready* and *The Children of the New Forest*. His daughter, **Florence Marryat** (1838-99), wrote many novels and some books on spiritualism.

Mars First of the superior planets beyond the earth. Its distance from the sun is 141,384,000 m., its mean diameter 4230 m. or rather more than half that of the earth, and its year measures 687 solar days, with a day of 24 hrs. 37 min. 23 secs. Mars has two small satellites discovered in 1877, one revolving round the planet in 7 hrs., the other in 30 hrs. Well-defined markings or "canals" were discovered by Schiaparelli in 1877 and these and other regional markings show seasonal changes and suggest the presence of snow and vegetation. Some think that Mars is inhabited, as its climate could sustain life in some respects as we know it.

Mars Roman god of war and husbandry. Although the Romans commonly identified him with the Greek Ares, he never lost his essentially Latin character. Deemed the legendary father of Romulus, he named the first month of the Roman year. His first altar stood in the Campus Martius, used by Roman youth for warlike exercises.

Marsala Seaport of Sicily. Situated at the island's westermost point, 19 m. S.S.W. of Trapani, it is the centre of a wine-producing region, and during the 19th century developed a large export trade in Marsala wine, a fortified white type with 20-25 per cent. alcohol, vatted and blended like sherry. The town, whose name is Saracenic, witnessed Garibaldi's landing, 1860. It occupies the site of the Carthaginian stronghold Lilybaeum, whose surrender to Rome, 241 B.C., ended the First Punic War. Pop. 50,200.

Marsden Market town and urban district of Yorkshire (W.R.). It is 7 m. from Huddersfield and 196 from London by the L.M.S. Rly. Here are textile manufactures. Pop. (1931) 5720.

Marseillaise National song of the French republic. It was written by C. J. Rouget de Lisle in 1792 and was first sung by a body of men from Marseilles on entering Paris during the disturbances of that year.

Marseilles City and chief seaport of France. It stands on the Gulf of Lyons, 410 m. by railway from Paris. It has enormous docks which a canal connects with the Rhône. The buildings, mainly modern, include a magnificent cathedral. The Hotel de Ville dates from the 17th century. The chief industry is shipping. It has a broadcasting station (315 M., 1.6 kW.). Pop. (1931) 800,881.

Marshal Title of honour. It meant a man who had the care of horses and at first the earl marshal was something like master of the horse to the king. To-day in England he is one of the great officers of state. There is also a marshal of ceremonies in the royal household.

As a military title, marshal originated in France and was given to famous soldiers by Louis XIV. Napoleon made great use of the dignity as a reward for services in the field. It fell into disuse after 1871, but was revived in 1916 for those who had distinguished themselves in the Great War. The English equivalent is field marshal (*q.v.*).

Marshall Group of islands in the Pacific Ocean. They lie to the east of the Carolines, just north of the equator. Jaluit is the capital. They cover 160 sq. m. and produce copra. The islands were taken by Germany in 1885 and since the Great War have been ruled by Japan under mandate from the League of Nations. Pop. 10,000.

Marshall-Hall **Sir Edward.** English lawyer. Born at Brighton, Oct. 29, 1865, he was called to the bar in 1883. He appeared with unrivalled distinction in some of the leading criminal cases of his time. Made a K.C. in 1898, he was Unionist M.P. for Southport, 1900-06 and East Toxteth, 1910-16, when he was appointed Recorder of Guildford. Knighted in 1917, he died Feb. 24, 1927. Hon. E. Marjoribanks wrote his *Life*.

Marshal of the Air Highest rank in the Royal Air Force. It corresponds to admiral of the fleet in the navy, and field marshal in the army.

Marshalsea Former prison in Southwark, London. Built originally in the 14th century, or earlier, it was pulled down about 1780, rebuilt in 1811, closed in 1849, and finally demolished in 1887. Dickens's father was here for debt, and the novelist describes it in *Little Dorrit*.

Marsh Mallow (*Althaea officinalis*). Perennial herb of the mallow order, native in temperate regions. Occurring on British maritime marshlands, it is a downy plant 2 to 3 ft. high, with large, thick, oval leaves and rose-coloured 1 to 2 in. flowers. The highly mucilaginous root furnishes guimauve lozenges and marsh mallow cream. *See* HOLLYHOCK.

Marsh Marigold (*Caltha palustris*). Perennial herb of the buttercup order, native in N. temperate regions. Its fleshy, creeping rootstock bears large smooth kidney-shaped leaves and showy 1 to 2 in. flowers of golden petal-like sepals. Double-flowered garden varieties exist.

Marston Moor District between York and Knaresborough famous for the battle of 1644. The Parliamentary army, aided by the Scots, was besieging York. Prince Rupert marched north to relieve it. The Parliamentarians, under Fairfax and Cromwell, and the Scots prepared to meet the Royalists on Marston Moor and were followed by Rupert and the force under Newcastle that had been freed from York. The battle took place on the evening of July 2. Fairfax was routed, but Cromwell's forces turned the scale. The Royalists, about 25,000 strong, were utterly beaten, leaving about 3000 dead on the field.

Marsupial Lowly order of the mammalia. Coming next above the most primitive groups, it is distinguished by the young being born in an immature condition and continuing their development in an abdominal pouch or marsupium. The order includes the opossums and bandicoots, wombats, kangaroos and phalangers.

Martello Tower Circular fort erected at intervals on the English coast and in the Channel Islands at the time of the threatened invasion by Napoleon. They are about 40 ft. in height with the entrance about 20 ft. above the ground, and were intended to accommodate a small garrison with cannon. Originally a martell was an Italian bell tower for giving warning against pirates.

Marten (*Mustela* or *Martes*). Name of various arboreal carnivorous mammals of the weasel family, distributed in the N. hemisphere. The European pine-marten, 18 in. long, with 9 to 12 in. tail, still lingers in Britain. The white-breasted beech-marten is widely distributed in Central Europe and W. Asia. The largest of all, the American fisher marten, furriers call the Virginian polecat.

Martha A sister of Lazarus and Mary, at whose village home in Bethany, near Jerusalem, Jesus was an honoured guest (Lk. x., Jn. xi.-xii.). Our Lord gently reproved the anxious spirit, in contrast with her sister's, in which she discharged her household obligations. She is habitually cited as the exemplar of the practical housewife.

Martial Roman epigrammatist. His full name was Marcus Valerius Martialis, and he was born in Spain about A.D. 43, but after 66 passed much of his life in Rome. He died in Spain about 104. Martial is famous for the wit and polish of his unrivalled epigrams.

Martial Law Law administered by the military authorities in times of danger or disorder. When it is proclaimed, the civil law is superseded by the rule of the soldiers who have extensive powers of arresting and punishing offenders against the peace. For many years there has been no necessity to place Great Britain under martial law, but in 1920 and 1921 parts of Ireland were under it. It was proclaimed in Spain during the troubles of 1930 and 1931 and there have been other cases of its use in Europe since the Great War, for instance in Prussia in 1932.

Martin Name of various perching birds of the swallow family. Two, breeding in Britain, spend the northern winter in S. Africa. The black and white house martin, *Chelidon urbica*, 5¼ in. long, makes rough mud-built, swallow-like nests. The lighter-hued sand martin, *Cotile riparia*, 4¾ in. long, forms nesting colonies in sandstone cliffs. Purple martins are American.

Martin French saint and bishop. The son of a Roman soldier, he was born about 316 and became a soldier. About 360 he founded a monastery near Poitiers and won a great reputation by his piety and learning. He was Bishop of Tours from 371 till his death in 400. His day is Nov. 11.

Martin Name of five Popes. **Martin I.** was Pope from 649 to 654. He was then deprived of his office and sent into exile. He died Sept. 16, 655, and was later regarded as a saint. **Martin II.** was Pope, 882-84, and **Martin III.**, 942-46. **Martin IV.**, a Frenchman, was Pope, 1281-85, having previously played an important part in state

affairs in France. **Martin V.** was Pope, 1417-31. He was elected to put an end to the great schism in the church at the Council of Constance. He restored the power of the Papacy, and died in Rome, Feb. 20, 1431.

Martineau **Harriet.** English writer. A sister of James Martineau, she was born in Norwich, June 12, 1802. In 1832 she published her popular *Illustrations of Political Economy*. She also wrote a novel, *Deerbrook*, *Society in America* and *Eastern Life*. Her other works include *A History of the Thirty Years' Peace*, translations of Comte, and an autobiography. An invalid for much of her life, an agnostic, and in politics a philosophic radical, she died June 27, 1876.

Martineau **James.** English theologian. A member of a Huguenot family, he was born in Norwich, April 21, 1805, and entered the Unitarian ministry. In 1840 began his long connection with Manchester New College, London. He was professor there from 1841 to 1869, and principal from 1869 to 1885. He was also minister of a chapel in Little Portland Street, London, 1860-73. He died in London, Jan. 11, 1900.

Martineau won fame as a preacher and teacher, but especially as a philosopher. His most important book is *The Seat of Authority of Religion*, 1890.

Martin-Harvey **Sir John.** English actor-manager. He was born at Wyvenhoe in Essex in June 22, 1867. Educated at King's College School, London, and intended for a naval architect, he later studied for the stage and made his first appearance in 1881 at the Court Theatre. He was with Henry Irving's company for 14 years. In 1897 he began work under his own management, and was knighted in 1921.

He has played in Shakespeare, *The Only Way* (achieving remarkable success in the character part of Sydney Carton), *The Corsican Brothers*, *Pelleas and Melisande*, *The Cigarette Maker's Romance*, *The King's Messenger*, etc.

Martini **Friedrich.** Austrian soldier and inventor. Born in Hungary in 1832, he became an officer in the Austrian army, served in the engineers, and later practised as a civil engineer in Switzerland. He invented a rifle taken up by the British Government and called the Martini-Henry. In this he applied a breech mechanism to the rifle of Henry. Martini who was also a poet, died in 1897.

Martinique Island of the West Indies. It is situated between Dominica and Santa Lucia and belongs to France. Its area is 385 sq. m. A mountainous and volcanic region, it yet contains much fertile soil, whereon sugar, tobacco and coffee are grown. Rum is produced and exported. There are extensive forest areas. Fort de France is the capital and chief seaport. St. Pierre, the old capital, was destroyed in 1902 by an earthquake. The island is under a governor, a privy council, and an elected council. Pop. 234,695.

Martinmas Festival of S. Martin. It is on Nov. 11, and was an important date in the Middle Ages. On it fairs were held and oxen killed for food during the winter. It is still a quarter day in Scotland, and if a period of mild weather occurs about this time it is called **St. Martin's summer.**

Martyr Term denoting a witness, especially one who willingly suffers death rather than surrender his religious faith. The first Christian martyr was the **deacon Stephen (Acts vii.).** Under the Roman Empire **many** Christian confessors suffered persecutions and, if to the death, were remembered as saints and martyrs. **Saint Alban,** said to have suffered death at Verulam during the Diocletian persecutions, A.D. 303, **giving** his name to St. Albans, Herts, is honoured as Britain's protomartyr. Martyrdoms occurred in the mediaeval church down to the 16th century. Others have attended missionary enterprises in heathen lands. Both Roman Catholics and Protestants have their martyrs, the latter the subject of a once popular work, Foxe's *Book of Martyrs*.

Marvell **Andrew.** English poet. He was born at Winestead, Yorkshire, March 31, 1621, and educated at Hull and Trinity College, Cambridge. He was a great friend and colleague of Milton, whom he helped in his blindness. He died in London, Aug. 16, 1678. His "Thoughts in a Garden" gained for him the title of "The Garden Poet." He is also remembered for his "Bermudas," "Ode to Cromwell," and the verses "To His Coy Mistress." He wrote many satires in verse, the popular nursery rhyme "Mary has a Little Lamb," and some vigorous pamphlets.

Marwick Head Promontory of Mainland, one of the Orkney Islands. Near here Earl Kitchener was drowned in the *Hampshire* in 1916, and a memorial tower has been erected on the headland. It was unveiled in 1925.

Marx **Heinrich Karl.** German economist. Born at Trier, May 5, 1818, he was a Jew and was educated at the Universities of Bonn and Berlin. He became a journalist, but his advanced views led to his expulsion from Germany and then from Paris, where he lived in 1843-44. He was again in Germany in 1848, but after the failure of the rising of that year, he went to London. There he lived until his death, March 14, 1883.

Marx exercised an enormous influence on the Socialist and Communist movements, and his doctrines are still accepted by a large number of their adherents. In 1847, at Brussels, he and Frederich Engels issued the manifesto which states the aims of the Communists. These views are more fully developed in his book, *Capital*, published in 1867. Shortly, his ideas are that all wealth is produced by labour and should go to labour and that, as this leaves nothing for the capitalist, who can therefore never accept the system, the worker must prepare for a class war in which capitalism will be destroyed.

Mary Mother of Jesus. She was sister of Mary, wife of Cleophas, and cousin of Elizabeth, John the Baptist's mother. Mary brought her twelve-year old son to Jerusalem for the Passover, attended the marriage feast in Cana, was committed by our Lord to John's care at the Crucifixion, and traditionally died at Jerusalem. She is the Madonna of Christian art.

Mary Queen of George V. She was born at Kensington Palace, May 26, 1867, the only daughter of the Duke and Duchess of Teck. Through her mother, a daughter of the Duke of Cambridge, she was descended from George III., and was thus a second cousin of her future husband. She was named Victoria Mary Augusta Louise Olga Pauline Claudine Agnes. The Princess May, as she was called, was educated at home, White Lodge, Richmond Park, and passed some three years in Italy. In 1891 she was betrothed to **Albert Victor, Duke of Clarence. He died early in**

1892, and in May, 1893 the princess was betrothed to George, Duke of York. On July 6, 1893, they were married in London.

In 1901 after long tours abroad, they became Prince and Princess of Wales and visited Australia. In 1910 George became king and on June 22, 1911, they were crowned in Westminster Abbey. During the period of the war, and after, Queen Mary filled with great dignity, constant industry and unfailing courtesy, the high position of first lady of the land. Her solicitude for the troops was notable. During the King's illness in 1928-29 she acted as President of the Council of State and when George V. died in Jan., 1936, her son, Edward VIII., commanded that she should continue to be styled Queen Mary. Her youngest son, John, died in 1919, and her other children are the Dukes of York, Gloucester and Kent, and Mary, Princess Royal.

Mary I. Queen of England. Daughter of Henry VIII. and Catherine of Aragon, she was born at Greenwich, Feb. 18, 1516, and carefully educated in the Roman Catholic faith. She lived a retired life, chiefly in Hertfordshire, until she was 37.

In July, 1553 her half-brother, Edward VI., died and Mary was proclaimed queen. In 1554 she married Philip II., King of Spain, but the union was unhappy. The queen, who had no children, died Nov. 17, 1558. Mary's short reign was marked by the restoration of the Roman Catholic religion in England, and the persecution of the Protestants.

Mary II. Queen of England. A daughter of James, Duke of York, afterwards James II., and his first wife, Anne Hyde, she was born in London, April 30, 1662. In 1677 she married William, Prince of Orange, and for the next ten years lived in the Netherlands. In 1688 William was invited to take the British throne, and after James II. had fled he and his wife became joint rulers of Great Britain. Mary was responsible for managing the affairs of state during her husband's frequent absences. She died of smallpox, Dec. 28, 1694, and was buried in Westminster Abbey. She had no children.

Mary Princess of Great Britain. She was born at Sandringham, April 25, 1897, the third child and only daughter of King George and Queen Mary, her full name being Victoria Alexandra Alice Mary. She was educated at home and went through a course of study in a children's hospital in London. On Feb 28, 1922, the princess married Viscount Lascelles who in 1929 became Earl of Harewood. They have two sons. The elder, born Feb. 7, 1923, is George Henry Hubert, Viscount Lascelles, and the younger, born Aug. 21, 1924, Hon. Gerald David Lascelles.

The princess has many social and philanthropic interests both in London and Yorkshire where is her country home. One of these is the presidency of the Girl Guides Association. In 1932 she was created Princess Royal.

Mary Queen of Scots. Born in 1542, daughter of James V. of Scotland and Mary of Lorraine, Mary became Queen of Scots when only a week old owing to the death of her father at the battle of Solway Moss. She became also Queen of France by her marriage to Francis II. and was heiress to the English throne as next of kin to Elizabeth Tudor.

She greatly impressed the French court by her gaiety and beauty. On the death of her husband she returned in 1560 to Scotland. A staunch Catholic she was opposed to the Calvinistic Protestant movement which had made headway through the teaching of John Knox. She married her cousin, Lord Darnley, who, jealous of her Italian secretary, Rizzio, had him murdered in the Queen's presence, and was himself murdered soon afterwards. Mary then married Lord Bothwell, which caused an insurrection among the nobles. They imprisoned her in Loch Levon Castle, from which she escaped and fled to England.

Elizabeth kept her imprisoned for nineteen years. Her presence in England led to a series of Catholic plots in her favour against Elizabeth. In 1586 Mary was accused of complicity in Babington's plot, mainly on the evidence of the Casket Letters (*q.v.*). She was executed on a charge of high treason at Fotheringay on Feb. 8, 1587.

Maryborough Market town of Leix (formerly Queen's County). Irish Free State, also the county town. It is 51 m. from Dublin on the Gt. S. Rlys. There is a trade in agricultural produce. The town was named after Mary Tudor.

Maryborough Town of Victoria, Australia. It is 118 m. from Melbourne with which it is connected by railway. Here are railway shops, and gold is mined in the neighbourhood. Pop. 5800.

Maryborough Town and port of Queensland, Australia. It is on the River Mary, 20 m. from its mouth and 167 m. north of Brisbane, on the railway line from Brisbane to Rockhampton. It is the trading centre for a district; gold and coal are mined and sugar is grown. Pop. (1931) 12,000.

Maryland State of the United States. With a coastline on the Atlantic, it is bounded on the N. by Pennsylvania, on the E. by Delaware, and on the S. and W. by Virginia. Chesapeake Bay divides it into two parts. Its land area is 9870 sq. m.; it is hilly in the west, but flat in the east. Annapolis is the capital, but Baltimore is the largest city. Wheat, maize and tobacco are grown; mining and fishing are other industries. The state is governed by a general assembly of two houses; it sends two senators and six representatives to Congress. Maryland was founded in 1634 and named after Henrietta Maria. It was one of the 13 original states. Pop. (1930) 1,631,526.

Marylebone Borough of the county of London. It lies between Oxford Street and Hampstead, with Paddington on the west. In it are the districts of St. John's Wood and most of Regent's Park, Cavendish and Portman Squares, Harley Street and Wimpole Street, as well as the railway stations of Marylebone and Baker Street. Here, too, are Lord's Cricket Ground, Bedford College, Queen's Hall and Madame Tussaud's. The full name of the borough is St. Marylebone, or St. Marys on the brook, the brook being the Tyburn. Much of the land forms the Portland estate, now the property of Lord Howard de Walden. The buildings include a fine parish church. Pop. (1931) 97,620.

Marylebone Cricket Club Cricket club, regarded as the governing body of the game. It is popularly known as the M.C.C., and its headquarters are at Lord's Cricket Ground, St. John's Wood, London. Its committee is responsible for any alteration

in the laws of the game, which must be approved by a two-thirds majority of the members. The club dates from 1787. Each year a prominent public man is elected as president.

Mary Magdalene Woman of Magdala or Magadan, near the Sea of Galilee, mentioned in the New Testament as a devoted follower of Jesus. Seven demons were cast out of her, she witnessed the Crucifixion, found the empty tomb, and first saw the risen Lord. Incorrectly identified in the early Western Church with the unnamed penitent who anointed Christ's feet in Simon's house, the word magdalen came to designate fallen women in general; emotional tearfulness is similarly called maudlin.

Maryport Urban district, seaport and market town of Cumberland. It is 28 m. from Carlisle, on the L.M.S. Rly. The chief industry is shipping, for which there are good docks. The old name of the place was Ellenport. It was named Maryport when the harbour was built in 1750, because in 1568 Mary Queen of Scots landed here on her escape from Scotland. The Romans built a fort here. Pop. (1931) 10,182.

Masaccio Italian painter. Born near Florence, Dec. 21, 1401, his name was Tommaso Guidi. Masaccio is a nickname meaning slovenly Tom. There are some notable frescoes by him in Florence and he is represented in the National Gallery, London.

Masai People of Hamitic-negro stock in E. equatorial Africa. Tall, sinewy, thin-lipped, chocolate-coloured, with Caucasoid nose, they speak a Nilotic language. Of warlike disposition, they long dominated a mountainous region in Kenya and Tanganyika formerly called Masai-land, habitually attacking caravans and expeditions. Now under British control, partly in the vicinity of Mt. Kilima-Njaro, partly in Kenya, they number 40,000 nomadic herdsmen, tending 750,000 cattle.

Masaryk **Thomas Garrigue.** President of the Czechoslovak Republic. Born March 7, 1850, in Moravia, a coachman's son, he was first a blacksmith. After study at Vienna and Leipzig Universities he took to teaching and at 29 became lecturer on philosophy and professor at Prague. He was a member of the Austrian parliament, 1891-93. Re-elected in 1907 he opposed the encroachment of Germany on Austria and the aggressive policy of Austria in the Balkans. While lecturing at King's College, London, during the War, he organised the Czechoslovakian Movement for Independence. He is the author of *The New Europe*, 1918, and *The Making of a State*, 1925. He was made President of Czechoslovakia in 1918, re-elected in 1920 and again in 1927. At the age of 85 he resigned the Presidency in Dec., 1935, and Dr. Benes succeeded him.

Mascagni **Pietro.** Italian composer and conductor, born on December 7, 1863, at Leghorn. After some public success he entered Milan Conservatoire, abandoning it to learn by experience in an operatic company. His opera, *Cavalleria Rusticana*, 1890, made him world famous. His later works include, *L'Amico Fritz*, *Iris* and a *Rapsodia Satanica*, an experiment in film opera.

Masefield **John Edward.** English poet. Born at Ledbury, June 1, 1878, the son of a solicitor, he was educated at King's School, Warwick, and trained as a seaman. After a voyage to Chile as an apprentice he became an officer in the merchant service. He left the sea after a few years and spent some time in New York before returning to England. In 1902 he published *Salt Water Ballads*, and in 1911, *The Everlasting Mercy*. Henceforward he took high rank among the poets of the day. Other notable poems include, *The Widow in the Bye Street* and *The Daffodil Fields*. In 1930 he was appointed poet laureate.

Masefield has also written dramas and a good deal of prose. His dramas include *Pompey the Great*, *The Faithful*, *Good Friday*, *The Trial of Jesus* and *The Coming of Christ*. Among his novels are *Captain Margaret*, *Multitude and Solitude*, *Sard Harker*, and *The Hawbucks*. Other books are *The Old Front Line* and *Gallipoli* (dealing with the World War) and a study of Shakespeare. He also edited *The Voyages of Captain William Dampier*. At his home at Boar's Hill, near Oxford, he constructed a private theatre.

Masham Market town and urban district of Yorkshire (N.R.). It is 8 m. from Ripon on the River Ure, and is reached by the L.N.E. Rly. There is an agricultural trade, and brewing is another industry. A lamb fair is held in September. Pop. (1931) 1995.

The title of **Baron Masham** was given in 1891 to Samuel Cunliffe Lister, the owner of great textile mills at Manningham, Bradford. He died Feb. 2, 1906. The title passed in turn to his two sons, but became extinct when the younger died in 1924.

Mashonaland District of South Africa. Granted to the British South Africa Company in 1889, it now part of Southern Rhodesia (*q.v.*). It is the eastern part of the country and is named after the Mashonas, a Bantu tribe, who live in the region.

Mask Lough or lake of Ireland. It is on the borders of counties Galway and Mayo, and is about 12 m. long, covering some 30 sq. m. In it are many islands.

Maskelyne **John Nevil.** English entertainer. Born at Cheltenham, Dec. 22, 1839, he became a public entertainer. With a partner he founded in 1865 the firm of Maskelyne and Cooke, and his reputation was increased when he exposed the tricks of some spiritualists. In 1873 the firm moved to London, its first home being the Egyptian Hall, Piccadilly.

Maskelyne had an extraordinary genius for staging optical and other illusions and the secret of some of them baffled all enquirers. In 1905 the firm moved to St. George's Hall, Regent Street. It became Maskelyne and Devant, but after the retirement of David Devant was carried on by Maskelyne's grandson and known simply as Maskelyne's. John Maskelyne died May 18, 1917.

Mason One who cuts, dresses and sets building stones and similar material. The term monumental mason is applied to one who works in stone for memorials, etc.

The trade is represented by the **Masons' Company**, one of the smaller of the London Livery Companies.

Masons' marks used in medieval buildings were devices cut in the stones to identify the responsible mason.

Mason **Alfred Edward Woodley. English** novelist. Born May 7, 1865, he was educated at Dulwich College and

Trinity College, Oxford. After a spell of secretarial work he began to write, and in 1895 *A Romance of Wastdale* appeared. In 1896 he scored a success with *The Courtship of Morrice Buckler*, the first of a number of novels in the romantic style in which historical incidents were sometimes used. Perhaps the best are *Miranda of the Balcony*, *Clementina*, *The Broken Road*, *The Four Feathers*, and *Running Water*. He also wrote two excellent detective stories, *At the Villa Rose* and *The Prisoner in the Opal*. These have been dramatised, as have several of his novels. His play, *The Witness for the Defence*, was afterwards made into a novel. His later works include *The Winding Stair*, *The House of the Arrow*, *No Other Tiger*, and *The Dean's Elbow*. From 1906-10 Mason was Liberal M.P. for Coventry and during the Great War he served with the Manchester Regiment on the staff.

Mason, Sir Josiah. English philanthropist. Born at Kidderminster, Feb. 23, 1795, of humble parentage, he settled in Birmingham and in 1825 began to manufacture hardware. He made a speciality of pen nibs in which he built up an enormous business, and he was also a pioneer in the electro-plating industry. Knighted in 1879, he died June 16, 1881. Mason was the founder of Mason College at Birmingham which was the nucleus of the great university there. He also founded an orphanage at Erdington.

Masonry Art or trade of building with stone, concrete blocks or similar material. The blocks are roughly shaped in the quarry (quarry-faced), or hammered to give a flat surface and straight edges (pitch-faced), and finally dressed or accurately finished. **Rubble Masonry** is where rough blocks are built up with or without mortar, and **ashlar masonry** where the dressed blocks are carefully set with thin joints of mortar.

Maspero Sir Gaston Camille Charles. French Egyptologist. Born at Paris, June 23, 1846, in 1874 he became Professor of Egyptology at the College de France. He was for many years the keeper and director of the museum at Bulak, and carried out notable excavations at Memphis, Karnac, Sakkara, etc. He was the author of several works on the history of Egypt. He was awarded the K.C.M.G. in 1909, and died in Paris, June 30, 1916.

Masque Word used for an occasional entertainment combining drama, songs, dances and spectacles, the whole embodying an allegory. Masques were fashionable in England in early Stuart times, the Inns of Court staging many. Ben Jonson, Milton (whose *Comus* is the classic example), and Campion wrote masques.

Masquerade Revel in which the participants disguise themselves with quaint clothing and wear a mask over the eyes. From the early thirteenth century it was popular in England with all classes, particularly in the reigns of Edward III. and the Stuarts. It survives, modified, in fancy dress carnivals.

Mass Name used for the celebration of the Holy Eucharist according to the rites of the Roman Catholic Church. It is a commemoration of the Passion, a propitiatory sacrifice, a service of praise and thanksgiving and a means of grace to all its participants and celebrants. A high mass is sung and solemnised with incense. A low mass is said. A requiem mass is one for the dead.

Massachusetts State of the United States. In the N.E., it is one of the original New England states. It has a coastline on the Atlantic, and an area of 8266 sq. m. Boston is the capital and the largest town; other populous centres are Worcester, Springfield, Fall River, Cambridge and New Bedford. It is governed by a legislature of two houses and sends two senators and 15 representatives to Congress. Massachusetts was founded in 1620 when the Pilgrim Fathers made their first permanent settlement here. **Massachusetts Bay** is a broad inlet in the coast, Harvard University is one of many educational institutions in the state. Pop. (1930) 4,249, 614.

Massage System of treating complaints by rubbing and similar manual movements. It is efficacious for rheumatism, sciatica, arthritis and kindred ailments. It is also used for sprains and other injuries, and to soothe nervous and sleepless persons. It was practised by the Chinese and other peoples in ancient times, and was brought into England in the 18th century. It was developed in the 19th, largely by the Swedes, and became a recognised method of treating affections of the joints. The chief English centre for the training of masseurs is the National Hospital, Queen's Square, London, E.C. Those entering the profession usually secure a certificate, given after examination by the Chartered Society of Massage and Medical Gymnastics, Tavistock Square, London, W.C.1.

Masséna André. French soldier. Born at Nice, May 6, 1758, he is considered to have been Napoleon's greatest general. He served in the Sardinian and French armies and distinguished himself at the battles of Rivoli, Zurich, the siege of Genoa, Essling and Wagram. Made a marshal in 1804, in 1810 he fought against Wellington in Spain (Torres Vedras), and was created Duke of Rivoli and Prince of Essling. At the Restoration he supported the Bourbons. He died April 4, 1817, leaving seven volumes of memoirs which were published in 1849-50.

Massey William Ferguson. New Zealand statesman. Born at Limavady, Ireland, March 26, 1856, he went to New Zealand in 1870 and became a farmer. In 1894 he entered parliament and in 1903 became leader of the Conservative opposition. In 1912 he became prime minister, and his character and ability enabled him to lead New Zealand with success throughout the World War. A member of the Imperial War Cabinet in 1917-1918 he represented his country at the Peace Conference in Paris, 1919, and attended the Imperial Conference in London in 1921. He was defeated at the general election in 1922 and died May 10, 1925.

Massillon Jean Baptiste. French divine. Born at Hyères, June 24, 1663, he became a priest. In 1717 he was made Bishop of Clermont, and delivered memorable sermons before the king and court in Paris. One of his greatest efforts was his funeral oration over Louis XIV. He died Sept. 18, 1742.

Massinger Philip. English dramatist. Born in Nov., 1583, at Salisbury, he was educated at Oxford. Of his many plays 15 remain, including, *A New Way to Pay Old Debts*, *The Maid of Honour*, and *The Bashful Lover*. Massinger died in March, 1640, and is buried in St. Saviour's, Southwark.

Massingham Henry William. English journalist. Born at Norwich in 1860, he was educated at the grammar school there. After experience in a newspaper office in Norwich, he settled in London and became editor of *The Star*. As editor of *The Daily Chronicle*, 1895-99 he was a great success until his views on the war against the Boers led to his retirement. He served as London editor of *The Manchester Guardian*, worked for *The Daily News*, and then edited *The Nation* from 1907 till 1921. He died Aug. 27, 1924. Massingham was a great journalist, one who took his calling very seriously. Everything he wrote was charged with his own individuality and was worth reading, although he managed frequently to find a point of view that was antagonistic to the general feeling of his countrymen.

Mast Straight, upright spar of timber or hollow metal. Secured to a sailing vessel's keel, it supports the deck yards, sails and rigging. Originally a single pole, it became a compound or made mast, distinguished from the deck upwards as lower-mast, top-mast, top-gallant mast and top-gallant royal. There are fore, main and mizzen masts and even more. A jury mast is an emergency spar. Masts also serve for supporting cables, aerials, overhead trolleys and airship-moorings.

Master of the Horse Official in the royal household. He looks after the stables and kennels and ranks as the third official of the court. Before the Great War the office was a political one and its holder was changed whenever there was a new government.

Master of the Rolls Judge of the High Court of Justice. He appeared in the 15th century as the Keeper of the State Rolls. Later he became judge of the Court of Chancery, and later still the president of the Court of Appeal. He is usually made a peer on appointment and ranks third in the judicial hierarchy. He is the head of the public record office and chairman of the Historical Manuscripts Commission.

Masterton Town of New Zealand. In North Island, it is 66 m. from Wellington with which it is connected by railway. It is the centre of a large sheep-rearing district. The town was damaged by the earthquake of Feb. 1931. Pop. 8525.

Mastic Gum resin obtained from incisions in the bark of a small tree, *pistacia lentiscus*, common in southern Europe. It forms yellow irregular brittle "tears" having a faint aromatic odour. Becoming plastic when heated, it is used as a tooth stopping and for making a colourless varnish for paper.

Mastiff Breed of dog. It is powerful, round-muzzled, short-coated, small-eyed, and thin-tailed, with pendulous upper lips. Brindled or fawn-coloured, it has ears and muzzle of black. The old English strain, bred for sporting purposes in Tudor times, is now used as a watch-dog. The modern mastiff is 29 ins. high, with pendent ears.

Mastodon Extinct mammal of the elephant family, closely allied to the mammoth. It had conical tubercles on its molars, and in some forms tusks were present in both upper and lower jaws. The mastodon was covered with thick woolly hair, and it existed from the Miocene age to the Pleistocene in Europe and North America.

Mastoid Name of a part of the temporal bone in the skull. It is situated immediately behind the ear and contains a number of hollow cells or cavities.

Mastoiditis is a disease of the mastoid bone and is due to suppuration of the ear. It shows itself in pains and tenderness in the affected part, in irregular temperature, especially at night, headache and perhaps giddiness and sickness. There is also a visible discharge from the ear and in the young the neck is usually stiff. There may be a degree of deafness. An operation is usually the only cure.

Matabeleland District of S. Africa. It lies between the Transvaal and Mashonaland. It was granted to the British South Africa Company in 1889, and since then has been part of Rhodesia.

The name is that of the Matabele, a Bantu tribe living in the region. In 1893 the Matabele attacked the Mashonas in Mashonaland, but were defeated by troops sent by the British South Africa Company, which seized their capital, Bulawayo. In March, 1896, they again rose in rebellion, but peace was soon made, the tribe submitting to British rule.

Matador Name in Spanish bull fighting for the chief bull fighter, who is appointed to kill the bull; also one of the three principal cards in ombre and quadrille.

Match Splinter of wood usually aspen or white pine, waxed thread or cardboard, tipped with an inflammable substance which is ignited by friction. The earliest matches were tipped with chlorate of potash and sugar and ignited by dipping in strong sulphuric acid. This type was superseded by friction matches and about 1836 phosphorus came into use. The modern friction matches are tipped with phosphorus sesquisulphide or similar substances. In safety matches the phosphorus is on the box, and the match tip is coated with an oxidising mixture.

Matchlock Form of musket used in England from the 15th to the end of the 17th century, when it was superseded by the flintlock. It was fired by means of a lighted match applied to the touchhole by a cock or lever, released on pressing the trigger.

Maté Roasted and powdered leaves of an evergreen shrub of the holly order, growing wild in Paraguay and S.E. Brazil, and cultivated in plantations (*Ilex paraguayensis*). An aromatic and bitter tea-like infusion, made with boiling water and sweetened with sugar in a cup or calabash, is sucked through a cane or silver tube. *See* ILEX.

Materialism Theory according to which the ultimate reality in the universe is matter. It is thus the opposite of idealism and is usually regarded as antagonistic to all religious systems. It was taught among the Greeks and has had powerful advocates in modern times. In a more general way, it refers to the belief that there is no future life, and to the tendency to make the fullest use of the opportunities of the present life without regard to the possibility of any other.

Mathematics Term usually applied to the science of numbers and space and the relations between these. A wider and more modern definition is "the science concerned with the logical deduction of consequences from the general

principles of reasoning" (Russel). Mathematics is divided into pure and applied, the former including arithmetic, algebra, theories of numbers, etc. Geometry, both pure and descriptive, also come under this head. Applied mathematics includes mechanics, physical science, geophysics and astrophysics, geodesy, etc. The study of mathematics goes back to early Greek times, and in Egypt the famous Rhind papyrus is mathematical in nature and believed to be a copy of a still earlier document.

Mather **Cotton.** American Puritan. He was born at Boston, Massachusetts, Feb. 12, 1663, a son of Increase Mather (1639-1723), a Puritan preacher, and in 1684 became assistant to his father. He remained in Boston preaching or writing until his death, Feb. 13, 1728. Mather was also known as a linguist and published an enormous number of books. Among them are his *Ecclesiastical History of New England* in seven volumes, and a book on witchcraft.

Matilda Name of two English queens. Matilda, or Maud, was the daughter of Henry I. She was born in 1102 and, on the death of her brothers, became heiress to the English throne. When Henry died, however, in 1135 his nephew, Stephen, seized the throne, Matilda being then in France. In 1141 she defeated Stephen at Lincoln and was crowned queen. The civil war continued until 1153 when peace was made and Matilda's son, afterwards Henry II., was recognised as her heir. Matilda died Sept. 10, 1167.

The other **Matilda** was the wife of William the Conqueror. She was a daughter of Baldwin, Count of Flanders, and was descended from Alfred the Great. She married William in 1053, and was crowned queen of England in 1068. She died Nov. 3, 1083, and was buried at Caen.

Matisse **Henri.** French artist. Born Dec. 31, 1860, he studied in Paris and his work soon attracted attention. He was one of the original Fauvists and his style is noted for its simplicity, its rather violent colouring and its vigorous calligraphic manner of brushwork. With Picasso he came to be acknowledged as the leader of the more mature art movement of Paris. Matisse, who lived for a time in Morocco, is represented in several European galleries and among his pictures are "Toilet" and "The Sisters."

Matlocks **The.** Urban district and inland watering place of Derbyshire. It consists of Matlock Bridge, Matlock Bath and Matlock Bank, which until 1927 were separate areas. It stands on the Derwent, and is served by the L.M.S. Rly; is 145 m. from London and 17 from Derby. There are some industries, but the place is chiefly a pleasure and health resort. There are medicinal springs at Matlock Bath. Near Matlock is some of the most beautiful of the Derbyshire scenery, including the High Tor and the Heights of Abraham. Matlock Bath is famous for its caves and its petrifying wells. Pop. (1931) 10,599.

Matoppo Hills Range of hills in Rhodesia. The district lies to the east of Bulawayo and covers about 1000 sq. m. On one of the hills called the World's View is the grave of Cecil Rhodes, a national cemetery and a national park.

Matriarchy Form of social organisation determining personal rights and obligations from the maternal side. It may govern descent and inheritance, require the husband to live, temporarily or permanently, with the wife's social group, or control the children through the mother or her male relations. All these conditions, exemplified in some American Indian tribes, collectively constitute mother-right.

Matriculation Act of admitting a student to membership of a university. Before doing this the universities require the student to pass an examination, exemption from which is granted to those who have passed an examination of the same standard at school. The matriculation examination of London university is a popular educational test. The universities of Manchester, Liverpool, Leeds and Sheffield combine to have a joint examination.

Matrix In mineralogy and mining a term applied to the earthy or stony matter in which a metallic ore is embedded. Often the presence of certain minerals serves as a guide to the occurrence of particular metals.

The term is used also for the mould in typesetting machines from which a letter is cast. Some machines use the individual matrix, others, a row giving a line of type. The term is also applied to the papier-mâché impression used to cast a page of type in stereotyping.

Matron Roman word for a married woman, especially one of high character. It is now used for the woman who is at the head of a workhouse, hospital or orphanage, or looks after the health, food and clothing of the pupils in a school. A **jury of matrons** is a jury summoned in case a woman who is sentenced to death pleads that she is pregnant. Their business is to decide if this is true or false; if the former, the sentence of death is deferred or annulled.

Matsys **Quentin.** Flemish painter. Born at Louvain in 1466, Matsys (or Massys) was at first a blacksmith but took up painting and became one of the great artists of his time. His early work is seen in the "Virgin and Child" in the Brussels Gallery and the "Madonna" in the National Gallery, London, but his most famous work is the triptych, "Piéta," now in Antwerp Museum. His paintings show great technical skill, delicacy of touch and religious feeling. He died at Antwerp in 1530.

Matte Term used in metallurgy for the fusible mass of mixed sulphides resulting from the calcination of copper ores, an alternative term being regulus. By this method, adopted for oxides, carbonates and siliceous ores, the metal is concentrated in the matte, which usually contains from 25 to 55 per cent.

Matter Term in physics applied to the substance composing the universe and of which we are cognisant by means of our senses. Matter exists in three states, solid, liquid and gaseous, these states differing from one another in the degree of aggregation of the component atoms according to the conditions of temperature and pressure. According to the atomic theory, atoms are the smallest particles of matter, but are grouped together to form molecules in compounds. Recent research has shown that the atom itself is a complex structure formed of electrons and protons, the centres of radiation of waves of energy.

Matterhorn Mountain of Switzerland. With an elevation of

14,782 ft., it is situated 6 m. S.W. of Zermatt on the frontier of Switzerland and Italy. It is the end of a mountain ridge and has a less difficult slope on the Swiss side than on the Italian. It was first climbed by Whimper and his party in 1865.

Matthew Saint and apostle. A Jewish customs officer, usually identified with Levi, he became one of Christ's twelve disciples. Owing to confusion with Matthias, apocryphal legends claim his martyrdom in Ethiopia, commemorated in the Eastern on 16th Nov., and in the Roman Church 21st Sept., on which day the Anglican Church commemorates his call.

Matthew **The Gospel of.** First book of the New Testament, traditionally attributed to the apostle. Modern scholarship tends to hold that Matthew's personal contribution comprised certain lost memoranda or Logia which he compiled in Hebrew. A later compiler expanded them into our completer narrative, using Mark's gospel as a framework. Designed for the Jewish community, the book takes for granted the authority of the Old Testament, from which 65 citations are made claiming our Lord's teaching as fulfilling the Mosaic law. *See* GOSPEL.

Maubeuge Town of France. It is on the Sambre, near the frontier of Belgium. Before the Great War it was a fortified place, but the forts were destroyed by the Germans in Aug., 1914, and the town surrendered, remaining in German possession until the end of the struggle. Pop. 24,221.

Mauchline Town of Ayrshire. It is 9 m. from Kilmarnock and is noted for its cattle and horse fairs. Burns lived near at the farm of Mossgiel.

Maud Queen of Norway. The youngest daughter of King Edward VII., she was born Nov. 26, 1869. In July, 1896, she married Charles, Prince of Denmark who, in 1905, became King of Norway as Haakon VII. They have one child, a son, Prince Olaf, born July 2, 1903, who in 1929 married Princess Martha of Sweden.

Maude **Cyril.** English actor-manager. Born in London, April 24, 1862, and educated at Charterhouse, he began his career on the American stage in 1883. He was co-manager of the Haymarket Theatre from 1896 to 1905, and afterwards sole manager of the Playhouse (built by him) until 1915. He achieved notable successes in *Grumpy*, *Lord Richard in the Pantry* and *These Charming People* (filmed 1931), and he is the author of *The Haymarket Theatre*, 1903, and *Behind the Scenes with Cyril Maude*, 1927. In 1888 he married Miss Winifred Emery (1862-1924).

Maude **Sir Frederick Stanley.** British soldier. He was born June 24, 1864, son of General Sir Frederick Maude, V.C. He served in the South African War and organised the Territorial Forces of Canada. After service in France, the Dardanelles and Egypt, he was promoted army commander in Mesopotamia and was responsible for a successful forward movement which drove the Turks from Kut. He later occupied Bagdad, and died there of cholera, Nov. 18, 1917.

Maugham **William Somerset.** English author and playwright. Born in 1874 and educated at King's School, Canterbury, and Heidelberg University, he adopted a medical career, gaining his M.R.C.S. and L.R.C.P., but later took to literature. His more notable novels include *Liza of Lambeth*, 1897; *The Moon and Sixpence*, 1919 and *Ashenden*, 1928, which is based on his experiences in the secret service during the Great War. *Ah King*, a volume of short stories, appeared in 1933.

His best known plays are *The Land of Promise*, 1914; *The Circle*, 1921; *East of Suez*, 1922; and *Our Betters*, 1923. The last is a brilliant satirical play of modern society. Of his later plays *Cakes and Ale* was produced in 1930, and *The Painted Veil* in 1931.

Maumbury Rings Spot near Dorchester, Dorset. It is believed to have been in Roman times the site of an amphitheatre which held 12,000 spectators.

Mauna Loa *See* HAWAII.

Maundy Name meaning "command" given to the Thursday of Holy Week; also the ceremonial ablutions, gift of money and Eucharistic celebration proper to the day. Anciently the pope, royalty and nobility washed the feet of as many poor people as they were years old in fulfilment of Christ's "command" (John xiii. 34). In England the custom was abolished in 1754, but maundy money is still given to the poor on this day at Westminster Abbey, a penny for each year in the sovereign's age.

Maupassant **Henri René Albert Guy de.** French novelist. Born in Normandy, Aug. 5, 1850, he is considered by many as the greatest of short story writers. Many of his stories are the result of his experiences as a soldier in the Franco-Prussian War. His best known books are *La Maison Tellier*, 1881; *Une Vie*, 1883; *Bel-Ami*, 1885, and *Pierre et Jean*, 1888. He became insane in 1892 and died July 6, 1893.

Maurice **Sir Frederick Barton.** English soldier. Born Jan. 19, 1871, eldest son of Sir J. F. Maurice, he entered the army in 1892 and saw service on the Indian frontier and in South Africa. He distinguished himself during the Great War, being knighted in 1916, but was retired for a breach of discipline in writing to the Press, challenging the accuracy of Ministerial statements concerning the strength of the army in the field in the spring of 1918.

He then became a war correspondent and, after the War, Principal of the Working Men's College, St. Pancras, in 1922. He was Professor of Military Studies at London University, 1927, and Chairman of the Adult Education Committee, 1928. He has published *Forty Days in* 1914, lives of Lord Wolseley, Robert E. Lee, and Lord Rawlinson, *Governments and War*, *British Strategy*, and *The 16th Foot*.

Maurice **John Frederick Denison.** English theologian. Born at Normanston, Suffolk, Aug. 29, 1805, son of a Unitarian minister, he studied at Trinity College and Trinity Hall, Cambridge. Between 1840-53 he held professorships of literature and theology at King's College, London. In 1854 he helped to found and became first principal of the Working Men's College. In 1860-66 he was incumbent of Vere Street Chapel, London, and in 1866 was appointed to the Chair of Moral Philosophy at Cambridge. He died in London, April 1, 1872. A friend of Charles Kingsley, his forceful personality and sympathy with the oppressed made him a factor in the religious life of his time, and the movement known as

Christian Socialism was an outcome of his teaching.

Mauritius Island in the Indian Ocean, sometimes called the Ile de France. It is 500 m. east of Madagascar and covers 720 sq. m. The capital and chief port is Port Louis. The island is mountainous, but in the fertile valleys the sugar cane and other tropical plants grow freely. The island is a British crown colony, under a governor who is assisted by two councils. Having been a Dutch possession, Mauritius became French in 1715 and British in 1814. In 1931 great damage was done by a hurricane. Pop. (1931) 400,904, the majority being Hindus.

Maurois **André.** French author, born in 1885, and educated at Rouen. Many of his books have been translated into English. Among them are *The Silence of Colonel Bramble*, dealing with the War, a *Life of Disraeli*, *Ariel*, an imaginative biography of Shelley, and *Don Juan*, a similar work on Lord Byron. He has written a book on Marshal Lyautey. In 1931 he lectured in London. *The Family Circle*, a novel, was published in 1932, and in 1934 a study of Charles Dickens, and a history, *King Edward and His Times*.

Mauser Rifle Type of magazine rifle invented by a German, Paul Mauser, and adopted as the standard military rifle in Germany. It has a bolt action and is characteristised by its durability and accuracy of aim.

Mausoleum Large tomb or memorial. The term is derived from the tomb at Halicarnassus in Asia Minor erected to the memory of Mausolus, King of Caria in 353 B.C. by his widow, Artemisia. This ornate building was 140 feet in height and surmounted by colossal statuary. Portions of the sculptures are in the British Museum.

Mawson **Sir Douglas.** British explorer. Born at Bradford in 1882, and educated at Sydney University, he was appointed to the scientific staff of the Shackleton Antarctic Expedition in 1907. He was also on the staff of the Everest Expedition and the Magnetic Pole journey in 1908. He was leader of the Australasian Antarctic Expedition of 1911-14, when he discovered radium ore at Mount Painter, and of the British Australian and New Zealand Antarctic Expedition of 1929. Since 1920 he has been Professor of Geology and Mineralogy in Adelaide University. He was knighted in 1914 and wrote *The Home of the Blizzard*.

Max **Adolphe.** Belgian patriot. Born in Brussels in 1869, he entered politics in 1894, and became Burgomaster of Brussels in 1909. When the Germans entered Brussels in 1914, he demanded complete freedon of action, and formed a central committee to deal with supplies. Arrested in Sept., 1914, he was sent to Germany, but escaped in Nov., 1918, and returned to his native city.

Maxim **Sir Hiram Stevens.** American inventor. Born in Maine, Feb. 5, 1840, he gained early a wide experience of engineering. He made discoveries of great value in the use of steam and electricity. Having settled in England he was naturalised, and in 1901 was knighted. He died Nov. 24, 1916. Maxim's name is perpetuated by the Maxim gun; he was also a pioneer in aeronautics.

Maximilian I. Holy Roman Emperor. Son of Frederick III., born in Vienna, March 22, 1459, he married Mary, heiress of Philip, Duke of Burgundy, and thus greatly increased the Habsburg dominions. He became Emperor in 1493. He was a patron of art and letters as well as an administrator of considerable gifts and a good soldier. Much of his reign was occupied with warfare against the French in Italy and against the Turks who were pressing up the valley of the Danube. By the marriage of his son Philip to Juana, heiress of Ferdinand and Isabella of Spain, he brought about the succession of the Habsburgs to the vast Spanish dominions, while the marriage of his grandson Ferdinand to Anna of Hungary brought in also Hungary and Bohemia. Owing to his liberality and extravagant schemes he was always in want of money, and thus failed to achieve most of his grandoise designs. He died Jan. 12, 1519.

Maximilian Emperor of Mexico. A son of Francis Charles, Archduke of Austria, he was born July 6, 1832, his elder brother being the Emperor Francis Joseph. In 1857 he was made Governor of Lombardy and Venetia, then Austrian possessions, and in 1863 accepted the throne of Mexico and was crowned in 1864. The French, who were his chief supporters, left him to struggle with his recalcitrant subjects. The result was that he was betrayed to them, and on June 19, 1867, was shot. Maximilian wrote a book translated as *Recollections of My Life*.

Max Müller **Friedrich.** German scholar. A son of Wilhelm Muller, a poet, he was born at Dessau, Dec. 6, 1823, and was educated at Leipzig and Berlin. He made a special study of philology and settled in London. In 1854 he was made Professor of Modern Languages at Oxford, and in 1866 Professor of Comparative Philology. He died at Oxford, Oct. 28, 1900. Max Müller was the foremost philologist of his day and made the results of his studies very widely known through his volume *The Science of Language*. He translated Kant's *Critique of Pure Reason* and edited the *Sacred Books of the East*.

Maxstoke Village of Warwickshire. It is 12 m. from Birmingham. Here is Maxstoke Castle, built in the 14th century, and notable for its moat, drawbridge and gatehouse. Near are the ruins of a priory.

Maxton **James.** Scottish politician. Born June 22, 1885, and educated at Barrhead School and Glasgow University, he became a teacher. In 1919 he was appointed organiser for the Independent Labour Party, and in 1922 was elected M.P. for Bridgeton (Glasgow), being returned at later elections. He was a leader of the advanced group who broke away from the official Labour Party in 1931. A biography appeared in 1935.

Maxwelltown With Dumfries a burgh of Kirkcudbrightshire. It stands on the Nith, on the L.M.S. Rly. It has an observatory and a museum. Three bridges connect it with Dumfries. Tweeds are manufactured. The old name of the place was Bridgend: it was renamed in 1810 after the Maxwell family.

May **Phil.** English artist. Born in Leeds, April 22, 1864, he became, while still a boy, a scene painter at a theatre there. By painting portraits of actors in a casual way he revealed an extraordinary genius for caricature, and later he became a popular cartoonist for the press. From 1887 to 1890 he was in Australia working for *The Sydney Bulletin*. After his return to London he worked

or *Pick Me Up*, *The Pall Mall Budget*, and *The Graphic*, and finally joined the staff of *Punch*. He died in London, Aug. 5, 1903. May published *The Parson and the Painter* and edited *Phil May's Annual*.

May Sir George Ernest. English financier. Born in 1871 he became a clerk, and rose to be secretary of the Prudential Assurance Co. During the war period he assisted the Government in connection with the loans from the United States and in other ways. In 1918 he was knighted. He retired in 1930 and in 1931 was chairman of the committee that reported on the condition of the nation's finances and suggested certain economies. In 1932 he was made chairman of the board appointed to advise the government on tariffs.

Maya American Indian people in middle America. A shortish, round-headed, dark-skinned stock, they are unprogressive peasants in Yucatan, Campeche, N. Guatemala and elsewhere. The 15th century, before the Spanish advent, witnessed the collapse of an advanced Maya civilisation, distinct from the Aztec, lasting 2000 years. Marked by impressive architectural remains at Copan, Quirigua, Palenque and, in British Honduras, Lubaantun, this early Maya empire, already decadent by A.D. 600, was followed by a northward migration which ultimately produced great cities like Uxmal and Chichen Itza. A remarkable system of chronology, reaching back to the 6th century B.C., was recorded in a peculiar glyphic script, which has been only partially deciphered.

Maya or Mahamaya. Mother of Gautama Buddha. Legend makes her and her sister, Prajapati, the principal wives of Suddhodana, the wealthy Kshattriya landowner of a small state surrounding Kapilavastu, in S. Nepal. When 45 years old, Maya gave birth to Gautama c. 560 B.C. in a wayside grove visited 300 years afterwards by Asoka, whose commemorative pillar there was discovered in 1895.

Maybole Burgh and market town of Ayrshire. It is 9 m. from Ayr and 50 from Glasgow, on the L.M.S. Rly. The tolbooth was once a castle in which the Barricks and Kennedys lived. Pop. (1931) 4210.

May Day First day of May. In England in the Middle Ages was a popular festival, probably a survival of a much older custom of celebrating the opening of spring.

The celebration took the form of dancing round the maypole and crowning a girl as Queen of May. The ceremony is still observed in some parts of England. The day is also regarded as Labour Day and is a holiday on the Stock Exchanges.

Mayfair District of London. It lies between Piccadilly and Oxford Street with Park Lane to the west and Bond Street on the east. It is a fashionable residential district and there are many large houses in its streets and squares. It owes its name to a fair which was held here every year until 1708. Much of the land belongs to the Duke of Westminster.

Mayfield Village of Sussex. It is 11 m. from Tunbridge Wells, on the S. Rly. The place was a market town in the Middle Ages and here the Archbishop of Canterbury had a palace, of which there are slight ruins.

Mayflower Sailing vessel carrying the Pilgrim Fathers (*q.v.*), about 102 men, women and children, from Plymouth, Devon, on Sept. 6, 1620. It reached Plymouth, Massachusetts, on Dec. 21. This double-decked, square-rigged brigantine was companioned by the *Speedwell* from Southampton, on Aug. 5, but proceeded alone from Plymouth westward when the *Speedwell* proved unseaworthy.

May Fly (*Ephemeridae*). Family of small insects. Belonging to the order *Neuroptera*, it is distinguished by having four membranous wings, rudimentary mouth parts, large compound eyes, and usually three long filaments at the end of the abdomen. The larval stage is aquatic and predaceous, and in some forms lasts for years. The imago lasts only from a few hours to a few days.

Maynooth Town of the Irish Free State. It is in Co. Kildare, 15 m. from Dublin, on the Gt. S. Rlys. The chief building is the Roman Catholic training college for priests, designed by A. W. Pugin. This was founded in 1793 and accommodates 500 men. There was once a castle at Maynooth, a stronghold of the Fitzgeralds. The splendid park of Carton, seat of the Dukes of Leinster, is near Maynooth.

Mayo County of the Irish Free State. In the province of Connaught, it covers 2158 sq. m. and has a long coastline on the Atlantic Ocean. It contains Loughs Conn, Mask and Carra, and much of it is wild and mountainous. Achill, Clare and other islands belong to it, and Clew, Blacksod and Killala Bays are openings of the sea. The Owenmore and the Moy are among the rivers. Castlebar is the county town; other places are Ballina, Killala and Westport. It is served by the Gt. S. Rlys. The soil is poor. The majority of the people live on the land and by fishing. Pop. (1926) 172,690.

Mayonnaise Salad dressing consisting of yolks of eggs beaten up raw, with olive oil and vinegar or lemon juice blended gradually till the mixture is of a creamy consistency. Any particular dish prepared with this dressing is also called Mayonnaise, as salmon mayonnaise, etc.

Mayor Word used for the chief officer of a city or borough. In England he is elected by the council for a year, and in many cases receives a salary. He is a magistrate and presides over the meetings of the council. In London and other cities he is called the Lord Mayor (*q.v.*). The Scottish equivalent is provost.

Mayweed (*Matricaria inodora*). Plant of the order *Compositae*. It is of branching growth with narrow finely cut leaves and daisy-like scentless flowers. The stinking Mayweed (*Athemis cotula*) has a malodorous juice which causes skin irritation to persons handling it.

Mazarin Jules. Italian cardinal and diplomat. He was born at Piscina, in the Abruzzi, July 14, 1602. Richelieu in dying, recommended him to Louis XIII., whose chief minister he became. Mazarin was naturalised later, and retained his power under Louis XIV. He was made a cardinal in 1641, brought the Thirty Years' War to a successful conclusion with the Treaty of Westphalia in 1648, triumphed over the Fronde, and died March 9, 1661.

Maze Form of labyrinth or series of tortuous paths constructed in a garden. There is one in the grounds of Hampton Court Palace dating from the time of William

III. The paths leading to and from the centre are bordered usually by hedges of yew, beech and other close-growing trees.

Mazeppa Cossack trader. Ivan Stephanovitch Mazeppa belonged to a noble Polish family and was born in 1644. He was educated by the Jesuits and after some time at the court of Poland went to the Ukraine and joined the Cossacks. The story goes that he reached them tied naked to a wild horse, a punishment for a love affair. He made a great reputation among the Cossacks by his skill and in 1687 became their leader or hetman. He helped Peter the Great against Turkey and Sweden, but in 1708 transferred his services to Peter's enemy Charles XII. The enmity of the Tsar was fatal and Mazeppa's power was soon broken. He fled to Turkey and died, probably a suicide, at Bender, Sept. 22, 1709. His romantic story has been used by Byron and Victor Hugo.

Mazurka National Polish dance originating in Mazovia in the 16th century. Its vigorous character demands music in triple time with accents on the third beat and an invariable feminine ending. Chopin idealised the musical aspect.

Mazzini **Giuseppe.** Italian patriot and author. He was born at Genoa, June 22, 1805. For forty years (1830-1870) he was the "most untiring political agitator in Europe," preparing the soil and sowing the seed of Italian unity. Banished from Italy in 1830, he went to Marseilles where he organised the society called "Young Italy." In 1837 he came to London, where he worked to enlist English sympathy in the cause of Italian unity. He was one of the triumvirs of the shortlived Roman republic of 1849 and vigorously supported Cavour and Garibaldi in 1859-60. He saw the consummation of his hopes for a united Italy before he died on March 10, 1872. An untiring propagandist, he is best known by his *Letters* and his essay, *On the Duties of Man*.

Mead Alcoholic beverage made by boiling honey in water with spices and adding a yeast or other ferment. It is sometimes fortified with brandy and flavoured with hops. Common in mediaeval England and throughout Europe, it is still prepared in rural England.

Meadow Grass General name for the more useful hay and pasture grasses of the genus *Poa*, abounding in cold and temperate regions. Usually tall, stout perennials, with soft, flat leaves and panicles of several-flowered spikelets they include the smooth *P. pratensis*, the blue grass of Kentucky, the rough *P. trivialis*, and the wood meadow-grass *P. nemoralis*.

Meadow Rue Large genus of perennial herbs of the buttercup order, natives of N. temperate and frigid regions (*Thalictrum*). Among British species *T. flavum*, with stout, furrowed stems 2-4 ft. high, bears pyramidal clusters of small flowers with yellow perianth leaves, petals being absent.

Meadow Saffron (*Colchicum autumnale*). Bulbous plant of the order *Liliaceae*. It is a hardy perennial, the large, crocus-like flowers of lavender purple bloom in September. The leaves are large and fleshy and appear in the spring, dying down before the flowers appear. The plant is poisonous and contains the drug colchicum, which is prepared for medicinal use in gouty and rheumatic afflictions.

Meadow Sweet (*Spiraea ulmaria*). Perennial herb of the rose order. It is allied to the dropwort, indigenous to N. Europe, Asia Minor and N. Asia. Common in waterside meadows in Britain, its short rootstock supports much-divided toothed leaves, 1-2 ft. long, white and downy beneath, and 2-4 ft. furrowed stems with dense clusters of small, fragrant, creamy-white flowers.

Mealies S. African colloquial name, derived from Boer-Dutch, for ears or cobs of the maize plant. This plant is grown in mealie fields or mealie gardens. *See* MAIZE.

Mearns Name by which the Scottish county of Kincardine (*q.v.*) is sometimes called.

Measles Infectious fever most common in childhood. One attack usually confers immunity.

The symptoms are a feverish cold with running eyes and nose and a general feeling of lassitude. The blotchy rash does not appear until the fifth day. As the first stage is very infectious, the child should be put to bed immediately measles is suspected and kept away from other children. A doctor must be consulted as serious complications, such as broncho-pneumonia, and after-effects sometimes arise from quite a mild attack. Incubation period is 10-14 days.

Meath County of the Irish Free State. It is in the province of Leinster and has an area of 905 sq. m., with a short coastline on the Irish Sea. Trim is the county town: in the shire are Navan, Kells, Bective and other places of interest, as well as Tara and Newgrange. The soil is fertile and the country level save in the west and the people are chiefly employed in farming. The chief rivers are the Boyne and the Blackwater. Pop. (1926) 62,969.

Meath was the name of one of the kingdoms of Ireland in the Middle Ages. It lasted until the 12th century and later was divided into the counties of Meath, Westmeath and Longford.

Meath **Earl of.** Irish title held by the family of Brabazon. In 1616 Sir Edward Brabazon, M.P., was made Baron Ardee. His son, William, the 2nd baron, was made an earl in 1627. Reginald, the 12th earl, was known as a philanthropist and for his efforts to make Empire Day a national holiday. He died Oct. 11, 1929. His son, the 13th earl, when Lord Ardee, commanded a battalion of the Irish Guards in the Great War.

Mecca City and capital of the kingdom of Hejaz. It is 70 miles from Jeddah on the Red Sea and is known as the birthplace of Mahomet and the holy city of the Mohammedan world. Here is the great mosque, containing in its courtyard the Kaaba.

Mechanic One skilled in the use of tools or in the manipulation of machinery. The term has special applications such as motor mechanic or aircraft mechanic.

A **Mechanics' Institute** was an association of working men to obtain a wider education by means of lectures, classes and libraries. Such institutes have been superseded by technical schools. The first mechanics' institute was founded in 1824 in London by Dr. Birkbeck.

Mechanics Branch of physical science concerned with the motions of bodies and the nature of the forces which

control motion: also the effect of these forces upon bodies at rest. One section, dynamics, deals with the action of force upon moving bodies while another branch, statics, is concerned with bodies and forces in equilibrium.

Mechlin City of Belgium, also called Malines. It is 13 miles from Brussels on the Dyle. The industries include railway shops and printing works. The archbishop is the Primate of Belgium. The city was long famous for its lace. Pop. 60,506.

Mechnikov Iliya. Russian scientist. Born May 15, 1845, he studied at the University of Kharkov and then in Germany. In 1870 he was made Professor of Zoology at Odessa and in 1887 he went to Paris to work at the Pasteur Institute. He died June 16, 1916. His discoveries are of the greatest importance in the treatment of certain diseases, notably cancer and syphilis. They concern chiefly the nature and functions of the blood. Mechnikov advocated sour milk as an aid to longevity.

Mecklenburg District of Germany. It has a considerable coastline on the Baltic Sea and consists of two little republics, Mecklenburg-Schwerin and Mecklenburg-Strelitz, Schwerin and Strelitz being their respective capitals. The former covers 5068 sq. m. and the latter 1131 sq. m. Pop., Schwerin 674,075, Strelitz 95,558.

In the Middle Ages Mecklenburg was divided into several petty states, but in 1701 it took its present form, its dukes being princes of the empire. In 1815 they were made grand dukes and in 1871 their states entered the German Empire. In 1918 the grand dukes abdicated and republics were set up. Each is governed by a landtag and a ministry responsible to it. Both are members of the Federal Republic of Germany.

Medal Piece of metal resembling a coin, but struck to celebrate an event or service. Medals were first struck by the Romans and since their time much artistic skill has been used in their design. To-day they are chiefly made and awarded for services in time of war, a custom which originated in England in the 16th century. Medals are awarded to all who have served through a campaign. At the end of the Great War over 5,700,000 victory medals were issued to men of the navy, army and air force.

Other medals, such as the Distinguished Service Medal, reward acts of gallantry and others are given to civilians for bravery in saving life. Medals are worn in a certain order of precedence and have distinctive ribbons.

Medallion Term applied to a large medal of antique character. It has been extended to include a rounded bas-relief or a circular design with figures as often met with in early stained glass or mural decoration.

Medea In Greek legend the daughter of the King of Colchis. She assisted Jason to secure the Golden Fleece and the two were married. Later Medea brought about the death of Creusa, who had become the lover of Jason. She is said to have married Aegeus, King of Athens, whom later she tried to poison. Euripides wrote a play entitled *Medea*.

Medes People closely associated with the Persians. They lived in Asia Minor and later in Persia, where they gave their name to a district called Media. Their greatest king was Darius, who is mentioned in the Bible (Dan. v.). Their laws, like those of the Persians, were regarded as unalterable.

Medici Famous Italian family. **Giovanni de Medici** was a trader and banker in Florence in the 13th and early 14th century. He died in 1429, when his great wealth passed to his son, Cosimo. In 1424 Cosimo, having been banished, was recalled to Florence and until his death, August 1, 1464, was the real ruler of the republic. His son succeeded to his position and soon members of the family became rulers of Florence by right of birth. The greatest of them was **Lorenzo**, called the Magnificent, who fully earned the epithet by the way he spent his great wealth in beautifying the city and encouraging artists and poets. He was one of the greatest figures of the Italian Renaissance.

In 1492 the Medici were expelled, but in 1512 they were re-installed. In 1530 Alessandro was recognised by the emperor as Duke of Florence and in 1569 his title was changed to that of Grand Duke of Tuscany. Three members of the family ruled until the male line died out in 1737. Two of the Medici became popes as Leo X. and Clement VII. Other notable members of the house were Catherine and Marie, both queens of France.

Medicine Art of healing. First practised by primeval man with magico-religious methods for counteracting malignant influences, it developed during ancient Euphrates, Indus and Nile civilisations into empirical systems making abundant use of remedial herbs. In early Greece rational cures first arose under the Greek physician, Hippocrates, c. 500 B.C., commonly called the Father of Medicine, whose writings influenced medical theory and practice for 2000 years. Anatomical research proceeded, and Galen of Pergamum, in the 2nd century, A.D., made still further collections of knowledge which governed medieval thought.

The Renaissance gave birth to the chemical teachings of Paracelsus: Harvey accomplished the supreme discovery of blood circulation, 1628. There followed the microscope, the development of clinical practice, Hunter's foundation work in experimental and surgical pathology and the advances of Bell, Abernethy, Virchow and others. The 19th century witnessed the work of Darwin, Pasteur, Koch and Lister. More recently researches in bacteriology, biochemistry, radiology and mental disease have produced epoch-making results.

MEDICINE AS A CAREER. The main careers open to members of the medical profession may be listed as follows:

(1) General Practice.
(2) Government Medical Services at Home and Abroad.
(3) Public Health Work.
(4) Poor-Law Medical Service.
(5) Psychological Medicine.
(6) Scientific Research or Teaching.
(7) Consultants and Specialists.
(8) Certain other Careers (as Ship Surgeoncies).

It will be seen that the scope is very wide for the qualified doctor, and the opportunities especially in branches other than General Practice, are increasing.

Since the Act of 1876, which rendered women eligible to obtain degrees and diplomas, more and more women's names have appeared on

the Register of the General Medical Council. The disfavour with which women doctors were originally looked upon, both by their male colleagues and by the public, is rapidly disappearing, and generally speaking, women are regarded as eligible for nearly all kinds of medical work, excluding the Services of the Crown.

The two main spheres of work in which they are especially finding opportunities are general practice and posts as maternity and child welfare and School Medical Officers under the local authorities. There is a special organisation for Women's Medical Service in India.

Before medical practice can begin it is necessary under Law for the student to have his or her name entered on the Register of the General Medical Council, and for this certain medical degrees or other recognised qualifications are necessary. (It is advisable also for a student after the preliminary examinations have been taken, to have his or her name entered on the Students' Register: a copy of the regulations can be obtained from the G.M.C., 44 Hallam Street, London, W. 1.).

The work necessary for a recognised medical degree or qualification falls into three periods:

(1) A period of about two years at a public or secondary school devoted to the study of Chemistry, Physics, and often Biology.
(2) A period of two years in the dissecting room and laboratories of a university or medical school.
(3) A period of three years of clinical study in a hospital.

This is the minimum time taken—illness or failure at examination frequently extends the period.

After the general degree or diploma has been taken, specialised courses for further degrees or special diplomas may be taken.

The Medical Course is therefore a long one, and it requires a considerable financial outlay in fees and maintenance before recognised qualifications are obtained. It is advisable to obtain full particulars as early as possible—from the G.M.C. or from the British Medical Association (B.M.A. House, 19b Tavistock Square, London, W.C. 1). The regulations, examination syllabuses and fees of the particular university or medical school it is proposed to enter should also be studied before the first examinations are taken.

The prospects before the qualified medical practitioner are good. The doctor in general practice has a high social standing, and although a good practice must be developed—or capital must be available to purchase a partnership in one—the remuneration is steady and adequate. Thus an income of £1000 per annum may be expected from an established practice.

The specialist can, of course, command higher fees, and the salaries scale in most of the public services extends above this figure. Full particulars of these salaries scales are available.

Medicine Hat City of Alberta, Canada. It stands on the South Saskatchewan River, 165 m. from Calgary and 660 from Winnipeg. There are some manufactures and railway shops and the city is the distributing and trading centre for a large district. It is rich in natural gas.

Medicine Man Practitioner of the healing art and kindred mysteries in primitive culture. The term, displacing the older "witch-doctor," conventionally denotes the professional exorciser of magical powers in cultural stages up to and including the shaman of N. Asia, beyond which leech-craft and priest-craft diverge. Usually set apart by long initiation, carrying his mysteries in a medicine-bag, wearing a distinctive dress, and sometimes operating in a medicine-hut, he combines with primitive magic empirical cures and crude surgery, in Africa, America and Melanesia.

Medick (*Medicago falcata*). Perennial leguminous herb found chiefly on waste land and dry gravelling or sandy soil in E. England. The stems are hollow and the stalks, bearing clusters of yellow, or sometimes violet flowers, rise from the axils of the leaves which are trifoliate. The flat downy seed pods are stickle-shaped or curved. A native of Europe the herb is found also in India and parts of Asia. Other varieties include the **Black medick** (*M. lupulina*) and Lucerne (*q.v.*).

Medina River of the Isle of Wight. It flows into the sea at Cowes, which stands on its estuary, and is navigable as far as Newport. The eldest son of the Marquess of Milford Haven bears the courtesy title of **Earl of Medina.**

Medina City of the Hejaz, Arabia. It is 240 m. from Mecca and has a large trade done partly through its port, Yanbua, on the Red Sea. Here the prophet lived for a time, and here, in a magnificent mosque, is his tomb. Medina was the residence of the early caliphs. It is much visited by pilgrims, as it ranks after Mecca, as a holy city. During the Great War, when it was a Turkish possession, it was besieged for a long time, but was not surrendered until Jan. 1919. Later it became part of the new state of the Hejaz. Pop. 30,000.

Mediterranean Sea Largest inland sea in the world. It has Europe on the N. and Africa on the S., while at its E. end is Asia. It is over 2000 m. long. At the W. end it communicates through the Strait of Gibraltar with the Atlantic Ocean: the E. end is closed, although it connects with the Black Sea. The Nile, the Ebro and the Rhône are the chief rivers that flow into it. The principal arms are the Adriatic and the Aegean Seas.

The Mediterranean contains an enormous number of islands, especially in the Aegean. The largest are Sicily, Crete and Cyprus. Malta is important.

Medium Name given by spiritualists to the person used as a channel for establishing communication between inquirers of this world and spirits of another sphere.

In bacteriology a sterilised nutritive substance used in the culture of germs is known as **a medium.**

Medlar (*Mespilus germanica*). Hardy tree of the rose order, indigenous to Greece and W. Asia. Long naturalised in Britain, it grows as a much-branched spiny tree, bearing solitary white 1¼ in. flowers and roundish ½-1 in. fruits. Spineless varieties, cultivated preferably on whitethorn, quince or pear stocks, yield improved fruits, one form being stoneless. The **Japanese medlar** is the Loquat.

Medmenham Village of Buckinghamshire. It is on the **Thames, 3 m. from Marlow and is famous for**

its abbey. A Cistercian house was founded here in 1204. Later a private house was built on the site. This was the residence of Sir Francis Dashwood (1708-81), and is known because here his Hell Fire Club, a mock order of Franciscans, met and celebrated their blasphemous rites.

Medusa In Greek mythology, one of the three Gorgons. The name is also given to a free-swimming jelly-fish resembling a bell or parachute. Ranging from microscopic to forms 6 ft. across, medusae develop pendent filaments bearing organs for stinging and grasping the prey which the tentacles convey to the mouth. Several species abound round British coasts: the largest are tropical. *See* GORGONS.

Medway River of England. It rises in Surrey and Sussex by two small streams and flows through Kent to the Thames. It is 70 m. long, and on its banks are Tonbridge, Maidstone and Rochester. Its mouth forms a fine estuary where are Sheerness and Chatham.

Meerschaum Soft porous hydrous magnesia silicate. Obtained from Asia Minor, Greece, Morocco and elsewhere, it is used chiefly, after steeping in wax, for pipe-bowls and cigar-holders.

Meerut City and district of British India. The city is 40 m. from Delhi and is an important military station. It was the place where the Indian Mutiny began in 1857. Pop. (1931) 136,709.

The district is extremely fertile, largely owing to the irrigation canals. Its principal crops are wheat, pulse, millet, sugar-cane and cotton. Owing to its comparatively elevated position it is one of the healthiest places in the plains of India.

Megalithic Age Archaeological term for the culture period characterised by the building of massive structures and monuments, and coinciding with the later Stone and Bronze Ages. In Britain the remains of the great stone circles at Avebury and Stonehenge and the numerous barrows, tumuli and earthworks scattered over the country testify to the skill and industry of the megalithic builders.

Megalomania Delusion of grandeur. As a form of insanity it may involve the belief that the sufferer is a king, millionaire or endowed with divine powers: it sometimes attends general paralysis. The word is often used untechnically for the exaggerated idea displayed by some persons of their social importance or mental powers.

Megalosaurus Extinct carnivorous reptile of the order Dinosauria. Fossil remains are found in Jurassic and Cretaceous formations in Europe, Asia and N. America. It was about 20 ft. in length and assumed the erect posture, support being given by its long thick tail. The hind limbs were large and powerful and the teeth serrated and laterally compressed.

Megaphone Sound amplifier. For speech a cone-shaped trumpet is held to the mouth. For hearing purposes there is an ear-trumpet which magnifies distant sounds for capable ears and ordinary sounds for the deaf.

Megara Ancient city of Greece. It stood near the sea about 30 m. from Corinth. A colony from Megara founded a city of the same name in Sicily.

Megara sided with Sparta in the Peloponnesian War. The modern village with some 6400 inhabitants is mainly composed of people of Albanian stock.

Megatherium Extinct giant sloth. Its remains are found in Pleistocene deposits in S. America. Probably it was contemporaneous with early man. It was about 20 ft. in length, herbivorous in habit and resembled the anteaters in respect of limbs and backbone, and the sloth in skull and teeth. In 1897 the remains of the skin and bones of a species of megatherium were found in a Patagonian cavern.

Megiddo Former city of Palestine. It stood in the plain of Esdraelon, 18 m. from Nazareth, and is several times mentioned in the Bible. Its fortifications were restored by Solomon (2 Kings, ix,). It was a flourishing city in Roman times, but had decayed when on Sept. 19, 1918, British troops took possession of it.

Megrims (or Blind Staggers). Disorder in horses. Most frequently occurring in warm weather and due to congestion of the blood vessels in the brain. When straining uphill with a heavy load and tight collar a horse may suddenly exhibit symptoms of giddiness, with loss of will-power, noisy breathing, quivering nostrils and tendency to fall.

Mehemet Ali Turkish soldier. He was born in 1769 in Albania. He became a tobacco dealer, then a soldier, and took a leading part in fighting against Napoleon in Egypt in 1798. At the head of a force of Albanians he brought Egypt under his control and was made viceroy and pasha by the sultan. He crushed utterly the Mamelukes, formed a regular army and did much for the material prosperity of the land. He conquered a good part of Arabia and part of the Sudan and helped the Turks in their struggle with the Greeks. In Egypt he remained powerful until his mind gave way in 1848. He died Aug. 2, 1849, and was succeeded by Ibrahim Pasha, his adopted son.

Meighen **Arthur.** Canadian politician. Born in Ontario, June 16, 1874, he was educated at the University of Toronto. For a time he was a teacher, but later became a barrister in Manitoba. In 1908 he was elected to the House of Commons at Ottawa, and in 1913 was made Solicitor-General in the Conservative ministry. In 1917 he became Secretary of State, and a little later Minister of the Interior. In July, 1920, on the resignation of Sir Robert Borden, he succeeded as premier, but he resigned on his party's defeat in 1921. He was again premier for a few months in 1926, having in the meantime been leader of the opposition. On leaving office he took up an important business appointment.

Meissen City of Saxony. It stands on the Elbe, 15 m. from Dresden. Its castle is one of the finest in Germany. The city has some industries and an agricultural trade, but is chiefly famous for its china. This was first made here in the 18th century, and the state porcelain factory is one of the sights. Pop. 46,000.

Meissonier **Jean Louis Ernest.** French artist. Born at Lyons, Feb. 21, 1815, he studied art and soon began to paint. His best works are historical and semi-historical, and there are several in the

Wallace Collection, London. "Soldiers," "Gambling" and "Napoleon I. and his Staff" may be mentioned. He died in Paris, Jan. 31, 1891.

Meistersinger Professional poet of the Middle Ages. Meistersingers were members of guilds of musicians and went about the country singing. Some of them were connected with courts, but later they became more closely associated with the life of the people. There were guilds in many German cities, and at Ulm one lasted until 1839. Wagner aroused interest in their songs by his opera *Die Meistersinger von Nurnberg*.

Mekong River of Asia. It rises in Tibet and flows for 2800 m. to the China Sea. From Tibet it enters China, and later forms for some distance the border between Siam and Indo-China. It enters the sea by two great arms, one of which has five mouths. Owing to its many rapids the river is not much used for navigation.

Melampus In Greek legend the first mortal who obtained the powers of a prophet. He reared two serpents, and from them received the gift of understanding the language of beasts and birds. From Apollo he learned something about medicine, and he cured the daughters of the King of Argos of their madness.

Melancholia Form of insanity marked by great depression. Simple melancholia is a common form of lethargy and listlessness, sometimes with hallucinations and sleeplessness, not necessarily needing treatment in a mental hospital. In acute forms, observable in maturer years, the depression becomes intensified; this may pass into active excitement or into stupor, sometimes leading to suicide. A condition in which excitement and depression occur, not necessarily alternately, is called manic-depressive insanity.

Melanchthon **Philip.** German scholar and reformer. Born Feb. 16, 1497, at Bretten in Baden, his real name was Schwarzerd. Educated at Heidelberg, he became Professor of Greek at Wittenberg, where he was Luther's fellow-worker. In 1521 he published *Loci Communes*, the first great Protestant work on dogmatic theology. The Augsburg confession was composed by him. He attended the Diet of Worms, and after Luther's death attempted to reconcile all the parties of the Reformation, and even the Reformers and the Roman Catholics. He died at Wittenberg, April 19, 1560.

Melanesia Group of islands in the Pacific Ocean. They lie to the W. of New Guinea and Australia, and include the New Hebrides, New Caledonia, Solomon, Gilbert and Ellice Islands and others. Most of them are British, but France owns a number. Those that were German before the Great War are now administered by Australia and New Zealand under mandate from the League of Nations.

Melba **Dame Nellie.** Name taken from her birthplace, Melbourne, by the Australian singer, Helen Porter Mitchell. A daughter of David Mitchell, she was born May 19, 1859. In 1882 she married Charles Armstrong. Having shown exceptional talent as a singer, she studied in Paris and became a professional. Her first appearance was in Brussels in 1887, and for the next 30 years she was one of the world's leading singers. In 1918 she was made D.B.E. In 1925 she published *Melodies and Memories*. She died Feb. 23, 1931.

Melbourne Town of Derbyshire. It is 7 m. from Derby, on the L.M.S. Rly. It has some textile manufactures and is a market gardening centre. Pop. 3700.

Melbourne Capital of Victoria, Australia. It is situated on Port Phillip, at the mouth of the Yarra, a site selected about 1837 and named after the then Prime Minister. It is noted for its parks, public gardens, and flower-decked streets. Collins Street, 1¼ m. long is famous. Here are the Parliament Buildings and the two cathedrals. It has two broadcasting stations (31.55 M., 5 kW. and 31.28 M., 20 kW.).

Other important buildings are Flinders St. Rly. Station, the public library, art gallery and museum, the university and the law courts. The city is connected by rail with neighbouring States and has an excellent electric suburban railway system.

Population (including the 23 suburban areas) (1931), 1,030,750, over 57 per cent. of the state.

Melbourne **William Lamb, 2nd Viscount.** English statesman. Born March 15, 1779, he was educated at Eton and Trinity College, Cambridge, and entered Parliament in 1806. He was Irish Secretary from 1827-28, and Home Secretary in 1830. Prime Minister from 1835-41, his influence over the young queen, Victoria, was great, and he impressed on her the sound constitutional principles to which she adhered throughout her reign. He was unable, however, to restrain her from showing a partisanship over Court appointments, which led to the fall of the Whig government and Melbourne's resignation in 1841. He died Nov. 24, 1848.

Melchett **Alfred Moritz Mond, Baron.** British politician and industrial magnate. Born at Farnworth, Lancashire, Oct. 23, 1868, the son of Dr. Ludwig Mond, F.R.S., he was educated at Cheltenham College, St. John's College, Cambridge, and Edinburgh University. Called to the bar in 1894 he entered his father's firm of Brunner Mond & Co., chemical manufacturers, and became identified with a number of other important industrial concerns, later forming the great Imperial Chemical Industries. His writings on industrial and political problems were re-issued in *Questions of To-day and To-morrow*, 1912. As a politician he was Liberal M.P. for Chester, 1906-10; Swansea, 1910-22; and seceding over the land policy of 1926 became Conservative in 1920 and represented Carmarthen, 1924-28. He was First Commissioner of Works in the Lloyd George Ministry, 1916, and Minister of Health, 1921-22. Made a baronet in 1910, a Privy Councillor in 1913 and a baron in 1928, and F.R.S. He died Dec. 27, 1930.

Melchizedek King and priest of Salem. He is mentioned in Genesis xiv. 18.

Meleager In Greek legend a great hunter. He was a son of Oeneus and Althaea, and was a king of Calydon. He went with the Argonauts on their expedition. His great exploit was to kill the boar which the goddess Artemis sent to ravage Aetolia.

Melinite Disruptive explosive. It is of the trinitrotoluene type used in France, and resembles in composition the

British explosive, lyddite. It consists essentially of a mixture of trinitrotoluene and picric acid (trinitrophenol), the compound being less sensitive and dangerous to handle and having a lower melting point than its components.

Melksham Urban district and market town of Wiltshire. It stands on the Avon, 98 m. from London, on the G.W. Rly. The industries include flour milling. Pop. (1931) 3881.

Mellon Andrew William. American politician and financier. Born at Pittsburg, March 24, 1855, he became like his father, a banker, and was closely identified with some of the industries of Pennsylvania. A republican in politics, he was made Secretary to the Treasury in 1921, and held that post until 1932, when he was appointed Ambassador to the Court of St. James's. He had a good deal to do with the negotiations about European debts, and in 1931 expressed the opinion that Great Britain was bearing an undue proportion of the burden. He was ambassador in Gt. Britain, 1932-3.

Melocactus Genus of perennial succulent plants of the cactus order, natives of Mexico, W. Indies, Brazil and Colombia. It is also called melon-thistle. The swollen melon-shaped stems, vertically ridged, are surmounted by cylindrical caps clothed with woolly hairs and spines, bearing rose-red tubular flowers.

Melodrama Originally a play in which music was introduced to give a more dramatic or emotional effect. Melodramas were first produced in France in the 18th century, an example being Rousseau's *Pygmalion*. To-day the word is used for a play which has a strong emotional appeal of a popular kind. Examples are *The Silver King*, played by Wilson Barrett, and *The Sign of the Cross*. In London, the Old Surrey and Adelphi and the new Lyceum theatres were long regarded as special homes of melodrama.

Melon (*Cucumis melo*) Annual trailing herb of the gourd order, indigenous to S. Asia. Cultivated from antiquity, it provides important crops in all tropical and sub-tropical lands, being raised for some European markets under glass. The size of the fruit, usually globular, ranges from an olive to a giant gourd. The edible flesh, white, scarlet or green, is the pericarp's inner layer. **Water melons**, the fruit of the allied *Citrullus vulgaris*, are usually larger and coarser-fleshed.

Melrose Burgh of Roxburghshire. It stands on the Tweed, 37 m. from Edinburgh, on the L.N.E. Rly. The abbey, once the greatest in Scotland, was associated later with Sir Walter Scott. The ruined church contains some magnificent stonework and windows, and in it are some interesting tombs. It is much visited by tourists. On the other side of the Tweed is the suburb of Gattonside. Pop. (1931) 2052.

Melton Mowbray Market town and urban district of Leicestershire. It is 14 m. from Leicester and 102 from London, and is reached by the L.M.S. Rly. Melton is famous for its pork pies, and equally well known as a centre for the Quorn, Cottesmore and Belvoir hounds. It has an agricultural trade. Pop. (1931) 10,137.

Melville Island, bay and sound of the Arctic regions. It is 200 m. long and covers about 20,000 sq. m. It was discovered in 1819. **Melville Sound** separates the island from Victoria Island. It is 240 m. long. An opening of Baffin Bay is called **Melville Bay. Melville Peninsula** is a part of the Canadian mainland. It is an eastward extension of the N.W. territories and is to the N. of Hudson Bay. It is nearly 300 m. long and covers about 30,000 sq. m.

Melville **Andrew.** Scottish theologian and leader of Presbyterian thought. He was born at Baldovie, Forfarshire, Aug. 1, 1545. After teaching in France and Switzerland he became Principal of the College of Glasgow (1574), and helped to draw up the Presbyterian *Second Book of Discipline*. After preaching against absolute authority and "remonstrating" with James VI. he was imprisoned in the Tower for four years. On his release he left England and resumed teaching in France. He was several times Moderator of the General Assembly. He died about 1622.

Melville **Hermann.** American author and novelist. Born Aug. 1, 1819, in New York City, he went to sea when 17, in a whaler, deserted twice, was captured by cannibals in the South Seas, and eventually joined a man-of-war. Later he returned to Boston in 1844 and began writing. He published *Typee* (1846) and *Omoo* (1847), tales of life among the cannibals. In 1850 came *White Jacket*, embodying his experience as a sailor, and by its force, largely abolishing corporeal punishment in the navy. In 1851 he published his masterpiece, *Moby Dick*, a tale of the sea and whaling. He died Sept. 27, 1891.

Memel **or Klaipeda.** Territory and seaport of Lithuania. On the Baltic, near the N. end of the Kurische Haff, the town is 71 m. from Konigsberg. Before the Great War, Memel was a province of E. Prussia, but by a convention of May, 1924, it was constituted a unit within the sovereignty of Lithuania, with a certain measure of administration and financial autonomy. Nazi feeling in Memel, however, is strong as the election of 1935 showed. In Sept., 1935, Herr Hitler invited the League of Nations to examine the Memel position "before events that would be regretted." Poland uses the port. The harbour is a fine one, and large quantities of timber and grain are handled. There are many important industries, including shipbuilding-yards, foundries, chemical works, etc. Area of territory, 913 sq. m. Pop. territory, 146,000; town, 37,100.

Memlinc **Hans.** Flemish religious painter. He was born at Mainz about 1430. He had an original style, powerful yet simple. He painted beautiful pictures of the Virgin, and panoramic pictures of the life of Christ and St. John. His "Mystical Marriage of St. Catherine" and "Shrine of St. Ursula" are in Bruges, where he died Aug. 11, 1494.

Memnon In Greek mythology the son of Tithonus and Eos. He was very beautiful and was beloved of Zeus. He helped the Greeks in the Trojan War and was killed by Achilles.

Memory Power of retaining and reproducing mental impressions. It varies very much in different persons, and there are on record cases of persons who possessed extraordinary powers of memory. Several theories have been put forward about its origin and nature; it certainly owes a good deal to the association of ideas.

Memory consists of four processes: learning, retention, recall and recognition, and of it there are three kinds—mechanical, which depends on the grouping of ideas in a certain order by repeating the words that represent them; artificial, by the deliberate association of certain ideas with certain words or symbols; and logical, or the association of ideas.

Many schemes have been put forward for improving the memory and some have produced valuable results.

Memphis Ancient city of Egypt. Its site is on the Nile, 14 m. from Cairo. It became a splendid city and was for a time the country's capital. It contained magnificent buildings, and a colossal statue of Rameses II. The city, of which some ruins remain, was named after its founder, King Menes.

Memphis City and river port of Tennessee. It is on the Mississippi, and is the largest city in the state, being a great centre for the sale of cotton. Pop. 253,000.

Menagerie Collection of wild animals maintained for study or exhibition. Travelling collections sometimes accompany circus shows. Stationary collections have been formed by conquering monarchs since early times. The collection kept at the Tower of London was removed to the Zoological Gardens in 1831. It received contributions from Queen Victoria's private menagerie in 1901, and now has an open-air monagerie at Whipsnade (*q.v.*). *See* ZOOLOGICAL GARDENS.

Menai Bridge Urban district of Anglesey. It is on the Menai Strait, near the end of the suspension bridge and has a harbour and a little shipping. Pop. (1931) 1675.

Menai Strait Sea passage of Wales. It is between Carnarvonshire and Anglesey, and is 14 m. long and 1 or 2 m. wide. Two bridges cross the strait. The suspension bridge which carries a road was opened in 1826. The tubular bridge, the property of the L.M.S. Rly., was opened in 1850. It is 1840 ft. long.

Menander Athenian poet. He lived in the 4th century B.C., and won a reputation by his comedies, of which only fragments survive, including some found in Egypt in the 20th century.

Mendeleef Russian chemist. Born in 1834, he observed periodicity in the change of properties of elements when tabulated according to atomic weights. This "periodic law" led to the discovery of new elements. He died Feb. 2, 1907.

Mendelism Term applied to a theory of heredity. It is based upon the experiments made by the Abbé Gregor Mendel, an Austrian scientist (1822-84). Mendel experimented with the breeding and hybridisation of the culinary pea, and from the results of his investigations formulated certain laws of heredity. His work has been carried further during the last 30 years, and his generalisations are found to hold good for plants and animals in general. Mendel found that certain characters are inherited by hybrids, and these he termed dominant, others were not shown by hybrids but occur in their offspring, and these are known as recessive.

Mendelssohn-Bartholdy Jakob Ludwig Felix. German composer. Born Feb. 3, 1809, at Hamburg, he was the grandson of the philosopher, Moses Mendelssohn, and son of Abraham Mendelssohn, a banker. He was baptised and educated as a Christian, his father adding the surname Bartholdy to the family name. He was broadly and thoroughly educated at home. A precocious first appearance as composer-pianist in 1818 led to an uninterruptedly successful and happy career. In 1826 he composed the music for *A Midsummer Night's Dream*. In 1829 he visited London and Scotland. From 1833 onwards he held various conductorships, and in 1843 founded Leipzig Conservatoire. In 1846 he conducted his oratorio *Elijah* at Birmingham, and died on Nov. 4, 1847, having achieved a consummate artistry in every form of music except opera.

Mendip Hills Range of hills in Somerset. It extends from near Wells to the Bristol Channel. The highest point is Blackdown (1068 ft.), and the range includes the Cheddar Cliffs.

Mendoza Daniel. English prize fighter. He was born of Jewish parents in London in 1764, and soon made a name as a fighter. In 1787 he beat Sam Martin, and he was successful in encounters with other pugilists, but in 1795 he was beaten by John Jackson. He continued his career until 1820, when he was beaten by Tom Owen. He died Sept. 3, 1836.

Menelaus Greek hero. He was the brother of Agamemnon, and became the husband of Helen. In this way he secured the throne of Sparta. During his absence, Paris visited his court and carried off his wife. The Trojan War was the result. Menelaus went to the war, and when Troy was taken, recovered his wife.

Menelek II. Emperor of Abyssinia. Born at Choa, Aug. 18, 1844, he claimed to be a direct descendant of Solomon and the Queen of Sheba. Founder and organiser of the modern Abyssinian state, he made war against the Italians to preserve the independence of his kingdom, and defeated them at Adowa. In 1896 the absolute independence of Abyssinia was recognised. Towards the end of his reign he maintained very friendly relations with both England and France. He died at Addis-Ababa, Dec. 12, 1913.

Ménière's Disease Ear complaint marked by sudden attacks of giddiness and ringing of a high musical note, followed by deafness. Named from the French physician who described it, 1861, it is usually caused by escaped blood in the labyrinth, due to intense heat or certain diseases. Potassium iodide or bromide is often used remedially.

Menin Town of Belgium. It stands on the Lys, 10 m. from Ypres. It was taken by the Germans in Sept. 1914, and there was constant fighting around it during the next four years.

The Menin Gate is a memorial at Ypres to the British who fell in the war. It is at Ypres on the Menin Road, hence its name. Designed by Sir Reginald Blomfield, it is in the form of a Roman arch. It was unveiled on July 24, 1927.

Meningitis Inflammation of the meninges, the membranes investing the brain and spinal cord. It may arise from injuries to the brain, tumours, diseased adjacent parts or sunstroke, or be excited by the bacterial causes of other fevers present. When, as frequently with children, it is due to the tubercle bacillus, it is called **tubercular meningitis**, acute hydrocephalus or water on the brain. A malignant type, due to another specific micro-organism, is called **epidemic cerebro-spinal meningitis**, or cerebro-spinal fever (*q.v.*).

Mensuration Branch of mathematics. It deals with the measurement of lengths, areas and volumes, and the formulation of rules for calculation. In general the term mensuration is used only for the measurement of surfaces, solids and regular figures, that of irregular figures coming under other branches of mathematics.

Mental Defective Term used for one whose mind is not fully developed, but who is not insane. Of late years great attention has been paid to the training of mental defectives. For mentally defective children special schools have been opened as have hospitals and other institutions. Proposals for sterilising mental defectives have been put forward, but as yet very little has been done in this direction.

Menthol White crystalline substance obtained from oil of peppermint. It comes chiefly from *Mentha arvensis* or *piperascens* and *glabra*, growing in Japan and China. Menthol is met with either in the form of fine needle-like crystals or in moulded masses, and is used as a local anaesthetic.

Mentmore Village of Buckinghamshire. It is 4 m. from Leighton Buzzard. Here is the magnificent seat of the Earl of Rosebery, formerly the property of the Rothschild family.

Mentone Watering place of France. It is on the Riviera, 13 m. from Nice. Beautifully situated and with a delightful climate, it has many other attractions for visitors including promenades, gardens and a casino. Pop. 18,000.

Mentor Greek hero. Odysseus left him to look after his son Telemachus and his estates when he went to the Trojan War. Thus the word has become a synonym for a wise counsellor.

Mephistopheles In German legend a familiar spirit "not loving light," with whom Faust made a pact bartering away his soul. In Marlowe's tragedy he is the fallen angel of theology combined with the old German kobold. Goethe, influenced by Lessing, changed him into an evil principle with which man's spirit eternally conflicts. *See* FAUST.

Mercantile Marine Term used for the shipping engaged in commercial purposes. In Great Britain it is controlled by the Board of Trade, which administers the laws that deal with it. The Board has a mercantile marine consultative branch at Great George Street, London, S.W. 1. To unite the service there is a Master of the Merchant Navy, an office created in 1928 and held by the Prince of Wales. On Tower Hill, London, there is a memorial to the 12,649 officers and men of the merchant service and fishing fleets who lost their lives in the Great War. In 1932 the mercantile marine of Great Britain and Ireland had a tonnage of 19,671,675 gross tons. *See* SHIPPING.

THE MERCHANT NAVY. As a career the training of a Navigating Officer normally takes place either partly in a recognised Training Ship or Nautical Training College, or by apprenticeship wholly at sea.

In the former case training may begin at 13 years or earlier, and continues until 16 or 17. Evidence of a satisfactory standard of education is required on entry, and after a minimum period of two years' training a certificate is granted to the successful candidate carrying exemption from one of the four years required for the Second Mate's Certificate. Application should be made as below for admission as an apprentice. The fees payable vary, but are of the order of £100 to £170 per annum.

In the latter case the boy should continue his general education until 16 or 17, and apply to be admitted as an apprentice to the shipping companies selected or to the Shipping Federation, Ltd., 52 Leadenhall Street, E.C. 3, through which body a number of the companies customarily recruit. No written examination is required—inquiries take the form of personal interview. It should be remembered that some physical defects, especially defective eyesight, will definitely disqualify a boy when he comes to take the Second Mate's Certificate.

The Board of Trade issues a model form of indenture for apprenticeship. Full particulars of the examinations necessary for Board of Trade Certificates during and after the period of apprenticeship may be obtained from the B.O.T. Regulations (Examination of Masters and Mates).

The prospects may be studied from the rates of pay which will be supplied in detail by the General Secretary of the National Maritime Board, 3/4 Clement's Inn, London, W.C. 2, from The Shipping Federation, or from firms of shipowners. Most officers continue at sea for the whole of their professional life, but there are a few shore appointments, with salaries ranging up to £1500 per annum.

Although a seafaring life may not offer a fortune, it does offer opportunity for saving, a good life and prospects of seeing something of the world, while modern conditions for apprentices are very different from those of the old exacting days of sailing ships. There is little home life, of course, and at present the supply of Officer and Deck ratings is rather more than equal to the demand—with resulting unemployment.

Mercator **Gerardus.** Flemish geographer. Gerhard Kremer, later called Mercator, was born March 5, 1512, and educated at Louvain. He was employed by the Emperor Charles V. to draw maps for military purposes, and later made a survey of Flanders. In 1552 he settled at Duisburg and the rest of his life was engaged in drawing maps. In 1568 he first used the system of projection, parallels and meridians at right angles, since known by his name. Mercator died Dec. 2, 1594. His maps were published in an atlas, a name for which he was responsible.

Mercer Dealer in small wares, silks, velvets and other rich fabrics. Mediaeval mercers tended to abandon the homelier cloths to the drapers. A London **Mercers' Gild** existed, 1172; the **Mercers**

Company, first chartered, 1393, is London's premier livery company. The hall in Cheapside and the adjacent chapel replace a hospital commemorating Thomas à Becket's birthplace; its school is now the **Mercers' School**, Holborn. The company also governs S. Paul's School, Hammersmith. Corporate income, £53,000; trust income, £58,000; membership, 221.

Mercerisation Name given to a chemical process by which a silky lustre is given to cotton fabrics. The process was invented by John Mercer (1791-1866), whose first patent was taken out in 1850. The yarn is treated with caustic soda solution of a particular strength.

Merchant Taylors London livery company. It is one of the 12 great companies and dates from about 1300. It has a large income and a magnificent hall in Threadneedle Street, London, E.C. The company maintains some almshouses at Lee, London, S.E.

The **Merchant Taylors' School** was founded by the company in London in 1561. It was in Suffolk Lane until 1873 when it was moved to Charterhouse Square. In 1931 it was decided to build a new school at Berkhampsted, and an extensive area of land was bought for the purpose. The school, which has a close connection with S. John's College, Oxford, has accommodation for about 600 boys, all day pupils.

There is also a **Merchant Taylors' School** at Great Crosby, Liverpool. This was founded in 1618, and until 1910 was managed by the Merchant Taylors' Co. The buildings were enlarged in 1913.

Mercia Anglo-Saxon kingdom of England. It came into existence about 600, and was in the centre of the country between the Thames and the Trent, excluding E. Anglia. At one time it included London. It became independent when Penda was its king in the 7th century. Under Offa, who died in 795, it was the most powerful of the English kingdoms, but early in the 9th century was conquered by Wessex. Its chief towns were Lichfield, Repton and Tamworth.

Mercier **Désiré Joseph.** Belgian prelate. Born Nov. 21, 1851, he was educated in Malines and ordained in 1874, afterwards studying at Louvain and Paris. Professor of Philosophy in the University of Louvain, 1882-1906, he was then made Archbishop of Malines and Primate of Belgium. In 1907 he was created a cardinal. When the Germans entered Belgium in Aug., 1914, Mercier boldly upheld the rights of his country. He took a leading part in the conferences with representatives of the Church of England held in Malines between 1920 and 1923, and died in Brussels, Jan. 23, 1926. A noted philosopher, Mercier edited until 1906 *La Revue Néoscholastique*, and in his writings sought to adapt the philosophy of S. Thomas Aquinas to the conditions of the modern world. He published his *War Memories* in 1920.

Mercury Smallest of the planets and the nearest to the sun, from which its mean distance is 36 million miles. Its year is a period of 88 solar days, in which time it also rotates upon its axis thus bringing the same side always towards the sun. The orbit of Mercury is eccentric and subject to varying perturbations technically known as elongations. The diameter of the planet is 2702 miles and its density about three-fifths that of the earth.

Mercury Metallic element. Its atomic weight is 200.61, symbol Hg, and melting point −39.5° C. Commonly known as quicksilver, it occurs in a fluid state and is found as small globules scattered through the gangue of a vein or as an amalgam with silver. It is extracted chiefly from the native sulphide, cinnabar, which occurs in Spain, California and Idria in Yugoslavia. Mercury is a heavy silver-white metal which readily combines with gold, silver and many other metals to form amalgams. It is used in the extraction of gold, the construction of thermometers and barometers, for silvering mirrors and in medicine.

Mercury Roman god of trade, corresponding to the Greek god Hermes. He was regarded by the Roman traders as their patron. He was also the herald of Jupiter and for this reason the word is used for a journal or newspaper, *e.g.*, the *Leeds Mercury*. *See* HERMES.

Mercy **Sisters of.** Order of women in the Roman Catholic Church. It was founded in Dublin in 1831, and has a number of houses in England, the U.S.A. and elsewhere. Its members take the usual vows and live in convents. They look after women and girls in trouble or poverty, and maintain homes and orphanages.

Mere Geographical term for a large pool or lake. The word occurs as a suffix in such names as Windermere and Buttermere. In some cases meres are formed by subsidence of the strata due to dissolution of the rocks, as in Cheshire, where the removal of rock salt has caused the formation of broad, shallow meres.

Meredith **George.** British novelist and poet. Of mixed Irish and Welsh origin he was born in Portsmouth, Feb. 12, 1828. Educated in Germany, he was articled to a solicitor in London in 1844, but abandoned the law for journalism. He was for 30 years literary reader to Chapman and Hall. He died on May 18, 1909.

Although never very popular his work shows great beauty of word and phrase, and his descriptions of scenery and emotion are varied and vivid. His poetry, too, reveals much beauty, but is intricate and lacks melody. Among his novels are *The Ordeal of Richard Feverel* (his most popular work), 1859; *Adventures of Harry Richmond*, 1871; *Beauchamp's Career*, 1875; *The Egoist*, 1879; *The Tragic Comedians*, 1881, based on the tragedy of Lassalle; and *Diana of the Crossways*, 1885, recalling the story of the Hon. Mrs. Norton. His verse includes *Modern Love and Poems of the English Roadside*, 1862; and *Poems and Lyrics of The Joy of Earth*, 1883.

Meridian In astronomy the great circle which passes through the poles of the celestial sphere, or the point at which sun or star attains its highest altitude. On the earth's surface a meridian is a great circle passing N. and S. through the poles. Degrees of longitude are numbered from a meridian passing through Greenwich.

Mérimée **Prosper.** French novelist. Born in Paris, Sept. 28, 1803, he entered the civil service and in 1853 became a senator. He belonged to the Realist School, but wrote in a style as exquisitely polished as it was precise. He is best known to English readers perhaps for his *Colomba*, so

familiar to school-children learning French, and his delightful *Carmen*. He also wrote a *Chronique du Règne de Charles IX.* and some historical and archaeological works. His *Lettres d'une Inconnue* and *Lettres à une autre Inconnue* give an amusing picture of society during the Second Empire in France. He died at Cannes, Sept. 23, 1870.

Merino Spanish name for a breed of sheep producing fine white wool. Imported by Louis XVI. to Rambouillet, 1783, that and other improved breeds have reached S. Africa, Australia, New Zealand, Argentina and the U.S.A. The word also denotes dress-goods of finest wool, but, in hosiery, cotton and wool fibre-mixtures, as distinct from all-wool yarns.

Merionethshire County of Wales. Between Caernarvon and Denbigh on the N. and Montgomery on the S. and E., it covers 660 sq. m. The beautiful scenery includes Cader Idris, the Berwyn Hills and Lake Vyrnwy. The valleys of the upper Severn and the Dovey are specially picturesque. Dolgelly is the county town; on the coast are Barmouth, Towyn and Harlech. The soil is poor, much of it fit only for sheep. There are slate quarries. Pop. (1931) 43,198.

Merit Order of. British order. Founded in 1902, its membership is limited to 24, but it gives neither title nor precedence. The letters O.M. signify membership. An Indian order of merit was founded in 1837 for native officers and soldiers, and there are similar orders in several European countries.

Merlin Traditional Welsh bard and soothsayer. His shadowy story, turned into a romantic myth by the 12th-century Geoffrey of Monmouth, represents him as an enchanter of miraculous birth associated with the cycle of Arthurian romance.

Merlin (*Falco aesalon*). Small bird of prey inhabiting Europe and Asia. The smallest of British falcons, 10-12 in. long, the male plumage is bluish-grey above, blush-red below, the tail being black-banded; the female is brown. Chaucer mentions their use for flying at larks. The wool-lined ground nest shelters 4-6 brick-red eggs.

Mermaid Tavern Inn that formerly stood in Cheapside, London. Here Shakespeare, Ben Jonson and others of their circle are supposed to have met. It stood near Friday Street, and was destroyed in the fire of 1666.

Meroë City of Ethiopia and a district of the Sudan. The district is almost surrounded by the Blue Nile and the Atbara. The city stood near Shenli on the E. bank of the Nile. Just before the opening of the Christian era it was the capital of Ethiopia. Excavations conducted by John Garstang have unearthed remains of temples, pyramids, etc., which show evidences of Egyptian and Greek culture.

Merovingians Line of Frankish kings. They began to rule about 500 in the person of Clovis and remained on the throne until 751. In that year Pepin deposed Childeric III., and the Merovingian kings were succeeded by the Carolingians. The name is from Merovech, one of their early princes.

Merriman **Sir Frank Boyd.** English lawyer and politician. Born in 1880, and educated at Winchester, he was called to the Bar in 1904, became a K.C. and served in the European War. Conservative M.P. for Rusholme since 1924, he was Recorder of Wigan, 1920-28, and Solicitor-General, 1928-29. He was knighted in 1928 and in 1931 became Solicitor-General in the National Government. In 1933 he was appointed President of the Probate, Divorce and Admiralty Division in succession to Lord Merrivale.

Merriman **Henry Seton.** Name taken by the English novelist, Hugh Stowell Scott. He was born at Newcastle-on-Tyne, May 9, 1862, and educated at Loretto. He entered business life in London but soon gave his whole time to literature, and died Nov. 19, 1903. Among his books are *With Edged Tools, The Sowers, Roden's Corner, Barlasch of the Guard, The Isle of Unrest* and *In Kedar's Tents.*

Mersea Island of Essex, 8 m. from Colchester. A causeway connects it with the mainland. It is 5 m. long and about 2 wide. The chief centres are **West Mersea**, an urban district, and **East Mersea.**

Mersey River of England. It rises in Derbyshire, and flows between Lancashire and Cheshire to the Irish Sea. Its total length is 70 m. The estuary, 16 m. long, is a great shipping area. On it, in addition to Liverpool and Birkenhead, are Runcorn, Wallasey, Bootle, Port Sunlight and several watering places, among them New Brighton and Seaforth. The Manchester Ship Canal joins the estuary at Eastham and underneath the river are tunnels serving Liverpool and Birkenhead. Continual dredging keeps the channel clear for the great liners.

The docks at Liverpool and Birkenhead are controlled by the Mersey **Docks and Harbour Board.**

The Mersey Tunnel for vehicular traffic between Liverpool and Birkenhead was opened by King George V. in July, 1934.

Mersey **Viscount.** English lawyer. Born in Liverpool, Aug. 3, 1840, John Charles Bigham was educated there and abroad. He became a barrister and soon won a reputation by his skill in conducting commercial cases. From 1895-97 he represented a Liverpool division in Parliament. In 1897 he was made a judge, and in 1909 he became President of the probate, divorce and admiralty division. In 1910 he retired, but he was chosen to inquire into the wrecks of the *Titanic* and the *Lusitania*, and served the state in other ways. In 1910 he was made a baron and in 1916 a viscount. He died Sept. 3, 1920.

Merthyr-Tydfil Borough and market town of Glamorganshire. It stands on the Taff, 24 miles from Cardiff and 184 from London, on the L.M.S. and G.W. Rlys. The borough includes Dowlais, Plymouth and Cyfarthfa. The chief industries are coal mines and iron and steel works. Pop. (1931) 71,099.

Merton District of London. It is near Wimbledon, on the S. Rly., and is now a residential area. In 1236 a great council was held here.

Merton College, Oxford, founded by Walter de Merton, was first at Malden in Surrey, but was removed to Oxford in 1274.

Meshed Town of Persia. Capital of a province, it is about 200 miles from Herat, is surrounded by walls and has a considerable trade. The magnificent mausoleum of the Iman Riza, son of Ali, is visited yearly by thousands of Mahommedan pilgrims. In 1918-20 Meshed was occupied by a British force. Pop. 85,000.

Mesmer Friedrich Anton. German physician. Born in Baden, May 23, 1733, he studied medicine in Vienna. In 1766 he published a book called *Influence of the Planets on the Human Body*, and later he met with much success when he treated his patients with what is now called hypnotism. He died at Meersburg, March 5, 1815.

Mesmerism Method of sending a person into a trance or sleep by the use of suggestion and movements of the hands. It was called after Friedrich Mesmer, who used these methods and other aids, such as a darkened room hung with mirrors and filled with scents. *See* HYPNOTISM.

Mesopotamia Region of Asia, corresponding roughly with the basin drained by the Tigris and the Euphrates. It is bounded by Persia, Turkey, Syria and the Nejd, having the mountains of Armenia and Asia Minor to the north and the Persian Gulf to the south. The northern parts are undulating and crops can be grown there, but south of Bagdad is an alluvial plain, 35,000 sq. m. in area, in which cultivation is only possible by irrigation, which has been practised here since the earliest times.

Historical records, revealed by the excavation of ancient cities, go back to the fourth millennium B.C. and the oldest civilisation was that of the Sumerians. Successive Semitic invasions gradually overwhelmed the Sumerian dynasties, the empire of Akkad, founded by Sargon at Kish, opening the era of consecutive history which witnessed the rise of Babylon, the great succession of Babylonian dynasties, the conquests of the Assyrians and the passing of Babylonia under the sway of Persia.

Conquered by Alexander the Great, Mesopotamia never became extensively Hellenised, but passed by degrees under the rule of the Parthians and for a short time under Trajan was part of the Roman Empire. Reconquered by Persia, it fell to the Arabs shortly after the rise of Islam, and became the centre of Moslem culture under the Caliphs. Conquered again by the Mongols under Hulagu and by the Tartars under Timus, the country, now laid desolate, was the scene of a struggle between Turks and Persians which ended in victory for the former, and Mesopotamia remained in Turkish possession till the growth of Arab nationalism led to its liberation during the Great War and its reconstitution into the kingdom of Iraq after the war.

Mesopotamia is extremely rich in archaeological remains and ancient monuments. Excavations at Ur, Kish, Babylon, Erech, Nippur, Lagash, Nineveh, Asshur and other ancient sites have yielded important results, but much work still remains to be done. Of existing monuments, the arch at Ctesiphon, the ruins of Babylon, and the ziggurat of Ur are worthy of mention. *See* SUMER, AKKAD, BABYLON, IRAQ.

Messalina Valeria. Wife of the Roman Emperor Claudius. She was noted for her avarice, cruelty and lust. While the emperor was away she publicly married one of her favourites, and eventually Claudius had her executed in A.D. 48.

Messiah Title "the Anointed," associated in Hebrew prophecy with the expected advent of one who would restore the kingdom of David. The Messianic hope, still surviving in Jewish theology, profoundly influenced the spread of Christianity.

Messina City and seaport of Italy. It stands on the strait of Messina, 70 m. from Syracuse. It has a fine harbour, but most of the buildings were destroyed by an earthquake in Dec. 1908. Since rebuilt, it contains some imposing structures, both ecclesiastical and secular, and the famous university has been partly reopened. The chief industry is shipping. Silk, muslin, and linen are manufactured. Pop. (1931) 182,508.

The **strait of Messina** between Italy and Sicily is about 20 miles long.

Messines Village of Belgium. It is in Flanders, 6 miles from Ypres and gives its name to a ridge of hills conspicuous during the Great War. On Nov. 1, 1914, the Germans entered Messines and they held it and the ridge until 1917. On June 7th of that year the British made a determined attempt to capture the ridge. The German lines were captured according to plan and their counter attack failed. The operations were directed by Lord Plumer and 7200 German prisoners were taken. The ridge and the other gains were lost in April 12, 1918, during the German offensive, but they again came into British hands during the advance in Sept. 1918.

Messuage Legal term for a dwelling-house with the outbuildings and garden that go with it.

Mestrovic Ivan. Croatian sculptor. Born in Dalmatia in 1883, he started life as an apprentice to a master mason at Spalato. He studied art at Vienna and soon attracted attention by his sculptures, first exhibited in 1902. In 1906 and 1915-17 works by him were on view in London and there is a torso by him in the Victoria and Albert Museum, South Kensington. Other works include portraits of Pius XI. and President Hoover.

Metabolism Term in biology. It is applied to the constant physical and chemical changes taking place in the protoplasm of all living tissues. One series of processes are concerned in the building up of tissues from simpler substances and are termed anabolic, while the reverse or katabolic process breaks down the protoplasm into simpler bodies.

Metal Larger of the two groups of chemical elements. A few of the metals are widely distributed throughout the earth's crust, others are of more restricted occurrence, while many are only present in small quantities in rare minerals. Iron and aluminium in the form of oxides and silicates, with calcium and magnesium as carbonates, form a considerable portion of rocks, while sodium and potassium compounds are abundant in sea-water and certain deposits. The characteristic physical properties of metals are their lustre and opacity, density, malleability, ductility, fusibility and conductivity, although a wide range of variation and degree occurs. Magnetic properties are present in iron, nickel and cobalt.

Metallography Branch of metallurgy. It deals with the microscopic examination of metals and alloys and the effect upon them of microchemical reactions in elucidating their physical structure. It was founded by Dr. Sorby of Sheffield in 1864 and has become of great importance in the investigation of causes of fracture and the structure of alloys, both ferrous and nonferrous. A highly-polished section of metal is etched by certain chemical

reagents and the characters of the etchings are studied by reflected light under a special type of microscope.

Metallurgy Science dealing with the extraction of metals from their ores and their adaption to manufacture. The methods employed are based upon a knowledge of chemistry, electricity, mineralogy, and the physical sciences. Metallurgy is one of the oldest of the arts and has now reached a very high stage of development. The processes by which metals are extracted from their ores are either dry, including smelting, volatilisation or amalgamation; wet, when chemical reagents are used for solution of the ores; or electrolytic.

Metaphysics Science of being. The word is the title given in the 1st century B.C. to certain books of Aristotle, dealing with philosophy, arranged for study "after physics." The metaphysician's problems concern matter and mind, appearance and reality, and schools of thought tend to fall into such categories as materialism, idealism and realism or to deal with their interactions in the form of monism, dualism or pluralism. There is a chair of metaphysical philosophy at Oxford.

Metazoa Term denoting, in the animal kingdom, all many-celled animals. Higher than the one-celled animalcules and colonies of independent cells forming the Protozoa, they possess body-cavities and nervous systems, being composed of cells specialised to perform the functions necessary for life and reproduction. They comprise the many-celled invertebrate sub-kingdoms, from the sponges upward through the jelly-fish, sea-urchins, worms and molluscs to the arthropods, culminating in the vertebrate sub-kingdom. Development occurs by means of male and female germ-cells.

Metempsychosis Belief of ancient origin that the human soul passes through a series of incarnations in a physical body. In its lowest form metempsychosis may imply the passing of a soul into an animal's body, but this view has not been acceptable to more advanced thinkers. In its higher aspect of reincarnation, it was taught by Plato, Pythagoras and other Greek philosophers.

Meteor Small, solid body moving in a regular orbit in space. Meteors usually occur in swarms which, on entering the earth's atmosphere at a great velocity, become incandescent and visible as so-called shooting stars. In November the Leonid Meteors are seen especially at intervals of 33 or 34 years. The Perseids are visible in August and other important streams occur in other months of the year.

Meteorite Metallic or non-metallic body occasionally found on the earth's surface and having its origin in interplanetary space. Meteorites vary in size from small grains to large masses found in Greenland and South Africa, weighing from 50 to 70 tons or more. The metallic kind, or siderites, are composed chiefly of iron and nickel, with some graphite carbon, while the stony kind, or aerolites, are analogous to the ultrabasic rocks of the earth's crust.

Meteorology Science dealing with the study of atmospheric conditions in relation to the weather and climate. It is based upon regular and systematic observations carried out at a number of stations. Uniformity in recording these observations necessitates a meteorological organisation with a central office where deductions are made and charts drawn up, enabling weather forecasts to be made. These records are concerned with temperature, direction and force of winds, also general weather conditions, and are based upon observation made at the ground level and partly by observation of the condition of the upper atmosphere by means of kites or balloons carrying recording instruments.

Meteorology has become of increased importance owing to the universal use of aviation, and the aeroplane is now a means of gaining direct knowledge of atmospheric temperature. In Great Britain the Meteorological Office is the controlling centre and was founded in 1854 under the supervision of the Board of Trade, but is now under the Air Ministry.

Methane Simplest of the paraffin series of hydrocarbons. It is known also as marsh gas or fire-damp. Its chemical formula is CH_4, and it is a colourless, odourless gas, which burns with a faintly luminous flame. Methane is a constituent of coal gas and is given off from decaying vegetable matter.

Methodism Term denoting religious communions arising from the 18th-century evangelical revival. It was applied derisively to certain Oxford students, including John and Charles Wesley, who formed a "society" for Bible study and other activities, 1729. John Wesley began evangelistic work in London, 1739, instituted lay-preaching, 1741, and in 1744 held a conference of his followers, who became officially "the people called Methodists." Wesley and his helpers took up open-air preaching, and the movement spread apace, especially among the humbler classes.

Immigrant local preachers in N. America, from 1760 onwards, developed a movement resulting in a conference in Philadelphia, 1773. Coke and Asbury were consecrated for this work, 1784; Coke's adoption of the title "bishop" started the American Methodist Episcopal Church.

After Wesley's death, 1791, various offshoots arose which gradually coalesced. An Enabling Act, 1930, empowered the Wesleyan, Primitive and United Methodist Churches to combine as the Methodist Church, 1933. World statistics aggregate about 10,000,000 members, ministers and local preachers, apart from scholars. *See* BIBLE CHRISTIANS.

Methuen **Baron.** English title borne by the family of Methuen. In 1709 **Sir Paul Methuen** arranged a treaty by which Portugal joined Great Britain in the war against France and received in return a market in England for her wine. In 1838 his descendant, **Paul Methuen, M.P.**, a landowner in Wiltshire, was made a baron.

Paul Sanford Methuen, who became the 3rd baron in 1891, was born Sept. 1, 1845, was educated at Eton and became a lieutenant in the Scots Guards in 1864. He served in Ashanti in 1874, in Egypt in 1882, and in 1884-85 raised and led Methuen's Horse in Bechuanaland. Meantime he held appointments on the staff. He was appointed to command a division when the war against the Boers broke out in Oct. 1899, and he was on active service until taken prisoner in March, 1902. From 1903-07 he held a command in England; from 1907-09 he was Commander-in-Chief in S. Africa; from 1909-

15, Governor of Natal, and from 1915-19, Governor of Malta. His honours include the rank of field marshal (1911). In 1920 Lord Methuen was made Governor of the Tower of London. He died Oct. 30, 1932.

Methuselah Character in the Old Testament. A son of Enoch and the grandfather of Noah (Gen. v.), he is said to have lived 969 years.

Methyl Name given to the organic radicle or group of atoms having the chemical formula CH_3. It does not exist alone, but has many derivatives.

Methyl Alcohol Simplest of the alcohol series of organic compounds having the formula $CH_3.OH$. In its commercial form it is known as wood spirit or naphtha, being obtained by the dry distillation of wood. Like ethyl alcohol, or spirits of wine, it burns with a blue flame and is used as a solvent in varnish-making and in preparing methylated spirit.

Methylated Spirit Form of industrial spirit which has been denatured or rendered unfit for drinking. It consists of a mixture of rectified spirit and wood naphtha or methyl alcohol with addition of pyridine or petroleum. Industrial methylated spirit contains 5 per cent. wood naphtha; pyridinised spirit has in addition 0.5 per cent. pyridine, and mineralised spirit for use in spirit lamps contains 9.5 per cent. wood naphtha, 0.5 per cent. pyridine and ⅛ per cent. petroleum. *See* ALCOHOL.

Metre Unit of measurement in the metric system. It was chosen as the supposed ten-millionth part of the quadrant of the earth's meridian, but is now taken as the length of a standard platinum bar in Paris.

Metric System System of weights and measures having a decimal scale of numeration and based upon the metre as the unit. The gram or unit of weight and the litre the unit of capacity are both derived from the metre, and in each set of weights and measures numeration is by powers of ten of the unit.

The following prefixes are used: deca=10, hecto=100, kilo=1000, myria=10,000 and deci=$\frac{1}{10}$, centi=$\frac{1}{100}$, milli=$\frac{1}{1000}$.

The metric system is adopted by most nations owing to its simplicity and ease in calculation; the leading exceptions being Great Britain and the United States.

Metronome Clockwork device for determining the pace of music. In inverted suspension before a wooden box (which is marked with a graduated speed-chart) is a rod kept upright by a bullet. A sliding brass weight causes the rod to make between 40 and 208 oscillations per minute. The modern metronome was the invention of the Dutch mechanician Winkel in 1912, but Maelzel who added the speed-chart, is credited as the inventor.

Metropolis Word used for the chief city of a country. In England the metropolis is London, where some of the organisations and the boroughs are known as metropolitan. The Metropolitan Water Board, set up in 1902, supplies water to some 8,000,000 people in the London area. It consists of 66 members elected by the county councils and other authorities concerned. Its offices are in Rosebery Avenue, E.C.

The police courts in London are called metropolitan, and there are metropolitan police and metropolitan district railways. The Metropolitan Asylums Board existed from 1867 to 1931, when its work was taken over by the London County Council. Its duties were to provide hospitals for infectious diseases, asylums for imbeciles, schools for defective children and so on.

Metropolitan Archbishop or bishop who holds a presiding position. The archbishops of Canterbury and York are metropolitans. The term is also used in the Greek and Roman Catholic churches.

Metternich **Clemens Lothar Wenzel, Prince.** Austrian statesman. Born at Coblenz, May 15, 1773, he became Austria's Foreign Minister in 1809, and for a period after the end of the Napoleonic wars was "The Master of Europe." A man of iron will but personally kindly, he was without any deep convictions or sympathies. He concluded the Treaty of Fontainebleau, and negotiated the marriage of Napoleon and Marie Louise. In 1814 he took a prominent part in the Congress of Vienna, joining with France and Russia against Napoleon. From 1815 he became very powerful and by his founding of the Holy Alliance and consequent suppression of all popular movements contributed largely to the period of revolution in Europe which came to a head in 1848. He lived in retirement from 1849 till his death in Vienna, June 11, 1859.

Metz Town of France, capital of the Moselle department. A Roman fortified town, it was supplied with water by a huge aqueduct, and connected by road with other important centres. It belonged later to the Huns, the Franks and, after a free period under its own powerful bishops, to the French, being strongly fortified by Vauban in 1674. Taken by the Germans in 1870 and made the capital of German Lorraine, it was restored to France in 1919.

The Moselle runs through it, and there are fourteen bridges and ten city gates. The cathedral, built in the 13th and 16th centuries, is mostly Gothic in style. Metz is a great centre of commerce. The chief industries are in shoes, metal-work and the preservation of fruits and vegetables. There is a tobacco factory, also some trade in wine and grain. Pop. (1931) 78,767.

Meuse River of Europe called by the Dutch the Maas. It rises in E. France, not far from Langres and flows past Verdun and Sedan to Givet, where it enters Belgium. It flows then past Dinant, Namur and Liége into the Netherlands. It falls into the Waal, a branch of the Rhine, near Gorkum. The river is 575 m. long, 120 m. being in Belgium and 150 in the Netherlands. The Bar, Sambre and Ourthe are among its tributaries. It is navigable for most of its course, and is linked with other waterways by canals. The Meuse is important from a strategic and a commercial point of view. There was much fighting along its course during the Great War and also in earlier times.

A department of France is called the **Meuse**. This is a hilly district in the E. Bar-le-Duc is the capital; other places are Verdun and Clermont.

Meux **Sir Hedworth.** English sailor. Born July 5, 1856, he was a younger son of the 2nd Earl of Durham, and as Hedworth Lambton entered the navy in 1870.

In 1899 he became known for his assistance when commanding the *Powerful* to the defenders of Ladysmith. From 1904-06 he commanded a cruiser squadron; from 1908 he was in charge of the fleet in Chinese waters. From 1912 to 1916, when he retired from the service, he was Commander-in-Chief at Portsmouth. In 1906 he was knighted, and in 1911 he succeeded to the property of Sir Henry Meux and took that name. From 1916-18 he was M.P. for Portsmouth. He died Sept. 20, 1929.

Mevagissey Village and watering place of Cornwall. It is 12 m. from Truro and has a good harbour. It is a fishing station.

Mexborough Market town and urban district of Yorkshire (W.R.). It stands on the river Don, 11 m. from Sheffield, on the L.M.S. and L.N.E. Rlys. The industries are connected with coal and iron. Pop. (1931) 15,856.

Mexico Country extending from the United States of America to Guatemala in Central America. It was annexed by Spain in 1521, remained a Spanish possession for three centuries and then became a republic passing through violent times, intermixed with periods of tranquillity, notably under President Diaz (1876-1880 and 1884-1911).

Mexico is a Federated Republic of 28 states, 1 federal district and 2 territories; area, 767,198 sq. m. It has a high central plateau bounded by coastal mountains, beyond which the land slopes to the coasts. The plateau has a cool dry atmosphere, with large desert areas, and crops need irrigation. The climate in the S. is tropical. The chief industry is mining. The oil products are also famous.

Vast areas are suitable for agriculture, but only a fraction has yet been exploited. The crops include sugarcane, sisal, maize, coffee, cotton, tobacco, cocoa, bananas, olives, rice and chicle, the basis of chewing gum. The valuable forests are almost untouched. Great damage was done by a cyclone in 1933. Population (1930) 16,101,030.

Mexico City Capital of Mexico, on the central plateau, about 7400 ft. above sea level. Like the old Aztec city, the principal streets lead from a central plaza, with its Parliament House and cathedral. Formerly liable to serious damage by flooding, the city is now adequately drained. It is an industrial centre with many factories and is connected with the United States by rail. It has two broadcasting stations (49.8 and 48.65 M.). Pop. (1930) 968,443.

Meyerbeer Giacomo. French composer. One of the outstanding figures in French Grand and Comic Opera, he was born in Berlin, of Jewish extraction, in 1791. A prodigy pianist at six, he afterwards studied composition in Venice, and settled in Paris, 1826, where he produced his best work, *Robert le Diable* (1831), *Les Huguenots* (1836) and *Le Prophète* (1843). He died May 2, 1864.

Meynell Name of an English family that gives its name to a famous pack of foxhounds. It was founded by Hugo C. Meynell-Ingram about 1846, and hunts a district on the borders of Staffordshire and Derbyshire. The kennels are at Sudbury.

Meynell Alice. English poetess. She was born in 1850, a daughter of T. J. Thompson and a sister of Lady Butler. In 1877 she married Wilfred Meynell, the author and journalist, and won fame by her poems *The Rhythm of Life* and *The Colour of Life*. She compiled one of the best of English verse anthologies *The Flower of the Mind*, and died Nov. 27, 1922.

Mézières Town of France. It stands on the Meuse, 47 m. from Rheims, and is a railway junction. With Charleville on the other side of the river, it forms a municipality. The Germans held it from Aug. 1914, until Aug. 1918, much damage being done when they were driven out. The town, which has been adopted by Manchester and rebuilt, is famous for its defence by the Chevalier Bayard in 1521.

Mezzotint Engraving process in which the design is worked from a dark ground to the high lights. This is done by roughening the surface of the copper or steel plate with a "rocker" tool, giving when inked a deep black surface. The high lights are obtained by scraping and burnishing.

Miami City and pleasure resort of Florida. It is in the south of the state at the mouth of the River Miami and on Biscayne Bay, an arm of the Atlantic Ocean. Owing to its excellent climate, it has become a very popular pleasure resort. In 1926 much damage was done by a hurricane. Pop. 110,600.

Miami is the name of an Indian tribe and of a river in Ohio.

Mica Group of mineral silicates of aluminium and potassium, sodium, lithium, or iron and magnesium, characterised by a pearly lustre and cleavage into thin elastic sheets. The colour varies from white, yellow, green to brown and black. The colourless varieties are used for lamp chimneys and stove doors, also as an electrical insulating material.

Micah One of the Old Testament minor prophets. A contemporary of Isaiah, he prophesied under Jotham, Ahaz and Hezekiah. **The Book of Micah** contains some Messianic promises.

Michael Name of a "great prince" of the angelic host mentioned in Daniel x. 12. In Jewish theosophy he was a champion of Israel. He is commemorated as a saint on Sept. 29.

Michaelmas Feast of S. Michael and All Angels on Sept. 29, and the day fixed as Quarter Day. Up to 1873 Michaelmas was the first term in law (Nov. 2 to 25).

Michelangelo (Michelangelo Buonarroti). (1475-1564). Italian painter, sculptor, architect and poet. The greatest of the Renaissance artists of Italy. He worked under the patronage of Lorenzo de Medici and Popes Alexander VI., and Julius II. His most famous works include the colossal statue of David, "The Giant," carved in a block of marble, his sculptured figures "Moses" and "The Slaves," his frescoes on the ceiling of the Sistine chapel at Rome, and "the Last Judgment." His verse is ranked among the finest examples of Italian poetry.

Michelsen Albert Abraham. American scientist. Born at Strelno, Germany, Dec. 19, 1852, he was educated at the U.S. Naval Academy, 1873.

Leaving the navy he studied in Germany and France, 1880-82, and became professor of physics at the Case School, Cleveland, 1883. While here he invented his Interferometer. In 1889 he became professor of physics at Clark University, and in 1892 at the University of Chicago. In 1926 he was appointed distinguished service professor at Chicago. He received the Nobel Prize for Physics in 1907. With E. W. Morley he conducted an experiment to determine the effect of the earth's motion on the velocity of light (1887). In 1925 he repeated this test, both results being negative—fundamental experiments upon which was based Einstein's Theory of Relativity. *See* ETHER; LIGHT; RELATIVITY.

Michigan State of the United States. In the north of the country, it consists of a peninsula between Lakes Michigan and Huron. Nearly 40,000 sq. m. of water belong to it and it has a coastline of 1620 m. on Lake Michigan. The land area is 57,480 sq. m. Lansing is the capital, but Detroit is much the largest city. Other populous centres are Grand Rapids and Flint. The state is governed by a legislature of two houses and sends two senators and 17 representatives to Congress. It is chiefly an agricultural area, but a great deal of copper is mined. Pop. (1930) 4,840,000.

Michigan Lake of the United States. It covers 22,450 sq. m. and is the only one of the Great Lakes wholly within the United States. Chicago and Milwaukee are lakeside cities. There is little navigation since the lake is subject to violent storms and lacks good harbours, but its fisheries are valuable.

Micrograph Instrument of the nature of a pantograph used for producing very small writing or drawings; also a minute drawing.

Micrometer Instrument used for accurately measuring very small spaces. It takes many forms, the commonest being the screw micrometer in which a screw with a very small pitched thread is provided with a large graduated head and suitably mounted. The movement of the screw during a complete rotation is equal to the pitch of the thread, smaller measurements being determined from the graduated head. Special forms of micrometers are used in telescopes and microscopes.

Microphone Electrical instrument for intensifying sound. The three chief types are the carbon or contact microphone used in telephony, the electrodynamic or magneto phone, and the electrostatic or condenser microphone. The action of the carbon type depends upon the varying electrical resistance between carbon particles, contained between two carbon discs upon which the sound waves impinge.

Microscope Optical instrument used for examining minute objects by magnification. The name is usually applied to the compound type consisting essentially of a rigid stand carrying a stage for supporting the object; beneath the stage is a movable mirror for illuminating the object and above is a tube carrying the lenses.

The Royal Microscopical Society, founded in London in 1839, was established to foster microscopical science.

Midas In Greek legend a king of Phrygia. He asked that all he touched might turn to gold and his wish was granted; when even his food became gold he implored relief, and gained it by bathing in the River Pactolus.

Middelburg Town of the Netherlands. The chief town of the province of Zealand, it stands on the Island of Walcheren, 4 m. from Flushing. The town hall is a fine 16th century building. Middelburg was formerly a centre of the cloth trade and has some manufactures. Pop 19,000.

Middelburg Town of the Transvaal. It is 95 m. from Pretoria, on the railway to the port Lourenço Marques, 284 m. away. Near are coal mines. It is the business centre of a large district. Pop. (white) 2274.

Another **Middelburg** is a town of Cape Colony. It is 250 m. from Port Elizabeth and is the centre of a farming district.

Middle Ages Term used for the period between ancient and modern history. It is usually regarded as beginning at 476, when the last Roman Emperor was deposed in Italy. Its end may be either the capture of Constantinople by the Turks in 1453 or the discovery of America in 1492.

Middleham Village of Yorkshire (N.R.). It is 2 m. from Leyburn and is famous for the ruins of its castle, one of the strongest fortresses in England, long a seat of the Neville family. There are racing stables in the village.

Middlesbrough County borough, market town and seaport of Yorkshire (N.R.). It stands on the Tees, 238 m. from London, on the L.N.E. Rly., and was founded early in the 19th century. The chief industries are the production of iron, steel, chemicals and shipbuilding. There is a fine harbour with extensive docks in the river. A transporter bridge crosses the river here. Pop. (1931) 138,489.

Middlesex County of England, the smallest in the country, but densely populated. It covers 233 sq. m. and much of the area is in the London district. Brentford is the county town, other boroughs are Acton, Ealing, Hornsey and Twickenham; the urban districts of Willesden, Edmonton, Enfield, Finchley, Southgate and Tottenham are also in the county. In 1932 the urban districts of Hendon and Heston were raised to the rank of boroughs. It is divided from Surrey by the Thames and from Essex by the Lea. The Colne and Brent are other rivers. Pop. (1931) 1,638,521.

The **Middlesex Regiment,** consisting of the old 57th and 77th Foot, raised in 1755 and 1787 respectively, has a long record of service and fought in the Great War. They are known as "The Die-hards" from their conduct at Albuera (*q.v.*).

Middleton Borough and market town of Lancashire. It is 6 m. from Manchester, on the L.M.S. Rly. There are cotton mills, engineering and chemical works. Pop. (1931) 29,189.

Middleton **Thomas,** English dramatist. Born in London about 1570 he studied law. In 1620 he was made city chronologer and he died in 1627. He is known as the author of several once popular plays, notably *A Trick to catch the Old One, A Mad World My Masters, Women beware Women* and *A Game at Chesse.* In collaboration with Rowley he wrote *The Changeling, The Spanish Gypsie* and *The Old*

Law, and collaborated with Thomas Dekker in *The Honest Whore* and *The Roaring Girle*. Middleton wrote for some years the pageants for the Lord Mayor's Show.

Middleton -in-Teesdale. Market town of Durham. It stands on the Tees, on the L.N.E. Rly. Around are coal mines. Pop. 1977.

Middlewich Borough and market town of Cheshire. It is on the River Dane, 6 m. from Northwich, on the L.M.S. Rly. The chief industry is the extraction of salt; there are also chemical works. Pop. (1931) 5458.

Midge Name denoting indiscriminately two-winged insects of various families. The typical plumed midge, *Chironomus plumosus*, swarms in the summer air, its short, soft, non-piercing proboscis distinguishing it from gnats; its larvae are colloquially called blood-worms. The black midge which bites the hand is a *Ceratopogon*. Some, *e.g.*, the pear-midge, are destructive.

Midhurst Market town of Sussex. It is 12 m. from Chichester and 64 from London, with a station on the S. Rly. Near are the ruins of Cowdray Castle. Midhurst was once a borough. Pop. (1931) 1890.

Midi District of France. It is the region around Toulouse and owes its name to the fact that this was once a middle land between France and Spain. The **Canal du Midi**, 148 m. long, constructed between 1666 and 1681, extends from Toulouse to the Mediterranean Sea, near Warboune.

Midian Arabian region E. of the Akabah Gulf, anciently occupied by the Midianites. Some were caravan traders, some pastoral nomads. They made predatory excursions into Canaan until Gideon defeated them.

Midlands Name used for the midland counties of England. The district lies between the Thames and the Trent, and between East Anglia and the counties on the border of Wales. It includes the counties of Nottingham, Derby, Stafford, Leicester, Rutland, Northampton, Warwick and Worcester.

The **Midland Regional** programme of the British Broadcasting Corporation is run on a wave-length of 398.9 M., 25 kW.

Midleton Earl of. English politician. Born Dec. 14, 1856, St. John Brodrick, was the eldest son of the 8th Viscount Midleton, the holder of an Irish title dating from 1717. In 1880 he was elected M.P. for Surrey and represented a division of that county until 1907, when he became a peer. In 1886-92 and again, 1895-1900, he held office in the Unionist Government and in 1900 became Secretary for War. From 1903-05 he was Secretary for India. He was created an earl in 1920. The earl lives at Piper Harrow, near Godalming, his eldest son being styled Viscount Dunsford.

Midlothian County of Scotland. It covers 370 sq. m. and has a short coastline on the Firth of Forth. In it are the Pentland and other ranges of hills. It contains Edinburgh, Leith, Dalkeith, Musselburgh and Penicuik, and such romantic spots as Roslin and Hawthornden. Its rivers are the Water of Leith, Gala, Almond and other short streams. The title of Earl of Midlothian has been borne by the Earl of Rosebery since 1911. Pop. (1931) 526,277.

Midnight Sun Term applied in relation to the fact that the sun is visible within the Arctic Circle during the whole 24 hours at midsummer. This is principally due to the obliquity of the earth's axis. During the season when the North Pole is inclined towards the sun, the day lengthens as one approaches the North Pole.

Midshipman Junior officer of the British navy. A naval cadet on passing out of the college at Dartmouth becomes a midshipman when his training is continued on board ship. He messes in the gun-room and commands small parties of men. His rank is shown by a white tab on the collar of the jacket and he wears a dirk.

Midsomer Norton Urban district of Somerset. It is 12 m. from Bath, on the G.W. Rly., and stands on the little River Somer. The chief industry is coal mining. Pop. (1931) 7490.

Midwife Women who attend during childbirth. The profession is a very old one and until recently could be practised by anyone. Now, however, in Great Britain all midwives must be certificated. The **Central Midwives Board** at 1 Queen Anne's Gate Buildings, London, S.W., grants the certificates and has power to revoke them. There is a separate board for Scotland at 49 George Square, Edinburgh.

Midwifery Properly speaking, the term covers the study and supervision of the whole reproductive cycle in man and is synonymous with obstetrics (*q.v.*). In terms of general reference, however, midwifery is confined to the attendance on mothers during childbirth and hence to the profession of midwifery as practised by women trained to assist in and supervise delivery. It therefore falls under the province of nursing (*q.v.*).

MIDWIFERY AS A CAREER.—Midwifery offers scope to the woman who takes up nursing too late in life to obtain a general hospital training, though here as elsewhere such a training would stand her in very good stead. The status of the midwife is much improved since the passing of the Midwives' Acts in 1902 and 1918, enforcing compulsory registration and training. The course is a twelve-months' one (or six months for a general nurse) and a certificate is given by the Central Midwives Board, Queen Anne's Gate Buildings, Westminster, London. Training can be had at any Maternity or Lying-in Hospital recognised by the Board, to whom application for particulars should be made.

Mignonette Genus *Reseda* of annual herbs of the order *Resedaceae*, natives of the Mediterranean region and W. Asia. The fragrant *R. odorata*, which reached Chelsea from Egypt, 1752, has become a favourite garden plant, developed into compact forms, with giant pyramidal white, red and golden heads, as well as dwarf and double-flowered varieties. Tree-mignonette, developed by gardeners, is a short-lived perennial form. The two British and several European species, including the white mignonette, are scentless.

Migraine Word derived from *hemicrania*, a neuralgic pain usually beginning or predominating on one side of the head. It is also called sick-headache. Sometimes occasioned by stomach disturbance and eyestrain, it may recur periodically, and

be attended by numbness, visual disturbances, excessive sensitiveness and vomiting, lasting several hours or the whole day.

Migration Periodic mass-movement of animals, especially birds, from one seasonal habitat to another and back again. The primary stimulus is the food-quest. Conditions in the S. hemisphere have not been closely studied; in the N. hemisphere most birds exhibit mass-movements between summer quarters for nesting and breeding and winter quarters for feeding and resting. Britain has summer visitors for breeding, winter visitors from northern breeding places, birds-of-passage, partial migrants of whom some remain, and non-migratory residents. Birds invariably breed in the colder area of their range; those breeding in the tropics sometimes make vertical but never horizontal migrations. The collective movement is remarkably uniform, punctual and constant in direction.

Mikado Sovereign of Japan. The Japanese do not use this title, preferring to call their ruler tenshi, or the son of heaven. *The Mikado* is the name of one of Gilbert and Sullivan's most popular operas. It was first produced in 1885.

Milan City of Northern Italy. Situated on the River Olona in the Lombard plain, it is the capital of the province of the same name. Historically it is one of the most interesting of the Italian cities, with many famous and beautiful buildings. These include the cathedral, which took nearly five centuries to complete; the church of San Ambrogio; the Castello Sforza, and the monastery of Santa Maria delle Grazie, where Leonardo painted his "Last Supper" on the refectory wall.

Milan is equally important commercially and financially. Silk is the principal manufacture. Others include machinery, embossed leather, etc. It has a broadcasting station (331.5 M., 7 kW.). Pop. (1931) 976,000.

The Duchy of Milan was very powerful in the Middle Ages. It was held first by the Visconti family, then by the Sforzas, and was later in the hands of the Spanish crown.

Mildenhall Market town of Suffolk. It is 12 m. from Bury St. Edmunds and 76 m. from London, on the little River Lark, and is served by the L.N.E. Rly. The market cross and the manor house are notable. Pop. 3370.

Mildew Term applied to a group of epiphytic and parasitic fungi belonging to the *Erysiphae*. It is popularly used for moulds and allied types. The mildew fungus forms a cobweb-like mycelium on plants while haustoria or suckers penetrate the epidermis of the host. Both summer spores and winter spores are formed, the latter being set free in the following spring. *Erysiphe tuckeri*, the mildew of the grape-vine attacks the leaves and fruit doing great damage to the vine.

Mile English measure of length. The statute mile is 1760 yards, but in former days it varied very much in different parts of the country. The nautical mile consists of 2026⅔ yards. The mile is divided into eight furlongs. It originated with the Romans, being 1000 (mille) paces, or about 1610 yards.

Mile End District of London. It is in the borough of Stepney and gives its name to the great thoroughfare known as Mile End Road, connecting Whitechapel Road and Bow Row. In Mile End are the People's Palace, the East London College, the Great Assembly Hall, St. Benet's Church and Trinity Hospital.

Miletus Ancient city and seaport of Asia Minor. Traditionally it was founded by Miletus, a son of Apollo, and it became one of the greatest of the Greek cities of Asia Minor. In 494 B.C. Miletus headed the other Greek cities of this region in their revolt against the Persians, but this resulted in its destruction. Being rebuilt it was destroyed by Alexander the Great, after whose time it was a Roman city.

Milford Seaport and urban district of Pembrokeshire, standing on Milford Haven, 9 m. from Haverfordwest, on the G.W. Rly. There is a good harbour and the port is a fishing centre. The town was founded in 1790 to serve as a station for the navy, but this was later moved to Pembroke Dock. Pop. (1931) 10,116.

Milford Haven Opening of the Atlantic Ocean on the coast of Pembrokeshire. It is 10 m. long and is one of the finest harbours in Great Britain. The East and West Cleddau rivers flow into it and on it are Milford and Pembroke Docks. St. Ann's Head, on which is a lighthouse, guards the entrance to the harbour.

The title of **Marquess of Milford Haven** was given in 1917 to Louis, Prince of Battenberg. Born in Austria, May 24, 1854, he became a British subject and entered the navy. He was Director of Naval Intelligence, 1902-05, Commander-in-chief of the Atlantic Fleet, 1908-10 and First Sea Lord of the Admiralty, 1912-14. He died Sept. 11, 1921.

Military Cross (M.C.). British decoration. It was founded in 1915 and is given to military officers not higher than the rank of captain for services in action. The badge is a silver cross and the ribbon is white, purple and white.

Military Medal (M.M.). Decoration given to non-commissioned officers and men of the British army for bravery under fire. Women are also eligible. Instituted in 1916 it is a silver medal. On the reverse side are the words "for bravery in the field" surrounded by a wreath with the royal cipher and a crown above.

Military Knights of Windsor. Body of officers attached to the Order of the Garter. They were at first known as Poor Knights and ranked below the ordinary knights. They are appointed by the king, being wounded or disabled officers of high rank and they occupy quarters in Windsor Castle. Their number is 13.

Military Law Law governing military forces. In Great Britain, the Army Act, passed annually, includes the penal code for discipline in the army, administrative laws and provision of maintenance. Matters of discipline, in addition to the act, are governed by rules of procedure in the King's regulations and in royal warrants.

Militia Name given to a military force in Great Britain until 1908. It was raised in the counties by the lord lieutenants, the men undergoing one month's training each year, for which they received payment. The militia was formed when the country was threatened with invasion. It was called out in 1715 and 1745. During the several wars with France, 1759-62, 1778-83, 1792-1802 and 1803-16; during the Crimean

War, 1854-55; and during the struggle with the Boers in 1899-1902. After 1757, each parish was obliged to furnish men, drawn by ballot, for the militia, but persons on whom the lot fell could pay a substitute. Not being available for foreign service some of them went as volunteers in 1899. In 1907 the militia was merged in the Territorial Force.

Milk Fluid secreted in the mammary glands for the nourishment of the young animal. It is of the nature of an emulsion, minute fat globules being held in suspension in a liquid which consists of water containing, in solution, albuminoids, lactose and mineral salts. Cow's milk consists of about 87 per cent. water, 3.5 per cent. fat, 3.0 per cent. albuminoids, 4.5 per cent. lactose or milk sugar, and 0.7 per cent. ash. In skim milk 90 per cent. is water and in whey about 93.5 per cent. In condensed milk much of the water has been evaporated in a partial vacuum at a comparatively low temperature. Under the Food and Drugs Act milk exposed for sale must conform to a certain standard and must not contain preservatives or colouring matter.

Milkwort Large genus of temperate and tropical perennial herbs typical of the milkwort family (*Polygala*). The common British *P. vulgaris*, formerly supposed to increase the milk-yield in cows, has wiry stems, leathery leaves and small flowers. Several showy Cape species are cultivated. The British sea-milkwort, *Glaux maritima* is of the primrose family.

Milky Way Name given to the starry belt seen on a clear night. It stretches as a luminous band across the sky, especially in autumn, when it stretches east and west close to the zenith. With the aid of the telescope it is seen to consist of a dense belt of stars, but not uniform, however, as dark channels and spaces occur usually near the brighter areas. In the vicinity of Alpha Centauri the Milky Way divides into two branches which reunite near Eta Cygni.

Mill **John Stuart.** English economist, publicist and philosopher. Born May 20, 1806, he was the son of James Mill, the founder, with Jeremy Bentham, of the Utilitarian philosophy. He entered the India Office and became the foremost exponent of Utilitarianism, but later adjusted his views on more altruistic lines. He did much for the poor, and advocated universal suffrage and franchise. He died May 8, 1873. Mill wrote a *System of Logic*, *On Liberty*, and *Principles of Political Economy* amongst other works.

Millais **Sir John Everett.** English artist. Born at Southampton in 1829, Millais was one of the founders of the Pre-Raphaelite Brotherhood. At an early age he entered the Royal Academy Schools and developed remarkable artistic power and technical skill. His early painting, "Christ in the Carpenter's shop" (Tate Gallery) is his best, and other important pictures are "Lorenzo and Isabella" (Liverpool), "Ferdinand and Ariel" (Tate Gallery) and "Ophelia" (National Gallery). In 1885 he was created a baronet and in 1896 became president of the Royal Academy. He died Aug. 13, 1896.

Millbank District of London, in the city of Westminster by the side of the Thames. The chief buildings are the Tate Gallery, Queen Alexandra's military hospital and the Royal Army Medical College and barracks. Between 1812-22 a prison was built here in the shape of a wheel, surrounded by a moat. It was used for various purposes and, in 1903, was pulled down. The site is now occupied by the Tate Gallery. Imperial Chemical Industries have erected large offices here, and another large block is known as Thames House.

Millboard Stout form of cardboard used for bindings, box-making, etc. It is made from various waste fibres and papers. Hemp and flax waste are used for the best grades, waste paper for the lower qualities, and a percentage of pulped leather for leather boards.

Millennium Mediaeval Latin word denoting especially a period when, according to long expectation, Christ would return to govern the earth for a thousand years. It is based upon apocalyptic literature, *e.g.*, Daniel and Revelation.

Millerand **Alexandre.** French lawyer and politician. Born Feb. 10, 1859, he became editor of Socialist papers, was elected to the Chamber of Deputies as a Radical Socialist in 1885, and was active in military organisation and the suppression of strikes. At the end of August, 1914, he became Minister for War, and in 1919, as Commissaire Général in Alsace Lorraine, was successful in re-organising these districts under French government. He was elected President of the Republic in 1920, and kept a firm hold on foreign affairs, but was defeated in 1927 and succeeded by Doumergue. Later in the year he was again elected to the Senate.

Milles **Carl.** Swedish sculptor. Born at Stockholm in 1875, and educated at Stockholm and Paris, he was for a time Professor at the Royal Akadamie at Stockholm. He teaches sculpture at the University of Cranbrook, Michigan, U.S.A. His work is represented in the galleries of Europe and America.

Millet General name for many cereal grasses. Common millet, *Panicum miliaceum*, and little millet, *P. miliare*, are grown largely in India for food purposes. Italian millet comes from *Setaria italica*, German millet being a dwarf variety. Pearl millet grows in tropical Africa, India and S. Europe. *See* INDIAN MILLET.

Millet **Jean François.** French painter. Born at Greville in Normandy, in 1814, Millet was the son of a peasant farmer and showed a natural aptitude for drawing. The town of Cherbourg paid for him to study in Paris under Delaroche. In 1849 he settled at Barbizon and became famous for his paintings of peasant life, his works including "The Angelus," "The Sowers," and "The Gleaners." He died Jan. 20, 1875.

Mill Hill Residential district of London. It is 8 m. N.W. of the city, on the L.M.S. and L.N.E. Rlys., in the urban district of Hendon.

Mill Hill School, founded in 1807 for the education of the sons of Nonconformists, has a fine range of buildings and accommodation for about 500 boys. The Society of Jesus have a college at Mill Hill.

Milling Term applied to the process of grinding corn and other material by steel rollers. It is also used for a process in engineering works by which metal parts are planed to true surfaces. In relation to coinage milling refers to the indenting of the rim of coins to prevent slipping or filing.

Millipede Order of the arthropod class *myriopoda*. Allied to the centipedes, the millipedes closely resemble the insects in having air-tubes or tracheae opening on the surface by stigmata. The body is long, rounded and segmented, each segment, with the exception of the first four, bearing two pairs of legs.

Millom Urban district and market town of Cumberland. It stands on the estuary of the Duddon, 9 m. from Barrow-in-Furness, on the L.M.S. Rly. The town is a centre of the iron and steel manufacture. At one time it had a castle, of which some ruins remain. Pop. (1931) 7406.

Millport Burgh and watering place of Buteshire. It is on the island of Great Cumbrae and is reached by steamer from the Clyde ports. Here is the cathedral for the Roman Catholic diocese of Argyll and the Isles, and there is a marine biological station. Pop. (1931) 2083.

Millwall District of London. It is on the north side of the river, in the Isle of Dogs and the borough of Poplar. It contains large docks and has facilities for unloading and storing grain.

Millwall Athletic is a famous association football club. The ground is at New Cross Gate, London, S.E.

Milne **Sir George Francis.** English soldier. Born Nov. 5, 1866, he entered the army as an artillery officer in 1885. He served in the Sudan in 1898 and in South Africa, 1899-1902. In Aug., 1914, he commanded the artillery of a division in France, and was soon promoted, being in turn chief staff officer of an army, leader of a division and head of an army corps. In 1916 he went to Salonica and commanded the British forces for the campaign that ended in the defeat of Bulgaria. From 1923-26 Milne had a command in England and from 1926-29 he was Chief of the Imperial General Staff. He was knighted in 1918, made a general in 1920 and a field-marshal in 1928.

Milner **Viscount.** British statesman. Born March 23, 1854, at Bonn, he was educated in Germany and at London and Oxford. He became a barrister, was private secretary to the Chancellor of the Exchequer and in 1889 was given a post in Egypt. As Sir Alfred Milner he was made Governor of the Cape of Good Hope and High Commissioner for South Africa in 1897. He was responsible for the negotiations that preceded the outbreak of war with the Boers in 1899 and his actions at that time were severely criticised. He helped to arrange the peace of 1902 and was made Governor of the annexed areas, the Transvaal and the Orange Free State. In 1905 he retired, having been made a baron in 1901 and a viscount in 1902. In 1916 he was made a member of the war cabinet and he helped to direct the final operations against Germany. In 1918 he was made Secretary for War and in 1919 Secretary for the Colonies. He left office in 1921 and died, unmarried, May 13, 1925. Of his books the best known is *England in Egypt*.

Milngavie Town of Stirlingshire. 6 m. from Glasgow, it is the terminus of a branch railway line. Near are some waterworks that supply Glasgow. Pop. 5056.

Milnrow Urban district of Lancashire. It is 2 m. from Rochdale and is a coal mining centre. Pop. (1931) 8624.

Milnthorpe Market town and river port of Westmorland, on the River Kent, 7 m. from Kendal. It has a coasting trade and is a summer resort. Pop. 1025.

Milo **Titus Annius.** Roman official. His fame is due to his connection with Cicero. In 57 B.C., when he was tribune, he brought about the return of the orator from exile. Later, following a quarrel which brought about the death of one Clodius, Milo himself was sent into exile. He was killed in a fight in 48 B.C. Cicero's speech in defence of Milo, *Pro Milone*, is a popular piece of classical prose.

Milreis Brazilian coin. It is worth about 6d. and is issued in gold, silver and paper. It contains 1000 reis. The coin was formerly used in Portugal.

Miltiades Athenian tyrant who was responsible for the battle at Marathon against the Persians. This victory, 490 B.C. was one of the decisive battles of the world. Miltiades attacked the Island of Paros to regain control of the Aegean, but was defeated, and on failing to pay a fine of fifty talents, was cast into prison, where he died, 488 B.C.

Milton Name of several places in England. **Milton-next-Sittingbourne** is a market town and urban district in Kent. It is 10 m. from Chatham and is reached by the S. Rly. Another is a little watering place in Hampshire, 6 m. from Lymington. Another is a village, 4 m. from Cambridge.

Milton Creek, an arm of the Swale, is famous for its oysters. Paper is made here.

Milton Abbas is a model village, 7 m. from Blandford in Dorset. There was once an abbey here and the fine church still stands.

Milton Park, near Peterborough, is a seat of the Fitzwilliam family.

Milton **John.** English poet. Born in London, Dec. 9, 1608, he was educated at S. Paul's School and Christ's College, Cambridge. His early poems, *L'Allegro*, *Il Penseroso* and *Lycidas*, a lament for the death of his friend, Edward King, show the influence of country life, as well as the classical learning and the beauty of language that mark his later works. *Lycidas* is one of the most beautiful elegies in the English language. To this period also belongs the masque of *Comus*, performed at Ludlow Castle in 1634.

After a tour abroad Milton turned to politics and prose writing. His prose works are largely theological in character, for he was a strong Puritan controversialist. *Areopagitica* is the greatest plea for liberty of speech in the English language. In the Civil War Milton espoused the Parliamentary cause; in 1649 he became Latin secretary to the Commonwealth, and in 1655 secretary to Cromwell. The blindness which fell upon him about 1652 led to the writing of the best known of his sonnets, *On his Blindness*.

At the Restoration, he retired from public life and wrote *Paradise Lost* and *Paradise Regained*. The greatness of its theme, the fall of man, as well as the stately beauty of its verse, makes *Paradise Lost* one of the great poems of the world, and places Milton as second only to Shakespeare among English poets. *Samson Agonistes*, his last poem, was written three years before his death, Nov. 8, 1674.

Milwaukee City and port of Wisconsin, United States. It is on the western shore of Lake Michigan where it has a good harbour, 85 m. from Chicago.

The River Milwaukee and its tributaries flow through the town before entering the lake. Milwaukee is a great distributing centre. Other industries are flour milling and tanning. Pop. 578,249.

Mimeograph Form of flat stencil duplicator for making numerous copies of a document. A wax stencil is made on a typewriter, or otherwise, placed over a sheet of paper when, by passing an inked roller over the stencil and paper a facsimile is obtained.

Mimosa Large genus of leguminous plants, natives of the warmer regions of Africa, Asia and America. The leaves, twice divided into leaflets, are in many species sensitive, closing when touched, *e.g.*, the Brazilian *M. pudica*, frequently cultivated in greenhouses. The so-called mimosa, popular in Covent Garden market, is actually a half-hardy *Acacia*.

Mimulus Cultivated variety of musk (*Mimulus moschatus*) of the order *Scrophulariaceae*. It is both annual and perennial, with large blooms in yellow, golden brown and variegated shades.

Min Egyptian god. He was a god of fields and highways, but later he became merged in Amon.

Mina (or **Mynah**). Name of various birds of the starling family, inhabiting India and S.E. Asia. One, *Acridotheres tristis*, regarded by Hindus as sacred to Ram Deo, is often confused with a hill-mina, *Gracula religiosa*, 10 in. long, with purplish-black plumage and yellow bill and feet.

Minaret Tall slender balconied tower on a mosque. From it at stated times the Muzzein chants the azan, or Mohammedan call to prayer, to the people.

Minchinhampton Town of Gloucestershire, 4 m. from Stroud. Minchinhampton Common (660 ft. high) is one of the beauty spots of the Cotswold Hills.

Minden City of Germany. It is on the Weser, 44 m. from Hanover, in the district called Westphalia. The cathedral is a fine building with some valuable treasures. The place has some manufactures. In the Middle Ages the Bishop of Minden was a prince bishop ruling over a territory of 400 sq. m. Pop. 27,000.

Near Minden on Aug. 1, 1759, a British and Hanoverian army defeated the French. The battle is memorable for the advance under fire of six British infantry regiments, since known as the Minden regiments.

Mine Excavation for extracting from the earth metallic ores and other mineral substances of economic importance. The character of the mine varies greatly with the nature and position of the deposits. In some cases the mine is an open quarry-like excavation, in others horizontal passages or adits are driven into a hill, or again, deep vertical shafts with a complex system of galleries are sunk, needing provision for ventilation and drainage.

Mine Explosive engine used in warfare. A land mine usually consists of a charge of high explosive buried in the ground, capable of being discharged either by pressure upon it or by electrical means. In naval warfare a mine consists of an explosive charge contained in a metal case provided with projecting detonators which fire the mine when touched by a vessel. Numbers are usually laid some distance below the surface and near one another, forming a mine field.

Minehead Urban district of Somerset. It is on the Bristol Channel, 25 m. from Taunton, on the G.W. Rly. There is a small harbour. North Hill overlooks the town. It is a tourist centre, being near Exmoor. Pop. (1931) 6315.

Mineralogy Study of the mineral constituents of the earth's crust. The term mineral being applied strictly to inorganic substances which have been formed under conditions unconnected with organic agencies, thus excluding coal, petroleum, amber, etc. Mineralogy as a science has only developed during the last 150 years and in its modern form is linked on to chemistry, physics, geology and crystallography, and includes the study of the form, chemical composition, specific gravity, hardness, cleavage, fracture of minerals and their behaviour in relation to light.

Mineral Waters Name given to the water of springs containing a high percentage of mineral salts in solution, used on account of their medicinal qualities. Mineral waters may be alkaline or saline, sulphurous or chalybeate. In England the waters at Bath, Harrogate and Buxton are well-known. Among the many Continental springs, those at Baden-Baden, Aix-les-Bains, Spa and Carlsbad are much frequented. In some cases the waters are bottled and exported, and under the name of mineral waters are included artifically prepared aerated waters.

Minerva Italian, perhaps Etruscan, deity. The patroness of all arts and handicrafts, she shared with Jupiter and Juno Rome's worship in Tarquin's temple on the Capitol. Her own temple was on the Aventine. Identified with the Greek Pallas Athena, she became the goddess of war, and victors' spoils were dedicated to her. *See* PALLADIUM.

Miniature Term in Art applied to a small painting upon vellum, parchment, ivory or other materials. The word is derived from minium or red lead used in writing the rubrics or initial letters in old manuscripts. Much of the early miniature painting was done on missals, etc., as a branch of illuminating and very fine work was done by Italian, French and Flemish artists. Painting on ivory came into vogue about the 17th century and in England Hilliard, in Queen Elizabeth's reign, and Samuel Cooper, a contemporary of Van Dyck, executed fine miniatures. In France this branch of Art was represented by Isabey and Augustin in the 18th century.

Minimum Wage Wage fixed by law as the lowest that may be paid. The principle of the minimum wage, operative in Australia and New Zealand, has never been put into general practice in Great Britain, though it has been introduced in certain industries. Under the Corn Production Act from 1917 to 1921 a minimum wage was guaranteed to agricultural labourers. In those industries which have a trade board minimum rates of wages are fixed by the board. Minimum wages are fixed to-day for agricultural labourers by joint committees and for coal miners. The trade unions also have their minimum rates of wages, but these are not compulsory.

Mining Art of extraction of metallic ores and mineral substances of

economic value from the earth, also the methods of prospecting or searching for minerals. Prospecting entails some knowledge of the principles of geology, and a close acquaintance with mineralogy and some practical knowledge of chemical analysis. In the development of mines much of the work falls under mining engineering and many questions have to be considered, such as the continuity of the lode, proximity of water and fuel, available means of carriage, etc. Within recent years low grade deposits, hitherto unworked, have been exploited by special mechanical methods and found profitable.

In mining, diverse methods are followed according to the character of the ore deposit; in surface mines excavators, steam navvies and hydraulic jets may be used, while in deeper mines mechanical haulage is needed for transport of material. Another department of mining is concerned with ore dressing, involving the crushing of the ore by hand, stamps or other grinding machinery. The final stage in ore dressing is that of concentration of the material to obtain the requisite degree of purity preparatory to smelting. Electricity is increasingly employed in mining, and according to the report of H. M. Electrical Inspector of Mines was in use at over 60 per cent. of the mines at work during 1934.

Mink (*Putorius*). Name of several semi-aquatic carnivorous mammals of the weasel family. Comprising the European mink or marsh-otter, the Siberian, and the American vison, they are trapped for their furs, the finest coming from Nova Scotia. They are also bred in minkeries for use as ferrets. All emit a disagreeable odour.

Minneapolis City and river port of Minnesota. It stands on the Mississippi, 360 m. from Chicago. It covers 53 sq. m. There are many open parks and in one of them are the Falls of Minnehaha, popularised by Longfellow in *Hiawatha*. In the river near the city are the Falls of St. Anthony which are used to generate electricity. Minneapolis is a great trading centre, especially in wheat. The industries include enormous flour mills, meat packing factories and machinery works. On the other side of the Mississippi is St. Paul, the two being known as the twin cities. Pop. (1930) 464,356.

Minnesingers Name given to a class of poets who lived mainly in Germany in the later Middle Ages. They were not unlike the troubadours. Men of good family, they lived at the courts of the princes, composing and singing lyrical verses and the attendant music.

Minnesota State of the United States. One of the north central states, it lies to the west of Lake Superior and has Canada for its northern boundary. It covers 84,682 sq. m. and is chiefly an agricultural area, but a great deal of iron ore is mined and there are some great industrial centres. St. Paul is the capital, but Minneapolis is larger. Another city is Duluth. The government is conducted by a legislature of two houses. Pop. (1930) 2,564,006.

Minnow Small freshwater fish of the carp tribe (*Leuciscus phoxinus*) common in British and European rivers and brooks. Normally 3-4 in. long, sometimes 7 in., it is dark-green, with black patches along the interrupted lateral line.

Minor Person under 21 years of age. In English law he or she is unable to enter into a contract. *See* INFANT.

Minor Name meaning "lesser" applied in music to all intervals one semitone less than major intervals (*See* MAJOR). A diatonic scale progresses in tones but with semitones between the 2nd and 3rd, 5th, 6th, 7th and 8th, and with an augmented 2nd between the 6th and 7th degrees is in the **minor mode**; so is the variant with the raised 6th.

A **minor semitone** is a chromatic semitone. The **minor tone** in acoustics is that in the ratio 10 : 9.

Minorca One of the Balearic Islands. It covers about 290 sq. m. Fort Mahon is the capital. The surface is hilly, but the soil is fertile, and tropical fruits, such as figs and oranges, are grown. It also produces wine and there is some mining. Horses and cattle are reared. On the islands are some remains of early man and some stalactite caves. Pop. 42,000.

A breed of fowl is known as the **Minorca**. They lay large eggs, but are bad sitters.

Minorites Name taken by the Franciscan friars. It was adopted because they regarded themselves as minors, or inferior to members of other orders. About 1212 a female branch was founded by S. Clara. They were called **Minoresses**, but are now known as Poor Clares. They had a house in the Minories, London, hence this name.

Minorities Groups of people which differ by race or religion from the nation of which they form a part. Sometimes these minorities become absorbed into the majority, but they often aspire to an independent life, either wishing to develop their own traditions, or demanding administrative autonomy. Since the World War, minorities have had the same legal rights as the naturals of their country, free exercise of their religion and their mother tongue, and the right to maintain their own schools and charitable institutions. If any of these rights are violated they can appeal to the League of Nations for redress.

Minos Legendary king of Crete. The son of Zeus by Europa, he was a great ruler, who gave good laws and made his kingdom powerful. After his death he was made one of the judges in Hades. It is probable that there was really a king of Crete named Minos and that the labyrinth at Cnossus was his palace.

Minotaur In Greek mythology, a fabulous Cretan monster, half-man, half-bull. It was represented as the offspring of a white bull and Pasiphaé, wife of King Minos. Kept in a labyrinth, it was fed on human flesh, until slain by Theseus. *See* CNOSSUS.

Minster Village of Kent. It is in Thanet, 4 m. from Ramsgate, on the S. Rly. There is an old and beautiful church and the place once had a religious house.

Minster Village of Kent, on the Island of Sheppey, 4 m. from Sheerness. At one time there was a convent here. The place is visited by holiday-makers and has oyster beds.

Minster Word used for a large church. It meant really the church of a monastery, and the older minsters were of this kind. To-day York Cathedral is often called the minster, and there are minsters at Beverley and Wimborne.

Minstrel A mediaeval musician, executant rather than composer, though frequently both. Minstrels came to England with the Normans. They attended the troubadours whose works they performed. Unattached, wandering minstrels were always welcomed, though noble families numbered minstrels among their valued retainers. In Elizabethan times minstrelsy declined.

The minstrels' gallery was a feature of the architecture of mediaeval churches and mansions. In Tudor and Plantagenet mansions it communicated with the kitchen.

Mint Place where money is coined under government authority. Formerly there were mints in England at York, Norwich, Chester, Bristol and Exeter, but now money is coined only at the Royal Mint, whose building at Tower Hill, London, was erected in 1810. Mints have been established at Ottawa, Pretoria, Calcutta and elsewhere. Each year a sample of the coinage is weighed and tested by the Goldsmiths' Company, a procedure known as the trial of the pyx.

Mint Genus of perennial labiate herbs (*Mentha*), distributed throughout N. temperate regions. They have creeping root stocks, square stems and whorls of purplish or pink flowers. Ten British species include peppermint, pennyroyal and horsemint. From this apparently came the garden spearmint, *M. viridis*, grown for culinary purposes.

Minto Earl of. Scottish title, borne since 1813 by the family of Elliot. The first earl was Gilbert Elliot, a Scottish baronet, who was Governor-General of India 1806-14, and died June 21, 1814.

His descendant, Gilbert John Murray-Kynynmound-Elliot, who became the 4th earl in 1891, saw service in Afghanistan, S. Africa, Egypt and Canada. From 1898 to 1904 he was Governor-General of Canada, and from 1905-1910 Viceroy of India. He died March 4, 1914.

The earl's eldest son is called Viscount Melgund, and his seat is Minto House, Hawick.

Minton Name given to a fine porcelain made at Stoke-upon-Trent. It was first made by a potter named Minton early in the 19th century, and is beautifully decorated. Minton works also won a reputation for their encaustic tiles, their della Robbia, majolica and other glazed ware.

Minuet Stately dance in triple time for two persons. It originated in Poitou and was fashionable in Paris about 1650. Lully was the first celebrated composer of minuet music. Musically the importance of the minuet form increased, until, independent of dancing, it was incorporated into sonata form.

Minute Term applied to a measure of time representing a sixtieth part of an hour, a minute is again divided into sixty parts, giving a second minute or second. This division of units into sixtieths dates from very ancient times and was characteristic especially of Babylonian astronomy and chronology.

Minutes Word used in connection with meetings of companies and societies. The minutes are a record of the proceedings of a meeting, made by the secretary in the minute book. They are read out at the next meeting, and if correct are signed by the chairman. Their accuracy can be challenged. By company law limited liability companies must keep minutes at their general meetings, and at those of the directors. A treasury minute is an order, usually on a financial matter, issued by the treasury.

Miocene Geological term for the Tertiary system between the Pliocene and Oligocene. It is unrepresented in Britain, but occurring in Western, Central and South-East Europe as well as in America, and India. Miocene deposits vary from clay to conglomerates, some being of marine, others of freshwater origin. The climate of the period varied from sub-tropical to warm temperate, and animal life included the dinotherium, mastodon, hippopotamus and rhinoceros.

Mir Village community once found in the east of Europe, especially Russia. The land belonged to the people as a whole, and a village meeting decided matters that concerned the community. The mir system existed in the 20th century, but the Bolshevist rule did much to destroy what remained of it.

Mirabeau Honoré Gabriel. French politician. Born March 9, 1749, he spent his youth in profligacy, was imprisoned and sentenced to death, but pardoned in 1782. He then lived precariously on writing until, rejected by the nobility, he was elected by Marseilles to the Tiers État of the States-General. He tried by his great oratory and political sagacity to put the king at the head of the Revolution, by forming a new government on the English plan, but failed through the intervention of Marie Antoinette. He died April 2, 1791.

Miracle Term, "wonderful work," denoting an event transcending the known laws of nature. It is particularly associated with the supernatural factors in Christianity, and pre-eminently the resurrection of Jesus Christ. Modern science, which recognises the miracle of the origin of life as an indisputable if inexplicable fact, no longer opposes a rigid disbelief to the New Testament miracles, the evidence for which was tested at the time. Inquiry is increasingly concerned with those wider laws of nature, hitherto unsuspected, which offer new methods of approach. The view that miracles were primarily designed to attest the truth of the Christian revelation is no longer held.

Miracle Play Type of mediaeval religious drama. Continental usage distinguished representations of gospel events or their Old Testament foreshadowings, called mysteries, from miracle plays portraying saintly legends. In England the former term was not used, the miracle play of mediaeval England practically covering both types; to this was added another, the morality play, illustrating similar truths allegorically. The removal of the representations outside the Church, the adoption of the vernacular, and lay acting, led to the Elizabethan drama.

Mirage Word used for optical phenomena that arise from the reflection and refraction of light in unusual circumstances. They are chiefly seen at sea or in deserts where there is calm air that is either extremely hot or extremely cold, but they are also seen elsewhere. The spectre of the Brocken in the Harz Mts. is a mirage.

Miramichi River of New Brunswick. It flows through the province for 220 m. and falls into Miramichi Bay, an arm of the Gulf of the St. Lawrence. It is navigable for small vessels for part of its course and is noted for its salmon.

Mirfield Urban district of Yorkshire (W.R.). It is on the Calder, 5 m. from Huddersfield, on the L.M.S. Rly. Woollen and cotton goods are made, and around are coal mines. Mirfield is the headquarters of the community of the Resurrection, a religious order in the Church of England, founded by Charles Gore in 1892. Pop. (1931) 12,099.

Miserere Name used for Psalm 51 ("Have mercy upon me O God"). It is the greatest of the penitential psalms and is usually attributed to David. The name is also used for the ledges placed under seats in the choirs of cathedrals and churches. Against this the monks could rest when the seats were turned up and they were standing. There are some fine examples in King Henry VII. Chapel, Westminster Abbey.

Misrepresentation In English law a false statement. A misrepresentation of a material fact is sufficient to make a contract void. In certain cases an action can be brought for misrepresentation.

Missal Latin book containing all the liturgical forms prescribed for the due celebration of the Roman Catholic Mass throughout the year. After the Council of Trent it was enjoined universally, except where local liturgies were at least two centuries old, 1570. At the Reformation the Anglican Prayer Book, 1549, superseded the ancient Sarum missal. The Roman missal, last revised in 1884, is now universal in Western Catholicism, except for the local Ambrosian, Mozarabic and some monastic rites.

Missel Thrush (*Turdus viscivorus*). Largest British songster, abundant throughout Europe and some parts of W. Asia. It is partial to mistletoe berries, hence the name. The male, 11 in., is greyish-brown above, black-spotted white beneath, golden on the rump; the song-notes are loud and sonorous. The grass-lined or mud-lined nests shelter 4 to 5 red-spotted, greenish eggs.

Missenden Great. Village of Buckinghamshire. It is 29 m. from London and 9 from Aylesbury on the Metropolitan and L.N.E. Rlys. It has become a popular place of residence for Londoners. Near is the village of Little Missenden.

Missions Organised efforts for the spread of a religion. In this sense Christianity has always been a missionary religion. The Acts of the Apostles records its progress from Judaea into Europe under the leadership of Paul. Later missionaries from the Celtic and other monasteries went throughout Europe. In the Roman Catholic Church missionary activity has been carried on by the Dominican, Franciscan and Jesuit orders. In the Protestant churches of Great Britain the closing years of the 18th century witnessed a great outburst of missionary enthusiasm. William Carey of Northampton founded the Baptist Missionary Society in 1792, and himself went to India as a missionary the following year. An important International Missionary Council was held at Jerusalem at Easter, 1928, at which more than one-third of the delegates were natives of Oriental or African countries.

Mississippi River of the United States, the most important in the country. It rises in a lake in the state of Minnesota and flows to the Gulf of Mexico at New Orleans. It is 2460 m. long, but with the Missouri, its chief tributary, it is 4200 m. After it is joined by the Missouri at St. Louis, it passes Cairo, Memphis, Baton Rouge and Vicksburg. Its tributaries include the Wisconsin, Illinois, Ohio, Des Moines, Minnesota, Arkansas and St. Francis, and its drainage basin covers 1,250,000 sq. m. At St. Louis the river is a mile wide.

The Mississippi is used for navigation and ship canals have been cut to make this possible where there are obstructions. It is noted for its floods, especially in the lower courses, and tremendous damage was done by them in 1929. Vast sums have been spent on works for regulating the flood water: these including the building of embankments or levees and other works for improving the channel.

Mississippi State of the United States. One of the southern states, it lies to the east of the Mississippi near its mouth, and has a coastline on the Gulf of Mexico. It is one of the cotton growing states, but maize is also produced. Jackson is the capital; Meridian and Vicksburg are other towns, but none exceeds 50,000 in population. The area is 46,865 sq. m. It is governed by a legislature of two houses, and sends two senators and seven representatives to Congress. Pop. (1930) 2,009,821.

Missolonghi Town of Greece. It is on the west coast, just north of the Gulf of Patras. In the early part of the 19th century the Greeks fortified it, and three times it was besieged by the Turks. It is better known, however, as the scene of Lord Byron's death in 1824. There is a memorial to him. Pop. 9270.

Missouri River of the United States. It rises in the Rocky Mts and flows mainly east and north until it joins the Mississippi, 20 m. above St. Louis, where it is over half a mile wide. It is 2950 m. long, being navigable for over 2000 m. On it are the waterfalls called the Grand Falls. Its chief tributaries are the Milk, Yellowstone, Platte and Kansas. It passes Kansas City, Jefferson City and other towns. The name means "mud river."

Missouri State of the United States. One of the central states, its eastern boundary is the Mississippi which divides it from Illinois. It is crossed by the Missouri. Its area is 69,420 sq. m. An enormous quantity of maize is grown in the state, which also produces oats, wheat and coal. Jefferson City is the capital, but St. Louis is much the largest place. Kansas City is another populous centre; other cities are St. Joseph and Springfield. Missouri is governed by a general assembly of two houses, and sends 2 senators and 13 representatives to Congress. Pop. (1930) 3,629,367.

Mistletoe Evergreen parasitic shrub of the order *Loranthaceae* (*Viscum album*), indigenous to Europe and N. Asia. The smooth pendent yellowish-green stem, 1 to 4 ft., bears forking branches with oval lance-shaped leaves, mostly paired, small green flowers and round, white berries containing a viscid pulp. The British host-plants include the apple, black poplar, hawthorn, lime and willow. Associations with early Celtic druidical ritual survive in modern Christmas celebrations, whose supply comes mostly from Normandy and Hertfordshire.

Mistral Cold, dry, north wind that blows in the south-eastern parts of France. It comes from the central plateau of

the country and blows to the sea down the valley of the Rhône. It is very damaging to fruit trees.

Mitcham Urban district of Surrey. It is 10 m. from London, on the S. Rly. The industries are laundrying, the manufacture of sweets and the growing of lavender. The Wandle passes through the district. The fair held every Aug. is one of the most famous in England. Pop. (1931) 56,856.

Mitchelstown Town of Co. Cork, Irish Free State. It is 11 m. from Fermoy on the Gt. S. Rly. In 1887 there were riots here in which some lives were lost. Pop. 2146.

Mite Name of small eight-legged invertebrate creatures of the class *Arachnida*. It forms with ticks the widely distributed order *Acari*, which pass through a six-legged larval stage. The unsegmented abdomen is usually indistinctly separated from the combined head and thorax. Many are parasitic, such as those causing itch, mange and scab, or those affecting mice, rats and poultry. **Gall-mites** cause big-bud disease in fruit trees; "red spider" form a family injurious to cultivated plants; others infest cheese, flour, sugar and copra. *See* HARVEST-MITE.

Mithras God of the Persians. He was the sun god and was regarded as a beneficent spirit. Worshipped in Persia, about 68 B.C., his worship was introduced into the Roman Empire, and there, especially among the soldiers, it flourished for about four centuries. In art the god is represented as a beautiful youth in the act of slaying a bull.

Mitre Headdress worn by certain officials of the Christian Church. Originally the headdress of the high priest of the Jews, it was worn by bishops in the 10th century and afterwards, and also by the more important of the abbots. Its use was discontinued in the Church of England, but it again came into use in the 19th century, and now most of the Anglican bishops wear mitres on ceremonial occasions.

In joinery a mitre is a joint of two blocks or mouldings of a similar pattern at an angle, usually a right angle, divided equally between the two.

Mitylene Capital of the island of Lesbos. It is a seaport on the east coast and has a good harbour. Pop. 29,500. *See* LESBOS.

Mizpah (or **Mizpeh**). Hebrew name, "watch-tower," of several Old Testament places. (1) The stoneheap raised by Jacob and Laban, perhaps Jephthah's Gilead home (Gen. xxxi.); (2) Mizpah of Moab, where David placed his family (1 Sam. xxii.); (3) the land of the Hivites who joined Jabin, near Mt. Hermon (Josh. xi.); (4) Gedaliah's residence after Jerusalem's fall, N.W. of Jerusalem (2 Ki. xxv.).

Mnemonics Art of improving the memory, usually by aid of a system of rules, rhythmic lines or other devices. The Greeks used mnemonic methods for training the memory, and in more recent years many mnemonic systems have been invented. Most of them depend upon the association of ideas.

Moa Maori name of a family of flat-breasted flightless birds formerly abundant in New Zealand, and now extinct. Apparently exterminated by the Maoris before European colonisation, they are known from remains collected from beds of Pleistocene age. They range from the giant moa, *dinornis maximus*, 12 ft. high, down to one 3 ft. high. Pale-green eggs, rounded feathers, and mummified heads and legs have been found.

Moab Region anciently occupied by the Moabites, who were traditionally descended from Lot's son Moab (Gen. xix.) It is a lofty tableland E. of the Dead Sea and lower Jordan valley, bounded N. by Ammon and S. by Edom, and confronts the eastern desert. Its inhabitants were subdued by David (1000 B.C.).

Moabite Stone Black basalt slab discovered by Klein at Dibon, Moab, in 1868. Although subsequently shattered by local Bedouin Arabs, Clermont-Ganneau secured it for the Louvre, Paris. Measuring, after reconstruction, 46 ins. by 24 ins, by 14½ ins., its 34 lines of primitive Hebrew script record victories against Israel of Mesha, King of Moab, c. 850 B.C.

Mobile City and seaport of Alabama, U.S.A. It stands on the Mobile Bay on the south coast at the mouth of the Mobile River, 130 m. from New Orleans. There is a large harbour with extensive docks, and the city has a large overseas trade. It is also a fishing port and has some manufactures. Pop. (1930) 68,202.

Moccasin Algonkin name of the shoe worn by N. American Indians. Made of deerskin or other soft leather, without stiff sole, the upper is often adorned with embroidery, beadwork or coloured sections of porcupine-quills.

Moccasin Snake Venomous North American snake; (1) the upland copperhead, *Ancistrodon contortrix*, 3 ft. long; (2) the fish and frog-eating water-moccasin, *A. piscivorus*, 5 ft. long, dreaded by negroes in the rice-fields.

Mocha Seaport of Arabia. It is on the Red Sea and was at one time a great port for the export of coffee. Certain brands of coffee were known as mocha. It was formerly the capital of the state of Yemen. Pop. 5000.

Mocking Bird Popular name of various birds with exceptional powers of mimicry. The common N. American perching song-bird, *mimus polyglottus*, 10 ins. long, is intermediate between the wrens and the babblers. Ashy-grey above, soiled-white beneath, the male has a full, liquid personal note, besides imitating the cries of many birds and other sounds.

Modder River of South Africa. It rises in the Orange Free State and flows through that country until it joins the Vaal in Bechuanaland. Its length is 186 m. On Nov. 28, 1899, there was an engagement here between the Boers and the British who forced their way across it with some loss.

Modena City of Italy. It is 23 m. from Bologna on a tributary of the River Po. The chief building is the magnificent cathedral. It is a manufacturing town and has a large agricultural trade. Pop. (1931) 92,757.

The territory around Modena formed the independent **Duchy of Modena** until it became part of the kingdom of Italy in 1868. From the thirteenth century it was ruled by the **Este** family.

Moderator Word used in the Presbyterian churches for a presiding minister. Each year a distinguished minister is elected moderator by the General

Assembly that meets in Edinburgh. In addition every presbytery has a moderator or presiding minister, and one is appointed to look after the affairs of a church that is temporarily without a minister. In England the Congregational church has moderators, each in charge of a district. At Oxford and Cambridge the examiners for certain examinations are called moderators, and at Oxford the second examination for a degree is called moderations. At Trinity College, Dublin, moderators are those who take the two highest places in certain examinations.

Modernism School of thought in Christian theology. In the Roman Catholic Church an early 20th century movement sought to adjust dogma to the generally received conclusions of Biblical criticism. Some leaders, notably Tyrrell and Loisy, encountered ecclesiastical censure, culminating in Pius X.'s encyclical *Pascendi gregis*, 1907. All clerics were enjoined to abjure modernism in 1910.

Modulus Term used in physics. It denotes the measure of an effect produced under certain conditions whose measure is taken as unity. The term is applied in a number of ways, thus the **modulus of a machine** is the ratio of its load to the power in equilibrium: **the modulus of elasticity** is the ratio of a stress to the accompanying strain, and the **gravity modulus** is a modulus of elasticity where the unit of force is taken as the weight of a unit mass.

Moffat Burgh and inland watering-place of Dumfriesshire. It is 21 m. north of Dumfries, on the L.M.S. Rly., and stands on the Annan. Pop. (1931) 2006.

Moffat Robert. Scottish missionary. Born at Ormiston, in East Lothian, Dec. 21, 1795, he became a gardener, spending his spare time in study. He was then trained as a missionary and in 1816 went out to South Africa for the London Missionary Society. He was there until 1870 and died at Leigh, near Tunbridge Wells, August 9, 1883. A man of great courage, devotion and resource, Moffat was one of the most successful missionaries of the time. His daughter married David Livingstone.

Mogul Name, a variant of Mongol, given to the empire that existed in India from about 1526 to 1858. It was founded by Baber, and continued to exist until after the Indian Mutiny. Its emperor, whose capital was Delhi, was called the **Great Mogul**.

Mohair Arab word meaning "select," and used for the fleece of the Angora goat. This has been used for many years for making garments and coverings. *See* ANGORA.

Mohammed Name of six sultans of Turkey. The name is a variant of Mahomet. The best known was Mohammed II., called the Conqueror (1451-1481). The greatest of his exploits was capturing Constantinople in 1453.

Mohawks North American Indian tribe of Iroquoian stock. Encountered between the St. Lawrence and the Catskills they were the first natives to obtain firearms, in exchange for pelts from the Dutch, 1614. Becoming the leaders of the Six Nations confederacy, they sided with England in the War of Independence, and migrated to Canada, where several thousands still remain.

The word was also used for a lawless band of ruffianly youths of fashion who nightly infested London streets, 1711-12. They atrociously attacked wayfarers of both sexes.

Mohicans North American Indian confederacy of Algonkin stock. First encountered in the upper Hudson valley, Mohawk pressure drove them partly into Massachusetts, 1664, a few now occupying a Wisconsin reservation, partly into Pennsylvania, where the Delawares absorbed them. An offshoot, the Mohegans, now extinct, became the dominant tribe in 17th century New England.

Molasses Sweet syrup produced when sugar is refined. It comes from both cane and beet sugar. It is thick, brown in colour, and has considerable food value. Treacle is made from it and by its fermentation rum is produced.

Mold Market town and urban district of Flintshire, also the county town. It is 13 m. from Chester, on the L.M.S. Rly. There are some manufactures and around are coal and lead mines. Pop. (1931) 5133.

Moldavia District of Rumania. It lies between Bessarabia and Wallachia and covers 14,700 sq. m. Jassy is the chief town. It is named after the River Moldava, a tributary of the Sereth.

Moldavia Soviet republic. One of the Russian republics affiliated to Moscow, it is on the left bank of the Dniester. It covers only 3200 sq. m., and its capital is Balta.

Mole Term applied to a form of breakwater. It consists of a stone wall or similar structure built of concrete projecting out into the sea to serve as a protection to shipping and form a haven, or to guide and regulate the currents and tidal flow.

Mole Small permanent congenital spot on the skin, more or less unsightly. It is usually slightly raised, often covered with hair, and darkly pigmented, and is sometimes called a birth-mark.

Mole River of Sussex and Surrey. It rises in Balcombe forest and flows through Surrey into the Thames near Molesey. It is 30 m. long and is noted for its Swallows, places where the river goes underground for a spell. These are near Leatherhead.

Mole Small burrowing, insectivorous mammal of the family *Talpidae*. Distinct from the shrew, it is found in the N. hemisphere. The common mole of Europe and Asia, *Talpa europaea*, 6 in. long, with 1 in. tail, widespread in Britain, is a muscular, earless, almost eyeless animal, feeding mainly on earthworms, and nesting in fortresses, not to be confounded with molehills. The velvety bluish-black coats are esteemed by furriers.

Molecule Smallest particle of matter composing a compound and consisting of a group of atoms having an independent existence and yet possessing the special properties of the substance in question. A simple example is that of common salt or sodium chloride, where one atom of sodium is combined with one atom of chlorine to form a molecule of salt, the resulting compound having characters quite different to those of the component elements. Molecules are regarded as being in ceaseless movement, this energy of molecular motion being heat. Further, there is an attractive force or cohesion which, under different conditions of temperature and pressure, acts upon the molecules, causing matter to assume either a solid, liquid, or gaseous state.

Molesey Urban district of Surrey. It stands on the Thames where it is joined by the Mole, being 2 m. from Kingston-on-Thames and 14 from London, on the S. Rly. It consists of East and West Molesey. Pop. (1931) 8460.

Molesworth Mary Louisa. English authoress. Born in May, 1839, she was the daughter of a Cheshire gentleman, C. A. Stewart. She made her name by her books for children. Among them are *Carrots, The Cuckoo Clock, Herr Baby, The Rectory Children, Tell me a Story, Robin Redbreast, Carved Lions, Uncanny Tales, Miss Mouse and Her Boys,* and *The Boys and I.* Some of these were written under the name of Ennis Graham. She died July 20, 1921.

Molière Name adopted by Jean Baptiste Poquelin, the great French dramatist. Born in Jan., 1622, his whole life was given to the theatre, beginning as a member and then leader of a small touring company and rising to the position of leading dramatic author of France, with the friendship and patronage of Louis XIV.

His work includes every type of comedy from simple farce to subtle satire, and forms a complete commentary on the people and customs of his period.

His greatest works are, *Les Précieuses Ridicules, L'École des Femmes, Tartuffe, Le Misanthrope,* and *Le Bourgeois Gentilhomme.* He died on Feb. 17, 1673.

Mollusca Sub-kingdom of invertebrate animals, including such forms as cuttle-fishes, oysters, whelks and snails. They are soft-bodied, cold-blooded, and lack segments, limbs and internal skeletons, being mostly protected by a shell of one or more pieces, secreted by the mantle or skin-covering. They have an alimentary canal, a mouth, a nervous system, and a heart, the blood being aerated by gills or, in land and most freshwater snails, by a kind of lung. Locomotion is effected mostly by a foot comprising the body's under surface which becomes the mussel's thready byssus, the tooth-shell's borer and the cuttle-fish's arms. *See* BIVALVES, CEPHALOPODA, GASTROPODA.

Moloch God of the Ammonites. He is called the abomination of the children of Ammon (1 Kings, xi. 7). He was a fire god and children were sacrificed to him. The name means king.

Moltke Helmuth, Count von. Prussian general called "The Silent." Born Oct. 26, 1800, at Parchim, he began his career in the Danish army, but in 1822 he entered the Prussian service. From 1835 to 1839 he was in the Turkish service, acting as adviser to the Turkish commander-in-chief in the Syrian campaign of 1838-9.

From 1858 to 1888 he was Chief of the General Staff in Berlin and reorganised the Prussian army. A master of military strategy, he played an important part in the war with Denmark in 1864, and was largely responsible for the Prussian success in the Seven Weeks' War with Austria (1866). In the Franco-Prussian war he planned the concentration of the Prussian armies on Metz, which resulted in the French capitulation at Sedan and the investment of Paris by the Prussians. He wrote histories of his campaigns for the use of the Prussian General Staff. He died April 23, 1891.

Moltke Helmuth Johannes Ludwig von. German general and nephew of the famous field-marshal. He was born May 23, 1848. At the beginning of the European War he was appointed director of the German operations. He relied on the plans handed on to him by his master, General von Schlieffen, strengthening the Metz-Verdun and Marne lines in the west but leaving only a minimum defence against Russia.

He was forced to withdraw troops from the west to meet the Russian advance, and was held responsible for the defeat of the Marne. He was recalled to Berlin at the end of 1914 as chief of the home General Staff. He died on June 18, 1916.

Molton South. Borough and market town of Devonshire. It stands on the River Mole, 12 m. from Barnstaple and 197 from London, on the G.W. Rly. It was once a centre of the woollen and lace manufactures. It is now chiefly a market for farm produce and has flour mills. Pop. (1931) 2831.

North Molton is a village, 5 m. away.

Moluccas Group of islands in the Dutch East Indies, also called the Spice Islands. They cover 192,402 sq. m. They lie between New Guinea and the Celebes and the chief are Ceram, Halmahe, Buru, Amboyna, Obi, Bachan and other groups. The soil is very fertile, the chief products being spice, coffee, cacao, indigo and rice. Amboyna is the chief town. Pop. 893,030.

Molybdenum Metallic element, having the symbol Mo, atomic weight 96 and melting point probably 2,500° C. Molybdenum though only found in small quantities in nature has become of economic importance owing to its use in the manufacture of tool steels and the employment of its compounds in making ceramic pigments, and in rubber manufacture. The chief source of the metal is molybdenite, a native sulphide occurring in granites and crystalline limestones associated with tin ore, and found in Australia, North America and Norway.

Mombasa Seaport of Kenya. It is on an island named after it. From here a railway goes to the mainland and it is a terminus of the Uganda Rly. Pop. 57,000.

Momentum Term in physical science applied to the quantity of motion in a moving body. Momentum is measured by multiplying the mass by the velocity, thus, a body having a mass of one pound moving at the rate of 100 ft. per second has the same momentum as another body with a mass of 100 pounds moving at 1 ft. per second.

Mommsen Theodor. German historian and archaeologist. Born Nov. 30, 1817, he studied at Kiel and then examined Roman inscriptions in Italy and France for the Berlin Academy. In 1848 he was appointed Professor of Law at Leipzig. He occupied chairs at Zurich, Breslau, and Berlin, and was a member of the Prussian parliament. He was awarded the Nobel prize in 1902. His great works were, *Roman History,* published in three volumes between 1854 and 1856, and his *History of the Roman Coinage,* and *Roman Provinces.* He died on Nov. 1, 1903.

Monaco Principality of Europe. It is on the shores of the Mediterranean, 9 m. from Nice and is surrounded be French territory. It covers 370 acres; in it is Monte Carlo. It is governed by a prince who is under the protection of France. The prince

belongs to the family of Grimaldi, which has ruled Monaco since 968. He obtains his revenue from the gaming tables at Monte Carlo. Pop. 25,000.

Monaco, the capital, is the headquarters of the international hydrographic bureau and has a small harbour. Pop. 2100.

Monad Term used in metaphysics for the primary element or existence. According to Leibnitz substance exists as monads or atoms each being a self-contained individuality; further, God is the supreme monad and the soul of man a single monad.

In zoology, a monad is a simple unicellular organism belonging to the flagellate infusoria.

Monaghan County of the Irish Free State. In the province of Ulster, it covers 499 sq. m. The Blackwater and the Finn are the chief rivers. The soil is fairly fertile and the people live mainly by growing oats, flax and potatoes, rearing cattle, sheep, pigs, and keeping poultry. Monaghan is the county town, other places are Castleblayney, Carrickmacross, Clones and Ballybay. Pop. (1931) 65,131.

Monaghan Urban district and county town of Monaghan, Irish Free State. It is 52 m. from Dublin by the Gt. Northern (Ireland) Rly, and is also served by a canal. It is an agricultural centre. Pop. 4636.

Monarchy Form of government in which supreme power is vested in a single individual. It may be absolute, independent of all other authority, and, according to the analytical school of political theory, incapable of legal limitation; or constitutional, subject to a form of constitution, written or unwritten. The English monarchy is constitutional.

Monash **Sir John.** Australian soldier. Born at Melbourne, Jan. 27, 1865 he was educated at the University of Melbourne and became an engineer. In 1887 he became an officer in the defence force and when the Great War broke out in 1914, after acting as censor, he led a brigade in Gallipoli. Later he went to France in command of a division and in 1918 became head of the Australian corps. He was knighted in 1918 and took charge of the demobilisation operations. In 1920 he returned to his work as an engineer. Monash, who was a Jew, died Oct. 8, 1931.

Monasticism System of corporate life adopted by persons who retire from the world into religious seclusion. The monastic life, older than Christianity, is exemplified in Buddhism and among the Essenes. In Egypt in the 2nd century solitary asceticism was practised by many hermits, one of whom S. Anthony organised corporate hermitages, c. 305, and founded Christian monasticism. In S. Egypt, a few years later, S. Pachomius founded the first cenobium, although the hermits still lived separately. Still later S. Basil, by prescribing common life under one roof, founded the Orthodox Eastern monastic system.

These practices spread westward, notably to Ireland, until Europe's unregulated asceticism was replaced by the ordered life of self-denial introduced by S. Benedict at Monte Cassino, c. 529. His rule, based on the "three substantials," poverty, chastity, and obedience to a superior, thenceforward governed all Western monasticism. Subsequent reforms introduced the Carthusian, Cistercian and other systems; a revolt against corporate monastic possessions gave rise to the mendicant orders, whose members are called friars, not monks.

Monastir Town of Yugoslavia. It is 130 m. to the N.W. of Salonika and is chiefly known for its military associations. In Nov. 1912, in the first Balkan War the Serbians defeated the Turks here, and in 1913 the town was formally given to them. In Dec., 1915, it was seized by the Germans. In Oct., 1916, French and Serbian forces attacked the Turks in the region of Monastir and entered the town on Nov. 19. Also called Bitolye, it has some manufactures and does a considerable trade. Pop. (1931) 32,982.

Moncton City and seaport of New Brunswick. It is on the Petitcodiac River, 89 m. from St. John, on the C.N. Rly. There is a good harbour and some shipping and here are railway workshops and textile mills. Pop. (1931) 20,617.

Mond **Ludwig.** German chemist. Born at Cassel, Germany, March 7, 1839, he was a pupil of Bunsen, but came to England in 1864 and settled in Widnes, where he perfected his sulphur recovery process. In 1873 he entered into partnership with Sir John Brunner, and founded the great alkali works of Brunner, Mond and Company at Winnington, Cheshire. He made new discoveries in the manufacture of nickel, and in 1876 presented a physico-chemical laboratory to the Royal Institution at a cost of £100,000. He was the father of the late Lord Melchett (Sir Alfred Mond). He died on December 11, 1909.

Monet **Claude.** French painter. Born Nov. 14, 1840, he was one of the founders of the Impressionist school. A member of the Dégas, Cézanne, Sisley group and a "painter of the open air," he was particularly interested in the effect of light on his subjects. He produced a number of studies of cathedrals (1874) and several views of London (1901). He died on Dec. 5, 1926.

Money Primarily coins used for the purchase of commodities. The term also includes pieces of impressed paper used for the same purpose and has been extended to cheques, bills of exchange, etc. The money market is the general term for dealings in money in London, New York, and other centres. A money changer is one who changes the coin of one country into that of another.

The earliest method of exchanging commodities was by barter, but soon pieces of metal and other substances, shells for example, were used for the purpose. Metallic money was first used, it is said, in Lydia. For many centuries silver coins were the chief form of metallic money. Gold coins were also minted, but to no great extent until the 19th century, when they became the generally accepted standard of value. These gold coins, and in their early days silver coins also, had a value equal to that of the goods they bought. Coins which did not possess this intrinsic merit (*e.g.*, the modern silver, nickel and copper coins), were only token coins; their value depended upon the solvency of the country that issued them.

In 1914 it became evident that the gold and silver coinage was inadequate to meet the needs of a world at war, and Governments issued paper money on an enormous scale. The result was that gold coins fell entirely out of use. Paper money continued in use after the end of the war, and silver coins were also used to a certain extent. The

functioning of money in relation to prices, was a matter of dispute during the serious economic crisis of 1931-32, but economists seemed unable to agree as to the utility or otherwise of increasing the supply of money in circulation.

In Great Britain a money bill is one that votes public money for a particular purpose. Such cannot be altered by the House of Lords. The decision as to whether or not a bill is a money bill rests with the Speaker.

Moneylender One who lends money as a business. Special legislation has been passed in England and other countries to protect the public from moneylenders. All moneylenders must be registered at Somerset House, London, W.C.2, and take out a licence which costs £15 a year. The law courts have powers to reduce the rate of interest and the amount charged for expenses if they consider such to be excessive. An Act passed in 1927 forbids moneylenders to exact compound interest on loans or to increase the rate of interest because the payments are in arrears.

Money Market Term applied to that market where all transactions can be reduced to the buying and selling of ready money against a promise of settlement at a future, definitely defined date. In this are involved foreign exchange movements, purchase of bills of exchange, dealings in Treasury Bills, and fluctuations of the Bank Rate.

Moneywort (*Lysimachia nummularia*). Perennial creeping herb of the primrose order, allied to the yellow pimpernel, a native of Europe. Its prostrate stems, 1-2 ft. long, bear rounded 1 in. leaves and solitary, bright-yellow, cup-shaped flowers 2 in. across.

Mongolia District of Central Asia. It lies W. of Manchuria, S. of Siberia, and N.E. of Chinese Turkestan and China proper. Inner Mongolia belongs to the Chinese Republic. Outer Mongolia has been a republic since 1924. Its area is 1,875,000 sq. m. The country is mountainous and much of it is occupied by the Gobi Desert. Its inhabitants belong to various nomadic tribes, and are cattle breeders and itinerant traders. Urga is the capital. The population is in the neighbourhood of 850,000..

Mongoose Indian name applied to various small weasel-shaped carnivorous mammals. They form a subfamily of the civet tribe and are indigenous to Africa and S. Asia. The Indian *Herpestes mungos*, 15-18 ins long, with 15 ins. tail, is frequently tamed for destroying snakes and rats. The somewhat larger Egyptian mongoose, formerly called the ichneumon, devours crocodile eggs.

Monism Philosophic view which refers all phenomena to a single form of reality, whether material or spiritual. Certain schools of thought consider the dualism of matter and mind, or body and soul to be parallel phenomena indistinguishable in reality. Some, *e.g.*, Spinoza, lean to materialistic, some *e.g.*, Hegel, to intellectual monism.

Monitor Armoured warship intended for coastal or river service and therefore of shallow draught. A monitor has a low freeboard and bulging sides for defence against torpedo attacks. It is designed for moderate speed and carries one or two guns. The first monitor was designed by Ericsson in 1861. Monitors were used to some extent during the Great War, notably on the Belgian coast in 1914.

Monitor Genus of fork-tongued lizards (*Varanus*), inhabiting S. Africa, S. Asia and Australasia. Long-bodied, with uncrested back and frequently with flattened tails, the head is covered with small scales. All are predacious, powerful creatures, with a partiality for eggs; some are semi-aquatic, and may reach 7 ft.

Monk Member of a male monastic order. Usually denoting a Christian recluse, the word, "living alone," is also applied to the members of Buddhist and Mohammedan religious fraternities. It was first used of the Christian hermits of 2nd century Egypt, afterwards extended to those who followed a cenobitic or corporate life in seclusion; the female counterpart is a nun. *See* FRIAR.

Monk Bretton Urban district of Yorkshire (W.R.). It is 2 m. from Barnsley on the L.M.S. Rly. There was a monastery here in the Middle Ages; hence the name. Woollen manufacture is the chief industry.

Monkey Name loosely applied to all mammals of the order *Primates* except man and perhaps the larger man-like apes. Distributed throughout the warmer regions they comprise, besides the long-armed gibbons, an extensive Old World family sharing their posterior callosities, the tails when present being never prehensile, and many possessing cheek-pouches. These include the langurs, baboons and macques, one of which is the Barbary ape of Gibraltar. American monkeys, are recognisable by the absence of callosities and cheek-pouches, by possessing four additional grinding teeth, making 36 altogether, and mostly having prehensile tails. Another family comprises the marmosets.

Monkey Flower (*Mimulus*). Genus of perennial herbs of the figwort order. They are natives of extra-tropical America and Australasia. The showy mask-like corollas, sometimes splashed and spotted, yellow, scarlet, purple or white, yield favourite garden flowers; a double-flowered "hose-in-hose" form occurs.

Monkey Puzzle Tree. Popular name for the Chile pine (*q.v.*).

Monkland Canal in Scotland. It goes from the Clyde at Glasgow to the North Calder at Calderbank. It is 13 m. long and is used chiefly for carrying coal. It was opened in 1790 and is now owned by the L.M.S. Rly.

Monkshood (*Aconitum napellus.*) Genus of hardy perennials of the order *Ranunculaceae*. The leaves are dark green and the hooded shape of the dull blue flowers, which are borne on a long head, have given the plant its popular name. Another variety (*A. napellus bicolor*) has violet, blue and white blossoms. Wilsoni, a blue monkshood, is a beautiful autumn blooming variety. The whole plant is poisonous.

Monkwearmouth District of Sunderland. It is situated on the north bank of the Wear and is 262 m. from London by the L.N.E. Rly. S. Peter's Church includes remains of a Benedictine monastery. *See* SUNDERLAND.

Monmouth Borough of Monmouthshire, also the county town. It stands where the Monnow falls into

the Wye, 144 m. from London. An interesting feature is the bridge with its gateway, over the Monnow. The town possesses a collection of Nelson relics. The borough includes Troy on the other side of this river. The town has an agricultural trade. Pop. (1931) 4731.

Monmouth James Scott, Duke of. Born April 9, 1649, he was the son of Lucy Walters and Charles II. Very much in favour with the king and the people at first he was created Duke of Monmouth, and became Captain-General of the Army. As a result of the Rye House Plot he was exiled in 1683. He returned to England in 1685 and led a revolt against James II., whose Catholicism had aroused the fear of a considerable party in England. He was defeated and captured at Sedgemoor soon after landing, and was executed on Tower Hill, July 15, 1685.

Monmouthshire County of England. On the border of Wales, it is treated for many purposes as part of that country. It covers 546 sq. m., and has a coastline on the estuary of the Severn. Monmouth is the county town, but Newport is the largest. Other populous centres are Pontypool, Abertillery, Bedwellty and others in the coal mining area. The more picturesque aspect is represented by Chepstow and Abergavenny, while the county also contains Tintern, Raglan and Caerleon. The rivers are the Wye, Usk, Ebbw and Rhymney. The west of the county is on a rich coal field. Monmouthshire contains some of the loveliest scenery in England. There wheat is grown, sheep are reared, and there are many orchards. Pop. (1931) 434,821.

Monolith Single stone of great size. Monoliths are found in Egypt, India, Peru and elsewhere, and are associated with early man. Some are plain stones, but others are sculptures. One at Baalbek in Egypt weighs 1100 tons.

Monoplane Type of aeroplane in which there is only one set of planes or supporting surfaces. The well-known Fokker three-engined aeroplanes are of this type, also the Dornier flying-boats, Junkers and the British Fairey postal aeroplane. *See* AEROPLANE.

Monopoly Exclusive right to trade in a particular commodity. In the Middle Ages and later, it was a very usual practice for kings to give monopolies to subjects, *e.g.*, the monopoly to sell coal in a certain town. These became very unpopular and in 1614 they were forbidden by law. Certain still exist, however, but these take the form of patents, the monopoly being granted to the inventor for a certain time. In France the sale of matches is a state monopoly, and in Great Britain broadcasting may be described as such.

Monotheism System of religious thought and practice which recognises only one God. Opposed to polytheism, which worships many gods, manifested in physical, animal or human forms, it claims distinction from systems of moral dualism by asserting the ultimate supremacy of good over evil. Differing from deism, it ranks as revealed religion based upon sacred scriptures, and is regarded as theism's highest expression. It is exemplified in Islam, Judaism and, notwithstanding the doctrine of the Trinity, in Christianity. *See* DEISM.

Monotype Name given to a form of printing machine. It was invented by an American, Lanston of Washington, for composing lines of movable type, each letter being a separate character. It consists of two machines, one a typewriter-like keyboard by which the operator perforates a paper roll, each perforation representing a letter, the other a casting machine which works automatically, casting lines of type from the perforated ribbon and arranging them in their proper order. The monotype machine, which is used for printing *The Times*, has the advantage of a great output and the capacity for printing intricate work, with a very high standard of quality.

Monro Sir Charles Carmichael, 1st Baronet. British soldier. Born June 15, 1860, he joined the army in 1879. He served in South Africa and was later commandant of the Musketry School at Hythe. During the Great War he served on the Western front as commander of the 1st Army Corps, and later of the 3rd Army.

As commander-in-chief of the Mediterranean Expeditionary Force he saved the situation in the Dardanelles by carrying out the evacuation of Gallipoli. He was commander-in-chief in India in 1916 and Governor of Gibraltar, 1923-1928. He was created a baronet in 1921.

Monroe James. American president. Born in Virginia, April 28, 1758, he was elected to the legislature of Virginia in 1782 and in 1785 became a member of the House of Representatives of the United States. In 1790 he was elected to the Senate and in 1794 went to France as an ambassador but was recalled in 1796. From 1799 to 1802 he was governor of Virginia and afterwards ambassador in turn in Paris, London and Madrid. In Paris he arranged the purchase of Louisiana by the United States. From 1811-17 Monroe was secretary of state. In 1816 and 1820 he was elected president. In 1825 he retired from public life and died in New York, July 4, 1831.

Monroe is chiefly known as the author of the Monroe doctrine. In 1823 he recognised the independence of the republics in South America, previously under Spanish rule, and in so doing, he declared that the American continents "are henceforth not to be considered as subjects for future colonisation by any European power."

Monrovia Capital and seaport of Liberia. It stands on the Atlantic, at the mouth of the St. Paul River. Through it much of the seaborne trade of the republic passes. It is connected by motor roads with the interior. Pop. 12,000.

Mons Town of Belgium. It stands on the River Trouille, 38 m. from Brussels, and is a coal mining centre and the capital of the district called the Borinage. The chief buildings are a beautiful town hall and a fine Gothic church. The town has some manufactures. Owing to its position Mons was several times taken and retaken during wars with France and until 1862 its fortifications remained. From Aug., 1914 to Nov. 11, 1918, it was in the possession of the Germans.

Mons Battle of. Battle between the British and the Germans, Aug. 23, 1914. At the outbreak of the Great War the British Expeditionary force took up a position from Mons to Condé, and here it was attacked by the Germans. The two British army corps resisted the attack throughout the day, but at nightfall, the French on their left having given way, they were ordered to retire. This they did in good order. Of 65,000

men engaged the British losses were about 5000.

Monsoon Seasonal wind blowing from the Indian Ocean over south-eastern and eastern Asia bringing heavy rain. It is caused by the rapid heating and cooling of the atmosphere in the same way as in the case of the diurnal land and sea breezes of low latitudes. The summer monsoon of India is south-westerly and blows strongly across the Indian Ocean, becoming south-easterly up the Ganges Valley and condensing in heavy rains, the heaviest rainfall being in the valley of Assam.

Monstrance In the Roman Catholic Church a transparent vessel in which the consecrated host is shown to the people for adoration.

Montagu **Lady Mary Wortley.** English letter writer. Born about 1690, daughter of the Duke of Kingston, she was famous even in youth for her beauty and wit. She was a friend of Alexander Pope, Addison, and other notable literary and society leaders. In 1712 she married Edward Wortley Montagu.

In 1716 Montagu was appointed ambassador at Constantinople, and Lady Mary lived with him in the East from 1716 to 1718. It was from the East that her letters, describing Turkish life, were mainly written. She died on Aug. 21, 1762.

Montaigne **Michel de.** French writer, philosopher and moralist. Born Feb. 28, 1533, he lived for the most part at the Chateau de Montaigne in Périgord. He was councillor of the *parlement* of Bordeaux, and *maire* of that town. Writer of the *Essais* in which he studies his own nature and that of humanity as a whole, he was particularly interested in the apparently contradictory elements of human nature, which, he said, are so confusing that it is only with the help of the divine revelation that man can arrive at the truth. His essays are notable for the grace and freshness of their style, and for the perspicacity and wide tolerance of the author. He died Sept. 13, 1592.

Montana North-eastern state of the U.S.A. It is situated on the Canadian border. Its products include wheat, oats and fruit, and, among other minerals, gold, silver, coal and petroleum. Represented in congress by 2 senators and 2 representatives, it joined the Union in 1889. Area, 147,182 sq. m. Pop. (1930) 537,606.

Mont Blanc Highest mountain peak in the Alps. It reaches the height of 15,781 ft., and is situated on the frontier between France and Italy, the mountain range running in a north-easterly direction. There are a number of smaller associated peaks, such as the Aiguille du Dru, Aiguille d'Argentière, Aiguille Verte, Grandes Jorasses, etc., and below are the Mer de Glace and other glaciers.

Montcalm **Louis Joseph, Marquis de.** French soldier. Born Feb. 29, 1712, he was in command of the French troops in Canada and captured the British posts of Oswego and Fort William Henry. After the French had lost Louisburg and Fort Duquesne, Montcalm moved to Quebec and was finally routed in battle by Wolfe on the Plains of Abraham. After trying vainly to rally his forces he was wounded and died the next day, Sept. 14, 1759.

Monte Carlo Pleasure resort of Monaco. It stands on the Mediterranean, 9 m. from Nice, and occupies a beautiful position overlooking the sea. It is famous as a gambling centre and the chief building is the casino. Pop. 14,055.

Monte Cristo Island of Italy. It is 26 m. south of Elba and covers 6 sq. m. On it are mineral springs. It gives its name to a famous romance by Dumas, *The Count of Monte Cristo*.

Montenegro Kingdom of Europe, now included in Yugoslavia. It began about 1390 as a principality and was ruled from 1697 by a family called Danilo. It was nominally part of the Turkish Empire until 1878 when it became independent. It received a constitution in 1905 and in 1910 its ruler, Prince Nicholas, took the title of king. When the Great War began, Montenegro took the side of Serbia. The land was therefore invaded by the Austrians, and by Jan., 1916, it was completely in their possession. At the end of 1918 they withdrew and the Serbians took their place. The Montenegrins then decided to depose Nicholas and unite with Yugoslavia. The area of the country is about 3630 sq. m. Its capital is Cetynye, but Jakova is the largest town. *See* YUGOSLAVIA.

Monterey City and pleasure resort of California on Monterey Bay, 90 m. to the south of San Francisco. It has a good harbour and the industries include shipping and fishing. Pop. 9100.

Another **Monterey** is a city of Mexico. It is on the San Juan River in the north-east of the country and is famous for the beauty of its surroundings. Pop. 81,000.

Montesquieu **Charles de Secondat, Baron de la Brède et de.** French political historian. He was born Jan. 18, 1689. In 1721 he published the *Lettres persanes*, in which, in the character of two Persian visitors, he satirised the decadence and insincerity of French society. His great political treatise, *De l'esprit des lois*, was published at Geneva in 1748. He was for a long time the President of the *parlement* of Bordeaux, and then travelled in Europe and became the friend of Lord Chesterfield. He had wide vision and deep insight, and his admiration for the free English constitution had a great influence on the first part of the French Revolution. He died Feb. 10, 1755.

Montessori **Maria.** Italian teacher. Born in 1870, she became a doctor and took a special interest in children of weak intellect. In 1898 she became head of an institution for the education of such children. Her methods spread to other European countries and were taken up as a means of educating normal children. She received the Degree of LL.D. at Durham in 1923 and visited England again in 1935.

The **Montessori system** aims at developing the child's individuality in every possible way. He or she is taught to look after himself or herself in every way. Attention is paid to physical training; work in the garden and in the open air is encouraged as well as manual work of one kind or other. There is a **Montessori Society** in London.

Montevideo City and seaport, and capital of Uruguay. It stands on the north side of the estuary of the River de la Plata, 132 m. from Buenos Aires, and is well served by railways. It developed with great rapidity in the 19th century and is

now a prosperous seaport and trading centre. The port has a fine harbour with ample docks. Pop. (1932) 655,972.

Montezuma I. Mexican emperor. He annexed Chalco and overpowered the Tlaxcalans. He died 1471.

Montezuma II. Mexican emperor, son of Montezuma I. Born 1466, he waged war against Tlaxcala, Guatemala and Tehuantepu and greatly enlarged his empire. In 1519 the Spaniards, under Cortes, landed, marched to the capital, and soon made the emperor a virtual prisoner. In 1520 Montezuma tried to prevent the Mexicans from attacking the Spaniards, but was himself attacked by them and died three days later.

Montfort **Simon de.** Born about 1206, he came to England in 1230. At first a great friend of Henry III., who created him Earl of Leicester, he afterwards fell into disfavour and was sent to Gascony to quell a rebellion. He returned in 1253 to find the barons in revolt against the king's foreign counsellors. For many years he led the barons in attempts to make Henry rule wisely, and in 1265 called a parliament which was the forerunner of modern government. He was defeated at Evesham in 1265 by Edward, Prince of Wales, and killed in the battle.

Montgomeryshire County of Wales. In the north of the country, it is wholly inland. In it there are several ranges of hills including the Plynlimmon range in the south. The rivers include the Severn, Dovey, Vyrnwy and Wye and herein is Lake Vyrnwy. The soil, not very fertile, is used chiefly for the rearing of sheep. Montgomery is the county town. Other places are Welshpool, Llanidloes, Llanfyllin, Newtown and Machynlleth. Pop. (1931) 48,462.

Month Division of the year. It may represent a period of twenty-eight days or one revolution of the moon round the earth, known as a lunar month, or it may represent the twelfth part of a year and is then termed a calendar month. In the Roman or Julian calendar, which began in March, the months corresponded to our own, with the exception of the fifth and sixth, named Quintilis and Sextilis, which were later renamed Julius and Augustus.

Montmartre District of Paris. It is on a hill to the north of the city proper and is famous for its night life and as a centre of Bohemianism. The chief building is the basilica of the Sacré Coeur.

Montmorency River of Quebec. It rises in Snow Lake, flows south through the province for about 80 m. and joins the St. Lawrence just outside the city of Quebec. The falls near the mouth are used to generate electric power. An electric railway links it with Quebec.

Montpellier City of France. It is 31 m. from Nimes, only a few miles from the Gulf of Lyons. The university was a famous medical school in the Middle Ages and the city has a botanic garden, the oldest in France. The city is a railway junction, and has some manufactures. Pop. (1931) 86,924.

Montreal Largest city in Canada. It is situated on the island of the same name, at the confluence of the Ottawa and St. Lawrence Rivers, in the province of Quebec. It is the commercial capital of the Dominion and between 1844 and 1849 was the political capital also.

Shipping is the principal industry, for the St. Lawrence is navigable during three-quarters of the year, and Montreal is a busy port. It is also a great railway centre, and the C.P.R. has its shops here. Educationally it is of importance, with its two universities, McGill and Montreal. The population is largely French. The modern city was founded by Maisonneuve, but there was previously an Indian village on the site. Pop. (1931) 818,577.

Montreuil Town of France. It is on the River Canche, 20 m. from Boulogne. At one time Montreuil was on the sea, but it is now some miles away. From March, 1916, to the end of the war Montreuil was the British general headquarters and near it was the Château de Beaurepaine occupied by Sir Douglas Haig.

Montreux Pleasure resort of Switzerland. It stands on the eastern side of Lake Geneva, about 50 m. from Geneva. It has a station, and from here steamers go to other places on the lake.

Montrose Royal burgh and Seaport of Angus (Forfarshire). It is 31 m. N.E. of Dundee on the L.M.S. and L.N.E. Rlys., and stands on the South Esk where it forms the Montrose Basin. The town received its charter from David I., and became a royal burgh in 1352. The staple industry is flax spinning, others are fishing, shipping, and the manufacture of linen. Pop. 10,196.

Montrose **Duke of.** Scottish title held by the family of Graham. In 1505 William, Lord Graham, a title dating from 1445, was made Earl of Montrose. John, the 3rd earl, was regent of Scotland and chancellor from 1603 to 1608. His grandson, James, the 5th earl (*q.v.*), was the famous soldier who was made a marquess in 1644. James, the 4th marquess, a supporter of the union between England and Scotland in 1707, was made a duke in that year. He was secretary of state, 1716 to 1733, and from him the present duke is descended. The duke's estates are around Loch Lomond, but a good deal of the land has been sold. The duke's eldest son is called the Marquess of Graham.

Montrose **James Graham, Marquis of.** "The Great Montrose." Born in 1612, he helped to form the Scottish Covenant, which he at first defended. After turning against the Covenanters he was imprisoned and went to England, but returned in 1644, when the Highlanders rallied round him. His campaign against the Covenanters was successful, but he was routed by Leslie at Philiphaugh, near Selkirk. He escaped abroad, but returned to avenge the execution of Charles I. He was then betrayed to Leslie who had him publicly hanged in Edinburgh, May 21, 1650.

Mont St. Michel Island off the coast of Brittany. It is in the Bay of St. Michel, 15 m. from Granville. A causeway about a mile long connects it with the mainland. On the highest point of the island is an abbey, now national property. The abbey was founded in 708, and the oldest existing building dates from the 11th century.

Monument Architectural structure, tomb, shrine, sculpture or incised brass used to commemorate some person or important event. Of ancient monumental buildings the famous mausoleum at Halicarnassus is an example. A modern monument of national importance is the Cenotaph in Whitehall. Monumental brasses of varying degrees of technical skill were common in

English churches from the 13th to 17th centuries.

Moody Dwight Lyman. American evangelist. Born Feb. 5, 1837, he started his work in Chicago in 1856. In 1870 he joined forces with Ira David Sankey and began the "Moody and Sankey" evangelical tour. Their campaigns in England in 1873 and again in 1883 caused a great emotional wave of revivalism due to the preaching of Moody and the singing of Sankey. Moody and Sankey hymns are still sung.

Moon Satellite of the earth. It revolves round the earth in 27 days, 7 hours, 43 minutes, and its average distance is about 238,793 m. The moon's diameter is about 2160 m., and its mass is estimated at $\frac{1}{80}$ of that of the earth. Owing to the time taken by its axial rotation being the same as that of its revolution round the earth, the moon always presents the same aspect to us. It shines by reflected light from the sun and when opposite the sun is called full moon, a fortnight later when between the earth and sun it is nearly invisible and is called new moon. The effect of the lunar attractive force upon tides is well known. The moon's surface shows signs of former volcanic activity in its vast craters and plains.

Moonstone Precious stone. Sometimes called wolf's eye, fish's eye, or water opal, its reflects a bluish milky light. It is a translucent, colourless felspar, chiefly orthoclase.

Moonwort (*Botrychium lunaria*). Fern of the adder's-tongue order, native in Britain and all cold and temperate regions. The single stout and fleshy frond, 3-6 ins. long, bears close-set pairs of crescent-shaped leaflets.

Moore George. Irish novelist. Born in Ireland in 1852, he first studied art in Paris, but turned to literature, beginning with verse, *Flowers of Passion* (1878). His three great novels are *Esther Waters* (1894), *Evelyn Innes* (1898), and *Sister Theresa* (1901). In these he imitated the French philosophical novel and "restored in England the Fielding tradition." *Hail and Farewell, The Brook Kerith* and *Heloise and Abelard* are other outstanding works. He turned later to drama with *The Coming of Gabrielle* (1920), and the successful *Making of an Immortal* (1928). *Aphrodite in Aulis* appeared in 1931. Died Jan., 1933.

Moore Sir John. Scottish soldier. Born in Glasgow, Nov. 13, 1761, he entered the army and from 1794 onwards saw active service in Ireland, the Netherlands, Egypt and elsewhere. He was sent to Spain in 1808 at the head of an army, and was soon given command of the forces there. He marched from Lisbon into Spain, but the advance of a large French army forced him to retreat and to fall back on Corunna, to which port he ordered his ships. The retreat was a difficult march of 250 m., but nevertheless Moore, on reaching Corunna, was able to defeat the pursuing French. During the battle on Jan. 16, 1809, Moore was fatally wounded by a cannon-ball.

Moore Thomas. Irish poet. Born May 28, 1779, his best-known works include the *Irish Melodies* (1807), the *Twopenny Post-Bag* (1813), a satire on the Regent and his friends, *Lalla Rookh* (1817), for which he received £3,000, *The Fudge Family Abroad* (1818), and his very fine *Life of Byron* (1830). He died Feb. 25, 1852.

Moorfields District of London. To the north of the city, it was marshland until it was drained about 1500. It later became known as Finsbury Fields, and was built over. Finsbury Square and Finsbury Circus now occupy the site.

Moor Hen Water-fowl. The European *Gallinula chloropus* (*Rallidae*) is common in England on rivers, ponds, etc. Iron-grey with greenish wings, white at the edges, it swims in a jerky manner, and can run and fly rapidly.

Mooring Mast Mechanism to which airships anchor. It is so arranged that the airship with its nose fastened to the top of the mast, can swing in any direction with the wind. Inside the mast are steps for passengers and crew to ascend, and it contains also mechanism for taking up petrol, water and other supplies. There are large mooring masts at Cardington, Bedford.

Moor Park Residence in Surrey. It is 2 m. from Farnham, and is noted as the residence of Sir William Temple, who bought it in 1682. Here Dorothy Osborne lived and Jonathan Swift met his Stella.

Another **Moor Park** is in Hertfordshire, near Rickmansworth on the Met. Rly. The house, built about 1670, was a seat of Lord Ebury, but after the Great War he sold it, and the park has been cut up for building land.

Moors Name of a people who live in the northern parts of Africa. They are descended from the Berbers or the Arabs, and gave their name to Morocco. Some of them crossed into Spain and conquered a good part of that country. There they set up a kingdom which lasted from 711 until 1492, and the southern parts of Spain still bear extensive traces of their influence, especially in architecture. They were of no mean repute as scholars. Other Moors helped to people, not only Morocco, but also Algiers and Tunis, where they are still found. *See* MOROCCO; SPAIN.

Moose Algonkin name, "wood-cropper," of the world's largest species of deer (*Alces machlis*). Ranking as an American variety of the elk of N. Europe and Siberia, it formerly ranged from 43° N. lat. northward to the so-called Arctic barren-grounds. It is disappearing from the northernmost of the United States, but is still found in Alaska and in various parts of Canada, especially towards the N.W., being protected in Alberta and elsewhere. *See* ELK.

Moose Jaw City of Saskatchewan. It is on Moose Jaw River, 400 m. to the west of Winnipeg and the same distance from Calgary. It is served by both the transcontinental lines, C.P.R. and C.N.R., and is the centre of an agricultural district. Pop. 24,000.

Moraine Term used in geology. The rocky material carried along the side of a glacier forms a lateral moraine. A median moraine is formed when two glaciers meet. The terminal moraine is found where a glacier ends.

Morality Play Form of drama that was popular in the 15th century. It grew out of the miracle play, the distinguishing feature being to personify the virtues and vices and so inculcate a moral lesson. The most famous of these plays is *Everyman*. It tells how human beings enter upon the journey to which they are called by death. Another of these plays is *The Castle of Perseverance*, which tells how the human

race is tempted by luxury but is saved by penitence.

Moratorium Postponement of a debt or other liability, usually for a definite period. In Aug., 1914, on the outbreak of war, the government declared a moratorium of one month for bills of exchange. In Dec., 1931, Hungary, faced with serious financial difficulties, declared a partial moratorium. During the depression of 1930-32 some public companies secured a moratorium for the payment of their debenture interest.

Moravia Part of the republic of **Czechoslovakia.** It is in the centre of the country with Bohemia to the west. Brunn is the capital and the March, also called the Morava, is the chief river. It was united with Austria-Hungary in 1849, and from then until 1918 was a province of that empire.

Moravian Brethren Protestant religious body. Founded originally after the death of John Huss (1415), an organisation was set up at Berthelsdorf in Saxony in 1727, its leaders being Count Zinzendorf and Christian David. Some of its members were Lutherans, but others were persons who had fled from Bohemia to Saxony and were the successors of the Hussites of the 15th century. The new faith obtained a footing in England and had chapels in Chelsea and in Fetter Lane, London. The churches are governed by bishops and elders. The Moravians do a great deal of missionary work. They have about 40 churches in England and over 3000 members. The headquarters are in Fetter Lane, London, E.C.4. The whole church is divided into four provinces, Germany, Britain, North America and South America.

Moray Former name for the county of Elgin (*q.v.*). It is the name of one of the earldoms into which Scotland was divided in the later Middle Ages. This covered the modern counties of Elgin, Banff, Nairn and part of Inverness.

Moray **James Stewart, Earl of.** Born in 1531, the natural son of James V. of Scotland, he opposed Mary, Queen of Scots in her marriage to Darnley, and was partly responsible for the murder of Rizzio, her secretary. When Mary was imprisoned in Loch Leven by the rebellious nobles, Moray was appointed Regent. He was known as the "Good Regent" and did much to restore civil and religious peace in Scotland. He was shot on Jan. 23, 1570, by one of Mary's supporters.

Mordant Substance used in dyeing to fix a dye in a fabric by forming an insoluble compound with the colouring matter, or by acting as a medium for absorbing the dye. Alumina and aluminium salts, ferric oxide, and salts of tin and chromium are used as mordants, also oil mordants in Turkey-red dyeing.

Mordecai Jewish exile. He figures in the Old Testament Book of Esther as the queen's protector and relative, who co-operated with her in frustrating the vizier Haman's anti-Jewish plots.

More **Hannah.** English authoress. Born at Stapleton, Gloucestershire, Feb. 2, 1745, she came to London in 1774, and became a friend of Dr. Johnson and of Burke. Garrick produced her tragedy, *Percy*, in 1777, but after his death she renounced the theatre and became a philanthropist, starting Sunday Schools in Cheshire, and organising a movement of which the outcome was the Religious Tract Society. She wrote many religious books, and bequeathed all her money to charity and religious institutions. She died Sept. 7, 1833.

More **Sir Thomas.** English scholar and lawyer. Born in London, Feb. 7, 1478, he was a son of a judge, Sir John More. He went to Oxford and then settled in London, where he studied and then lectured on law. He obtained an official position in the city and was elected to the House of Commons. Thomas Wolsey formed a high opinion of him and appointed him Treasurer of the Exchequer and Chancellor of the Duchy of Lancaster, whilst the Commons chose him as Speaker. He went to France and Germany on public business, and in 1529, succeeded Wolsey as Lord Chancellor. In 1532 he resigned that office and in 1534, for refusing to recognise the king as head of the church, he was accused of high treason. On July 7, 1535, he was beheaded. He was beatified in 1886.

More is one of the most attractive characters in English history, and has a permanent place in English literature. He was a member of the circle of scholars and humanists that included Erasmus and Colet. He wrote a *History of Richard III.* as well as the immortal *Utopia*.

Morecambe Borough and watering place of Lancashire. It stands in Morecambe Bay, 3¼ m. from Lancaster, on the L.M.S. Rly. Fishing is the chief occupation. Pop. (1931) 21,600.

Morecambe Bay Opening of the Irish Sea. It cuts into the coasts of Lancashire and Westmorland and is 10 m. across. At low tide it is largely sand. The Lune, Wyre, Kent and other rivers flow into it.

Moresnet District of Belgium. It is on the border of Germany just outside Aix la Chapelle. In 1816 it was placed under the joint control of Germany and the Netherlands. In 1541 it was put under a burgomaster and council, and the inhabitants could be either German or Belgian citizens at choice. In 1919 it was handed over to Belgium. Here are zinc mines. Pop. 3000.

Morgan **John Pierpont.** American financier and banker. Born at Hartford, Connecticut, on April 17, 1837, he was the son of a banker and entered the family firm in 1864. This later became the firm of J. P. Morgan and Company, and, largely through his financial ability, became one of the most powerful banking houses in the world. It organised the Steel Trust, formed an Atlantic Shipping Combine, controlled railways, etc. He was a yachtsman, collector and philanthropist, and died a multi-millionaire on March 31, 1913, in Rome. His son, **John Pierpont,** placed contracts and raised loans for the British Government during the War.

Morland **George.** British painter. Born June 26, 1763, he was the son of the crayonist, Henry Morland, who brought him up with such strictness that when he became his own master, he went steadily downwards through drink and debt. He painted chiefly country subjects, such as gipsies and farm interiors. His pictures are remarkable for their beauty of conception and harmony of colouring. "The Inside of a Stable" in the National Gallery is one of his finest works. He died of brain fever and in poverty on Oct. 29, 1804.

Morley Borough and market town of Yorkshire (W.R.). It is 4 m.

from Leeds and 183 from London, by the L.N.E. Rly. The place is a centre of the woollen manufacture, and machinery is made. Pop. (1931) 23,397.

Morley Viscount. English writer and statesman. Born at Blackburn, Dec. 24, 1838, John Morley was the son of a doctor. He went to Cheltenham College and then to Lincoln College, Oxford. In 1867 he became editor of *The Fortnightly Review*. During the next 10 years he wrote his studies on Voltaire, Rousseau, Diderot and other French thinkers, and a book, *On Compromise*. These and the writings published as *Critical Miscellanies*, reveal him as a thinker, a scholar and a stylist. He wrote also *Lives* of Burke and Cobden and was recognised as the leading exponent of philosophic radicalism. In 1880 he became editor of *The Pall Mall Gazette*, but he resigned in 1883, the year after he had given up *The Fortnightly*.

In 1883 Morley entered the House of Commons as M.P. for Newcastle-on-Tyne, and when Gladstone declared for Home Rule, he was one of his leading supporters. He was Chief Secretary for Ireland in 1886 and again, 1892-95. In 1895 he lost his seat at Newcastle, but in 1896 was returned for the Montrose Burghs. Soon after Gladstone's death, he withdrew from public life, while he wrote the monumental life of that statesman, published in three volumes, in 1904. In 1905, when the Liberals returned to power, he became Secretary for India, a post he held until 1910. In 1908 he was made a viscount, and he was Lord President of the Council from 1910 until he resigned on the outbreak of war in Aug., 1914. He died Sept. 23, 1923, when his title became extinct. His many honours included the O.M. His writings, in addition to those mentioned, include *Studies in Literature* and a *Life* of Walpole. He edited the *English Men of Letters* series.

Mormons Religious organisation entitled the Church of Jesus Christ of Latter-Day Saints, founded by Joseph Smith in New York State, 1830. So-called divine revelations included a pretended history of primitive America, *The Book of Mormon*, claimed as of equal authority with the Jewish and Christian scriptures. The church spread rapidly to Ohio, Missouri and Illinois, secured many proselytes in England and sent missionaries elsewhere. In 1843 the prophet received a "revelation" permitting polygamy; during the "Gentile" indignation thereby aroused, he was shot. Brigham Young, who succeeded, led the church in 1847 to Great Salt Lake, afterwards constituted the Utah Territory. Prolonged controversies concerning plural marriages culminated after Young's death in their ostensible abandonment, 1890. The community now exceeds 600,000, with 82 churches in Great Britain. The Reorganised Church of Latter-Day Saints, after Smith's death, distrusted Young and repudiated polygamy, accepting the founder's son as president, 1860. Now numbering about 100,000, their headquarters are in Independence, Missouri.

Morning Glory Popular name of various twining herbs of the bindweed order. It refers especially to the tropical American *Ipomoea purpurea* which gardeners call alternatively *Convolvulus major*. It has alternate, toothless, heart-shaped leaves and large five-lobed, funnel-shaped corollas, purple, azure-blue, crimson, striped or white. Ivy-leaved and other forms occur.

Morocco Country of N. Africa. It has a coastline on the Mediterranean Sea and Atlantic Ocean, while Algeria lies to the West. The total area is 213,350 sq. m. which is divided into three territories, French, Spanish and International.

The native population consists largely of Berbers and Arabs, and there are also many Jews. The European population is chiefly French, and there are British colonies at Casablanca and Tangiers.

Agriculture is the main industry in all territories. A great irrigation scheme was begun in 1927. There is some mining, phosphate being the most important mineral so far exploited. The chief towns are Fez, Marrakesh and Rabat. The country is ruled by a sultan under French protection. Pop. 5,300,000.

Morpeth Borough and market town of Northumberland. It is 284 m. from London and 17 from Newcastle-on-Tyne, by the L.N.E. Rly., on which line it is a junction. The industries included brewing, malting and coal mining, while cattle fairs are held. Near are the Bothal Castle and the ruins of Newminster Abbey. Pop. (1931) 7390.

Morphia (or Morphine). Name given to the principal alkaloid in opium, morphia was isolated in 1816. It occurs either as a white amorphous powder or as transparent acicular crystals soluble in alcohol but insoluble in water. Morphia is used in medicine on account of its soporific and anodyne properties, although excessive doses are poisonous and fatal. Its import and export is regulated by licence under the Dangerous Drugs Act.

Morris William. English poet. He was born March 24, 1834. He first tried painting as the result of his close friendship with Burne-Jones, but in 1858 published *The Defence of Guenevere*, and in 1867 *The Life and Death of Jason*. His best known work is *The Earthly Paradise*. He contributed to the movement which tried to bring about a revival in decorative art in England and started the Kelmscott Press in 1890. In his later years he was a pronounced socialist, and showed sympathy with the poor by lectures and writing; but he was always more writer, poet and artist than politician. He died Oct. 3, 1896.

Morris Dance Dance very popular in the 16th century. Its name shows that its originators were the Moors, and it may have been introduced into England by Eleanor of Castile, the wife of Edward I. It was danced at village festivals. The characters included Robin Hood and Maid Marian, and a hobby horse was usually introduced. There has been a revival of the Morris dance in the 20th century.

Morrison Herbert Stanley. English politician. Born Jan. 3, 1888, he worked in a shop as a telephone operator. Later he became connected with the newspaper industry and came to the front as a socialist politician. He was elected to the London County Council and rose to be the leader of his party there. In 1923-24 and 1929-31 he was M.P. for South Hackney, and from 1929-31 he was Minister of Transport. He conducted the Road Act of 1930 through the House of Commons, and was regarded as one of the most successful of the Labour ministers. He lost his seat at the General Election of 1931 but regained it in 1935. In 1920 Morrison was Mayor of Hackney, in 1928-29 chairman of the Labour Party, and has been leader of Labour Party in the L.C.C. since 1934.

He published *Socialism and Transport* (1933); *How Greater London is Governed* (1935).

Morriston River of Scotland. It is only 19 m. long and enters Loch Ness in Inverness-shire at Invermorriston.

A suburb of Swansea is named **Morriston.** On the G.W. Rly., it has tinplate works and other industries.

Morse Code System of signalling primarily intended for use by telegraph operators, but since extended and modified for army and navy signalling. It was devised by Samuel F. B. Morse, in collaboration with Alfred Vail, in 1837 for telegraphic purposes, and consists of a series of dot and dash symbols representing letters of the alphabet, numerals, punctuation marks and conventional phrases, these signs being combined in various ways. In signalling the code is used by day by means of flags or the heliograph, and by night by lamp signals. A modified code known as American Morse is used to some extent in Canada and the United States.

Mortar Cementing material used for binding together bricks or stones in buildings. Mortar for brickwork consists of quicklime and clean grit or sharp sand mixed with water, and for courses of ashlar masonry a mixture of slaked lime and water known as mason's putty. The term mortar is applied also to a vessel of porcelain, iron, agate or other materials in which substances are reduced to a powder by means of a pestle, or in ore-dressing by a steel shoe.

Mortar Type of cannon formerly much in use for throwing shot or shell at a short range and at a high angle. The barrel was thick-walled with a smooth bore and leaded at the muzzle, the whole being mounted on a strong frame or bed. In the Great War modifications of the older type of mortar were used by both combatants, these taking the form of weapons which could be thrown into the opposing trenches.

Mortgage Name for a charge on land and houses. It is a loan secured on the property in question and a great deal of money is lent in this way by building societies. The lender or mortgagee can give notice, usually six months, that he wants his money repaid. If this is not done he can sell the property, and after taking what is owing to him, hand over the balance to the mortgagor, who is the legal owner of the house, as he possesses what is called the equity of redemption. Alternatively he can apply to the court for an order permitting him to foreclose, or take over the property entirely. The details of a mortgage are contained in a deed which must bear a stamp. This costs 2s. 6d. for every £100 or part of a hundred. Mortgages can be sold, a transfer stamp being required.

Mortise Term in joinery and masonry for a cavity cut in a piece of wood or block of stone to receive a shaped end or tenon of another piece. This form of joint is used to give stability and strength, and an example of mortised work in stone is seen in the trilithons at Stonehenge.

Mortlake District of Surrey. It is on the Thames, near Richmond, 6¼ m. from London, on the S. Rly. It is known as the place where the Oxford and Cambridge boat race finishes. In the 17th century it was famous for its tapestries, and in the 18th for an enamelled stoneware called Mortlake ware.

Mortmain Word meaning "dead hand." It was used in the Middle Ages by lawyers for land that was given to the church and so never became liable to the dues payable on death, as other land did, because its holders, being a corporation, never died. Landowners sometimes made over their lands to the church, but retained the revenues, thus avoiding taxation. In 1279 a law was passed forbidding persons to pass any land into mortmain. To-day there are many exceptions in English law to the rule that corporations may not hold land. Public companies, railway and other companies formed by act of Parliament, and local authorities can buy and own land. Charitable trusts can also own it, but if the amount is over two acres they must obtain a licence from the Board of Trade.

Morton **Earl of.** Title borne by the family of Douglas since 1458. The most important of the 20 earls was James Douglas, the 4th holder of the title. He became earl in 1553, and was one of the leaders of the party opposed to Mary, Queen of Scots. He was concerned in the murder of Rizzio and Darnley, and fought against Mary at Langside. He was made Regent of Scotland in 1572. For complicity in the murder of Darnley, years previously, he was condemned by an assize, and executed on June 2, 1581. The earl's eldest son is called Lord Aberdour.

Morton **John.** Archbishop of Canterbury, cardinal and statesman. Born about 1420, he began as an ecclesiastical lawyer and took a prominent part in the Wars of the Roses on the Lancastrian side. After the victory of the Yorkists, he was reconciled to Edward IV. and became Master of the Rolls in 1474. Arrested by Richard III., he escaped and supported the Earl of Richmond, later Henry VII. He was principal adviser to Henry, Archbishop of Canterbury in 1486 and Lord Chancellor in 1487. He was created cardinal in 1493 and died on Oct. 12, 1500.

Mosaic Term applied to a surface formed of small pieces of various stones, tiles, metal or glass, and used for making floors or for covering walls, vaults and columns. Roman mosiac was used chiefly for flooring, but in Byzantine architecture the art of mosaic work reached its height as mural and pictorial decoration, inlaid cubes of many-coloured marbles, glass and enamels being used. Fine mosaics of the early period are to be seen in St. Mark's, Venice, and the churches of Ravenna.

Moscow Ancient capital of Russia, now the capital of the Russian Union of Socialist Soviet Republics. It has a fine situation on seven hills, and is full of historic interest. The Kremlin is the ancient citadel. Here is the Great Palace and other famous buildings, including the Uspenski Cathedral, the coronation place of the Tsars.

Moscow is an important commercial and railway centre, being the starting point of the Trans-Siberian Rly. Its industries, temporarily hindered by the Revolution, have revived again, and the population has increased with astonishing rapidity. In 1930 it was 2,781,300. It has nine broadcasting stations. The two most powerful operate on 1481 M., 100 kW., and 1304 M., 100 kW.

Moselle River of France and Germany. It rises in the Vosges and flows through Alsace-Lorraine into Germany, where at the Coblenz it falls into the Rhine. It is 320 m. long and much of its course is navigable. Its chief tributaries are the Meurthe and the Saar. It gives its name to a light wine that is made from grapes grown in the valley.

Moses Hebrew law-giver and leader. Son of Amram and Jochebed, and younger brother of Aaron and Miriam, he was adopted by Pharaoh's daughter, educated as an Egyptian prince, and undertook pastoral pursuits in Midian. Returning to Egypt, he became the leader of the Israelites and after the Exodus, led them to the outskirts of Canaan, dying near Mt. Pisgah. Posterity ascribed to him the first five Old Testament books and the legislative code embodied therein.

Mosley Sir Oswald Ernald. English politician. Born Nov. 16, 1896 a son of Sir Oswald Mosley he was educated at Winchester and Sandhurst, and entered the army. Having served in France, he was elected Unionist M.P. for Harrow in 1918. In 1924 he joined the Labour Party. In 1926 he was elected M.P. for Smethwick. In 1929 he became Chancellor of the Duchy of Lancaster in the Labour ministry, but differed from his colleagues and resigned. In 1931 he formed the New Party, but at the General Election of that year he and his colleagues failed to secure election. For a short time he controlled a paper called *Action*. Since then his speeches as leader of the Black Shirt Movemen. have attracted much notice. In 1928 he succeeded to the baronetcy. In 1920 Mosley married Cynthia, daughter of the Marquess Curzon. She was Labour M.P. for Stoke-on-Trent, 1929-31. She died in 1933.

Mosque Mohammedan house of prayer. Normally an open quadrangular court with a fountain for ceremonial ablutions surrounded by an arcaded sanctuary, with a wall-niche indicating the direction of Mecca a pulpit and sometimes a lectern, it is completed externally with a dome and minarets.

Mosquito General name given to insects belonging to the *Culicidae* or gnat family. A number of species occur in Great Britain. These insects pass their larval stage in stagnant water, and the female only is provided with biting mandibles, the male being quite harmless. The tropical genus, *Anopheles*, is a carrier of the malarial parasite, and other species of the parasite of yellow fever.

Mosquito Coast Low-lying territory along the W. coast of Nicaragua, fronting the Caribbean Sea. About 225 m. long, averaging 40 m. wide, it bears an aboriginal name, corrupted by early European settlers. Great Britain exercised a protectorate, 1655-1860, when Nicaragua acquired suzerainty; the Indians retained autonomy, withdrawn in 1906, and resided in the Mosquito Reserve, since renamed.

Moss Group of cryptogamic plants forming a division of the class *Bryophyta* and closely related to the liverworts. While their structure is cellular, vascular tissue being absent, a conducting tissue is present and the plant body is differentiated into an apparent stem and leaves. Like the ferns, alternation of generations occurs, the moss plant representing the sexual stage bearing the sexual elements or "flowers," with the spore capsule borne upon the moss stem as the asexual generation.

Mossel Bay Seaport of Cape Province, South Africa. It is 318 m. to the east of Capetown, and is connected with that city and other places by railway. It is a port of call for ocean steamers and has a harbour protected by a breakwater. It is noted for its oysters. Pop. 5700.

Mossley Borough and market town of Lancashire. It is 10 m. from Manchester, on the L.M.S. Rly., and is situated on the Tame. Here are engineering works and textile factories. Pop. (1931) 12,041.

Most Favoured Nation Clause inserted in many commercial treaties between countries. It means that the two nations making the treaty will not give to any other nation advantages in the matter of tariffs greater than they give to one another. There were cases in 1932 of the violation of this principle, but protests were promptly made by Great Britain.

Mosul City of Iraq. It is on the right bank of the Tigris, 220 m. north of Bagdad, and, being on the road to Persia, has long been an important trading centre. Under the Turks it was also a military station. The word muslin is a corruption of Mosul. Opposite the city, across the Tigris, are the ruins of Nineveh. Mosul was occupied by the British in Nov., 1918. Pop. 80,000.

The vilayet of Mosul is rich in oil and an international company has been formed for working it; the construction of a pipe line arranged.

The ownership of the vilayet was a matter of dispute after the Great War, as it was claimed by both Turkey and Iraq, the latter then controlled by Great Britain. In 1925, negotiations between them having failed, the League of Nations decided in favour of Iraq, and the boundary line was fixed, with a neutral zone of 50 m. on each side. The inhabitants accepted this decision, but they were not altogether satisfied when the mandate given to Great Britain came to an end and Iraq became an independent state.

Motet Short piece of musical composition set to sacred words. It was used largely in the church music of Tallis, Palestrina and other composers. The music is contrapuntal in style with great delicacy of expression.

Moth Lepidopterous or scale-winged insect of the division *Heterocera*. It has variously-shaped feelers, as distinct from a butterfly of the division *Rhopalocera*, with club-like feelers. Their feelers may be thread-like, spindle-shaped, comb-like or feathery, but never club-like. Moths usually fly during twilight or at night, but this characteristic is neither scientific nor invariable. Most have the fore and hind-wing on each side linked in flight by a bristle and catch, which butterflies lack. Both butterflies and moths have spiral probosces for imbibing food, and scales covering body and wings, except in the clear-wings. The most important, economically, are those whose larvae produce silk.

Mother-of-Pearl Nacreous or inner lining of the shell of the pearl oyster, used in the manufacture of buttons, ornamental articles and for inlaying. Of the several trade varieties, white mother-of-pearl from Thursday Island and the Great Australian Barrier Reef is the best; other grades are the yellow-edged shell from Burma and the black-edged from various Polynesian islands.

Mother of Thousands Popular name applied to two unrelated flowering herbs. (1) The European ivy-leaved toad-flax of the figwort order, long naturalised in Britain (*Linaria cymbalaria*). Its yellow-

lipped bluish-purple flowers, like miniature antirrhinums, suit hanging baskets. (2) The creeping-sailor or strawberry-geranium of the saxifrage order, from E. Asia (*Saxifraga sarmentosa*), is a favourite cottage-window plant.

Motherwell Burgh of Lanarkshire. It is on the Clyde, 13 m. from Glasgow, on the L.M.S. Rly. The chief industries are coal mining and engineering. Since 1920 the burgh has included Wishaw. Pop. (1931) 64,700.

Motherwort Perennial labiate herb (*Leonurus cardiaca*). Growing in British hedgerows and waste places, it is indigenous throughout Europe and N. and W. Asia. It is a downy, aromatic plant with erect stem 2-4 ft. high, much-divided lobed and toothed leaves, and dense whorls of small pale-rose flowers.

Motion Act of moving, or change of position of a body. It is a fundamental condition of matter, as the smallest particles, atoms and molecules, are in a state of constant movement. Consequently motion has not to be maintained, but may be accelerated, retarded or changed in direction under certain conditions. To explain the nature of motion, Newton framed three fundamental laws, the first being that all bodies remain in a state of uniform motion in a straight line, except under the action of an external force; the second law states that under this action acceleration of the body occurs in proportion to the force; and according to the third law the action of every force is opposed by an equal and opposite reaction.

Motley **John Lothrop.** American historian and novelist. Born on April 15, 1814, he achieved fame with his *Rise of the Dutch Republic* (1856), a work that had taken him 10 years to write. This was followed by a *History of the United Netherlands* (1860-69). In 1861-67 he was minister of the American Government to Austria, and in 1869-70 minister to Great Britain. He died on May 29, 1877.

Motor Term used in a general sense for different forms of machines employed as prime movers. Examples are the various types of engines—steam, gas, oil or petrol, hydraulic motors and electric motors. Electric motors for converting electrical energy into mechanical energy are classified as direct current and alternating current motors, the latter type being the most extensively used. The direct current type is still, however, employed for many purposes, being most suitable for high-speed passenger lifts, rolling mills, colliery winding and certain kinds of machine tools. Direct current motors are either series, shunt or compound-wound machines, according to the method of winding the insulated coils on the armature and magneto.

Motor-Car Name given to a self-propelled road vehicle driven, at the present day, by a petrol engine. Steam-driven vehicles came into use in the early 19th century, but the invention of the petrol motor in 1884 brought in a new type of engine which rapidly superseded the old type.

A motor-car consists of a metal frame work or chassis, which supports the body, the driving mechanism, engine, wheels, axles, brakes, etc. The engine, fixed usually in the fore-part of the chassis, has a friction clutch joining it to the transmission gear, but the power is transmitted to the driving wheels in various ways, and the arrangement of the engine, transmission, mechanism and driving axle also varies in different types of car. In ordinary motor-cars transmission is by the shaft drive, but many commercial vehicles still retain the older chain drive. The body varies considerably according to the type of car. In some makes there is a folding hood, in others the seating accommodation is permanently enclosed. The racing car type has a specially designed body with wedge-shaped radiator and conical rear end to give the minimum of air resistance.

Private motor-cars are taxed at a rate of 15s. per horse power per annum, the minimum tax payable being £4, 10s. Commercial vehicles are taxed according to their type, and coaches and omnibuses according to their seating accommodation.

Motor-Cycle Two-wheeled vehicle. It is propelled by an internal combustion engine of either one, two, three or four cylinder power, with belt or chain transmission, and with or without a sidecar. The term also includes in a broader sense certain kinds of three-wheeled cars.

A motor-cycle not exceeding 8 cwt. in weight unladen is taxed according to the cylinder capacity of the engine—150 cubic centimetres or less, 12s., 150-250 c.c., £1, 2s. 6d., over 250 c.c. and not over 224 lbs weight, £1, 2s. 6d. if taken out before Jan. 1, 1933; in all other cases £2, 5s. There is an extra 15s. in each case for a sidecar. These licences now may be taken out in quarterly payments of 27½ per cent. of the full annual tax.

Motor Mark Identification mark allotted to motor vehicles on registration. It consists of index letters, representing the county or borough council, followed by a number. Motor marks are displayed on plates in a prominent position on the vehicle, the rear plate being illuminated. In motor-cycles plates are carried at the front and rear, both being illuminated. Recently the size of the letters and figures has been increased to render identification easier.

Motor Racing Competitions for motor vehicles commenced in 1894 on the continent, especially in France, on suitable circuits on roads. Among the first were the Gordon-Bennett races for reliability and speed for teams of touring cars from each competing country. The Grand Prix was established in France, 1906, to enable individual makes to compete with one another. Brooklands track was constructed in 1907 to remedy the fact that England, having no suitable testing place, suffered in these competitions. Races and tests are now common events in England, on the continent and in America, and extend to motor-cycles, on the road—the Tourist Trophy races, and on special tracks—speedway racing, and to motor-boats.

Mottram **Ralph Hale.** English author. He was born in 1883. As a result of his war experiences, he produced the *Spanish Farm* trilogy, which brought him immediate fame. He has written since then *Our Mr. Dormer*, *The English Miss*, *A History of Financial Speculation*, *Europa's Beast*, *Castle Island*, *The Lame Dog* and *Flower Pot End*.

Moufflon Species of wild sheep now confined to Corsica and Sardinia (*Ovis musimon*). Standing 28 in. at the withers,

it has short, non-woolly hair, with abundant under-wool; the ram's curved horns may attain a length of as much as 29 in. With the Asiatic urial it was probably the ancestor of the domesticated sheep, with which it interbreeds freely.

Mould Loose, fine, crumbly earth, such as constitutes surface soil. Leaf-mould is rich in organic matter. The word also denotes furry growths of minute fungi, developed on animal and vegetable substances exposed to damp.

Moulding Term applied in architecture and joinery to a concave or convex surface on wood or stone. It forms a continuous uniform groove or projection ("staff"), or a combination of both. Of Greek and Roman mouldings there are eight types which can be geometrically constructed —the fillet, astragal, torus, ovolo, scotia, cavetto, cyma recta and cyma reversa. In Renaissance architecture the moulding was confined chiefly to the cornice, but in Gothic it became very elaborate, especially on arches.

Moulmein Seaport of Burma, at the mouth of the Salween River. There is a harbour protected by an island, and from it a great quantity of teak is shipped. Pop. 61,300.

Moulting Periodical shedding of the outer covering of animals, especially the feathers of birds. It occurs at least once annually, after the breeding season; a second moult occurs in the cases of some birds with a special breeding-plumage, *e.g.*, ducks; while there may be even a third for the white winter dress, *e.g.*, ptarmigans. Snakes slough their skins correspondingly. The name denotes also analogous, but not identical, processes in various invertebrates, *e.g.*, the external shell of crustaceans and the skin of insects during growth.

Moulton **John Fletcher, Baron.** British lawyer. He was born on Nov. 18, 1844, and in 1874 was called to the Bar, where he established a practice in patent law, on which he became a supreme authority. In 1906 he was appointed a Lord Justice of Appeal, and in 1912 a Lord of Appeal with the title of Baron Moulton of Bank. He was first chairman of the Medical Research Committee under the National Insurance Act (1912), and was Director General of Explosive Supplies during the war. He died March 9, 1921.

Mountain Term used for an elevation of the earth's crust. There are two types: tectonic mountains, which are due to accumulation or deformation of the earth's crust, and subsequent or relict mountains, representing the remains of ancient elevated areas. There is no standard height for a mountain. In Great Britain the name is applied to peaks over 2000 ft. high.

Mountain Name used for a political party that arose during the French Revolution. They were a group of Jacobins, which included Danton and Robespierre. The name was given because its members sat on benches somewhat higher than the others in the chamber. About 100 in number, they were responsible for the Reign of Terror.

Mountain Ash Urban district and market town of Glamorganshire, on the River Cynon, 18 m. from Cardiff, on the G.W. Rly. The district includes, in addition to Mountain Ash itself, Aberpennar, Cwmpennar and Abercynon. The principal occupation is coal mining. Pop. (1931) 38,381.

Mountaineering Climbing of mountains as a pastime or adventure. It developed in the 19th century, when Frenchmen, Englishmen and others began to climb some of the peaks of the Alps. One by one the summits were reached, clubs were formed, a technique of climbing was developed, a literature came into being—and mountaineering had become a widely practised sport. The Alpine Club was founded in 1857. Mountaineers went to Africa and America, where mountains of over 20,000 ft. were climbed, these including Aconcagua, Mt. St. Elias and Kilimanjaro, until almost the only unclimbed mountains were the highest peaks of the Himalayas. The three greatest are Everest, Kanchenjunga and Godwin-Austin, and attempts to reach the summits of these have so far failed. A further expedition to conquer Everest set out in the spring of 1936 under Mr. Hugh Ruttledge.

Mountbatten Name taken in 1917 by the members of the royal family until then known as Battenberg. One became the Marquess of Milford Haven. *See* BATTENBERG.

Mount Edgecumbe Headland in Cornwall, near Plymouth. From it the old Cornish family of Edgecumbe takes the title of earl, which dates from 1789. The family seat is Mount Edgecumbe, and the earl's eldest son is called Viscount Valletort.

Mount Grace Ruined abbey in Yorkshire. About 4 m. from Northallerton, it was once a house of the Carthusian monks. It was destroyed at the Reformation, but considerable ruins remain, including monks' cells, each with its oratory and garden, and parts of the church and the chapter house.

Mountmellick Market town of Leix, Irish Free State, 9 m. from Maryborough and 50 from Dublin, on the G.S. Rlys. It is an agricultural centre. Pop. 2280.

Mounts Bay Arm of the sea off the coast of Cornwall. It is 21 m. across, and Penzance is the chief place on its shores. It also includes St. Michael's Mount.

Mountsorrel Town of Leicestershire, on the Soar, 7 m. from Leicester. The chief industry is the mining of granite from its famous quarries.

Mount Stephen **George Stephen, 1st Baron.** Railway director. Born in Scotland on June 5, 1829, he went to Canada in 1850 and became in turn Director, Vice-President and President of the Bank of Montreal. He was also director of several railways, and President of the C.P. Rly., which opened up trans-continental traffic in Canada. He died on Nov. 29, 1921.

Mount-Temple **William Francis Cowper-Temple, Lord.** English politician. He was born in 1811. He was Lord of the Admiralty, 1846-52, President of the Board of Health and Privy Councillor, 1855, and in 1865-66 Commissioner of works. He died in 1888.

Mount Vernon Town of Virginia, 15 m. from Washington. It is famous as the home of George Washington, whose house there became a

national memorial in 1859. Nearby is his tomb. There are several other places of this name in the United States, the largest being a city in New York state, on the Bronx River, 18 m. from New York. Pop. 61,500.

Mouse Name of various small rodents. British species include the cosmopolitan house mouse (*Mus musculus*), the tiny nest-building harvest-mouse (*Micromys minutus*), and the long-tailed field-mouse (*q.v.*).

Mousterian Name given to an epoch of the Palaeolithic age. It is derived from the Cave of Le Moustier in Dordogne, where flint implements, as well as bones of the mammoth, woolly-haired rhinoceros, cave-bear and musk-ox were found. The climatic conditions appear to have been cold and damp, but the tools found show an advance upon those of the previous period.

Mouth Median opening in the head of an animal. It leads to the mouth cavity into which open the alimentary canal, the respiratory organs and salivary glands. The mouth or buccal cavity in the higher types is provided also with organs for prehension and retention of the prey, or the tearing and grinding of food, namely the teeth. Salivary glands are present, and in mammals the tongue, a highly muscular upgrowth from the floor of the mouth, reaches its highest development.

Moynihan **Lord.** English surgeon. Berkeley George Andrew Moynihan was born in Malta, Oct. 2, 1865, and, having trained as a doctor, began to practise in Leeds. He was appointed professor at the university there and made a great reputation. He served with the R.A.M.C. throughout the Great War, and in 1922 was made a baronet, becoming a baron in 1929. He has written several books on surgical subjects.

Mozambique District of Portuguese E. Africa. A small island, 3 m. from the coast, was named San Sebastian de Mozambique and became known by the latter part of the name. On this island the Portuguese founded a settlement in 1508, and this became the seaport of Mozambique. It has a harbour.

The name was extended from the island to the mainland, where a large district of Portuguese E. Africa is called Mozambique. This covers 297,657 sq. m. between Tanganyika and S. Afri a, and contains the port of Lourenço Marques. It comprises 245,776 sq. m. of territory administered by the State and 51,881 sq. m. governed by the Mozambique Co., where is the port of Beira. Mozambique has railway connections with the interior of Africa, and produces sugar, maize and cotton. Pop. 4,309,758.

Mozart **Wolfgang Amadeus Chrysostom.** Austrian musician and composer. Born on Jan. 27, 1756, he made his first professional European tour when six years old. After a period of financial difficulty he produced, with tremendous success, the *Marriage of Figaro* (1786): and in 1787 *Don Giovanni* which was equally successful. He was appointed Kammer Musicus to the Emperor Joesph II., for whom he wrote *Cosi fan Tutti*.

His financial difficulties continued, and while making money for others, his generosity and carelessness kept him poor. *The Magic Flute* was produced in 1791. He combines the richness and melody of the Italian school with a knowledge of harmony and instrumentation gained by his strict training in the German school. He died on Dec. 5, 1791.

Mucilage Name given to a viscous and often sticky aqueous solution of a gum, occurring naturally in many seeds, tubers, stems and other plant tissues. Commercial mucilage, adhesive in character, is a solution of gum arabic, or of British gum, a form of dextrin. A mucilage of less adhesive power is made from gum tragacanth, and used in calico-printing, pharmacy and the manufacture of oil emulsions. Another type of mucilage is the pectin, prepared from fruits and used in jelly and jam-making.

Mucous Membrane Term applied in zoology to the membrane lining the stomach and other parts of the alimentary canal, bladder and various ducts of the body. It consists of a layer of loose connective tissue or submucosa over which is an epithelium containing glandular cells secreting mucus or digestive juices.

Mudfish Name given to certain fishes having the peculiar habit of burying themselves in the mud during a dry season. Among the ganoid fishes, the bowfin (*Amia calva*) of N. America can survive drought for a time by inhaling air into its swim-bladder. Several other mudfishes belong to the dipnoi or lung-fishes, characterised by a lung-like organ for air breathing, these are the protopterus of S. Africa and lepidosiren of Australian rivers.

Mudie **Charles Edward.** English publisher and founder of Mudie's Lending Library. Born on Oct. 18, 1818, the son of a second-hand bookseller, he started a stationery and book-selling business in Bloomsbury, London, and in 1842 began to lend books. This innovation proved so successful that in 1852 he transferred his "select library" to larger premises in New Oxford St., and branches were also established elsewhere in 1860. In 1864 Mudie's became a limited company. He died on Oct. 28, 1890.

Mudros Town and port of Lemnos. It is on the S. coast of the island, and was used as a base by the British during the campaign in Gallipoli in 1915. Here on Oct. 30, 1918, was signed the armistice between the allies and the Turks.

Muezzin Official in a Mohammedan mosque. He is appointed by the imam to proclaim from the platform of the minaret, or from the side of the mosque, the regular hours of prayer. These are at dawn, noon, 4 P.M., sunset and nightfall.

Mugwort Perennial composite herb indigenous to Europe, Asia and N. Africa (*Artemisia vulgaris*). Woolly, aromatic, with erect, angled, grooved, reddish stems 2-4 ft. high, it has large alternate leaves, silky beneath and crowded sprays of small reddish-yellow flower-heads.

Muirkirk Town of Ayrshire, 26 m. from Ayr on the River Ayr. The chief industries are the mining of coal and iron ore.

Mukden City of Manchukua, the capital of a province, and an important trading centre. The city is surrounded by outer and inner walls and has a university. Pop. 250,000.

Near Mukden in Feb.-March, 1905, the Japanese gained a decisive victory over the Russians.

Mulatto Word, diminutive of mule, denoting in Spanish-America a half-breed, the offspring of a white and a negro parent. The skin-colour and hair are usually intermediate. The offspring of a mulatto and a white is a quadroon (one-fourth black); that of a quadroon and a white an octoroon (one-eighth black).

Mulberry Genus of deciduous trees or shrubs, allied to the nettle order, natives of the N. hemisphere (*Morus*). They have toothed leaves, often three-lobed and bear collective fruits each formed of many coalesced flowers. The **black mulberry**, of Persian origin, with purplish-black fruit, was cultivated in antiquity and reached Tudor England. The **Chinese white mulberry**, with white fruit, whose leaves silk-worms prefer, grows extensively in Mediterranean lands. The **N. American red mulberry**, 40-70 ft. high, with red fruit, yields useful timber.

Mulch Gardening operation. It consists of placing material upon the soil for the purpose of protecting tender plants from frost, or preventing evaporation in hot weather, or of supplying nourishment to plants.

Mule Name given to the hybrid offspring of the union of a male ass and a mare, resulting in an animal of considerable strength and hardiness. Mules are more suitable than horses for certain kinds of work, such as draught and pack work in arid or mountainous country. They are much used for army work. Large mules are usually the progeny of Spanish or French asses.

Mule Machine used in cotton spinning. It was invented by Samuel Crompton in 1779, its name being given because it was a cross between the spinning jenny of Hargreaves and the throstle of Arkwright. The mule was improved later by Richard Roberts, and in its modern form is self-acting, functioning as an intermittent spinner and winder. Some mules are of considerable size carrying up to 1400 spindles borne on steel carriages. Mule-spun yarn is even and regular, and of fine quality.

Mulheim City and river port of Germany, on the Ruhr, 16 m. from Dusseldorf, and a centre of the coal and iron industries. There is a good harbour and many manufacturing establishments. Pop. 127,400.

Another **Mulheim** is a town on the Rhine opposite Cologne. It is a large manufacturing centre with a good harbour in the river. Pop. 51,000.

Mulhouse Town of Alsace, France, on the Ill, 56 m. from Strasbourg. Also served by the Rhine-Rhône Canal, it is a manufacturing town, the industries including the production of textiles. Mulhouse was a free city from 1198 to 1797, when it was taken by France, and in 1871 was handed over to Germany. The French entered it in Aug., 1914, but were soon driven out. Pop. (1931) 99,534.

Mull Island of Argyllshire, 7 m. from Oban. It covers 351 sq. m. and is the second largest island of the Inner Hebrides. Tobermory is the chief town. The interior is mountainous, some peaks being over 3000 ft. high. The coast is very much indented. The inhabitants are engaged in grazing cattle. Pop. 4000.

The **Sound of Mull** separates the island from the mainland. It is 20 m. long and from 2 to 3 m. wide.

Mullah Mohammedan word for a teacher or official. In Egypt and other Mohammedan countries it is used especially for one who administers the law. In India the word is used for a schoolmaster. In Somaliland leaders called "mad mullahs" have on several occasions raised rebellions.

Müller **George.** Preacher and philanthropist. Born near Halberstadt on Sept. 27, 1805, he came to London in 1829, and became the minister of a noncomformist chapel at Teignmouth, where he abolished pew rents, gave up his own salary, and depended on voluntary gifts. In 1836 he founded an Orphan House at Ashley Down near Bristol, and in 20 years, through "prayer to God" and without appeals, had received £84,441 for the orphans. He wrote *The Lord's Dealings with George Müller*. He died on March 10, 1898.

Müller **Hermann.** German politician. He was born May 18, 1876. A strong socialist, he was made editor of a socialist newspaper in Silesia, and in 1906 was chosen one of the leaders of the socialist party in Germany. In July, 1914, he visited Paris and Brussels in the interests of peace, but his efforts were futile, and he gave his support, somewhat reluctantly, to the war policy of Germany. He undertook the editorship of *Vorwarts*, and in 1917 was made an Under-Secretary of State.

In June, 1919, when Germany was enraged by the terms of the peace treaty, he joined the Cabinet founded by Gustav Bauer as Minister for Foreign Affairs and as such signed the treaty at Versailles. This made him very unpopular, but he held on his way and in 1920 was elected for the first time to the Reichstag. In Jan. of that year he had succeeded Bauer as Chancellor, and during the next few months he carried out hurriedly some important social reforms. In June, 1920, however, he was forced to resign, and for the next eight years he led the socialist party in the Reichstag. In May, 1928, he again became Chancellor, with Stresemann as his Foreign Secretary, and he remained in power until March 1930. He died March 20, 1931.

Müller **Max.** *See* MAX MÜLLER.

Mullet Name of two unrelated kinds of food fishes. Two forms of each occur on British coasts. Of red mullets (*Mullus*), the striped or surmullet, 6-16 in. long, is commoner than the smaller plain red. Of grey mullets, (*Mugil*), the thin-lipped, 12-20 in. long species, frequenting brackish estuaries, is commoner than the smaller thick-lipped.

Mulligatawny (Tamil, *milagu-tannir*, pepperwater). East Indian soup. Made with boiled meat or chicken and rice, it is highly seasoned, and contains sufficient curry powder to render it very hot to the palate.

Mullingar Market and county town of Co. Westmeath, Ireland, on the River Brosna, 50 m. from Dublin. The town has an agricultural trade, and horse and cattle fairs are held. Pop. 4500.

Mullion Architectural term for the vertical division in a window, usually of stone or wood in England but sometimes of brick. It arose from the gradual reduction of the pier or piers between two

coupled lancet windows. The mullion is not seen in pure Renaissance architecture, but is chiefly late Gothic.

Mulready William. Irish painter. He was born at Ennis on April 30, 1786, and later removed to London. He entered the Royal Academy in 1800, and found his most successful sphere in such subjects as "A Roadside Inn," "The Barber's Shop" and "Punch." His "Idle Boys" procured him his A.R.A. in 1815, and he was made R.A. in 1816. He is perhaps best-known for his illustrations to the *Vicar of Wakefield*. He died on July 7, 1863.

Mumbles Watering place of Glamorganshire, on Swansea Bay, 202 m. from London. Nearby are **Mumbles Head** and two small islands.

Mummy Dead body prepared for burial according to processes devised in ancient Egypt. To postpone natural decay, it was at first soaked in crude natron; subsequently methods employing bitumen, spices, honey and drugs were introduced. From the 21st dynasty onwards, brain and entrails were removed, the body-cavities repacked, the whole enswathed in smeared linen bandages inscribed with ritual texts and enclosed with amulets and faience statuettes in a mummy-case. The practice extended to cats, crocodiles and other sacred animals. It ceased about A.D. 700.

Mumps Infectious fever with involvement of the parotid salivary glands.

The symptoms are pain and swelling of the glands under the ear, with feverishness and loss of appetite. The patient should be kept in bed on a liquid diet until the temperature is completely normal, and should be isolated for about three weeks. A doctor should always be called. Incubation period is 14-21 days.

Münchhausen **Baron Von.** German soldier and storyteller. Karl Friedrich Hieronymus Münchhausen was born in Hanover in May, 1720, and fought for the Russians against the Turks. He won a great reputation by the wonderful stories he told ostensibly about his warlike and other adventures, but largely the products of his imagination. These were collected, and in 1785 they were published in English as *Baron Münchhausen's Narrative of his Marvellous Travels and Campaigns in Russia*. He died in 1797.

Mundesley Village and holiday resort of Norfolk, 7 m. from Cromer and 135¼ from London. Pop. 770.

Mungo Scottish saint, believed to have lived in the 6th century A.D. The patron saint of Glasgow, his name means in Gaelic "dear one." He is known more usually as Kentigern (*q.v.*).

Munich City and capital of Bavaria. Known to the Germans as München, it is situated on the Iser, and is the fourth largest city in the German republic. It is an important art centre, the Peria Rothen and the Glyptothek containing fine collections of paintings and sculpture.

The chief industry is brewing, Munich beer being world famous, while there are also manufactures of machinery and scientific instruments, and wood-carving is much practised as a local craft. It has a broadcasting station (533 M., 1.5 kW.). Pop. 680,704.

Municipality Term used for a town or city, which is organised for self-government under a municipal corporation. It is also used for the governing body. In Great Britain, a corporation consists of a mayor, or provost, at the head, aldermen and councillors. By its seal, it acts as a person, and can sue and be sued, and it has powers to hold lands and to make by-laws and enforce by penalties, as long as they are reasonable, and do not violate the charter.

Municipal Trading. In some towns, as in Blackpool, where municipal enterprise provides amusement, and Birmingham, where there is a Municipal Bank, the Socialist idea of a municipal authority acting as a private enterprise is carried out, but mostly, the towns confine themselves to housing and town-planning, water-works, highways, electric light supply, sewers, tramways, elementary education, gas-works, small-holdings and parks, including tennis-courts and golf-courses.

Housing was undertaken, largely after Wheatley's Act of 1924, by the local authorities when the building was executed under the Joint Town Planning committees.

The water supply is in the hands of about two-thirds of the public authorities and the electric supply, complicated by the appointment of the National Electricity Commission, and the Central Electricity Board, has only been undertaken by about half the local authorities.

Munitions Term applied to the materials used in warfare. It includes both guns and ammunition, while the development of trench warfare and the use of poisonous gases has widened the range of materials to include grenades, bombs, mortars, steel helmets, various chemicals, etc. In the Great War the production of munitions being on a large scale, a government department, the **Ministry of Munitions**, was created in 1915 to control production and co-ordinate the various industries concerned. For this purpose the metal, engineering and chemical industries were mobilised, and national factories set up, with the result that production was increased with an economy of materials. The ministry came to an end on March 31, 1921.

Munster Province of Ireland. In the S.W. of the country, it is wholly within the Irish Free State. It contains six counties, Clare, Kerry, Cork, Tipperary, Limerick and Waterford, and covers 9300 sq. m. At one time it was a separate kingdom, and was divided into Thomond, in the N., and Desmond in the S.

The title of **Earl of Munster** is borne by the family of Fitzclarence. The 1st earl (created 1831) was a son of William IV. and Dorothea Jordan.

Münster City of Westphalia, on the Aa, 78 m. from Cologne. The industries include the manufacture of textile goods and beer, printing works, and sugar refineries. An event in the history of the city was the kingdom set up by the Anabaptists under John of Leiden in 1535. Pop. 90,300.

Another **Münster** is a town of Alsace, in the Vosges district, 11 m. from Colmar. Pop. 6000.

Muntz Metal Widely used non-ferreous alloy of the group of brasses. Called also yellow metal it contains from 60 to 62 per cent. of copper and 40 to 38 per cent. of zinc. It is an alloy of high tensile strength, and resists corrosion well. Formerly used for sheathing ships, it is

employed now for propellers, and also for bowls, trays, etc.

Murat **Joachim.** King of Naples. Born on Nov. 25, 1767, he distinguished himself as cavalry general under Napoleon by his fearlessness at the battle of the Pyramids, and later at Marengo, Friedland and Moscow. He was brother-in-law to Napoleon, who made him King of Naples in 1808. Murat abandoned Napoleon in 1814, to ally himself with Austria and England, but was himself abandoned later by his allies, and forced to flee his kingdom. Trying to recover it, he was captured and shot on Oct. 13, 1815.

Murcia City of Spain on the River Segura, in the S. of the country, 25 m. from Cartagena. It is a large manufacturing and trading centre. Near the city are the celebrated gardens of Murcia, where vines, mulberries, olives, etc., grow in great profusion. Pop. (1931) 160,478.

Murcia was the name of a Moorish kingdom which existed in the 13th century.

Murillo **Bartolomé Esteban.** Spanish painter. Born at Seville in 1617, he studied under local painters and, struggling to earn a living by peddling pictures at fairs, he saved sufficient money to enable him to visit Madrid where he became a pupil for a time of Velasquez. He returned later to Seville and obtained commissions from the clergy, and developed his own style of painting. He interpreted religious subjects in homely realism understood by the people, but his work in general suffered from lack of restraint and selective power. A number of his pictures are in the Louvre, at Madrid, and the London Galleries. He died April 3, 1682.

Murman Name given to the coast of the Kola Peninsula. In the extreme N. of Russia, this lies between the Kola Bay and the White Sea, and is 200 m. long. On Kola Bay is the port of Murmansk, which is the terminus of a railway from Leningrad.

Early in 1918 a force composed of British, French and American troops occupied Murmansk and the neighbourhood, this being part of an operation that included the expedition to Archangel. During 1919 the troops gained possession of about 400 m. of the railway and, winning several successes over the Bolshevists, advanced as far as Lake Onega. The enterprise, however, offered no prospect of permanent success and towards the end of the year the force was withdrawn.

Murray River of Australia, rising in the Australian Alps and flowing to the sea through Lake Alexandrina. At the mouth are sand-dunes which make the navigation of the river possible only for small vessels. The water of the Murray is used for irrigation purposes, being held up at the dune reservoir where the Milta falls into the Murray, so that it is available in the dry season. Improvements have also been made in its lower course to facilitate navigation. For the greater part of its course it forms the boundary between the states of New South Wales and Victoria. It is 1500 m. long, and its chief tributaries are the Darling and Murrumbidgee.

Murray **Sir David.** Scottish painter. Born at Glasgow, 1849, he was elected A.R.A. in 1891, and R.A. in 1905. In 1917 he was made President of the Royal Institution of Painters in Water Colours, and was knighted in the following year. Among his finest pictures are "In the Country of Constable," "Young Wheat," "River Road," "Marigolds," "Hampshire" and "Gorse." He died in Nov., 1933.

Murray **George Gilbert Aimé.** English scholar. Born in Sydney, June 2, 1866, he had a remarkable career as a classical scholar at Oxford. He was made a fellow of New College, Oxford, and in 1889 Professor of Greek at Glasgow. In 1908 he returned to Oxford as Professor of Greek. To scholars Murray is known as the author of *A History of Ancient Greek Literature*, *The Origin of Tragedy*, *The Rise of the Greek Epic* and other books, and to a wider public for his translations of the plays of Euripides. He is one of the leading supporters of the League of Nations.

Murray **Sir James Augustus Henry.** Scottish lexicographer, born at Denholm, Scotland, on Feb. 7, 1837. He founded his reputation as a philologist with *Dialects of the Southern Counties of Scotland* in 1873. His great work was the editing of the Philological Society's *New English Dictionary* which was begun at Mill Hill in 1879 and continued at Oxford with several successive joint-editors. He died on July 26, 1915.

Mürren Pleasure resort of Switzerland, in the Bernese Oberland, 3 m. from Lauterbrunnen. It is 5000 ft. high, and is a good centre for the ascent of the Jungfrau and other peaks.

Murrumbidgee River of New South Wales, rising in the Australian Alps, and flowing first N. and then W. to the Murray. Its length is 1350 m., for about 500 of which it is navigable. Its chief tributary is the Lachlan.

Muscat Seaport of Arabia, the chief port of Oman. It is on the Gulf of Oman, and from it some of the products of the country are exported. It was a Portuguese possession from 1508 to 1650. Pop. 20,000.

Muscatel General name for wines derived from muscat and similar grapes. Sometimes red, but mostly white, with musky flavour and more or less sweet and elegant taste, they are produced in Languedoc and other French wine-growing districts, on the slopes of Vesuvius, in Capri, Sicily, Crete, Switzerland, Australia, S. Africa and elsewhere.

Muscle Tissue in an animal's body concerned in the power of movement, and consisting of bundles of fibres, each fibre being a thin thread of muscle substance about $\frac{1}{500}$ inch in diameter and surrounded by a delicate sheath or sarcolemma. The muscle substance is probably of more or less fluid consistence, and has the special property of contractility on the application of a stimulus. Muscles controlled by the will are termed voluntary, others not under the will, involuntary.

Muscovy Former name for Russia. The district around Moscow constituted the realm, until the time of Peter the Great. It was ruled by princes who became known later as tsars. *See* RUSSIA.

The **Muscovy Duck** is found in America. It nests in the trees and lives in marshy districts. The bird has been introduced into Britain.

Muse Goddess of song. Greek legend represented the Muses as nine in number, presiding over the different kinds of

poetry, arts and sciences. They were the daughters of Zeus and Mnemosyne and the companions of Apollo. The nine were Clio, the muse of history, represented with an open roll of paper or a chest of books; Euterpe, the muse of lyric poetry, represented with a lyre; Thalia, the muse of comedy and idyllic poetry, represented with a mask, a shepherd's staff or a wreath of ivy; Melpomene, the muse of tragedy, represented with a crook, the club of Hercules, or a sword, with vine leaves on her head and wearing the cothurnus; Terpsichore, the muse of dawn and song, represented with the lyre; Erato, the muse of erotic poetry, also with a lyre; Polymnia, the muse of the hymn; Urânia, the muse of astronomy, represented with a staff pointing to a globe; and Calliope, the muse of epic poetry, represented with a tablet and stylus. Mount Helicon, with its sacred fountains, and Mount Parnassus were sacred to the muses.

Museum Building or part of a building appropriated as a repository for preserving and displaying objects of antiquity, science, natural history and art. The first great national museum was the **British Museum**, London, 1753; the **Louvre Museum**, Paris, was founded 1793. There now exist many important general collections, *e.g.*, the **Metropolitan Museum** of New York; special collections, *e.g.*, the **Wellcome Historical Museum**, London; and open-air museums, *e.g.*, Skansen, Stockholm.

Mushroom Name indefinitely applied to several of the larger fungi, especially if edible, although indistinguishable by any rough-and-ready means from non-edible forms. The common edible mushroom or agaric (*Psalliota campestris*), successfully cultivated, especially in France, for more than 200 years, comprises a cylindrical stalk supporting an umbrella-shaped cap, 3-5 in. across, with coloured gills beneath which ultimately blacken. Other recognisable edible fungi include the fairy-ring champignon and the morel. A toadstool (*Amanita phalloides*) causes nine-tenths of all deaths from so-called mushroom-poisoning. *See* KETCHUP.

Music Melody of harmony; a tone or tones having any or all of the features of melody, rhythm or consonance. The first idea of music was that it was any art over which the muses presided, but after a time it was narrowed down by the exclusion of poetry, dancing and other arts, although music was still closely associated with them.

Among the Greeks music was generally subordinate to verse and was rather limited in the direction of expression, because the instruments used, chiefly lyre and flute, were simple. Nevertheless, it set up the diatonic scale or modes and the rudiments of key relationships. There had been music before the time of the Greeks, indeed, from the very beginning of human life, but it was of the same simple kind. Among the Jews, however, as detailed in the Bible, the use of musical instruments seems to have been somewhat more advanced. Music played a great part in their religious and other ceremonies, as it did in the festivals of Greece.

Music owes much to the church and great advances were made in the art during the Middle Ages. The ecclesiastical modes were taken from the Greeks; new ones to indicate the pitch of tones were invented and staff notation was developed. The tetrachordal, or fourfold, unit was superseded by the hexachordal or six-fold; **descant**, or simultaneous melody, was replaced by mensurable music and thence came counterpoint. Very elaborate settings for the mass and psalms were composed, especially by the great Italian masters, culminating in Palestrina. Concurrently in the 10th-16th centuries secular music was making great advances. It was the age of the minstrels, the troubadours and the minnesingers.

Modern music owes a vast debt to **Bach**, who was largely instrumental in developing polyphony. The establishment of the major and minor scales, with the octave as a unit, and of equal temperament, made modulation in any key possible, and so harmony was developed.

Since the time of Bach there have been great advances in both vocal and instrumental music. Vocal music has broadened out into the opera, oratorios and the lyric. Instrumental music has been aided by improvement in the instruments, which gave scope for the superb productions of Haydn and especially of Beethoven. Other great masters are Mozart and Wagner in opera and Handel in oratorio.

With the 20th century, the outstanding development of music has been the widespread use of the gramophone and other mechanical devices for reproducing it and its transmission by wireless.

MUSIC AS A CAREER. Though an overcrowded profession, music, which now comprises so many branches, still offers considerable scope for performers and teachers of real talent and personality. Success in either capacity, however, is by no means easy to achieve, and requires many years of training.

Orchestral players for broadcasting, theatres, cinemas, dancing, etc., should be steadily in demand, and have fixed rates of pay. Organists, with city or cinema appointments, may obtain as much as £500 per annum, and whole-time cathedral posts are worth about £300-£500 with a house as well as allowing opportunity for pupils to be taken.

The Royal Academy of Music and the Royal College of Music in London are the most famous centres of study for all branches of the profession, the fees being fourteen guineas a term at the former and twelve at the latter. Other well-known training schools are the Royal Manchester College of Music, the Guildhall School, Trinity College, and London Academy of Music.

For **Music Teachers**, courses are provided at the Royal Academy of Music, York Gate, Marylebone Road, N.W.1.; the Royal College of Music, Exhibition Road, S. Kensington; Trinity College of Music, Mandeville Place, W.1; and the Guildhall School of Music, John Carpenter Street, E.C.4. Courses are also provided at certain reputable institutions in the provinces.

Musk Perennial herb of the figwort order, native of Oregon (*Mimulus moschatus*). The nearly regular yellow flowers, diffuse hairy stems, and thin oblong leaves, exhaling a musky odour, make it a favourite plant for window-boxes and hanging baskets. The name also denotes a native British musky-smelling stork's-bill, *Erodium moschatum*, with rose-purple flowers. *See* MONKEY FLOWER.

Musk Strong-smelling substance secreted in a sac-like gland by the male musk deer. The animal is killed and the gland removed, the dried secretion being sent to market "in pod" or, after extraction, "in grain." The perfume is powerful and enduring.

Musk Deer Small ruminant inhabiting the mountains of Central Asia (*Moschus moschiferus*). Clumsily-built, 20 in. high at the shoulder, the males have projecting sabre-like upper-jaw tusks 3 in. long and bear an abdominal gland containing the perfume before-mentioned. The thick, coarse, brittle hair is greyish-white, the hind legs long, and the toes splayed. Neither sex bears antlers.

Musket Term employed for a firearm of the smoothbore type. It was used chiefly for arming infantry. Muskets were either matchlocks fired by applying a match to the powder, flintlocks, or breech loaders.

Musk Ox Arctic American bovine ruminant (*Ovibos moschatus*). The male has wide flattened horns, and a long thick brownish coat; its flesh has a musky odour. It is now confined to N.E. Canada and Greenland, from 64° N. lat. to Grinnell Land.

Muslin Fine, plain-weave cotton fabric used for dresses, hangings, curtains, etc. Named from Mosul, Indian makes were introduced into Stuart England, and still come from Madras and other famous centres. The invention of mule-spinning developed a great industry in Lancashire, Scotland, Switzerland and N. America.

Musquash N. American rodent of the vole subfamily (*Fiber zibethicus*). It is also called musk-rat, a musky-smelling gland being present in both sexes. Stoutly built, 12 in. long, with compressed 10 in. tail, and partly-webbed hind feet, it is of amphibious habit. Its soft, velvety, dark-brown fur is extensively used by furriers.

Mussel Popular name for bivalve molluses constituting large marine and freshwater families of world-wide distribution. The common sea-mussel of British coasts, *Mytilus edulis*, as well as being much prized for human food, is also a valuable bait for deep-sea fishing. British freshwater mussels include the river-mussel and pearl-mussel, *Unio*, and the swan mussel, *Anodonta*.

Musselburgh Burgh and seaport of Midlothian, at the mouth of the Esk, 6 miles from Edinburgh. There is a harbour at Fisherrow for the fishing fleet, while an important industry is paper-making. Here is Loretto School (*q.v.*). Pop. (1931) 16,996.

Musset **Alfred de.** French romantic poet, author and playwright. Born on Dec. 11, 1810, he was admitted to the circle of French Romantics after leaving school, and published in 1830 with success his first poems, *Contes d'Espagne et d'Italie*. Extremely sensitive, his life was a series of emotional crises, the greatest of which came after his break with George Sand. As the result of his suffering at her unfaithfulness, he wrote his greatest lyric poems, *Les Nuits*, which mark the highest point in French lyric verse. He wrote also several successful light comedies, some of which are still produced. He died on May 2, 1857.

Mussolini **Benito.** Italian statesman. Born at Varano di Costa, Dovia, in the province of Forli, July 29, 1883, the son of a blacksmith, he attended an elementary school, and later a boarding-school at Faenza, and gained a teacher's certificate at Forlimpopoli, after which he taught for a year at Gualteri, Reggio Emilia. He went to Switzerland in 1902, and while doing manual labour, studied French at Lausanne University, read widely, made speeches, organised unions and strikes, and was expelled from one canton after another.

In 1905 he carried out his military service with the Bersaglieri. He founded the weekly paper, *La Lotta di Classe*, in 1910 at Forli, and was imprisoned for his articles. He became secretary of the Socialist Society at Trent, and was banished for his "irredentism" in *Il Popolo*. He then became editor of the Milan social paper, *Avanti*. When war broke out he wished Italy to remain neutral, but was converted to the Allies' cause, and for this was expelled at a Socialist Congress at Milan in Nov., 1915. He founded the paper *Il Popolo d'Italia*, and, when Italy entered the War in 1915, volunteered as a private soldier in the Bersaglieri. He fought in the trenches until Feb. 22, 1917, when he was seriously wounded by the explosion of a mortar.

The following September he again became editor of *Il Popolo*, now preaching against pacifism. The end of the war found Italy in such a state of disorder that Mussolini judged the time for his counter-revolution rapidly approaching, and on March 23, 1919, founded the Fascismo Institution. (*See* FASCISM).

When the Fascists marched on Rome, Victor Emmanuel dismissed his Prime Minister, Facta, and invited Mussolini to enter Rome on Oct. 30, 1922. Since then Mussolini has been the dictator of Italy, holding the premiership, and at one time the ministries of Foreign Affairs, Interior Colonies, War, Marine, Air and Labour.

Through the Fascist system Mussolini has put down all opposition, and led a united and re-vitalised Italy into the forefront of progress. Dissentients have been summarily dealt with, and centralised methods of government, backed by extensive social legislation, have increased the material well-being of the country, while Fascist education has increased the national solidarity. He has encouraged excavation and research into the antiquities of Rome to inspire the nation with a sense of its glorious heritage; and an extensive scheme for rebuilding Rome was launched in 1932 as part of his policy.

No less remarkable was his achievement in 1929 of the treaty which finally settled the Roman Question, the Pope thereby becoming sovereign of the newly created state of the Vatican City. Subsequent differences with the Vatican were satisfactorily composed.

Mussolini's foreign policy has been directed to maintaining the influence of Italy in the Mediterranean and strengthening her position as a European power. In 1924 he negotiated a settlement with Yugoslavia in which the Italian claim to Fiume was recognised. In 1926 he placed Italian relations with Greece on a friendly footing, and vigorously supported the independence of Albania.

In 1933 he published The Political and Social Doctrine of Fascism, and became Minister of War. He signed a pact between Italy, Austria and Hungary in March, 1934, and urged on military preparations till by Aug., 1935, Italy had 1,000,000 men under arms, and all male Italians between 8 and 55 were to be considered as soldiers. After the Wal Wal incident in Nov., 1934, Mussolini's intentions in Abyssinia became plainer, and in Oct., 1935, Italy was declared aggressor by the League of Nations and subjected to the operation of economic sanctions by 50 members.

Mustang Semi-wild horse of the American prairies. Descended from

European horses of 16th-century introduction, mustangs live in troops, are very hardy, and are often broken in for riding.

Mustard Name of several species of annual plants of the genus *Brassica*. They belong to the order *Cruciferæ*, and are natives of Europe, Asia, and North Africa. The dark brown seeds of the black mustard, *B. Nigra*, are ground with those of the white mustard, *B. alba*, with or without the addition of starches, to form the well-known condiment.

Mustard Oil is an acrid pungent oil distilled from black mustard and used medicinally for external application.

Mustard gas is the name given to a noxious gas—dichloridethyl sulphide—used in the Great War. It causes, when inhaled, severe inflammation of the lungs.

Muswell Hill District of London, about 6 m. to the north of the city, and reached by the L.N.E. Rly. A residential area, it is outside the county, being in the Borough of Hornsey.

Mutation Term applied in the study of heredity to one of the types of variation which occurs in the offspring of both animals and plants. This type is known as discontinuous variation or mutation, and is characterised by the appearance of new forms differing considerably from their parents and having no intermediate forms. According to some modern biologists, mutation is the basis of evolution, affording a means by which the unfit are eliminated by natural selection.

Mweru Lake of Africa, 90 miles to the west of Lake Tanganyika, discovered by David Livingstone in 1867. It is 76 miles long, and the River Luapula falls into it, while around it is a marsh district which is a game preserve for the elephant. The lake belongs to Belgium and Rhodesia.

Mycenae Ancient Greek city in the Peloponnesus. Here, on a natural rock in N.E. Argolis, Bronze-age immigrants developed a remarkable civilisation, marked by Cretan fashions in art. After the fall of Cnossus this civilisation dominated the E. Mediterranean, culminating in the dynasty to which Agamemnon belonged. The city was destroyed 468 B.C. Explored by French archæologists, 1822, Schliemann, 1876, and Wace, 1920-23, innumerable gold and silver ornaments, utensils, weapons and pottery objects have been revealed.

Myelitis Term applied to the inflammation of the spinal cord, but used loosely for various spinal affections. True myelitis may arise from exposure to cold and wet, wounds or injuries to the cord, or from infectious diseases. Paralysis of the limbs is followed by muscular atrophy and high fever, ending in death.

Mynyddislwyn Urban district of Monmouthshire. A colliery centre, it is 8 m. from Newport, and has chemical and tinplate manufactures. Pop. (1931) 16,201.

Myopia Condition of the eye resulting in shortsightedness. Weakness in the accommodating mechanism of the eye causes the visual focal point to be in front of the retina. The range of distinct vision therefore is nearer to the eye and distant objects appear indistinct, a defect remedied by the use of concave lenses.

Myrmidon In ancient Greece a Thessalian tribe who fought in the Trojan war under their leader, Achilles. Their fidelity and devotion to Achilles has made their name a symbolic term for one who gives a blind, unquestioning obedience to a superior.

Myrrh Gum resin, obtained as an exudation from the stem of a tree, *Balsamodendron myrrha*, growing in Arabia and Abyssinia. Myrrh is imported as irregular tears or reddish-brown masses, having an aromatic odour and bitter taste. It is used medicinally as a tonic, and also in mouth washes, gargles and tooth powders.

Myrtle Evergreen shrub of Asiatic origin, long naturalised in the Mediterranean region, and hardy in S.W. England (*Myrtus communis*). Its thick, shining, opposite leaves and fragrant white flowers, largely used in perfumery, yield an aromatic medicinal oil; the berries are used in cookery and turners esteem the hard, mottled wood.

Mysore Native state of S. India. It has an area of 29,483 sq. m., and is situated on the Deccan Plateau, surrounded by British territory. It is ruled by a Hindu maharajah, under British protection. Coffee planting is the principal industry and gold is mined. Pop. (1931) 6,423,189. Mysore City is the capital, with a population of 83,932, while Bangalore is another large town.

Mystery Secret rite. Early social and religious institutions, affecting the emotional life of settled agricultural peoples, display widespread observances, perhaps derived from ceremonial dances in neolithic culture, still traceable in primitive survivals. They comprised the initiation of selected persons by processes of purification and sacrificial offering into a secret formula, and their presence at the revelation or commemoration of a dramatic event. The most renowned mysteries in ancient Greece were held each September at Eleusis, based upon the veneration of the corn-goddess, Demeter, with whom the youthful Dionysus was afterwards associated. In the Græco-Roman world Orphic, Mithraic, and other mysteries maintained a long rivalry with early Christianity. Medieval Christendom developed a type of religious drama or mystery; collections of those performed at York, Coventry, Chester and Towneley survive. *See* MIRACLE PLAY.

Mysticism Mode of thought or feeling which seeks, in Dean Inge's words, to realise "the immanence of the temporal in the eternal and the eternal in the temporal." Traces of it occur in many diverse religions, notably in theosophical Hinduism, Persian Sufism, and Platonism. It marks some N.T. writings, particularly the Johannine and Pauline. Medieval mysticism is represented by such examples as Eckhart and S. Teresa. In Protestant thought Boehme influenced William Law; certain Quaker and Methodist tenets have mystical affinities.

Mythology Term denoting the sacred stories of a people, or their study. Myths are primitive stories, perpetuated by oral tradition, subserving the purposes of religion and morality, and bringing home to the community what must be believed and obeyed. When there is an historic background they rank as legends.

NAAS Market town and urban district of Co. Kildare, Irish Free State. It is 20 m. from Dublin on the G.S. Rlys. Pop. 3440.

Nabob Word used in India in the time of the Mogul Empire for high officials, and later for any person of rank. It had a temporary vogue in England in the 18th century.

Naboth Landowner in Jezreel whose vineyard, adjoining the royal palace, was coveted by Ahab, King of Israel. He was stoned on a false charge arranged by Jezebel (1 Ki. xxi.). *See* JEZEBEL.

Nadir Term used in astronomy for that part of the heavens directly opposite to the zenith, or point of the heavens vertically above any place on the earth. The zenith and nadir, therefore, form the two poles, superior and inferior respectively, of the horizon.

The term nadir cup or basin is applied to the vessel of mercury attached to a meridian circle used for observing the nadir as the zero point for measuring declinations.

Naevus or **Mole.** Term applied to certain outgrowths of the skin, usually congenital and, therefore, sometimes called a "mother's mark." One form of naevus is due to an enlargement of the cutaneous blood vessels, and is known as a "port wine mark." Pigmented and hairy naevi may occur on various parts of the body.

Nagasaki Town and seaport of Japan, on the west side of Kiushiu Island. It has a magnificent harbour. For about 300 years it was the only port in Japan open for trade with Europe. The town has some engineering works and other industries, and there is a European quarter. Pop. 204,626.

Nagpur City of India, the capital of the Central Provinces, 450 m. from Bombay. The town has some manufactures. Pop. (1931) 215,165.

Nahum One of the Old Testament minor prophets. A native of Elkosh, identified by Jerome in the 4th century A.D. with a Galilean village, but later with a locality near Nineveh where his alleged tomb is shown. His book predicts the fall of Nineveh, which occurred in 606 B.C.

Naiad In ancient Greek legend a female deity. Naiads were nymphs of rivers and springs. *See* NYMPH.

Nail Horny layer growing on the ends of fingers and toes. A thickening of the epidermis, it corresponds to claws and hoofs in other animals. Lying on a nail-bed of sensitive skin, it forms near the root an opaque *lunula*. It grows continuously throughout life, being worn away or cut at the free end.

Nainsook (Hindu, *nain*, eye, *sukh*, delight). Thin muslin-like material of fine texture, with a specially soft finish. It is a variety of jaconet, and was originally made in India.

Nairn Burgh and watering place of Nairnshire. It stands on the Moray Firth and a little river of the same name, 15 m. from Inverness. There is a harbour and some fishing. Nairn is the county town. The quarter inhabited by the fisherfolk is called Fishertown. Pop. (1932) 5282.

Nairnshire County of Scotland. It covers only 162 sq. m., and has a short coastline on the Moray Firth. Nairn is the county town; other places are Auldearn and Cawdor. The rivers are the Findhorn and the Nairn. The land is hilly and unfertile, and the chief industry is the rearing of sheep. Pop. (1931) 8294.

Nairobi Capital of Kenya Colony, East Africa, on the Uganda Rly., 327 m. from Mombasa. It stands on a plateau over 5000 ft. high. The climate is excellent, and many Europeans visit the town as a starting point for expeditions into the colony. It has a broadcasting station (49.5 M.). Pop. 70,960.

Namaqualand District of South Africa. It is divided into two parts, Great and Little Namaqualand, which are separated by the Orange River. **Great Namaqualand**, part of the South-West Africa protectorate, is a desert region. **Little Namaqualand** is part of the Cape Province. The name is that of a Hottentot tribe, the Namaqua.

Name That by which a person or thing is denoted. The choice or bestowal of personal names is governed by social usage, and in primitive culture is often attended by measures designed to counteract their malevolent misuse. Nowadays one or more Christian or given names and a surname, usually the father's, are usual in Britain and elsewhere in Christendom. Under English law a woman on marriage takes her husband's surname; in Scotland, for all legal purposes, she usually retains her maiden name. Members of the British royal family sign their baptismal names only, peers of the United Kingdom only their surnames or peerage designations. *See* PLACE-NAME, SURNAME.

Namur City of Belgium, standing where the Sambre falls into the Meuse, 35 m. from Brussels. A bridge across the Meuse leads to the suburb of Jambes. There are some manufactures. Pop. (1931) 31,611.

Owing to its position Namur has long been a fortified place. In 1692 it was taken by the French and in 1695 by the English, after a long siege. It was fortified by the Belgians in the 19th century, and was regarded as almost impregnable. In 1914, however, the forts were quickly reduced by the Germans, who entered the town on August 25th.

Nanaimo Seaport and town of British Columbia, on the Island of Vancouver, 73 m. from Victoria. It is a fishing centre, but is more important for its shipping. There is a good harbour.

Nancy Town in N.E. France. The capital of the Meurthe-et-Moselle department, it has a population of (1931) 120,578, and was formerly the capital of Lorraine. The older quarter of the town is picturesque, the modern city has buildings and open streets. It is an important railway junction, and manufactures lace goods. During the World War, in August, 1914, its suburbs were invaded.

Nankeen Strong cotton fabric, originally made in China from native cotton of a yellowish drab tint. Nankeen, or

cotton twill, is now manufactured in other countries from ordinary cotton and dyed to the requisite shade.

Nanking Capital city and river port of China. It is on the Yang-tse-Kiang, about 200 m. from the mouth. The industries include shipping and various manufactures. Nanking was at one time the capital of China, and in 1928, with the setting up of a national government, it replaced Pekin as the nation's metropolis. Near is an avenue of gigantic statues, leading to the tombs of the Ming dynasty. Pop. (1931) 633,452.

Nansen **Fridtjof.** Norwegian explorer. Born Oct. 10, 1861, after an arctic voyage in 1882, and the first crossing of Greenland in 1888, he attempted, unsuccessfully, in 1893 to reach the North Pole by letting his ship freeze in the ice and drift with a current setting towards Greenland. He wintered away from his ship, the *Fram*, at a latitude of 86° 14′ North, only returning to civilisation in 1896. He was a professor of zoology at Christiania University, and a strong nationalist. He was Norwegian ambassador at London in 1906-08, when he returned to academic life, making several oceanographic expeditions. His relief work in the post-war famine in Russia and other work as high commissioner for refugees to the League of Nations earned him a Nobel Peace Prize in 1923. He was instrumental in securing the entry of Germany into the League. He wrote, among other books, *Eskimo Life*, *In Northern Mists* and *Russia and the Peace*. He was elected Lord Rector of St. Andrews in 1925. He died May 13, 1930.

Nantes Town in Western France. The capital of the department of Loire Inférieure, on the river Loire, it stands where the river divides into several branches, and has a population of (1931) 187,343.

It has played a prominent part in Breton history from the time of its commercial expansion under the Romans, and rivalled Rennes for the sovereignty of Brittany. Though, in feeling, it has always been anti-Protestant, it was here that the **Edict of Nantes** was signed, in 1598, giving religious freedom to the Huguenots.

Nantes possesses a large and important port on the Loire, as well as a great maritime port, both accessible to big ships. It exports slate and machinery, pit-props and soaps, and imports coal, petroleum, sugar and grain.

Nantucket Island of Massachusetts. Its area is 48 sq. m., and the town of Nantucket is at the north end of the island. The light from Nantucket lighthouse is familiar to travellers approaching New York. The island was long the home port of the great whale fisheries.

Nantwich Market town and urban district of Cheshire. It stands on the Weaver, 161 m. from London and 4 m. from Crewe. At one time Nantwich was a centre of the salt industry, but this no longer flourishes. There are brine baths. Clothing and shoes are made. Pop. (1932) 7132.

Nantyglo Market town of Monmouthshire, part of the urban district of Nantyglo and Blaina, 162 m. from London, on the G.W. Rly. The chief occupations are in the coal mines and ironworks. Pop. (1931) 13,190.

Naomi Old Testament character portrayed in the Book of Ruth. With her husband Elimelech and their two sons, she went from Bethlehem-Judah to Moab in time of famine. Returning a childless widow, accompanied by her Moabitish daughter-in-law, Ruth (*q.v.*), she reached Bethlehem, exclaiming to old friends "Call me not Naomi (pleasant), call me Mara (bitter).

Nap **(or Napoleon).** Game of cards, of French origin. To each player, usually three to five, five cards are dealt from a full pack. Each plays for himself. The player calling the highest number of tricks proposed to be won leads, a declaration of five tricks being called "going nap." The trump suit is that of the declarer's first card played. On making his declaration, the player is paid by each of his opponents; should he fail to make it, he must pay each of them the amount of his stake. If the player declaring Nap succeeds, he usually receives double stakes.

Naphtali Israelitish tribe named after Jacob's younger son by Bilhah. Their territory lay in the mountainous district of upper Galilee.

Naphtha Term applied to derivatives either of petroleum, coal tar, or wood. **Petroleum naphtha,** a product of the distillation of petroleum, has a specific gravity about 0.700 and is used as a solvent and cleaning material. **Coal tar naphtha** or "light oil" is the first product of coal tar distillation, and when refined is used under the name of solvent naphtha for dissolving rubber. **Wood naphtha** is a form of methyl alcohol (*q.v.*).

Naphthalene Solid white hydrocarbon which crystallises out from the "middle oils" formed in the distillation of coal tar. It occurs as glittering plates having a peculiar tarry odour, and is soluble in hot alcohol and also benzene. Naphthalene is used as an antiseptic, for enriching water-gas and coal-gas, and it forms the basic substance for a large number of important intermediate dyestuffs by nitration and sulphonation, the most important being α-Naphthol, β-Naphthol and phthallic acid.

Naphthol **Alpha and Beta.** Solid hydrocarbon derivatives of naphthalene, used as basic substances in the preparation of a large number of aniline dyestuffs. **Alpha naphthol** is employed in making Martius's yellow for silks and wool, as well as brown dyes for soaps and spirit varnishes. **Beta naphthol** is of still greater importance in the manufacture of intermediates and dyestuffs.

Napier Town and seaport of North Island, New Zealand. Standing on Hawke's Bay, 200 m. from Wellington, there is a good harbour from which wool and meat are exported. Napier was seriously damaged by earthquake in 1931. Pop. (1932) 19,300.

Napier **John.** Scottish mathematician. Born at Edinburgh in 1550, in 1593 he published his *Plain Discovery of the whole Revelation of Saint John*. He devised warlike machines for use against Philip of Spain, and recommended salt as a fertiliser of the land. He described his famous invention of logarithms in *Minifici Logarithmorum Canonis Descriptio* (1614), and the calculating apparatus called *Napier's Bones* in another Latin work in 1617. He died April 4, 1617.

Napier Celebrated Scottish family. **Sir Charles Napier,** British admiral, was born March 6, 1786, near Falkirk. He took part in the capture of the West Indies, 1806-08. After commanding the Portuguese fleet, and winning the title Count Cape St. Vincent, he stormed Sidon in the Syrian War of 1840, and

in 1854 was commander-in-chief in the Baltic against Russia. He was M.P. for Marylebone 1842-46, and for Southwark, 1855-60. He died Nov. 6, 1860.

His uncle, **Sir Charles James Napier**, British general and statesman, was born in London, Aug. 10, 1782. He served in the Irish rebellion of 1798, in Denmark, and at Corunna. He took part in the Chesapeake expedition, and became Governor of Cephalonia in 1822. In 1841 Napier went to India and subdued the rulers of Sind by his victory of Meeanee. He died Aug. 29, 1853.

His brother, **Sir William Francis Patrick Napier**, British soldier and military historian, was born near Dublin, Dec, 17, 1785. He fought in Denmark in 1807 and the Peninsula 1808. He wrote *History of the War of the Pyrenees*, (6 vols., 1828-40), and *History of the Conquest of Scinde* (1845), among other books. He died Feb. 12, 1860.

Napier of Magdala. Robert Cornelius Napier, 1st Baron. British field-marshal. Born at Colombo, Ceylon, Dec. 6, 1810, he distinguished himself in the two Sikh wars, was present at the relief of Lucknow, and later defeated Tantia Topi on the plains of Jaora Alipur in 1858. He served for a time in China, taking part in the entry into Peking, and in 1868 he commanded the Abyssinian expedition, and was given a peerage as a reward for his brilliant storming of Magdala. He was afterwards successively Chief of the Forces in India, Governor of Gibraltar, and Constable of the Tower. He was made Field-marshal in 1883, and died Jan. 14, 1890.

Naples City and seaport of Italy. It is beautifully situated on the Bay of Naples, 135 m. from Rome, and has a fine anchorage. On the north-east shore of the bay are the sites of Herculaneum and Pompeii, overshadowed by Vesuvius (*q.v.*), and near are the Bay of Baiae, the Lucrine Lake and Lake Avernus. The islands of Ischia and Capri (*q.v.*) lie off the coast.

Built on volcanic slopes, Naples has many well-known streets and buildings, the former including the Toledo and the Corso Vittorio Emmanuele, and the latter the Museo Nazionale containing the Farnese and other art treasures, the castle of S. Elmo (1537-46), the Castle Nuovo (1279-82), the royal palace, National Library, the cathedral of S. Januarius (1294-1323), and over 230 churches. The new university buildings date from 1906.

The industries include silk, cotton, jute and wool manufactures, railway plant and automobile making, shipbuilding, etc. After the cholera epidemic of 1884 extensive slum-clearance was carried out, and the city was largely reconstructed. It has a broadcasting station (319 M., 1.5 kW.). Pop. (1931) 839,390.

Founded by the Greeks, Naples remained Greek in culture under the Romans, suffered during the Gothic wars, and finally became independent in the 8th century. It remained independent till the 12th century, when it became the seat of the kingdom of Naples.

The Kingdom of Naples existed from the 12th to the mid-19th century, and was ruled in turn by the Hohenstaufens, the Angevins, and the kings of Aragon and Spain, until it passed to Austria under Charles VI. in 1713. After Garibaldi's liberation of Italy, it became part of the Sardinian kingdom (1860).

Napoleon **Eugene Louis Jean Joseph.** French prince, usually called the Prince Imperial. Born March 16, 1856, he was the only son of Napoleon III. and the Empress Eugénie, and left France with his parents in 1870. He was trained as a soldier, and went out with the British army to Zululand, where he was killed, June 1, 1879.

Napoleon French gold coin, first issued by Napoleon. It consisted of 20 francs, and was worth about 16s.

Napoleon I. **Bonaparte.** Emperor of the French. Born at Ajaccio in Corsica, Aug. 15, 1769, and educated at military schools in Brienne and Paris, he soon rose to fame as an artillery officer of the new French Republic and in 1796 was in command of the French army in Italy. A series of spectacular victories made him the idol of France. After a brief campaign in Egypt he returned, and by the *coup d'état* of 18 Brumaire (9th Nov. 1799), made himself First Consul under a new constitution which gave him autocratic power.

His ambition now knew no limits, and he contrived to make himself Consul for life in 1802 after another successful Italian campaign. In 1804 he became Emperor as Napoleon I. Then followed a period of despotic government at home, with an almost constant succession of campaigns abroad.

He destroyed Austrian opposition at the battles of Jena and Austerlitz, threatened England with invasion from Boulogne and defeated the Russians at Eylau and Friedland; but his ambition then led him into adventures which brought about his downfall, beginning with the unsatisfactory campaign in Spain, and later the disastrous march into Russia and the retreat from Moscow (1812). The end came with the battle of Leipzig (the "Battle of the Nations") and the invasion of France by the allies, which resulted in the abdication of Napoleon (1814) and his exile to Elba.

On Feb. 26, 1815, he made one desperate effort, returned to France, and was decisively beaten at Waterloo on June 15, 1815. Surrendering to the British, he was exiled to St. Helena, where he died May 5, 1821.

He was married first to Josephine Tascher de la Pagerie, whom he divorced in 1809 in favour of Marie Louise of Austria.

"The greatest adventurer in the world," his genius showed itself not only on the battlefield, but in his detailed reorganisation of France, much of which still remains.

Napoleon III. **Charles Louis Napoleon Bonaparte.** Emperor of the French, nephew of Napoleon I. Born April 20, 1808, the son of Louis Bonaparte, King of Holland, he made two unsuccessful attempts to displace Louis Philippe and the Bourbons, and restore the Napoleonic dynasty (1836 and 1840). After the Revolution of 1848, he accepted the Republic and was elected President. In 1851, by a *coup d'état*, he dissolved the Constitution, and in the following year became Emperor. He carried out a policy of administrative centralisation and remodelled Paris.

His foreign policy was unsuccessful. Though he gained glory for France by his participation in the Crimean War, his support of the disastrous attempt to make Maximilian of Habsburg Emperor of Mexico and his intervention in Italy on behalf of unification alienated various sections of French opinion. The Franco-Prussian War, into which he was drawn by Bismarck, resulted in the total defeat of the French and the collapse of the Second

Empire. The Emperor sought refuge in England, where he died Jan. 9, 1873.

Napoleonite Alternative name for ball-diorite, an igneous rock found in Corsica and composed of an aggregate of spherical masses of radially and concentrically arranged felspar and hornblende.

Narcissus Genus of bulbous herbs of the amaryllis order, natives of central Europe and the Mediterranean region; one species extends eastward to Japan. The special feature of the tubular perianth is the cup springing from the base of the flower-segments. Various species have furnished hundreds of cultivated and hybridised forms, sometimes double-flowered, often fragrant, including polyanthus or bunch-flowered and pheasant's-eye types. These present innumerable variations of size, and white or yellow colouring, sometimes with a scarlet-edged or frilled corona (*q.v.*). *See* DAFFODIL, JONQUIL.

Narcissus In Greek mythology, a beautiful youth, son of the river-god, Cephissus, beloved by the nymph Echo. He ignored her passion so that she pined away in grief, while he, seeing his own reflection in a fountain, became so enamoured of it that he too pined away, changing into the flower bearing his name.

Narcotics Name applied to drugs such as opium, chloral, cocaine, etc., which have a sedative effect and are therefore of value in relieving pain.

Nares **Owen Ramsay.** English actor. Born Aug. 11, 1888, he trained with Miss Rosina Filippe, and first appeared in *Her Father*, at the Haymarket Theatre, in 1909. After touring provincially for two years, he played in London for eleven. In 1926 he toured in S. Africa. His best known parts have been Julian Beauclerk in *Diplomacy*, Philip in *The Boy Comes Home*, Peter Beavans in *The Charm School*, Mark Sabre in *If Winter Comes*, and Cary Liston in *Two White Arms*. In 1935 he appeared in *Youth at the Helm* and *Call it a Day* at the Globe Theatre.

Nares **Sir George Strong.** English explorer. Born in 1831, he entered the navy in 1846, and as mate of the *Resolute*, sailed on the Arctic Expedition of 1852. After service in the Crimea he was in command of the *Challenger*, in her world voyage of deep-sea exploration. He commanded the Arctic Expedition in the *Discovery* and the *Alert* in 1875, and in 1876 surveyed the Magellan Strait. He was promoted Vice-Admiral in 1892, and died Jan. 15, 1915.

Narwhal Scandinavian name of a cetacean of the dolphin family, inhabiting the Arctic regions (*Monodon monoceros*). It is also called sea-unicorn. The male possesses a tapering tusk, spirally grooved, sometimes as much as 8 ft. long. This projects horizontally forwards, usually from the left upper jaw; the corresponding right tooth sometimes develops also. It is of compact ivory, with a central cavity. In colour it is black-grey above, white beneath, and frequents polar seas, usually in schools of 15-20.

Naseby Village of Northamptonshire. It is 7 m. from Market Harborough, and is famous for the battle fought here on June 14, 1645. Charles I., with an army, was marching towards Leicester pursued by his enemies. He waited for them at Naseby, and won an initial success. Cromwell's men, however, turned the scale, and in the end the Royalists were routed. Charles escaped to Leicester, but his private papers were captured, as well as a large number of his men. An obelisk marks the site of the encounter.

Nash **Paul.** British painter. Born in London, May 11, 1889, he was educated at S. Paul's School and the Slade School. He held his first exhibition in 1911, but it was not until 1918, when his work as an official war artist (1917-18) was shown, that he attracted attention. He developed charm and individuality as a landscape painter, and held an important exhibition in London in 1924. He also produced woodcuts, and book illustrations, of which the series of wood-engravings, "Genesis" (1924), are the most important.

Nash **Richard.** English dandy, known as Beau Nash. Born at Swansea, Oct. 18, 1674, he entered the army, and in 1693 the Middle Temple, but forsook the law for society. He made a precarious living by gambling, but in 1704 was made master of ceremonies at Bath. He conducted the public balls with a sumptuous splendour, and gained great prestige. He died in poverty at Bath, Feb. 3, 1762.

Nash **Thomas.** English dramatist and satirist. Nash, who was called by Lowell "The English Rabelais," was born in 1567. He wrote amongst other works, *Pierce Pennilesse, his Supplication to the Divill* (1592), full of keen satire and mainly autobiographical. Other works were *The Terrors of the Night*, *The Unfortunate Traveller* and *The Isle of Dogs*, which was at once suppressed and is now lost. He completed Marlowe's unfinished tragedy, *Dido*. He died in 1601.

Nashville City and capital of Tennessee, on the Cumberland River, 185 m. from Louisville. In Centennial Park is a replica of the Parthenon at Athens. It has a great trade in cotton, lumber, and tobacco, while there are also printing works and textile mills. Pop. 153,900.

Near Nashville, on Dec. 15-16, 1864, there was a great battle during the American Civil War. The Confederates, or Southerners, were utterly defeated by the Federals in possession.

Nasmyth **James.** Scottish engineer. Born at Edinburgh, Aug. 19, 1808, he started business in Manchester in 1834, and was soon head of the Bridgewater foundry at Patricroft, from which he retired with a fortune in 1856. He invented the steam-hammer in 1839, to forge large paddle-wheel shafts for steamships, also many other appliances, among them a planing machine (*The Nasmyth Steam-Arm*). He died May 7, 1890.

Nasturtium (1) Genus of British and N. temperate cruciferous herbs, called watercress (*q.v.*). (2) Popular name for a genus of S. American herbs of the geranium order, *Tropaeolum*.

Natal Province of the Union of South Africa. It lies between the Indian Ocean and the Drakenberg Mts., N.E. of Cape Province, and has an area (including Zululand) of 35,284 sq. m. Pietermaritzburg is the capital, and Durban the principal port. The province is rich in minerals, of which the most important are coal and iron. Gold is also found, and marble is quarried. There is considerable trade in timber, while coffee and sugar are grown, and cattle and horses reared. The name was given to it because it was discovered on Christmas Day, 1497, by Vasco da Gama. The white population (1931) was 177,224, and there are about 1,300,000 blacks.

Nathanael One of Jesus Christ's first disciples. Belonging to Cana of Galilee, he was introduced to our Lord by Philip (John i.). He is variously identified with Bartholomew and others.

National Anthem Term used for the official song of a nation. *God save the King*, the British national anthem, is attributed to Henry Carey and also to John Bull, but its exact authorship is doubtful. Among other national anthems are the French, *La Marseillaise*, the Belgian, *La Brabançonne*, and the Canadian, *The Maple Leaf for ever*. The U.S.A., though without an official national anthem, have *Hail Columbia*, and *The Star Spangled Banner*, for popular use.

National Debt Phrase used for money owing by a state in its collective capacity. Most of it consists of money borrowed to carry on war. Almost every country in the world has a national debt, and during the financial crises of 1931-32 several found it impossible to meet the interest payments thereon. The Dominions of the British Empire have each a national debt.

In Great Britain the national debt, as distinct from the liabilities of the king, originated in the time of William III. The amount was greatly increased during the 18th century, and in 1785 it amounted to £244,000,000. A good deal was borrowed to finance the war against France, and in 1816 it had reached £858,000,000.

During the rest of the 19th century, except for the short period of the Crimean War, the debt was steadily reduced in amount until in 1899 the total was only £635,000,000. The South African War, however, added another £150,000,000, and in 1914 the total was £706,000,000. The Great War increased enormously the amount of the debt, and in 1920 it amounted to nearly £8,000,000,000, much of which had been borrowed at 5 per cent. interest. Attempts were made to reduce the total, but on the whole they were not very successful and in March, 1934, the total amount owing was £8,030,400,000

This debt is divided into external and internal. The external debt amounts to £1,066,660,000, chiefly owing to the United States. The internal debt is divided into funded and unfunded debt. The total funded debt in 1934 consisted chiefly of consols and a 3½ per cent. conversion loan, and amounted to £3,374,300,000. The bulk of the debt is therefore unfunded. It includes the 3½ per cent. war loan of £2,087,000,000, the 4½ per cent. conversion loan, victory bonds, savings certificates, treasury bonds and treasury bills. The 3½ per cent. war loan was a 5 per cent. loan until 1932, when a successful conversion scheme was carried out. Of the total amount about £500,000,000 is held by the Post Office Savings Bank on account of depositors, and about £750,000,000 by departments of state.

On the other hand there are assets which may be set off against the enormous total of the national debt. Nominally these are worth £2,445,500,000, nearly half consisting of debt owing by Russia. The remainder is owed by the Dominions and foreign countries, and there are certain other assets such as the shares in the Suez Canal and the Anglo-Persian Oil Co.

The interest on the national debt, and the cost of managing it, together with the New Sinking Fund, amounted in 1933-34 to £224,000,000. To meet these payments, and also to reduce the amount, an annual sum of £360,000,000 is set aside, so that there is about £66,000,000 for repayment, this sum being known as the sinking fund. There is also a national debt redemption fund, which receives donations and legacies for the same purpose.

National Gallery Any collection of pictures belonging to the state, but particularly the one in Trafalgar Square, London. This dates from 1824, and the building from 1838; the latter has been enlarged several times. It contains a wonderful collection of paintings, nearly all the great masters being represented. It is under trustees and a director, and is open free, except on Thursday and Friday, when a small charge is made.

Connected with it is the National Gallery at Millbank, founded by Sir Henry Tate and usually called the Tate Gallery (*see* TATE, SIR HENRY). It was opened in 1897 and is chiefly used for British pictures, although it has a foreign gallery. It contains a fine collection of the works of Turner, and a special gallery for those of Sargent presented by Sir Joseph Duveen.

The **National Portrait Gallery** adjoins the National Gallery in Trafalgar Square. It was opened in 1896 and has since been enlarged. There is a **National Gallery of Scotland** at the Mound, Edinburgh, and a **Scottish National Portrait Gallery** in Queen Street, Edinburgh. Other great national galleries are the Prado in Madrid and the Louvre in Paris.

Nationalisation Acquisition by the state of land or any other public utility, usually by purchase. In Canada and Sweden some or all of the railways have been nationalised. The nationalisation of the land has been proposed in Great Britain, and a society exists to forward the idea, while the nationalisation of the coal mines and the railways has also been suggested. Nationalisation has been extensively carried out in Russia under the Soviet, but in other countries it has been confined to public utilities, such as telegraphs and telephones.

National Mark In Great Britain a mark placed on certain articles of food to show that such are produced at home. The scheme was introduced in 1928 and is used for beef, flour, eggs, apples and other articles of food. *See* GRADING.

National Trust Society for preserving places of historic interest and natural beauty. It dates from 1895, and now holds a great deal of land and a number of buildings all over the country, some having been given to it and some purchased by subscription. The property held by the trust includes a large area of Exmoor, Minchinhampton Common and several castles. The acquisitions in 1931 include Frankley Beeches, near Birmingham, Harestield Beacon, Longshaw Moor, near Sheffield, and land in the New Forest. The offices are at 7 Buckingham Palace Gdns., London, S.W.1.

Nativity Name of several Christian festivals. For Christ's Nativity, commemorated on Dec. 25, *see* CHRISTMAS. The Nativity of the Virgin Mary on Sept 8, established in Rome in the 7th century, was adopted by the Eastern Church in the 12th. The Nativity of John the Baptist, on June 24, dates from the 5th century.

Our Lord's birth has been commemorated in art throughout the ages; **nativity plays** occurred in early mediaeval drama.

Natrolite Fibrous mineral belonging to the zeolite group and found in

basalts, usually in cavities, as beautiful tufts of white, transparent acicular crystals, or in more massive form and as slender prisms. It is a hydrated silicate of alumina and soda, and is so fusible as to be melted in a candle flame.

Natron Natural form of sodium carbonate, occurring usually in white or greyish efflorescent incrustations near certain lakes in Egypt, in Kenya Colony (Lake Magadi), and in British Columbia, having crystallised out from a concentrated brine. In some instances the carbonate is mixed with the bicarbonate, as in the *trona* of certain Californian lakes.

Natterjack Toad indigenous to W. Europe (*Bufo calamita*). Found in parts of England, Scotland and Ireland, it is smaller than the common toad, with shortened hind limbs, short and nearly webless toes, and a yellow line along the back. The male has a vocal throat-sac which, when distended, is larger than the head.

Natural Gas Name given to various gaseous hydrocarbons occurring in rocks of varied geological age in Canada, the United States and elsewhere, due to the natural destructive distillation of carbonaceous rocks. Accumulations of the gas are, in America, tapped by deep borings and collected for purposes of illumination and heating. Carbon black, used extensively in the manufacture of printing ink, paints, gramophone records, etc., also is obtained by the incomplete combustion of natural gas in special furnaces.

Natural History Term once used for the study of nature generally, but later confined to zoology. The **Natural History Museum**, opened in 1881, is in Cromwell Road, South Kensington, London, S.W.7., and is a branch of the British Museum. It contains botanical, geological, mineralogical, zoological and other collections.

Nature Word of manifold senses derived from its original meaning of birth or origin. It may denote the metaphysical principle of life, or the forces and processes of the material world, often personified, and regarded as the agency through which the Creator works. Again, it may denote the essential constitution or quality of a being or thing, its original uncultivated condition, or its innate character or disposition.

Nature-study is a modern educational method of bringing children into sympathetic contact with common natural objects. By stimulating the powers of observation it forms an invaluable foundation of scientific knowledge.

Nature-worship. Ritual expression of reverence for physical phenomena deemed capable of affecting human life. In some stages of primitive culture these phenomena—rivers, mountains, animals, plants, storm, thunder, moon and sun, etc.—are variously deemed to be animated by powers akin to man's, or to be the abode of supernatural beings amenable to control by spell or to propitiation by prayer.

Naucratis Ancient Greek settlement in Lower Egypt. Midway between Cairo and Alexandria, it monopolised Greek trade in Egypt from Aahmes II. to the Persian invasion, 570-520 B.C. Petrie's (1885-6) and later excavations revealed much local and imported pottery and the remains of fort-sanctuaries.

Nausicaa In Greek fable, daughter of Alcinous, King of the Phaeacians, whose court was on the Island of Scheria (perhaps Corfu). Homer describes how the shipwrecked Ulysses found her on the shore playing ball with her maidens, and was led by her to the king, to whom he related his adventures.

Nautch Girl Indian professional ballet dancer. Many are attached to Hindu temples, performing sacred dances in bejewelled dresses before the gods, although private secular dances alone are strictly called nautches. Moslem nautch-girls engage solely in secular dances, as on the festival evening terminating the Ramadan fast.

Nautilus Genus of cephalopods or head-footed molluscs, which produced in remote geological ages ammonites and other remarkable fossil forms. The spiral shell is divided by thin walls or septa into a series of chambers, of which only the outermost is occupied. Of the three or four species, confined to Indo-Pacific waters, the best-known is the pearly nautilus. The female of the two-gilled argonaut, making a temporary shell-cradle, was formerly called the paper nautilus. *See* CEPHALOPODA.

Naval Cadet Youth undergoing training for a commission in the Royal Navy. Cadets pass into the Royal Naval College, Dartmouth, when in their fourteenth year. After 3 years' training, if satisfactory, they are appointed to ships where, if still satisfactory, they become midshipmen (*q.v.*). A limited number of cadets may enter the College at the age of 17, direct from public schools, being transferred to ships after one year's training.

Naval Reserve **Royal.** Unit of the British Navy. Formed in 1853, it consists of officers and men enrolled from the mercantile marine and fishing fleets, and called up to serve with the navy in times of national emergency. The **Royal Naval Volunteer Reserve**, formed in 1902, affords facilities for using the services of yachtsmen and others not connected with organised maritime work at similar times. The **Royal Fleet Reserve** consists of those who have already served in the navy.

Navan Market town and urban district of Co. Meath, Irish Free State, 30 m. from Dublin, on the G.S. Rlys. Here the Blackwater falls into the Boyne. The town is an agricultural centre. Pop. (1926) 3650.

Navarino Seaport of Greece, now called Pylos. Here, on Oct. 20, 1827, a combined British and French fleet so decisively destroyed the ships supporting an army that the Turks had landed, that the battle ended the attempt of Turkey to prevent Greece from securing her freedom.

Navarre Formerly a kingdom between France and Spain, in the west of both countries with a coastline on the Bay of Biscay. It arose in the 11th century and, after 1284, was ruled by the kings of France, who secured it by the marriage of Philip IV. with its heiress. In 1316 the two were again separated, and Navarre had a queen, the daughter of Louis X. After being connected with Aragon, Navarre came to another queen, Catherine de Foix, the grandmother of that Henry who became King of Navarre and later, in 1589, King of France as Henry IV. This once more united Navarre with France, except for a portion which had previously been included in Spain.

Nave Architectural term for the central and largest part of a church. The nave in many cathedral and monastic churches included the choir at the east end, though in later buildings the choir was cut off by a screen from the nave. The clerestory, or upper part of the wall of the nave, was pierced with windows.

Navigation Term applied to the art of sailing or directing a ship on its course from one port to another. For this purpose charts for determining the course, and plotting the position of the vessel at any given point, are necessary, as well as the mariner's compass for taking bearings.

From the time of Cromwell onwards a number of laws known as the **Navigation Acts** were made for the regulation of shipping and the fostering of British trade. These acts increased the prices of imported goods and led to the early wars with the Dutch, and were repealed in 1849.

Navy Ships and personnel of a nation, used for purposes of war. Early navies were built less for war than for commerce, though fighting craft were specially designed by the Phoenicians, Athenians, Carthaginians, Romans, Norsemen and others. The first English navy was built by Alfred the Great to fight the Danes, while the Normans requisitioned ships from coastal towns and counties. Later the navy was maintained entirely by the state. Under Henry VIII. and the Stuarts the navy was greatly improved, but received little further impetus till the time of Nelson (*q.v.*).

Marked improvements are comparatively modern—the introduction of iron, first as a protection and, about 1860, for constructional purposes and later replaced by steel, and the introduction of steam propulsion. The development of the water-tube boiler, oil fuel, turbine, electric and hydraulic power have revolutionised shipbuilding, of which full advantage has been taken in the navy. The introduction of submarines and aircraft added considerably to the range of naval activities, while refrigeration, wireless, range-finders and many other scientific devices have helped to maintain efficiency and to improve conditions on the ships.

THE NAVY AS A CAREER. The commissioned ranks in the Royal Navy and Royal Marines may be divided as follows:

(1) Executive and Engineer Officers in R.N. —Entry is through R.N. College, Dartmouth, at the approximate age of 13½, or through H.M.S. *Erebus* between ages of 17½ and 18½. The period spent at Dartmouth is approximately four years and one year in H.M.S. *Erebus*. Fees at Dartmouth are £150 a year, with reduced rates of £40, £70, and £100 a year in selected cases. No fees are payable for training in H.M.S. *Erebus*.

Pay ranges from about £90 a year as Midshipman to about £1100 a year as Captain or Engineer Captain, plus allowances. Higher rates are paid to officers on the Flag List.

(2) Accountant Officers in the R.N. Entry as Paymaster Cadets between the ages of 17 and 18. Pay ranges from about £90 a year as Paymaster Midshipman to about £1400 a year as Paymaster Rear-Admiral, plus allowances.

(3) Commissioned Officers in the R.M. Entry between the ages of 18 and 19. Pay ranges from about £135 a year as Probationary Second Lieutenant to £1100 as Colonel, plus allowances. Higher rates are paid to Officers on the General List.

Candidates entered under these systems must satisfy an Interview Committee and pass the prescribed educational and medical examinations. Full particulars as to entry may be obtained from the Secretary, the Admiralty, Whitehall, London, S.W.1.

The R.N. or R.M. offers an attractive life to an active man, good pay and conditions, and a pension on retirement.

Navy Board Organisation formerly existing to manage the English navy. It was set up in the time of Henry VIII. and remained in existence until 1832 when it was abolished. It was one of several departments responsible for managing the navy. Samuel Pepys was its secretary. At that time the office was in Seething Lane, London, E.C.

Naxos Island of Greece. Covering 175 sq. m., it is the largest of the Cyclades. Naxos, a seaport on the west coast, is the capital. Vines grow freely, although the land is mountainous, and the island is also famous for its marble. In ancient times it was a centre for the worship of Bacchus. Pop. 15,000.

Nazareth Town in a hollow of the hills bordering the plain of Esdraelon, midway between the Mediterranean and the Sea of Galilee. Its association with Christ's early life made it a place of pilgrimage from early times.

Nazarites (or Nazirites). Name meaning "separated" and denoting certain Jews under a personal vow. This included abstinence from wine and strong drink, from cutting of the hair and from contact with the dead. It might be temporary, for a month or more, or lifelong, *e.g.*, Samson and John the Baptist. Regulations are prescribed in Numbers vi.

Naze The. Cape of England. It is in Essex, 5 m. from Harwich and is a prominent landmark.

Nazi Shortened form of National Socialist Party, the party which under Adolf Hitler has gained supreme control in Germany. Its aims are similar to those of the Fascists in Italy, and its rule has had far-reaching effects. (*See* HITLER).

Neagh Lake or lough of Ireland. The largest lake in the British Islands, it covers 153 sq. m. It lies between the counties of Armagh, Londonderry, Down, Tyrone and Antrim, and is noted for its fish.

Neanderthal Man Extinct palaeolithic race. With heavy brow-ridges and receding forehead, they inhabited Pleistocene Europe during the Mousterian culture-period. Fossilised remains were found in the Neanderthal ravine near Dusseldorf, 1856. Similar remains have come from Belgium, France, Jersey, Malta, Galilee and Gibraltar. The race is generally considered to be unrelated ancestrally to modern or Aurignacian man.

Neasden District of Middlesex, forming part of the urban district of Kingsbury, 5 m. from London, to the N.W. of the city. *See* KINGSBURY.

Neath Borough, market town and river port of Glamorganshire. It stands on the River Neath, 183 m. from London, by the G.W. Rly. The chief industry is smelting and there are tinplate and chemical works Pop. (1931) 33,322.

Neat's Foot Oil Oil prepared by boiling the feet of oxen, sheep and horses, and used as a lubricant for delicate machinery and in the dressing of leather.

Nebraska State of the United States. In the centre of the country, it is an agricultural area, producing great quantities of maize, wheat, oats and fruit. Its area is 77,510 sq. m. Lincoln is the capital, but there are no very populous cities. It is governed by a legislature of two houses and sends two senators and five representatives to Congress. Pop. (1930) 1,377,963.

Nebuchadnezzar (or Nebuchadrezzar). Name of three Babylonian kings. Nebuchadnezzar II., Nabopolassar's son, reigned 604-561 B.C., having as crown-prince defeated Pharaoh Necho at Carchemish. He took Jerusalem, carrying many Jews into captivity, 586 B.C., besides capturing Tyre after 12 years' siege, and invading Egypt. He carried out much temple and civic building at Babylon, Ur and elsewhere.

Nebula Astronomical term for cloudy or misty patches in the heavens which are unresolved by powerful telescopes into stars or star-clusters. Many of the so-called nebulae of early observers have been shown by the aid of photography to be globular clusters of stars, but others are found to be composed of gases of very feeble density. Nebulae may be divided into two classes, regular and irregular, the former consisting of luminous and dark nebulae, the latter of planetary, spiral, and the globular and spindle nebulae. One of the best known examples is the Great Nebula in the constellation of Orion.

Nebulium Provisional name formerly given to a hypothetical substance supposed to exist in nebulae, and to be the cause of the greenish appearance they show when seen through a telescope, and of the presence of two bright lines in the green part of the spectrum. Recently, however, nebulium has been shown to be only ionised oxygen and nitrogen.

Neck That portion of an animal's body joining the head to the trunk and having in all mammals, with few exceptions, seven cervical vertebrae, whether the neck is long or short. The muscular covering consists chiefly of the sternomastoid and trapezius muscles. The carotid arteries and jugular veins are the chief blood vessels in this region, and internally there is placed the oesophagus, trachea, larynx and the thyroid glands, the latter situated in the lower part of the neck.

Necker Jacques. French financier. Born at Geneva, Sept. 30, 1732, he became a banker in Paris. In 1777 he was made a director general of finance, but this was too late for him to save the country from bankruptcy. He published the famous *Compte Rendu* (Account Rendered) in 1781, and left office the same year. In 1788, after a period of exile, he was recalled, and on his advice the states general was brought together. Necker was again director general in 1790. He died in Switzerland, April 9, 1804.

Necromancy Divination by pretended conversation with a departed spirit. A professional sorcerer usually summons the spirit on the would-be consultant's behalf, as the witch of Endor did the spirit of Samuel for Saul (I Sam. xxviii.). Circe, in Homer's Odyssey, sent Ulysses to Hades to consult the dead seer Tiresias. Mediaeval Europe corrupted the word to nigromancy, as if denoting "the black art," or sorcery in general. Necromancy still occurs in primitive cultures, including negro and Bantu Africa and Melanesia.

Necropolis Greek word, "city of the dead," anciently designating an extensive cemetery in the suburbs of Alexandria, and now commonly used for any large burial ground found near an important centre of early civilisation. It also occasionally denotes a modern cemetery in actual use, *e.g.*, the London Necropolis at Brookwood, near Woking.

Necrosis Term applied usually to the death of bony tissue. It is also used for the death of a circumscribed portion of any tissue, and is due to lack of nutrition of the part.

Nectar Term used by the Greeks for the drink of the gods. Supposed to give life and beauty, it was forbidden to mortals, as to drink it conferred immortality. The honey of flowers is poetically called nectar.

Nectarine Smooth-skinned variety of peach (*q.v.*). The skin of the ripe fruit is shinier, tenderer, and generally more crimson-tinted; the flesh is firmer. The method of culture is identical. No essential difference between the two exists; they sometimes grow side by side on the same tree, and peach-seeds will produce nectarines.

Needles Three rocks off the west coast of the Isle of Wight. On the outermost stands a lighthouse. They were part of the island until the intervening land was washed away early in the 19th century.

Needwood District of Staffordshire between Burton and Lichfield. It was once a royal forest and covers approximately 100 sq. m. It was formerly full of deer and other wild animals. Most of it has been disforested, but some parts remain woodland and the name is used. Much of the land belongs to the Duchy of Lancaster.

Negative In photography a term used for the plate or film on which a picture is developed with its lights and shades the reverse of what occurs in nature. Paper negatives were first used, but were superseded by glass in the wet plate of the collodion process and the later dry plate, these in turn being largely displaced by the roll film.

Negligence Term used in law, meaning want of reasonable care. Those guilty of negligence are liable to be summoned before the courts and made to pay damages. Negligence occurs in connection with the driving of motor-cars, the keeping of property in repair, failure to erect fences, etc. If any person is injured by negligence of this, or any other kind, he can, if he proves his case, recover damages. It is for the jury to say whether or no an accident is due to negligence. *See* ACCIDENT.

Negotiable Instrument Document which, by the act of transferring it, conveys the legal right to the property it represents. Cheques, bills of exchange and promissory notes are negotiable instruments, as are dividend warrants and bills of lading and bonds payable to bearer. On the other hand share certificates and the deeds relating to real property are not negotiable instruments. Custom has a good deal to do with the distinction; if it can be shown that a particular class of document has been regarded, in the trade concerned, as a negotiable instrument, the courts will uphold this view.

Negrito Spanish name denoting diminutive peoples of the black race in S.E. Asia, and the allied negrillo pygmies of

equatorial Africa. Dark-skinned, black-haired, the adult male stature never exceeding 4 ft. 11 in., the Asiatic section comprises the Andamanese of the Bay of Bengal, the Semang of Malaya, the Aeta of the Philippines and the Tapiro of Dutch New Guinea. The African pygmies, usually shorter, even down to 4 ft. 4 in., yellowish or reddish-brown, include such groups as the Bambute, Akka and Batwa.

Negro Name denoting dark-skinned, woolly-haired African peoples. A branch of the negroid division of mankind which includes the E. Asiatic Papuo-Melanesians, the pure negro race inhabits W. Africa, S. of the Sahara; an eastern or Nilotic section, betraying more ethnic intermixture, extends from the E. Sudan to the Kenya coast. They have narrow heads, broad noses, prominent jaws, large teeth and thick lips. Displaying in places much Caucasian contact, they shared in forming the Bantu peoples. Agricultural or pastoral, they live an unprogressive social life marked by magico-religious beliefs. There are large populations of negroes in the W. Indies and America, whither their ancestors were transplanted as slaves before the abolition of slavery.

THE AMERICAN NEGRO. The negroes in U.S.A. now number over 12,000,000, mostly descendants of slaves imported from West Africa, but some immigrants from the British West Indies. They were all slaves in the North and South until 1863, working as family servants, artisans and agricultural labourers. In 1865-69 laws were passed giving full civic rights to the negro, although since then the negro in the South has become more or less disenfranchised and is treated as a separate race.

Under the influence of Booker T. Washington the negroes rose steadily, becoming good farmers and artisans, with efficient educational and religious institutions of their own. Negroes have risen to eminence in all walks of life.

The negro question, however, is still a major problem in the U.S.A., and occasional lynchings testify to the acuteness of feeling against miscegenation, while social recognition of the educated negro is the exception rather than the rule.

Nehemiah Jewish cupbearer to the Persian King Artaxerxes Longimanus. Commissioned, in 444 B.C., to rebuild the walls of Jerusalem which Zerubbabel, when restoring the temple, had neglected, he overcame local opposition, encouraged all to co-operate and accomplished the task in 52 days. The Book of **Nehemiah**, supplementary to Ezra, describes the events at Shushan preceding the return, rebuilding, dedicating the wall and restoring the temple service. After sojourning in Persia for 12 years he revisited Jerusalem.

Nehru **Pandit Motilal.** Indian Swarajist leader. Born May 6, 1861, he became an advocate in the High Court of Allahabad. In 1919 he turned his magnificent residence into a free school, and founded the *Independent*, an aggressively nationalist paper. He presided over Congress in 1919 and 1928, supported Gandhi in his non-co-operative campaign, and was imprisoned. He was president of the Swaraj party in 1928, presided over the "All-Parties Conference" at Bombay, which formulated the Nehru Report, laying down a scheme for Dominion status for India. He endorsed Gandhi's "civil disobedience" campaign in 1930, was sentenced to six month's imprisonment, and died at Lucknow, Feb. 6, 1931.

Nehru **Pandit Jawaharlal.** Indian Congress leader and Socialist. Born November 14, 1889, son of Pandit Motilal Nehru, he was educated at Harrow and Trinity College, Cambridge. He is a Bar.-at-Law of Inner Temple and Allahabad High Court. Since 1918 he has been a member of the All-India Congress Committee. He was President of the Indian National Congress, 1929-30, and was again elected for 1936. Participated in Non-Co-operation Movement, Salt Satyagraha in 1930, C.D. Movement in 1932, and has been imprisoned five times. His wife Kamala, an active Congress-woman, died in February, 1936.

Neilston Town of Renfrewshire, on the L.M.S. Rly., 10 m. S.W. of Glasgow. It has various industries connected with cotton. Pop. 15,200.

Nejd Kingdom of Eastern Arabia. A lofty plateau, it is largely desert, with numerous fertile oases in the north and east, supporting a large settled population. The products include dates, barley, wheat, hides, fruit, camels, and horses. Riyadh is the capital. Pop. (estimated), 3,000,000.

Becoming a Turkish dependency in 1871, Nejd retained a measure of independence till its liberation by Ibn Sa'ud (*q.v.*) between 1905 and 1914. After the Great War Ibn Sa'ud and his Wahhabi followers extended their dominions to include the Hejaz (*q.v.*).

Nelson Borough of Lancashire, 30 m. from Manchester on the L.M.S. Rly. The chief industries are cotton mills and engineering works. Pop. (1931) 38,306.

Nelson Town of British Columbia, 1102 miles from Winnipeg and reached by both the C.P.R. and C.N.R. lines. It stands on Kootenay lake and is the chief town of a district in which lumber is cut and silver mined. There are saw mills and smelting works. It is also a port for the shipping on the lake. Pop. (1931) 7000.

Nelson City and seaport of New Zealand, on Tasman Bay, on the north coast of South Island. There is a fine harbour and the town has some manufactures. Nelson is the capital of a district which has an area of 10,000 sq. m. Pop. (1932) 12,700.

Nelson River of Canada. It flows from Lake Winnipeg in a N.E. direction into Hudson Bay, where at its mouth is Port Nelson. It is 400 m. long, but is of little use for shipping owing to its rapids. The chief tributary is the Burntwood.

Nelson **Horatio, Viscount.** British admiral. Born at Burnham Thorpe, Norfolk, Sept. 29, 1758, he entered the navy in 1770, and in spite of bad health saw continuous service until 1787 when he married and retired with his wife to Burnham Thorpe.

Returning to the navy in 1793, he fought in the Mediterranean and while commanding the Naval Brigade at Calvi, Corsica, lost his right eye. He continued his service in the Mediterranean, and as Commodore was responsible for the victory off Cape St. Vincent in 1797. In the same year he lost his right arm in an engagement at Santa Cruz.

In 1798 he won an overwhelming victory over the French in Aboukir Bay (*see* NILE, Battle of the). His rewards for this victory included a barony, large sums of money, and the Dukedom of Bronté in Sicily. He formed in this year a liaison with Emma, Lady Hamilton, which lasted until his death, their daughter, Horatia, being born in 1801. In 1801 he won another

victory at Copenhagen, and in Oct., 1805, Nelson, now a viscount and Commander-in-Chief, sailed to his last victory. The Battle of Trafalgar ended in the annihilation of the Franco-Spanish fleet, but Nelson, mortally wounded, died as victory was assured, on Oct. 21.

The most famous of British seamen, he was a great leader of men, well known for his humanity and kindness, and an unrivalled strategist. In recognition of Nelson's services to his country, his brother was made Earl Nelson of Trafalgar.

Nemesis In Greek mythology, the personification of retribution. She was regarded as the goddess charged with readjusting immoderate good fortune and checking the presumption attending it.

Nemi Lake of Italy. Supposed to be the crater of an extinct volcano, it is situated in the Alban Hills, 20 m. from Rome. In the hope of finding valuable treasures, in 1929 the lake was partly drained, but the finds, which included remains of two galleys, did not come up to expectation.

Nen River of England. It rises in Northamptonshire and flows through that county and Lincolnshire to the Wash. It is 90 m. long and on its banks are Northampton, Wellingborough, Peterborough and others.

Nenagh Urban district and market town of Tipperary, Irish Free State. It stands on the river of the same name, 96 m. from Dublin. The industries include slate quarrying. Pop. 4500.

Neolithic Term denoting the highly finished and polished stone implements characterising the later phase of the prehistoric Stone Age, contrasted with the ruder workmanship of the earlier or palaeolithic phase. They are found scattered throughout Europe and elsewhere, associated with other evidences of a well-marked civilisation, to which the same term is now applied. During this cultural stage mankind started on agriculture, and introduced plant and animal domestication, pottery, basketry and weaving. The grinding of stone edge-tools led to carpentering, improved navigation, megalithic building, settled homes and ever-increasing refinement, which culminated in the development of metal-smelting. Neolithic conditions still persist among various backward peoples.

Neon Gaseous element occurring in minute proportions in the atmosphere. It is associated with argon from which it was isolated in 1898 by Sir William Ramsey. Its symbol is Ne, atomic weight 20.2 and its spectrum shows red, orange and yellow lines. Neon is used in special lamps for producing an orange-red light by passing an electric discharge through the gas.

Neophyte Term "newly planted," denoting in early Christianity a newly baptised person. Neophytes passed through a pre-baptismal stage as catechumens. S. Paul enjoined Timothy not to select bishops from neophytes (1 Tim. iii.). The Roman Church designates as such newly converted heathens or heretics, and sometimes newly ordained priests or novices of a religious order.

Neo-Platonism Last school of pagan philosophy. Combining elements of Platonism and Stoicism with Oriental doctrines, it was influenced by the philosophy of Philo and the Gnostics, emerged in 3rd-century Alexandria under Ammonius Saccas, and was profoundly remodelled by Plotinus, whose views were popularised by Porphyry and modified in the direction of mysticism by Iamblichus. It influenced Clement, Origen, Augustine and other early Christian fathers, but succumbed to the rival teaching of Christianity.

Neoptolemus (or Pyrrhus). In Greek legend, son of Achilles and Deidamia. Handsome and brave, he proceeded to Troy in the last year of the war, entered the city with the heroes concealed in the wooden horse, slew King Priam and afterwards his daughter Polyxena, and took to Epirus Hector's widow Andromachē, awarded to him by lot. He plundered the Apollo temple at Delphi, wedded Hermionē, and was slain by her promised consort, Orestes.

Nepal Kingdom of Asia, in the Himalayas. It has Tibet on the north, Sikkim on the east and India on the south and west. It is 54,000 sq. m. in extent and is governed by a maharajah. Katmandu is the capital. The inhabitants are mainly Gurkhas and the state has an army of 45,000 men. Cattle are reared and wheat, rice and other crops are grown. There are large forest areas. The country is quite independent, its autonomy having been recognised by Great Britain in a treaty signed in 1923. Pop. 5,600,000.

Nepheline A rock-forming mineral consisting of a silicate of alumina, soda and potash, and occurring as hexagonal prisms, usually white or colourless, in lavas, phonolite and other eruptive rocks, associated with potash felspar or with garnets, mica and hornblende. A dark coloured greasy variety, elaeolite, occurs in certain syenites.

Nephrite A compact variety of either tremolite or actinolite, two closely allied minerals of the amphibole group. Nephrite or jade is white or green in colour, very hard and tough. White nephrite is a tremolite mineral consisting of silicate of calcium and magnesium, while green nephrite or greenstone has, in addition, iron as in actinolite.

Nephritis Inflammation of the kidneys. Its most prominent symptom is the presence of albumin in the urine; dropsy frequently supervenes. Acute nephritis commonly arises from exposure to cold, especially after alcoholic intemperance; from irritant poisons; or as a complication of various other acute diseases. Local means of relieving congestion, such as hot fomentations, and confinement to a warm bed are important; should the disease reach the chronic stage the patient may have to anticipate a semi-invalid future. *See* BRIGHT'S DISEASE.

Neptune Roman god identified with Poseidon (*q.v.*), god of the sea. He is represented as holding a trident, the emblem of his power.

Neptune Outermost of the larger planets of the solar system. It was discovered by Galle at Berlin Observatory in 1846, its position having been indicated by Leverrier. Its distance from the sun is 2794 million miles and its year equals 165 of ours. The diameter of the planet is about 31,225 m., slightly exceeding that of Uranus, and its mean density is 1.54. It has one satellite which moves in a retrograde orbit in about five days, twenty-one hours.

Nereus In Greek legend a god of the sea, son of Pontus and Gaea. He had 50 daughters who were called the Nereids, one being Thetis, the mother of

Achilles. He was supposed to possess prophetic powers and in art is shown as an old man holding a trident.

Neri Philip. Italian saint. Born at Florence, July 21, 1515, at the age of 18 he went to Rome. In 1564 he became a priest, and after gaining a number of disciples he instituted the religious exercises for which he is famous. He encouraged musical and religious entertainments at holiday times, the origin of the Oratorio (*q.v.*). In 1564 he established the Oratory, a community which was approved by the Pope. He died May 26, 1595, and was canonised in 1622.

Nernst Walter. German chemist. Born at Briesen, Germany, June 25, 1864, he became Director of the Physical Institute at Charlottenburg until 1924, after studying and assisting at different universities. In 1925 he took up the same position in the University at Berlin.

Nernst is known for his invention of an electric glow lamp and for his statement of the third law of thermo-dynamics. He also initiated important measurements in specific heats at low temperatures. In 1920 he received the Nobel prize for physics.

Nero Roman emperor. Born at Antium, Dec. 15, A.D. 37, he was adopted by the Emperor Claudius in 50, and succeeded him in 54, displacing Claudius' son, Brittanicus. His reign was marred by a series of murders attributed to him. His mother, two successive wives, and Brittanicus were among the victims. He blamed the Christians for the burning of Rome, and had many put to death, afterwards building a magnificent new city. In 68 his troops revolted in favour of Galba, and Nero fled from Rome, saving himself from execution by suicide on June 9.

Nerve White glistening cord-like structure consisting of a bundle of numerous nerve fibres, each measuring about $\frac{1}{2500}$ inch in thickness and forming part of the nervous system controlling and regulating the movements and functions of the body. Each consists of an axis surrounded by a fatty layer and a delicate membrane. All nerves are outgrowths from the cerebro-spinal system, those conveying impulses from the brain are termed motor or efferent nerves, while those conveying impulses to the central system are known as afferent or sensory nerves, and upon their nerve roots are ganglia or masses of nerve fibres and cells.

Ness Loch and river of Inverness-shire. The loch is 22 m. long and is used to form the course of the Caledonian Canal. Its waters are carried to the Moray Firth by the River Ness which is 7 m. long.

Nessus In Greek legend one of the centaurs. He was shot by Hercules with a poisoned arrow and, in revenge, he gave to Deianeira, the wife of Hercules, a poisoned cloak. Hercules put this on and met a painful death. The phrase "**Nessus shirt**" is derived from this incident.

Neston District of Cheshire, 12 m. from Chester and 191 from London by the L.M.S. Rly. Situated on the estuary of the Dee, it is in a coal mining area. Neston forms part of the urban district of Neston and Parkgate. Pop. 5191.

Nestor In Greek legend, son of Neleus and Chloris. Sharing in youth the Argonaut adventure and the hunt for the Calydonian boar, he took part as the aged King of Pylos in the Trojan war. His wise counsels were highly valued by the other Greek chieftains.

Net-Ball (or Basket Ball). Had its origin in the United States in 1892, where its vogue as an indoor game quickly spread, though in England it is frequently played outdoors upon grass or asphalt by English women and girls. It is played on a court 95 ft. long; at each end is a goal consisting of a small bottomless net suspended on posts 10 ft. high. The aim is to throw the ball through the opponents' net, by passing from one player to another. A team may comprise from six to nine players.

Netherfield Town of Nottinghamshire, 2 m. from Nottingham. It has factories for the manufacture of lace and hosiery, and is part of the urban district of Carlton.

Netherlands (or Low Countries). Former designation of the countries now known as Belgium and Holland. In modern speech it refers to the eleven provinces of Holland. *See* NETHERLANDS, Kingdom of the.

The Netherlands has had a stormy and heroic history, being a long struggle against the supremacy of Spain and the burden of Roman Catholicism which that country laid upon it. William the Silent is the dominating figure of the struggle, and his successors include our own William III. The Dutch Republic emerged from the struggle at the end of the 16th century, and for the next century was a maritime and commercial power of prime importance. At the end of the 18th century it became the Batavian Republic, and the modern kingdom came into being in 1813. Belgium became a separate kingdom in 1831. *See* BELGIUM, HOLLAND.

Netherlands Kingdom of the. Country of north-western Europe, commonly known as Holland. It is bounded on the east by Germany, on the south by Belgium, and on the north and west by the North Sea. The country is mainly low-lying, and is drained by the Rhine, the Maas (Meuse) and the Schelde. The Zuider Zee has now been separated from the sea by a dike, and has already been partially reclaimed. Dikes have been constructed at different times to protect the country from inundation by the sea, and the rivers have been largely canalised. Of the total area (12,761 sq m.) nearly half is below sea-level. Pop. (1933) 8,290,389.

The kingdom, set up in 1814 as a bulwark against France, at first included the Belgian Netherlands, but Belgium broke away 1830-31. Thereafter Holland played little part in European history, remaining neutral throughout the Great War. In 1932 Holland entered into a tariff union with Belgium and Luxembourg.

Holland is ruled by a constitutional monarch (Wilhelmina) and the States General, consisting of an upper chamber of 50 members and a lower chamber of 100 deputies. The Prince Consort died in 1934. There is universal suffrage over 25 years of age. The political capital is the Hague, and the commercial capitals Amsterdam and Rotterdam. Other large towns are Utrecht, Groningen and Haarlem.

The country is primarily agricultural, intensive stock-breeding, general agriculture and flower-growing being carried on. The chief manufactures are shipping, bricks, margarine, cocoa, linen, cottons, etc. Coal is produced, and there is a great diamond-cutting industry at Amsterdam.

The country has extensive possessions in the East Indies and the West Indies. *See* JAVA, SUMATRA, BORNEO, MOLUCCAS, SURINAM.

Netley Village of Hampshire. It stands on Southampton Water opposite Southampton. The large military hospital at Netley, opened in 1856, is called the Royal Victoria Hospital. Near are the extensive and beautiful ruins of a Cistercian abbey.

Nettle Typical genus of herbs of the nettle order, scattered over temperate and subtemperate regions (*Urtica*). The stem and leaves bear stinging hairs. Of the three British species the tender shoots of the great perennial downy *U. dioica*, 2 to 4 ft. high, are used as a pot-herb. The strong bast-fibres of the stem have been fashioned into yarn and paper. The smaller annual species is smooth-leaved except for the stinging hairs; the coarser Roman nettle, long naturalised, is the most virulent.

Nettlerash (*Urticaria*). Diffuse redness of the skin accompanied by wheals, raised and pale in colour, causing great irritation and itching. The rash is produced by some article of diet, such as shell-fish, which does not suit the individual, and will disappear when the cause is removed. An aperient should be given, and a cooling lotion or dusting powder will allay the irritation.

Nettle Tree Handsome tree of the elm order, indigenous to the Mediterranean region eastward to China (*Celtis australis*). It is straight-trunked, 30 to 40 ft. high, with toothed, lance-shaped leaves and small, sweet blackberries. The wood is dense and fine-grained; the tough, pliant branches make good hayforks. The allied N. American *C. occidentalis* is the hackberry.

Neuchâtel Capital of the Swiss canton of that name, it is at the north-eastern end of Lake Neuchâtel. It is built partly on the slope of the Chaumont, and partly on new alluvial land. Pop. 23,152.

Lake Neuchâtel, the largest in Switzerland, has an area of 92½ sq. m., is 23½ m. long, and from 3½ to 5 m. broad. It receives the River Thièle and several others. The chief places on its shores are Estavayer, Yverdon, Serrières and La Tène.

Neuilly District of Paris, on the Seine. It is noted for its midsummer fair. On Nov. 27, 1919, Bulgaria and the Allies signed a treaty of peace here.

Neuralgia Term, literally "nerve pain," often used loosely for any pain of obscure origin. It strictly denotes pain in the whole or part of a sensory nerve without recognisable structural change. It may be *tic douloureux*, pain in the fifth facial or trigeminal nerve; *migrgine*, referred to half of the head; intercostal, pain in the nerves running from the spinal cord between the ribs to the front; or sciatica. It sometimes results from pressure by a tumour, or indirectly from decayed teeth.

Treatment.—Neuralgia will often yield to aspirin tablets, two at a time if they suit the individual, and to the application of external heat. Facial neuralgia is sometimes due to decayed teeth or to defective eyesight, and sufferers should have these matters attended to. A run-down condition and exposure to sudden cold is often the cause.

Neurasthenia Term, literally "nerve weakness," denoting a condition of nerve exhaustion which renders the sufferer incapable of sustained exertion. It may arise from physical or mental overstrain, hardship, worry or self indulgence, and may be attended by constipation, loss of appetite, sleeplessness, irritability and depression. It may affect the brain, heart, stomach or the sexual life.

Neuritis Inflammation of one or more bundles of nerve fibres. Exposure to cold or injury may affect a single nerve; this localised neuritis impairs muscular action, occasioning, if the facial nerve be affected, facial paralysis. Multiple neuritis, due to general or constitutional causes, results in the breaking down of the smaller nerves. It may arise from acute or chronic poisoning by alcohol, lead, arsenic and other substances, or the toxins of acute infective diseases, *e.g.*, diphtheria and influenza.

Neurosis Nervous disorder not associated with recognisable organic changes. It may take the form of hypochondriasis, hysteria, neurasthenia phobias or obsessions (*q.v.*). It is distinguishable from psychoses, mental disorders such as delusional insanity or melancholia; the generic term psychoneurosis conveniently embraces various borderland cases. Occupational neurosis is any nervous disorder caused by the sufferer's occupation, such as writer's cramp. The adjective neurotic, frequently applied to sensitive women, may loosely indicate tendencies not referable to a distinct neurosis.

Neutrality Condition of a state, abstaining from participation in a war between other states, and maintaining an impartial attitude in its dealings with the belligerent states, with the recognition of this impartiality by the warring states. The neutral state cannot supply any ships, men, food or money to those at war, nor erect special wireless stations, through which news can be transmitted.

Neuve Chapelle Village of France in the department of Nord. During the Great War it was a strategic position of great importance, lying at the junction of several roads.

The **Battle of Neuve Chapelle** was fought on March 10-12, 1915, between the British and the Germans, and was an Allied victory, though not carried out to its desired conclusion. Casualties were heavy on both sides, the British losing a total of 12,811. Indian troops took a share in this battle.

Neva River of Russia. It rises in Lake Ladoga and flows past Leningrad to the Gulf of Finland, which it enters by several mouths. Although only 45 m. long, it is important from the commercial point of view, as it unites Leningrad with the Baltic, and by means of other waterways with the Caspian.

Nevada Western state of the United States. It is chiefly a mining area and produces a good deal of gold and silver. The soil is on the whole unfertile, but irrigation works have improved it, and a certain quantity of wheat, barley and other crops are grown. The state area is 110,690 sq. m., and the capital is Carson City. It is governed by a legislature of two houses, and sends two senators and one representative to Congress. Pop. (1930) 91,058.

Neville English family. In the Middle Ages it had great estates in the N. of England, and its members were Earls of Westmorland and held other titles. The most prominent of the Nevilles was Richard, Earl of Warwick, the king maker. The great castles at Raby and Middleham once belonged to the Nevilles, who lost their power in the north during the reign of Elizabeth. To-day the

Nevilles are represented in the peerage by the Marquess of Abergavenny and Lord Braybrooke.

Neville's Cross Spot near Durham. There on Oct. 17, 1346, the English army defeated a Scottish army under King David II., who was among the prisoners. There is an old cross here.

Nevin Village and seaside resort of Caernarvonshire. It is 6 m. north-east of Pwllheli, and was formerly a considerable town. Fishing is carried on.

Nevinson Christopher Richard Wynne. English artist. Born on Aug. 18, 1889, he was educated at Uppingham, the Slade School and Paris. He first exhibited work in London in 1910, and has exhibited in London, Paris, New York, Washington and Chicago continually since then. He served in Flanders in 1914-15, and was discharged from the army in 1916. He exhibited war paintings at the Leicester Galleries, and on his appointment as Official Artist, returned to France in 1917. His works have been purchased by the British War Museum and the Canadian War Memorials Fund. In 1920 he was the official representative of British Art at Prague, by invitation of the Czechoslovakian Republic.

Nevis One of the Leeward Islands, British W. Indies. Its area is 50 sq. m., and its capital Charlestown. Sugar and cotton are exported.

Nevis Ben. *See* BEN NEVIS.

Newark Borough and market town of Nottinghamshire. It is on the Trent, 19 m. from Nottingham and 120 from London, on the L.N.E. Rly. The town is an important agricultural centre, but has also engineering works, malt houses, breweries and other industries. Its castle withstood three sieges in the Civil War, and the church of S. Mary Magdalene has an octagonal spire 223 ft. high. Pop. (1931) 18,058.

Newark is called **Newark-on-Trent** to distinguish it from other Newarks. One of them is near Woking and another near Port-Glasgow.

Newark City of New Jersey, the largest in the state. It stands on the Passaic River, 9 m. from New York. There are manufactures of chemicals, clothing and other articles. Pop. 442,337.

Newbattle Village of Midlothian. It is on the South Esk, adjoining Dalkeith. Here is Newbattle Abbey, the seat of the Marquess of Lothian.

Newbolt Sir Henry John. English author and poet. Born June 6, 1862, he was educated at Clifton College and Corpus Christi College, Oxford. He was called to the Bar in 1897 and practised until 1899. He created his literary reputation with the ballads *Admirals All* (1897), followed by other stirring sea poems—including *Drake's Drum*. He wrote two novels—*The Old Country* and *The New June*. *St. George's Day and Other Poems* appeared in 1918; other publications are *Naval History of the Great War* (1920); *Studies in Green and Gray* (1926); *New Paths on Helicon* (1927). He was Controller of Wireless and Cables during the war, and was knighted in 1915.

New Brighton Watering place of Cheshire. On the Mersey, 4 m. from Birkenhead, it forms part of the Borough of Wallasey. It has steamer connection with Liverpool and elsewhere.

New Britain Island of the East Indies. It is near New Guinea, from which it is divided by St. George's Channel. It covers 9600 sq. m. and Rabaul is the capital; another port is Kokopo, formerly known as Herbertstoke. The island is mountainous and has volcanoes. It produces rubber, coffee, etc. The only part that is settled and cultivated is the Gazelle Peninsula in the north. Pop. (1931) 88,000.

New Brunswick Province of Canada. Lying east of Quebec, with the state of Maine on the south-west, it borders the Gulf of St. Lawrence on its north-east shore, and on the south connects with Nova Scotia and with the Atlantic by the Bay of Fundy. Mainly undulating, it is mountainous in the north west, is well forested, and has many lakes. The chief rivers are the St. John, Miramichi and Restigouche. Lumbering, agriculture, fisheries and mining are the chief industries, and the tourist and hunting business is extensive. There are considerable water powers.

New Brunswick, once part of Acadia, was ceded by France in 1713 and settled by the English in 1764. Separated from Nova Scotia in 1784, it joined the Canadian federation in 1867 and sends 11 members to the Dominion House of Commons, and 10 senators. Fredericton is the capital and the seat of the provincial government, but St. John (*q.v.*) is the largest city. Pop. (1931) 408,255.

Newburgh Burgh and seaport of Fifeshire. It is 7 m. from Ladybank by the L.N.E. Rly., and is on the Firth of Tay. There is a harbour for the fishing, and some manufactures. Pop. (1931) 2152.

The title of **Earl of Newburgh**, dating from 1660, is now held by the Italian family of Giustiniani-Bandini. The earl's eldest son is known as Viscount Kynnaird.

Newburn Urban district of Northumberland. A colliery centre, it is 6 m. west of Newcastle, and 276 m. from London by the L.N.E. Rly. The town stands on the Tyne, and has metal works and some manufactures. Pop. (1931) 19,539.

Newbury Borough and market town of Berkshire. It stands on the Kennet, 17 m. from Reading and 63 from London by the G.W. Rly., on which it is a junction. The chief trade is in agricultural produce and sheep. At one time Newbury was noted for its wool. It is on the main road from London to the west. The borough includes Speenhamland. Pop. (1931) 13,336.

During the Civil War, Sept. 20, 1643, the royalists were defeated near Newbury, but on Oct. 26, 1644, the parliamentary forces were defeated here.

New Caledonia Island of Australasia, in the S. Pacific Ocean. It has an area of 7650 sq. m. and was discovered by Captain Cook in 1774. In 1853 it became French, and some ten years later was founded as a penal settlement, which it continued to be until 1895. Pop. 47,505.

Newcastle City and river port of New South Wales. It stands at the mouth of the river Hunter, 73 m. by railway from Sydney. A mining centre, it has accommodation for shipping the coal. Iron and steel works were established here in 1915 and the city is the largest in the state after Sydney. Pop. (with suburbs) (1931) 103,700.

Newcastle Duke of. English title borne by the family of Pelham-Clinton. The first duke was William Cavendish (1592-1676). His title became

extinct when his son died in 1691. From 1694 to 1711 his son-in-law, John Holles, was Duke of Newcastle.

In 1715 Thomas Pelham, who had inherited the estates, was made Duke of Newcastle-upon-Tyne and in 1756 he was made Duke of Newcastle-under-Lyme. He died in 1768 when the first dukedom became extinct, but the second passed to a nephew, Henry Fiennes Clinton. From him the present duke is descended. Henry, the 5th duke (1811-64) was a secretary of state, 1852-54 and 1859-64.

The duke's eldest son is called the Earl of Lincoln. He owns valuable estates in the city of Nottingham. In 1931, following the death of Henry, the 7th duke, the family seat, Clumber, near Mansfield, was closed.

Newcastle Market town of Co. Limerick, Irish Free State. It is 27 m. south-west of Limerick, on the G.S. Rlys. It is an agricultural centre.

Newcastle Seaside resort of Co. Down, Northern Ireland. It is 36 m. south of Belfast and is reached by the G.N. of Ireland and Belfast and Co. Down Rlys. Pop. 1800.

Newcastle Town of Natal. It is 160 m. from Durban by railway, and stands under the Drakenberg Mts. The principal industry is the mining of coal. Others are iron and steel works, a creamery and trading in wool and grain. Pop. 4860.

Newcastle-under-Lyme

Borough and market town of Staffordshire. It is 16 m. from Stafford, by the L.M.S. Rly., on the little river Lyme. The industries include the making of chemicals, pottery and clothing and around are coal mines. The district near was once the forest of Lyme. Pop. (1931) 23,246.

Newcastle-upon-Tyne

City, municipal county and port of Northumberland. It is on the Tyne, 8 m. from the sea and is an important colliery and shipbuilding centre. Other industries are engineering, electrical works and chemical manufactures. Originally a Roman station, Newcastle has a castle built by Henry II., and its cathedral, the seat of a bishop, dates from the late 14th century. There are colleges of medicine and science belonging to Durham University. The borough sends four members to Parliament. It has a broadcasting station (288.5 M., 1 kW.). Pop. (1931) 283,145.

Newchwang Seaport of Manchuria. It refers both to the town and the port, although these are 40 m. from each other. The town proper is on the Liao river, the port, which is closed by ice for three months in the year, is one of the treaty ports, and from it large quantities of the soya bean are exported. Pop. (1931) 106,040.

Newdigate **Sir Roger.** English antiquary. Born May 30, 1719, he had an active political career, but is chiefly remembered for his collection of antiquities. Among other gifts to the University of Oxford, he founded the Newdigate prize of twenty-one guineas for English verse, which is open for competition annually to undergraduates of Oxford University. It was first awarded in the year of his death, which took place at Albury on Nov. 23, 1806.

Newel Term in architecture for the pillar or post forming the central support of a spiral staircase of wood or stone, and from which the steps radiate. In modern carpentry a newel is the more or less ornamented post at the head, foot or angles of a staircase, and giving support to a handrail.

New England Name given to six north-eastern states of the United States. They are Maine, New Hampshire, Connecticut, Massachusetts, Rhode Island and Vermont. The first settlement was made here in 1620 and the colonies remained an English possession until 1783. They formed themselves into a confederation in 1643.

Newent Market town of Gloucestershire. It is 10 m. north-west of Gloucester and 124 from London by the G.W. Rly. Pop. (1931) 2325.

New Forest District of Hampshire. In the south-west of the county, it covers about 150 sq. m., and is the largest stretch of woodland in the country. In it are several towns among them Lyndhurst, Brockenhurst, Ringwood and Minstead. Beaulieu Abbey and Rufus Stone are objects of interest. The trees are chiefly oak and beech and the scenery is of great beauty. The forest has its own breed of ponies. It is usually believed that the forest was created by William the Conqueror.

Newfoundland British dominion of N. America. It lies E. of the Gulf of St. Lawrence, and has an area of 42,754 sq. m., including Labrador (*q.v.*). It is the oldest British colony, having been formally annexed by Sir Humphrey Gilbert in 1583, less than a century after the discovery by John Cabot.

It is the centre of the cod-fishing industry, and has also important herring and other fisheries. Next in importance comes the pulp and paper-making industry. The country is rich in minerals, silver, nickel, copper, asbestos, iron and coal. St. John's is the capital. Other towns are Harbour Grace, Bonavista, Placentia and Carbonear. The government consists of an executive council under the Governor, a legislative council of 24 members, and a house of assembly of 27 members. In 1933, however, the financial situation was such as to warrant an appeal to the British government, and the constitution was temporarily suspended. Meanwhile full administrative powers were vested in the Governor, advised by a commission (Newfoundland 3 members, U.K. 3 members) appointed in 1934. Pop. 267,330.

Newfoundland Dog Large breed of dog. Imported into Britain in the 18th century, it has become a favourite companion and guard. Broad-backed, deep-chested, it has a massive head, muscular hindquarters and thick, well-covered tail. Dogs should average 27 in. in height, bitches 25 in. Essentially a large retriever, it is specially trained to rescue drowning persons. The shaggy, oily coat is preferably black with one or two white patches: the smaller black Labrador dog is a part ancestor of the black retriever.

Newgate London gaol, demolished in 1903. The name derives from the fact that the prison was originally in the gate house of the New Gate. There was a prison on this spot for more than a thousand years. The Central Criminal Court now occupies the site.

New Glasgow Town of Nova Scotia. It is on the East River, 105 m. from Halifax, and 3 m. from its port, Pictou Harbour, by the C.N.R. There are steel works and coal mines. Pop. 8974.

Newgrange Monuments

Irish bronze-age cemetery in the Boyne Valley, Co. Meath. There are 17 grave-mounds, the largest, at Newgrange, being a truncated cone, 70 ft. high, and 315 ft. across at the base. It contains a corbelled chamber 19½ ft. high with three side-cells, displaying spiral and other designs, and approached by a 63 ft. covered gallery.

New Guinea

Island of the Eastern Archipelago, the largest after Australia and Greenland. 330,000 sq. m. in area, it is partly British and partly Dutch. With a long coastline, it is mountainous, thickly forested and largely unexplored, and has several navigable rivers. Rubber, valuable woods, pearls, copra and agricultural products are the chief exports, and cocoa and coffee are grown. Gold, copper and phosphates have been found. The natives are Papuan negroes with a mixture of Malay and Polynesian blood. Some are given to cannibalism. Pop. (estimated), 480,000.

New Hampshire

State of the United States. In the east of the country, it is one of the New England states and has a short coastline on the Atlantic Ocean. Its area is 9041 sq. m. Concord is the capital, but Manchester is the most populous town. Mainly agricultural it has a considerable extent of forest land, and was one of the 13 original states of the Union. The University of New Hampshire is at Durham. Pop. (1930) 465.293.

New Hanover

now **Lavongai.** Island of the Bismarck Archipelago, off the coast of New Guinea ; area 460 sq. m. Coffee, rubber, cotton and other tropical products are grown. The island was taken by the British from the Germans in 1914 and is now governed by Australia under mandate from the League of Nations.

Newhaven

Urban district and seaport of Sussex. It is 56 m. from London by the S. Rly. It stands at the mouth of the Ouse, and is chiefly important since the most direct sea route from London to Paris is from Newhaven to Dieppe. Pop. (1931) 6790.

New Haven

City of Connecticut, U.S.A. It is the seat of Yale University, which was transferred here in 1716, sixteen years after its foundation. It has manufactures of iron and steel goods, firearms, hardware, cutlery, etc., and is also the chief seaport of the state, owing to its position on New Haven Bay. Pop. (1930) 162,655.

New Hebrides

Island group of the S. Pacific, belonging to France. They lie between the Santa Cruz Islands and the Loyalty Islands, and are about 30 in number, only 20 being inhabited. The principal ones are Malekula, Sandwich, Erromanga and Espiritu Santo. They trade in copra, fruits, sandalwood and similar produce. The total area is 5700 sq. m. Pop. 55,000.

New Ireland

Island of the Bismarck Archipelago. As Neumecklenburg, it was a German possession, but in 1914 it was taken by the British, and is now governed by Australia under a mandate from the League of Nations. The chief town is Kavieng, and the chief industry the growing of cocoanuts.

New Jersey

State of the United States. It lies to the south of New York State and has a long coastline on the Atlantic Ocean, but its area is only 8224 sq. m. Trenton is the state capital, but other cities, Newark, Jersey City and Paterson, are larger. Another populous city is Camden, while it contains Atlantic City and Hoboken on the Hudson. The state is largely an agricultural area and has valuable fisheries. It was one of the 13 original states of the Union. Pop. (1930) 4,041,334.

Newlands Corner

Beauty spot of Surrey. It is on the downs, 3 m. from Guildford, and from it wonderful views of the surrounding country can be obtained. Its height is 570 ft.

Newlyn

Seaside resort of Cornwall. It is 2 m. from Penzance, beautifully situated on Mounts Bay. It has a good harbour and is a fishing port, but it is better known for its association with artists. About 1880 a number of artists made their homes here and the group became known as the Newlyn School, the distinctive feature of which was the amount of work done in the open. Stanhope Forbes was a member.

Newmains

Town of Lanarkshire. A coal mining centre, it is 2 m. from Wishaw, by the L.M.S. Rly. Here are ironworks. Pop. (1931) 2800.

Newman

John Henry. English Cardinal, theologian and writer. Born Feb. 21, 1801, he was educated at Trinity College, Oxford, where he formed a friendship with Pusey, Hurrell Froude and others.. After ordination he turned from Evangelicism and became one of the leaders of the Oxford Tractarian Movement, or the High Church Movement. The movement resulted in the conversion of many to Roman Catholicism, including Newman, who resigned his living at Oxford, and became converted in 1845. From 1854-58 he was rector of the Catholic university in Dublin, and in 1859 founded a school in connection with Birmingham Oratory. He was made a cardinal in 1879 and died at the Oratory, Aug. 11, 1890.

He wrote in verse and prose, and was famous as a lecturer and preacher. Of his works, his *Grammar of Assent*, (1870) on the philosophy of faith, and his *Apologia pro Vita Sua*, a history of his own religious life, are the best known, and he will always be remembered as the author of the hymn "Lead, Kindly Light." His epic poem, *The Dream of Gerontius*, has been set to music by Sir Edward Elgar.

Newmarket

Urban district and market town of Cambridgeshire, and Suffolk. It is 13 m. from Cambridge and 70 m. from London, and is the chief centre of horse racing in the country. The races are held on the heath where there are eight courses. Eight meetings are held in the year. The industries are all connected with racing. In the High Street are the headquarters of the Jockey Club and a house once owned by Charles II. The Astley Institute and the King Edward VII. Memorial Hall are notable. Pop. (1931) 9753.

New Mexico

State of the United States. In the southwest of the country, it is bounded on the south by Mexico and on the west by the ocean, represented by the Pacific and the Gulf of California. It includes the southern part of California and covers 122,634 sq. m. Santa Fé is the capital, but Albuquerque is larger. It is mainly agricultural, and maize, wheat, cotton, potatoes and fruit are grown. Much of the soil is unfertile, but irrigation works have made it more productive. The state produces a good deal

of silver and copper, and there are large forest areas. Pop. (1930) 423,317.

New Mills Market town and urban district of Derbyshire, on the L.M.S. Rly. It is 8 m. from Stockport on the little Rivers Guyt and Kinder. Cotton is manufactured and in the neighbourhood are coal mines. Pop. (1931) 8551.

Newmilns Burgh of Ayrshire. It is 7 m. east of Kilmarnock, on the L.M.S. Rly. The River Irvine divides it from Greenholm, which is part of the burgh. The chief industry is the manufacture of cotton goods. Pop. (1931) 3979.

New Model Term used for the army raised in 1645 to fight for the cause of the Parliament. It was raised and trained on a new plan, and consisted of about 14,000 infantry and 7000 cavalry. Sir Thomas Fairfax was appointed general and Cromwell led the cavalry. It was responsible for the victory of Naseby and was in a sense the foundation of the standing army of to-day.

Newnes Sir George. English publisher. A son of Rev. T. M. Newnes, a Congregational minister, he was born at Matlock, March 13, 1851. He was educated at Wakefield and in London and entered business in Manchester. In 1881 he started *Tit Bits* in that city, but three years later he moved it to London, and on it the firm of George Newnes, Ltd., was built. Under his direction this had many successes, the most notable being *The Strand Magazine*. In 1890 Newnes founded *The Westminster Gazette*, which ceased publication in 1927. In 1919 the firm founded *John o' London's Weekly*. From 1885 to 1895 he was Liberal M.P. for the Newmarket Division and from 1900 to 1910 for Swansea. In 1895 he was made a baronet and he died June 9, 1910. His only son, Frank, who succeeded him, was a short time a Liberal M.P.

Newnham College for women at Cambridge. It was opened in 1871 and consists of several halls. There is accommodation for about 200 students.

New Orleans City and port of Louisiana, U.S.A., the commercial capital of the state. It is situated on the Mississippi, rather more than 100 m. from the mouth, and is the great cotton mart of the country, as well as a busy manufacturing centre. The principal industry, after the shipping, is sugar refining. Cotton goods are manufactured, also cigars, footwear and furniture. The Tulane University is here, also the Ursuline Academy and a Jesuit College. There is also a university for negroes. Pop. (1930) 458,762.

Settled by the French in 1718, New Orleans was ceded to Spain in 1763. It fell to France in 1800 and was purchased with Louisiana by the U.S.A. in 1803. There was a battle here between England and the U.S.A. in the war of 1812.

New Plymouth Town and seaport of North Island, New Zealand. It is 160 m. by railway from Auckland. It has a good harbour and shipping is the chief industry. Pop. (1932) 18,650.

Newport Borough, market town and capital of the Isle of Wight. It stands on the Medina, 10 m. from Ryde, and is the centre of the railway system. God's Providence House and the Castle Inn are of interest. Owing to its nearness to Carisbrooke, Newport has associations with Charles I., who made here the Treaty of Newport with his enemies in Sept.-Dec., 1648. Pop. (1931) 11,313.

Newport Burgh of Fifeshire. It stands on the Firth of Tay and is reached by the L.N.E. Rly. It is opposite Dundee with which it is connected by a ferry. Pop. (1931) 3275.

Newport County borough, seaport and market town of Monmouthshire. It stands near the mouth of the Usk, 12 m. from Cardiff and 133 from London, on the G.W. and L.M.S. Rlys. A transporter bridge crosses the Usk to the suburb of Maindee. It has extensive docks and a large shipping trade. Other industries are connected with the manufacture of iron and steel. There are also chemical and glass works. Pop. (1931) 89,198.

Newport Seaport of Pembrokeshire. It stands at the mouth of the River Neven, 6 m. from Fishguard. It has a small harbour.

Newport Urban district and market town of Shropshire. It is 145 m. from London and 17 from Shrewsbury, on a joint line of the G.W. and L.M.S. Rlys. The town is an agricultural centre and here is the Harper Adams Agricultural College. Pop. (1931) 5490.

Newport Pagnell Urban district and market town of Buckinghamshire. It is on the Great Ouse, where it is joined by the Ousel, 50 m. from London, by the L.M.S. Rly. The Grand Union Canal passes the town. The town has an agricultural trade and motor car works. Pop. (1931) 3957.

New Providence Chief island of the Bahamas. It is 19 m. long and on it is Nassau, the capital of the group. It produces pineapples and in it are a number of lagoons. Pop. (1931) 19,756. *See* BAHAMAS.

Newquay Urban district and seaside resort of Cornwall. It is 14 m. north of Truro, and 281 m. from London by the G.W. Rly. There is a small harbour for the fishing. Pop. (1931) 5958.

New River Artificial waterway in the Counties of Hertford and Middlesex and was made to supply London with water. It is 27 m. long and extends to New River Head at Clerkenwell. It dates from 1609-13, having been made by Sir Hugh Myddelton, and is now the property of the Metropolitan Water Board. The river obtains its water from springs and from the Lea.

New Ross Urban district, market town and river port of Co. Wexford, Irish Free State. It stands on the Barrow, 100 m. from Dublin, on the G.S. Rly. There is a harbour in the river and the industries include shipping and fishing. The urban district includes Rosbercon in Co. Kilkenny. Pop. 5011.

Newry Urban district and port of Co. Down, Northern Ireland. It is on the River Newry, 35 m. from Belfast and 63 from Dublin, on the G.N. (I.) Rly. The newer part is called Ballybot. Here flax is spun and there are some manufactures, but the chief industry is shipping. Pop. (1926) 11,963.

New South Wales The oldest Australian state, situated on the east coast. Discovered by Captain Cook in 1770, settlement commenced in 1788. Under an excellent climate, agricultural and pastoral pursuits are established on a vast scale. Mining is important. The

Bank of New South Wales, an important local institution, is largely interested in the development and progress of the country. There is a variety of coastal and mountain scenery; the Jenolan Caves are in the Blue Mountains. The harbour of Sydney, the capital, is famous. Area 310,372 sq. m. Pop. 2,500,486.

Newspaper Periodical publication that gives the news of the day or the week. The chief newspapers are published daily in the morning, but there are evening and weekly newspapers, the latter including the Sunday papers. In England the earliest newspapers were the news sheets of the 16th century and the pamphlets of the 17th. In 1704 Daniel Defoe started *The Review*, and in 1785 John Walter founded *The Times*. In the 19th century an enormous number of papers were established all over the country.

The outstanding events of the end of the 19th and the beginning of the 20th century were the arrival of a new kind of newspaper marked by the foundation of *The Daily Mail* in 1896 and the speeding up of the means of communication, which made it possible to distribute the London newspapers over a large part of the country early in the day. Some important dailies, however, still cater for the needs of the provinces, *e.g.*, *The Yorkshire Post*, which was founded in 1754 and *The Manchester Guardian*, which was founded in 1821. At the same time enormous improvements were made in printing machinery, and the advertising side of successful newspapers became of paramount importance. London dailies of to-day, such as *The Daily Mail*, *The Daily Express*, *The Daily Herald*, have an enormous circulation. From March, 1930, to July, 1933, the circulation of the last-named increased from about 300,000 to over 2,000,000.

The production of newspapers is now a highly organised business. Guides are published giving the names and addresses of all the newspapers. The owners have their trade organisations, as have the journalists and the compositors who form their staffs. The Newspaper Press Fund exists to help indigent and aged journalists. Newspapers can be sent through the post for a penny, providing the weight does not exceed six ounces.

Newstead Village of Nottinghamshire. It is 8 m. from Nottingham, on the L.M.S. Rly., and has coal mines. Here is Newstead Abbey, originally an Augustinian house. It passed in the 16th century to the family of Byron and was the residence of the family until 1818, when it was sold. Some parts of the old abbey remain. In 1932 the house and park were presented by Sir Julius Cahn to the City of Nottingham.

Newt Genus of the order *Urodela* or tailed amphibia, comprising 18 species of which three are natives of Great Britain. The newts are characterised by having a compressed tail and usually a dorsal fin most marked in the breeding season and amongst the males. They frequent moist places but live in the water when breeding, and like the salamanders, hibernate in winter. The common newt or eft, *Molge vulgaris*, is about 3 in. in length.

New Testament One of the two divisions of the Bible. The books therein record the life and teaching of Jesus Christ and the foundation of the Christian Church. Written within the 1st century, A.D., some of them received early recognition and were read publicly in churches, sometimes associated with books like the Clementine Epistle and the Shepherd of Hermas. The 2nd century gradually formed an authoritative list of those recognised as valid in controversy by orthodox and heretic alike. By 365 Athanasius issued a list, comprising the existing New Testament books; the Synod of Carthage, summoned by Augustine, 397, gave final sanction to the New Testament canon.

Newton **Sir Isaac.** English mathematician, astronomer and philosopher. One of the leading pioneers of scientific discovery, he was born at Grantham, Dec. 25, 1642, and educated at the grammar school there and at Trinity College, Cambridge. In 1666, it is said, the fall of an apple suggested to him the law of gravitation (*q.v.*), but he did not conclude his calculations on this subject until 1684. He sat in Parliament twice, and was Master of the Mint from 1698 until his death. Queen Anne knighted him in 1705. He was a student of alchemy, but is chiefly remembered for his study of gravitation, his work on the spectrum (*q.v.*) showing the composition of white light, his statement of the laws of dynamics (*q.v.*), the construction of telescopes, his work in geometry and the differential calculus, the first rules of which he laid down at the same time as Leibnitz. His two chief works were the famous *Principia* and the *Optics*. He died Mar. 20, 1727.

Newton **2nd Baron.** British author. Born Mar. 19, 1857, Thomas Wodehouse Legh was educated at Eton and Christ Church, Oxford. After six years in the diplomatic service he sat in the House of Commons for the Newton division of Lancashire from 1886 until he succeeded to his father's barony in 1899. In 1915-16 he was Paymaster General and from 1916-19 was Controller of Prisoners of War. Newton wrote a *Life* of his old chief, Lord Lyons, 1913, and in 1929 appeared his *Life of Lord Lansdowne*. Lady Newton wrote *The House of Lyme*, this being the Cheshire seat of the family.

Newton Abbot Market town and urban district of Devonshire. It is 20 m. from Exeter and 194 from London, on the G.W. Rly., being situated at the head of the estuary of the River Teign. Beer and pottery are made and there are railway repairing shops. Pop. (1931) 15,003.

Newton-in-Makerfield Urban district of Lancashire. It is 15¼ m. east of Liverpool and is a junction on the L.M.S. Rly., which has repairing shops here. It is also a colliery centre. The town is sometimes called Newton-le-Willows. Pop. (1931) 20,150.

Newton Stewart Burgh and market town of Scotland. It is 24 m. E. of Stranraer, by the L.M.S. Rly., and is on the borders of Wigtownshire and Kirkcudbrightshire. The textile industry is carried on and the town which stands on the Cree, is also a tourist centre. Pop. (1931) 1914.

Newtown Market town and urban district of Montgomeryshire. It is 12¼ m. S. of Welshpool and 186 from London by the G.W. Rly. Woollen goods are manufactured here, notably flannel. The urban district includes Llanllwchaiarn. Pop. (1931) 5152.

Newtownards Market town of Co. Down, Northern Ireland. It is 14 m. from Belfast by rly., and is near Strangford Lough. The industries centre round the linen manufacture. Pop. (1926) 9587.

Newtown Stewart Market town of Co. Tyrone, Northern Ireland. It is on the River Mourne, 24 m. from Londonderry, on the G.N. (I.) Rly.

New Westminster City and port of British Columbia. It is 12 m. from Vancouver, near the mouth of the Fraser River. It is reached by the C.N.R., which has a ferry service to Victoria. The chief industries are shipping and salmon canning. Pop. 18,000.

New Year's Day First day of the year. The Julian Calendar, introduced by Julius Cæsar, made it Jan. 1; in Anglo-Saxon England it was Dec. 25, and in medieval Christendom Mar. 25. This became Jan. 1 in Scotland in 1600, and in England in 1752, when the new style was adopted.

New York State of the United States. In the east of the country it has a coastline on the Atlantic Ocean and includes the island of Manhattan, on which New York City stands, and Long Island. It stretches from the sea to the border of Canada. Area, 49,200 sq. m. Albany is the capital. The largest cities after New York are Buffalo, Rochester, Syracuse, Yonkers and Albany. The staple industry is agriculture, especially the growing of vegetables and the production of milk and butter for the metropolis. Iron and gypsum are mined. New York is one of the 13 original states of the Union. Pop. (1930) 12,588,000.

New York City of the U.S.A. It is the financial and commercial capital of the country, and was originally founded by Dutch settlers in 1621 and called New Amsterdam. Captured by the English in 1664 it was renamed New York after the Duke of York (James II.). It is situated at the mouth of the Hudson River, occupies an area of 305 sq. m. and has a population of 5,873,356. It has a magnificent harbour formed by the rivers Hudson and North, at the entrance to which stands the famous Statue of Liberty.

New York centres on Manhattan Island, but greater New York includes Brooklyn, Bronx, Richmond and other boroughs. Broadway, Wall Street and Fifth Avenue are famous thoroughfares; Bowery is the Jewish and Harlem the negro quarter. Ferries connect Manhattan Island with Brooklyn and Hoboken, and four great bridges cross the East River to Brooklyn. The city has also elevated and underground railways. Two railways, the New York Central and the Pennsylvania, have their termini here. The several airports include Curtis Field and Roosevelt Field, both on Long Island. The buildings are famous, including the Empire State Building (1000 ft.), the Chrysler and Woolworth Buildings, vast hotels and apartment houses, the cathedral of S. John the Divine and many well-known churches.

A cosmopolitan city, New York has many daily newspapers, printed in many languages. Its educational institutions include Columbia University and New York University, and there is a great public library. The Metropolitan Art Museum is one of the greatest in the world. There are over 130 hospitals. Amusements and theatres centre on Broadway, apart from Coney Island (*q.v.*). Central Park has 840 acres; Bronx Park contains the great New York Zoo, and the beautiful driveway of Riverside Park borders part of the bank of the Hudson. Long Island (*q.v.*) has a garden suburb.

New York City manufactures about a tenth of the nation's products, besides being a great importing and exporting centre and a great grain port. Wall Street is the financial centre, and the city has many great private banks and a Federal Reserve Bank.

The city is governed by a mayor, five borough presidents and 65 aldermen. The finance department has a controller at its head. It has two broadcasting stations, Brooklyn (54.52 M.) and Richmond Hill (49.02 M., 0.5 kW.). Pop. 6,930,446.

New Zealand Dominion of the British Empire. It is 1200 m. east of Australia, consisting of two large islands—North and South Islands—a small one—Stewart Island and several others. Discovered by Tasman in 1642 the coastline was explored by Captain Cook in 1769. It was ceded in 1840 by the Maori chiefs to the British Crown, becoming a colony. It became the Dominion of New Zealand in 1907. It is governed by a Legislative Council under a Governor-General appointed by the crown, and there is a House of Representatives with 80 members.

The country has a healthy temperate climate, is mountainous, and has numerous lakes and rivers, providing facilities for the generation of electricity. Numerous thermal springs and geysers exist and the country is famous for the variety and beauty of its scenery.

Having large areas of well-watered, fertile land, New Zealand is well settled and possesses many excellent towns. Agricultural and pastoral pursuits constitute the principal industries, but mining and working the forests are important. The Maoris are specially provided for and are now increasing.

The road and railway systems are extensive and there are many ports, facilitating the use of sea transport from almost all parts of the Dominion. Wellington is the capital but Auckland, also on North Island, is the largest city.

Area 103,722 sq. m. Pop. (1932) (Maori, 69,893) 1,524,921.

New Zealand Flax Perennial herb of the lily order, indigenous to New Zealand and Norfolk Island (*Phormium tenax*). Its sword-shaped leaves, 4-8 ft. long, 2-4 in. broad, yield a strong fibre used for binder twine and rope.

Next Friend In Great Britain a person who brings an action in a court of law on behalf of a minor or a person of unsound mind. As neither of these classes can take legal action, a next friend is essential. Such is usually a kinsman and must consent to his name being used.

Ney **Michel.** French soldier and Marshal of France. Born at Sarrelouis, the son of a cooper, Jan. 10, 1769, he enlisted in 1788, and distinguished himself at Jena, Eylau, and Friedland, and chiefly in the Russian campaign of 1812. As commander of the rearguard during the retreat from Moscow, he saved the remnants of the Grande Armée. Louis XVIII. made him peer of France, but, sent to oppose Napoleon on his return from Elba, he rejoined him, and fought bravely at Waterloo. At the second restoration he was condemned for high treason and shot, Dec. 7, 1815.

Niagara River, forming part of the boundary between Canada and the U.S.A. It flows from Lake Erie to Lake Ontario, and is 36 m. long. It is famous because about half of its 326 ft. of fall takes place at Niagara Falls (*q.v.*).

Niagara Town and pleasure resort of Ontario. It stands where the River Niagara falls into Lake Ontario. At one time it was called Newark, and was the capital of Ontario, or Upper Canada. Pop. 1400.

On the American side of the river is Fort Niagara, which was first built by the French in 1675 and was an important frontier port in the various wars down to the one of 1812-15.

Niagara Falls Waterfall on the Niagara River, North America. The river flows between the United States and Canada, and the Falls, perhaps the most celebrated in the world, are divided between the two countries. The American falls are 167 ft. high and are separated by Goat Island from the Canadian or Horseshoe Falls, which are 158 ft. high. The latter are 3100 ft. across, but the American falls are only 1080 ft. It is said that 100,000,000 cubic ft. of water pass over the falls in an hour. The fall is used to generate electric power, and there are treaties between the two countries to prevent the flow from being depleted. The water is gradually wearing away the rock so that the falls are moving slowly backwards at the rate of 5 ft. a year.

Niagara Falls City and river port of Ontario. It stands on the Niagara River, 82 m. from Toronto, and just below the Falls. It is served by the two main railway lines, C.N.R. and C.P.R., and also by American lines. An electric railway connects it with Toronto. Pop. 19,016.

The American city of **Niagara Falls** is on the other side of the river, 18 m. from Buffalo. It is a river port and has many manufactures and an enormous plant for generating electric power. Pop. 75,500.

Nibelungenlied German poem. It was composed about 1200 and tells of the deeds of the hero, Siegfried, and his wife, Sieglinde, other characters being Brunhilda and Gunther. The Nibelungs are a people to which some of the characters in the poem belong.

Nicaea City of Asia Minor. It was in Bithynia and was one of the capitals of that kingdom. It was founded in 316 B.C. by King Antigonus. Here, in 325, a famous church council was held. This condemned the teaching of Arius and formulated the creed called the Nicene. Arius and his opponent Athanasius both attended the council which also fixed the date of Easter.

The **Nicene Creed** is used to-day in the services of both the Roman and Anglican Churches and in the Orthodox Church of the East, though without the *filioque* clause. In the Church of England it is repeated during the communion service. Its famous *filioque* (also the son) clause, has been the cause of much controversy.

Nicaragua Republic of Central America. It lies south of Honduras, and stretches from the Pacific to the Caribbean Sea; area, 51,660 sq. m., pop. (1930) 750,000. Managua is the capital, Corinto and San Juan del Sur the principal Western ports. On the E. are Bluefields and other ports, mainly interested in the fruit trade.

Nicaragua produces coffee, fruit, sugar and india-rubber. Mahogany grows in the forests, and among other minerals, gold and silver are mined.

Nice City of France. Situated on the Mediterranean Sea, it is the most important town in the department of Alpes Maritimes. Founded over two thousand years ago, Nice was a busy seaport, frequently under different rule until 1860, since when it has been French. There are fine promenades, notably the Promenade des Anglais. The commercial part lies to the east of the hill upon which the town is built. It is one of the most important towns on the French "Riviera," and is a fashionable winter resort for English people. The main industries are perfumery factories, distilleries, factories for silk, straw, leather goods and tobacco. Pop. (1931) 219,549.

Nicholas Name of five popes. **Nicholas I.**, pope from 858-868, asserted the supremacy of the Roman curia, and restored her rights to Thietberga, the divorced wife of Lothaire, King of Lorraine.

Nicholas II. (1058-61) had Robert Guiscard as vassal. **Nicholas V.**, born at Pisa in 1398, distinguished himself at the Councils of Basle and Florence and was elected Pope in 1447. By persuading the anti-pope Felix to abdicate, he procured peace for the Church in 1449. He founded the Vatican Library, and sent scholars far and wide to buy and copy Latin and Greek manuscripts. He tried to enlist the aid of Europe in the cause of the Greek Empire, but failed. He died in 1455.

Nicholas Patron saint of Russia, and of children, seafarers and merchants. Archbishop of Myra, Lycia, he attended the Council of Nicaea, 325. His remains were taken to Bari, Apulia, 1087. The pilgrimage then originated which popularised his memory. Nearly 400 English churches bear his name. The widespread making of gifts on S. Nicholas Eve, afterwards transferred to Christmastide, accompanied early Dutch colonists to America, where the name was corrupted to Santa Claus. He is commemorated on Dec. 6.

Nicholas I. Tsar of Russia and son of Paul I. Born June 5, 1796, he succeeded his brother, Alexander I., as Emperor in 1825. He waged a successful war against the Persians in 1826 and increased his dominions. He suppressed a rising of the Poles in 1830 and strove to extinguish Polish nationality. In 1848, during the "Revolutionary Year," he assisted in quelling the Hungarian revolt against Austria. In 1855, in the Crimean War, Turkey, supported by the British and French, defeated Russia. Nicholas died during this campaign, Mar. 2, 1855.

Nicholas II. Tsar of Russia. Born May 18, 1868, he succeeded his father, Alexander III., in 1894. He formed an alliance with France and an entente with Great Britain. In 1899 he caused the first meeting of the International Peace Congress at the Hague. At home he refused the people a share in internal administration and opposed the growth of social democracy, but showed liberal leanings in establishing the Duma in 1905, at the end of the Russo-Japanese War of 1904-5. Early in the Great War he closed all liquor shops and, influenced by the Empress, who was dominated by Rasputin (*q.v.*), showed a reactionary tendency. The conduct of the war was mismanaged, and in March, 1917, he was forced to abdicate and was imprisoned. He was shot with his family at Ekaterinburg, July 16, 1918.

Nicholson John. British soldier. Born in Ireland, Dec. 11, 1821, he joined the East India Company in 1839, and saw service in Afghanistan. He did excellent work during the Sikh Rebellion of 1848 and was appointed Deputy-Commissioner of the Punjab

in 1851. During the Indian Mutiny he was responsible for the holding of the Punjab, and was mortally wounded at the siege of Delhi in the same year, Sept. 23, 1857.

Nickel Metallic element having the symbol Ni, atomic weight 58 69, and melting point between 1450° and 1660°C. Nickel is a white, lustrous metal having great hardness and tensile strength, but is malleable, ductile and magnetic. It is little affected by air and unattacked by alkalies, but is dissolved by mineral acids and after long contact by organic acids.

Nickel forms alloys with steel, copper and zinc, all of which are of great economic importance, and it may be deposited electrolytically on metals, constituting nickel plating. The chief nickel ores are pyrrhotine or magnetic pyrites from Canada and garnierite from New Caledonia.

Nicobar Group of Islands in the Bay of Bengal. They are 21 in numbe and cover 635 sq. m. The largest are Great Nicobar, Camorta and Car Nicobar. There is a good harbour at Nankauri and the chief product of the islands is coconuts. The islands became British in 1869 and are governed with the Andaman group, 75 m. to the N. Pop. 9300.

Nicomedia Ancient city of Asia Minor, now represented by Ismid It was on the Sea of Marmora and was founded by a king of Bithynia, Nicomedes I., who made it the capital of his country. Diocletian made it his capital, and here Hannibal committed suicide.

Nicosia City and capital of Cyprus, also called Levkosia. It is 25 m. from the sea and still has traces of Venetian rule. The walls built then still stand. Its port is Larnaca. Nicosia was one of the centres of disturbance in the Cypriot rebellion of 1931. Pop. (1931) 23,507.

Nicotine Colourless volatile liquid alkaloid obtained from the leaves of the tobacco plant, *Nicotiana tabacum*. It has a strong disagreeable odour, is soluble in water and alcohol, and darkens with age. About 2 to 7 per cent. is present in tobacco, but the amount varies according to the kind, climatic and soil conditions, and cultural methods. Nicotine is highly poisonous, but being decomposed by burning is absent from tobacco smoke, whose harmful effects are due to the presence of carbon monoxide, pyridine and other substances. It is used also as an insecticide for plants in the form of a vaporising compound.

Nidd River of Yorkshire (W.R.). Rising on Great Whernside, it flows in a northernly direction past Pateley Bridge to the Ouse north of York.

Niemen River of Europe. It rises in Russia and flows through Lithuania to the Kurisches Haff, an opening of the Baltic Sea, which it enters by two mouths. Grodno and Kovno are on its banks and it is 550 m. long. It is navigable to Grodno and canals connect it with the Bober and the Vistula. The Lithuanians call it the Memel.

Nietzsche **Friedrich Wilhelm.** German philosopher. Born at Roecken, Oct. 15, 1844, he studied at Bonn and Leipzig. He is the author of several philosophical works beginning in 1878, which have as their main theme a new doctrine of morality. Man should concentrate on the development of vital energy and develop into a "superman," caring only for his own strength and advancement. This seemingly anti-Christian doctrine has been wrongly interpreted as meaning "Might is Right," and Nietzsche was long regarded by the world with horror. More recently, however, he has been recognised as a constructive, even religious, thinker, and only in part destructive. Nietzsche's mind failed 11 years before his death. He died Aug. 25, 1900.

Nieuport Town of Belgium in the province of W. Flanders. It is situated on the River Yser, and was the port of Ypres. In the Middle Ages it was strongly fortified, and was besieged by the French in 1488-89. It contains a cloth market, an old town hall and church, and a lighthouse dating from 1289. The locks of Palingbrug here drain the Low country, and in 1914 they were reversed, so that water flooded the front on the Yser, thus impeding the German invasion. Pop. 3016.

Nigella Name of the flower popularly called "Love-in-a-Mist" (*q.v.*).

Niger River of Africa. Parts of it, known before the complete course had been traced, were associated with the Nile and the Congo. Rising near Sierra Leone, it flows N.E. to Timbuctu, then E. and later, S.E., entering Nigeria where important tributaries join. It splits into a net-work of channels emptying through numerous mouths, scattered over 200 m. of coast, into the Gulf of Guinea. It is an important means of communication and transport in Nigeria. It is 2600 m. long.

Nigeria British Crown Colony and Protectorate in W. Africa, originating out of the trading depôts established as far back as the 17th century and later concerned with oil palm products. The north is inhabited principally by Mohammedan tribes, in the south pagans predominate. The tribes are largely governed through their chiefs. The people are agriculturalists and pastoralists, their surplus produce forming considerable exports. Tin and coal mining are established. A railway and motor roads have facilitated transport beyond the navigable reaches of the Niger. The extreme "damp heat" of the climate renders it very unhealthy for English people. Area, 372,674 sq. m. Pop. (1931) 19,928,171.

Nighthawk Insectivorous bird. Closely related to the goatsuckers. It has a wide skull, soft plumage, and can see at night, and fly noiselessly like the owl. It wanders from the Arctic Ocean to the south of South America, and lays its eggs on the ground or flat roofs.

Night Heron Widespread genus of birds of the heron tribe (*Nycticorax*), specially active in twilight and night hours. The common European species, 23 in. long, with greenish-black plumage and pale-straw underparts, bearing three long, thread-like, white plumes behind the head, visits Britain in spring and autumn.

Nightingale Bird of the thrush family (*Philomela luscinia*), ranging over Europe and N. Africa. Arriving in S.E. England about April 15, the males, 6½ in. long, with russet-brown plumage, greyish-white beneath, and bright rufous tail, utter their melodious song by night as well as day. The loosely built nest, placed in a thick hedge near the ground, shelters 4-5 olive-brown eggs, after whose hatching the

cock's song ends, and presently the departure southward for the winter quarters begins.

Nightingale Florence. English nurse and hospital reformer. Born May 12, 1820, after training as a nurse she went out during the Crimean War with a staff of 38 women to nurse the wounded. In four months the death-rate in the hospitals was reduced from 42 per cent. to 2 per cent. She made her hospitals efficient throughout, but still found time to go round the wards at night with a lamp, comforting the sick. She became known as "The Lady of the Lamp."

She was responsible for the founding of hospital schools of nursing. In 1907 she was awarded the O.M. She died Aug. 13, 1910.

Nightjar Migratory swift-like bird (*Caprimulgus europaeus*), belonging to a numerous cosmopolitan subfamily. It breeds in Britain and Europe, spending the northern winter at the Cape. The male, 10½ in. long, has white-spotted rufous plumage. They make a churring note when beating for insect food, sometimes round the udders of goats and cattle; hence called goatsuckers.

Nightmare Oppressed state during sleep, accompanied by feelings of fear. The word perpetuates the ancient belief that the state is caused by an evil spirit. It is sometimes precipitated by stomachic disorder, but Freud's theory of dreams ascribes it to the emergence of repressed wishes from the subconscious into the conscious mind.

Nightshade Popular name of several species of British plants. The common nightshade, *Solanum nigrum*, bears black berries, occasionally red or yellow. The bittersweet or woody nightshade, *S. dulcamara*, bears scarlet berries. The deadly nightshade, *Atropa belladonna*, highly poisonous, bears black berries, cherry-sized. Enchanter's nightshade, *Circaea lutetiana*, bears tiny fruit.

Nihilism Term used in the 19th century for a movement in Russia whose adherents aimed at overturning the existing order. The Nihilists were responsible for the murder of the tsar, Alexander II., in 1881, and for other outrages.

Nijmwegen Town of Holland, in the province of Gelderland. It is a railway junction, and has manufactures of pottery, brewing, leather, etc. Pop. 84,031.

The Treaty of Nijmwegen was signed on Aug. 11, 1678, and concluded the war between France and the Dutch, Spanish and Imperial coalition.

Nijni-Novgorod Government and city of central Russia. The province has an area of 19,797 sq. m. and a population of about 2 millions. The city, which is the capital of the province, lies at the confluence of the Volga and the Oka and is a great commercial centre. It has an annual fair which is held from July 25 to Sept. 10. There is trade in metals, cereals and fish. In 1918 a university was opened here. It has two broadcasting stations (761.4 M., 1.8 kW., and 500.8 M.). Pop. 185,274.

Nike Greek goddess of victory, called by the Romans, Victoria. Daughter of the giant Pallas, she aided Zeus in his struggle with the Titans, and was raised to Olympus. She was represented as a winged figure, wreathed or palm-bearing, sometimes guiding victors' steeds. The Roman Victoria bore a shield or wand.

Nile River of Africa. Rising in the Victoria Nyanza, 3900 ft. above sea-level, it flows north-west, then north into the Sudan, as the White Nile, being joined by the Blue Nile at Khartum. Between Khartum and Aswan there are six cataracts, but the river is navigable from above Khartum. Below Cairo the river, which is 4000 m. long, divides into a delta of 8500 sq. m. Alexandria is at one of the mouths.

The Nile is the source of Egyptian prosperity, which depends entirely on the extent of the annual inundation. Irrigation has been practised since 1842, when the Cairo barrage was built. The Assuan Dam, completed in 1902 and heightened in 1912, conserves the river water for 200 miles. There is another barrage at Assiut, and the dam at Sennar on the Blue Nile has brought 300,000 acres under fresh cultivation.

Nile Battle of the. Naval engagement. It was fought Aug. 1, 1798, in Aboukir Bay between the British and French fleets. The French ships were anchored in the bay, to support Napoleon, who had landed in Egypt. They were found by Nelson, who attacked them, and won a conspicuous victory. The French lost 13 ships out of 17 engaged.

Nilgai Kind of antelope (*Boselaphus tragocamelus*). It is found in the lowland district of India. It is fairly large, standing as high as 5 ft. The horns of the male are short and straight. In colour the animal is brown or brownish grey.

Nilgiri Range of hills in India. They are in the Deccan, to the S. of Mysore. The highest peak, Dodabetta, is nearly 9000 ft. high; others are over 8000 ft. Places in the hills are visited by Europeans during the hot weather. The name means "blue mountains."

Nilsson Christine. Swedish singer. Born at Wedersloff, Sweden, Aug. 20, 1843, of poor parents, she studied singing at Paris, where she made her début at the Théâtre Lyrique in 1864 as Violetta. She appeared in London as leading prima donna, in 1867, and went to America in 1870. After her marriage in 1872, her appearances were rare, and ceased altogether after her second marriage in 1887. She died Nov. 22, 1921.

Nimbus Term in art for a form of halo surrounding the head of a saint or divine personage. It is of ancient origin, occurring in Greek and Buddhist art and adopted as a Christian symbol for saintliness in square, rectangular or circular form.

Nimes A city of S. France, the capital of the Gard Department, which has a population of 74,102. It was founded and built by the Romans, who built its great amphitheatre, a temple known as the Maison Carrée and the famous aqueduct, the Port du Gard.

Nimes lies at the foot of the Garrigue Hills, and overlooks the plain of the Vistre, which is rich in vineyards. It is an important market for wine and brandy, and its chief industry is the manufacture of silk. It has a broadcasting station (237.2 M., 1 kW.). Pop. (1931) 89,213.

Nimrod Son of Cush, "a mighty one of the earth," and the founder of Babel (Gen. x.). A mighty hunter and warrior, his name is used as a symbol for any great hunter.

Nineveh City of Assyria. Situated on the left Tigris bank opposite

Mosul, 275 m. N.N.W. of Babylon, it occupied a walled enclosure of 1800 acres. Metal-using peoples displaced an earlier neolithic population (Gen. x.). After centuries of political activity under Hammurabi and later monarchs it became the royal capital, especially under Sennacherib and Ashurbanipal, whose cuneiform library and massive monumental remains, excavated by Sir H. Layard (*q.v.*), are in the British Museum. The Medes, aided by Nabopolassar, King of Babylon, brought about its fall, 612 B.C.

Ningpo City and port of China. It stands on the River Yang, 16 m. from its mouth, and 95 m. from Hangchow. There are some manufactures and a considerable trade. Since 1842 Ningpo has been open to foreign trade. Pop. (1931) 218,774.

Ninian Saint. Apostle of Christianity in N. Britain. Of Welsh birth, and trained in Rome, he was consecrated bishop. Founding at Whithorn, on Wigtown Bay, a church dedicated to S. Martin of Tours, about 397, he evangelised the S. Picts up to the Grampians. He is commemorated on Sept. 16. He died about 432.

Niobē In Greek mythology, wife of Amphion, King of Thebes. Taunting Leto with having borne only two children, Apollo and Artemis, whereas she herself had twelve, her six sons fell to Apollo's darts, her daughters to those of Artemis. Niobē became a stone shedding incessant tears, a fruitful theme in ancient art.

Niobium A rare metallic element having the symbol Nb, atomic weight 93.1, and colour steel-grey. Discovered by Hatchett in 1801 in the mineral columbite from which the metal receives its alternative name of "columvium." It is associated also with tantalum, uranium and yttrium in other rare minerals.

Nipissing Lake of Ontario. Covering 330 sq. m., it is 50 m. long and contains many islands. It is connected by the French River with Lake Huron. The district around, which is rich in minerals, is called the Nipissing district.

Nippon Variant of the native name for Japan (*q.v.*).

Nippur Ancient city of Sumeria. About 100 m. to the S. E. of Bagdad, it was a large and flourishing city and a centre of the worship of the Sumerian god Enlil. It was later a city of Assyria and a residence of the kings of Parthia. The site was excavated between 1889-1900.

Nish Town of Yugoslavia. A departmental capital 130 m. S.E. of Belgrade, on the Nisava tributary of the Morava, it is an important railway junction, second only in strategic and commercial eminence to Belgrade. It was Constantine the Great's birthplace. Captured by Bulgaria, 1915, it was recovered by Serbia, 1918. Pop. 35,384

Nith River of Scotland. It rises in Ayrshire and passes through Dumfriesshire to the Solway Firth, flowing through a beautiful valley called Nithsdale.

The title of **Earl of Nithsdale** was held by the border family of Maxwell until 1715. William, the 5th earl, a Jacobite, was taken prisoner at the Battle of Preston and condemned to death. He escaped, however, from the Tower of London, owing to the skill and devotion of his wife. He died March 20, 1744, his title having been taken from him in 1715.

Nitre Common name for potassium nitrate or saltpetre which occurs in nature as a white incrustation or as crystals in the porous soil in many parts of the world. Commercial nitre is prepared chiefly from nitrate of soda or Chilean saltpetre which occurs over a wide area in S. America as an impure saline incrustation or "caliche." Nitre is used in the preparation of gunpowder, for salting meat and in medicine. Nitre cake is a trade term for the refuse nitre from the manufacture of nitric acid.

Nitric Acid Compound of nitrogen with hydrogen and oxygen, commonly known as aqua fortis. It is a colourless fuming liquid when pure, but is yellowish in its commercial form, and is very corrosive, acting upon organic matter and many metals, but not upon gold or platinum. It is prepared by heating Chile saltpetre with sulphuric acid in retorts, or by oxidation of atmospheric nitrogen by means of the electric arc. It is used in the manufacture of dyestuffs, explosives, etc.

Nitrification Process by which nitrates are formed in the soil and decaying organic matter by the action of bacteria and other micro-organisms. These nitrifying organisms convert the proteids in the soil into ammonium carbonate, then into nitrites and finally into nitrates, these changes take place in the presence of lime or other basic substances, moisture and freely circulating air. Free atmospheric nitrogen in the soil also is fixed by bacteria present in the root tubercles of leguminous plants.

Nitrobenzol Derivative of benzol or benzine. It is known also as essence of mirbane and is used largely as a substitute for the natural oil of almonds in the perfuming of soap. It is employed also in the production of aniline and a number of important intermediate dyestuffs. Nitrobenzol is prepared by treating benzene with a mixture of strong nitric and sulphuric acids, and is a yellowish liquid having a strong odour of oil of bitter almonds.

Nitrogen Gaseous element having the symbol N and atomic weight 14.008. It forms four-fifths by volume of the atmosphere and occurs in nature in the form of nitrates, also as a constituent of many animal and vegetable compounds. It is a colourless, odourless, tasteless and inert gas, which does not support combustion or animal life. It is prepared commercially chiefly from ammonia or by distillation methods from the air, and from atmospheric nitrogen many compounds are now being made.

Nitroglycerin Explosive substance prepared by treating glycerin with a mixture of cold concentrated nitric and sulphuric acids. It is a colourless or pale-yellow oily liquid, insoluble in water; and, while burning harmlessly in an open vessel, explodes violently by concussion or when quickly heated. It is a valuable medicine in the treatment of angina pectoris, Bright's disease and other diseases, for this purpose being often given in a fatty or oily solution and in tablet form when it is quite safe and stable. Its chief use, however, is as an ingredient of cordite, dynamite and other high explosives.

Nivelle **Robert George.** French general. Born at Tulle, Corrèze, Oct. 15, 1856. After service in China and Algeria, he was appointed General of Brigade in 1911, and fought successfully on the Aisne. In

March 1916, he successfully and gloriously held Verdun against the German Crown Prince, and is famous for his unforgettable words, "Ils ne passeront pas." As commander-in-chief in 1916 he failed and was succeeded by General Pétain (*q.v.*). He took over the French troops in N. Africa in 1917. He was a member of the Supreme War Council in 1920, and represented France at the Tercentenary of the Mayflower in America (1921). He died Oct. 11, 1924.

Nizam Title of the ruler of Hyderabad, India. It comes from an Arabic word meaning "administration."

Noah Old Testament patriarch. Son of Lamech, and father of Shem, Ham and Japheth, he built the Ark in which he, his family and some representative animals were saved from the Flood. After its subsidence he became the ancestor of all mankind. Another legend claims him as the first to cultivate the vine (Gen. v.-x.). *See* DELUGE.

Nobel **Alfred Bernhard.** Swedish chemist and inventor of dynamite. He was born at Stockholm, Oct. 21, 1833. His father had manufactured nitroglycerin, and the son continued research in explosives, inventing also blasting jelly and smokeless powder. He died Dec. 10, 1896.

NOBEL PRIZE. On his death Nobel left a fortune of £2,000,000, most of which he ordered to be used to found the five Nobel prizes which are awarded annually for the most important discoveries and works for the benefit of humanity in physics, chemistry, medicine, literature and the furtherance of peace in the world. A Nobel Prize for literature was awarded to Rudyard Kipling in 1907, to W. B. Yeats in 1923, to Bernard Shaw in 1925, and to John Galsworthy in 1932. Other British prize-winners have been Sir J. J. Thomson (physics); Sir Ernest (now Lord) Rutherford (chemistry); Sir Ronald Ross (medicine); and Sir Austen Chamberlain, Sir Norman Angell and Mr. Arthur Henderson (peace).

Nobile **Umberto.** Italian explorer. He was *born* at Avellino in 1885. In 1926, together with Amundsen, he successfully carried out a polar expedition on the airship *Norge*. In May, 1928, he passed over the Pole in the dirigible *Italia*, but crashed shortly afterwards. He was rescued a month later by a Swedish search party, but Amundsen and others lost their lives in the search.

Nocturne Dreamy, musical composition, suggestive of night, introduced by Field and perfected by Chopin, as pianoforte literature. Mozart's "Notturno" is a piece in three movements for horns and strings, and that of Mendelssohn (in *A Midsummer Night's Dream*), truly an Intermezzo.

Node Astronomical term for the place where the orbit of the moon or a planet intersects the plane of the ecliptic. The position where the planet passes from S. to N. of the ecliptic is the ascending node, and where it passes from N. to S. the descending node.

Noel-Buxton **Lord.** English politician. A son of Sir T. Fowell Buxton, Edward Noel Buxton was born in 1869 and educated at Eton and Trinity College, Cambridge. He devoted his time to public affairs and spent some years in Greece and the Balkans. In 1905-06 he was a Liberal M.P., as he was from 1910-18. In 1922, having joined the Labour Party, he was again sent to Parliament for N. Norfolk, his old constituency. In 1924 he was Minister of Agriculture and he returned to that office in 1929. In 1930 he resigned his office and was made a peer.

Nomad Member of a tribe or community who roam from place to place for their subsistence. They may be hunters, *e.g.*, Australian blackfellows, S. African bushmen or quasi-industrial gipsy vandwellers. Nomadism especially characterises pastoral tent-dwellers on grasslands and steppes who follow their flocks and herds from summer-pastures to winter-pastures.

Nome Town in N.W. Alaska. It is situated on Norton Sound, 13 m. W. of Cape Norton. On the discovery of gold in 1899 it became the centre of a famous mining area, but its population, which in 1900 was 12,500, had decreased in 1930 to 1213.

Nonconformity Dissent from the practices and doctrines of the Established Church. In Great Britain the first secession was made in 1563 by the Puritans, whose influence was increased by the misgovernment of the early Stuarts. After the restoration, however, they suffered severe penalties under the Act of Uniformity (1662), the Conventicle Act (1664), the Five Mile Act (1665), and the Corporation Act (1661). Some disabilities thus inflicted were not removed till the Toleration Act was passed (1689) after the accession of William and Mary. But the movement, which included Baptists, Independents and Presbyterians, received fresh strength about 1760 through the secession of the Methodists. In 1892 the National Council of the Evangelical Free Churches was established to protect the rights of the Nonconformists. Recently movements have taken place in the direction of closer unity between the various Free Churches.

Nonjuror One who refuses to take an oath of allegiance. It applies particularly to the bishops, clergymen and others who, for conscience sake, declined to take the oath to William and Mary in 1689. They were therefore deprived of their offices. They included William Sancroft, Archbishop of Canterbury; Thomas Ken; Jeremy Collier; William Law; and about 400 others. They formed a church of their own under their own bishops.

Nonpareil Name of a size of printing type. It is between minion and pearl and is sometimes called six point. Twelve lines go to the inch.

Non sequitur In logic a conclusion that is incorrectly drawn, or does not follow from the premises. They are very common in ordinary life. A man argues "gales cause slates to become loose: a slate on my house has become loose, therefore it was caused by a gale." Logicians say this false assumption is due to an undistributed middle term, the middle term here being gales.

Norbiton Urban district of Surrey. It is 12 m. from London, on the S. Rly. Pop. (1931), 12,652.

Norbury District in Croydon in the county of Surrey. It is 7 m. from the city, just outside the boundary of the county of London, and has a station on the S. Rly.

Norbury in Derbyshire, 7 m. from Uttoxeter, has a church with memorials of the Fitzherbert family, and a station on the L.M.S. Rly. Pop. (1931), 365.

The Irish title of **Earl of Norbury** has been

borne since 1827 by the family of Toler. The 1st earl, John Toler, was a successful Irish lawyer.

Nordenskiöld Baron Nils Adolf Erik. Swedish explorer. Born at Helsingfors, Nov. 18, 1832, he began his exploration and topographical research at Spitzbergen in 1864. In 1879 he discovered and navigated the N.E. passage from the Atlantic to the Pacific along the N. coast of Asia. As a reward he was made Baron of Sweden (1880). He later made two expeditions to Greenland. He published several books giving accounts of his exploration and scientific work, notably *The Voyage of the Vega* (1881). He died Aug. 12, 1901.

Nore River of the Irish Free State. It rises in the northern part of Co. Tipperary and flows S.E. through Leix Co. and Co. Kilkenny until it falls into the River Barrow just above New Ross. It is 70 m. in length.

Nore Sandbank at the N. of the Thames. It is 3 m. from Sheerness and is considered to be the mouth of the Thames. It has a lightship and is famous for the mutiny in the navy that took place here in 1797.

Norfolk County of England. It lies on the E. coast, with an extensive coastline, and is the fourth largest of the counties. Area 2119 sq. m. It is mainly agricultural, while there is a flourishing fishing industry on the coast, centering in Yarmouth. Much stock is raised and Norfolk red polls are a well-known breed of cattle. Norwich is the capital, and Yarmouth is another large town. There are some popular watering places, among them Cromer, Sheringham, Hunstanton and Mundesley. It was the centre of a vigorous woollen and silk trade from the 12th century when the Flemings established themselves in the county. It sends five members to Parliament. Pop. (1931) 504,293.

Norfolk City of Virginia, U.S.A. It is situated on Elizabeth River and is an important port. Its industries include coffee-roasting, cotton and silk goods, fertilisers, tobacco and cigars. The shipping trade is extensive. Pop. (1930), 129,710.

Norfolk Island in the Pacific Ocean. It is 900 m. from Sydney and was discovered in 1774 by Captain Cook. It covers about 14 sq. m. and on it fruit is grown. In 1856 the descendants of the mutineers of the Bounty were brought here from Pitcairn Island. Since 1914 it has been part of the Commonwealth of Australia, being governed by New South Wales. It is the headquarters of the Melanesian Mission. Pop. 1000.

Norfolk Dukes of. English title held since 1483 by the family of Howard. It is the senior dukedom in the peerage.

In 1312 Thomas of Brotherton was granted the earldom of Norfolk. After his death his daughter was created Duchess of Norfolk, and her grandson Thomas Mowbray, became the first Duke of Norfolk in 1397. He tried to lessen the power of Richard II., and was banished from England and attainted, nor was his son, Thomas (1325-1405) allowed to reaume the title. In 1425 John Mowbray (1415-61), brother of Thomas, regained the dukedom, which became extinct at the death of his son-in-law Richard in 1483.

It was then granted to John Howard (1430-85), a member of the powerful Howard family. John lost the title because of his support of Richard III., but it was restored to his son, Thomas (1443-1524) after his defeat of the Scots at Flodden, 1513. Thomas Howard, 3rd duke (1473-1554), served Henry VIII. in opposition to Wolsey. When Catherine Howard, his niece, was executed, he was accused of treason and remained in prison during the reign of Edward VI., only regaining his dukedom in 1553. Thomas Howard, 4th duke (1536-72) intrigued with Spain so that he might marry Mary, Queen of Scots, but this was discovered and he was beheaded. The dukedom was restored in 1660, and bestowed on Thomas Howard (1622-77), 4th Earl of Arundel.

Later dukes were Charles Howard, 11th duke (1746-1815), an important Whig; Henry Charles Howard, 13th duke (1791-1856), a Roman Catholic, who, as a member of the House of Commons, did much to further Roman Catholic education. Henry Fitzalan Howard, 14th duke (1847-1917), was Postmaster-General, 1895-1900. The first Lord Mayor of Sheffield, he served in the South African War, and was a notable figure in public affairs.

Norfolk Thomas Howard, 3rd Duke of. English nobleman and soldier. Born in 1473, he became Lord High Admiral in 1513, and in 1514 led the English Army against the Scots at Flodden. He was created Earl of Surrey the same year. He went to Ireland as Lord-Deputy.

He succeeded his father in 1524, and with this added prestige led the anti-Wolsey party. He favoured the marriage of Anne Boleyn to Henry VIII., and in spite of her execution, remained in favour. He put down the rising known as the "Pilgrimage of Grace," in 1536, and led armies in France and Scotland. He was put in prison for his share in his son's treason in 1547, and kept there till 1553, when his position was restored. He tried unsuccessfully to suppress the rebellion under Sir Thomas Wyat, and died on Aug. 25, 1554.

Norham Village of Northumberland. It is 8 m. from Berwick-on-Tweed, and 340 m. from London by the L.N.E. Rly. It is visited for its castle, which, mentioned in *Marmion*, was a border fortress belonging to the Bishop of Durham. It is the centre of a small district called Norhamshire, which was part of the county of Durham until 1844.

Norman Inhabitant of Normandy. The Normans were really Northmen who settled in the northern part of France, and also in Italy and Sicily where they have left extensive traces of their presence and where they developed a somewhat remarkable civilisation. In 1066 there was a Norman invasion of England in which William, Duke of Normandy, known as "William the Conqueror," overcame the Saxons and ruled England.

The form of architecture called Norman preceded the Gothic. It is distinguished by the rounded arch and to it belong some of the oldest buildings in England.

Norman Montagu Collet. British financier. He was born in 1871 and educated at Eton and King's College, Cambridge. He served with distinction in the Boer War, and was awarded the D.S.O. He became governor of the Bank of England in 1920, and a member of the Privy Council in 1923. He has since taken an active part in public affairs, notably during the financial crisis of 1931.

Normanby Village of Yorkshire (N.R.) It is 5 m. W. of Pickering. From here the family of Phipps takes the title

of marquess, given to the 2nd Earl of Mulgrave in 1838. The family seat is Mulgrave Castle, near Whitby, where the marquess conducts a private school.

Normandy District of France formerly a province. In the north of the country, Normandy is now divided into the departments of Seine Inférieure, Eure, Orne, Calvados, and Manche. It was taken by Rollo and his Norsemen in 912, and was an English possession from 1066, but was lost finally in 1449. The chief towns are Rouen, the capital, Dieppe, Havre, Caen, Bayeux, Cherbourg and Mont-St.-Michel.

The ground is fertile, producing corn, hemp, flax and fruit (chiefly cider-apples). There is iron near Caen. It has large fisheries, and sheep and dairy-farming in the interior.

Normanton Urban district and market town of Yorkshire (W.R.). It is 10 m. from Leeds on the River Calder and is a junction for the L.M.S. and L.N.E. Rlys. The industries include coal mines and chemical works. Pop. (1931) 15,684.

Norn In northern mythology, a divinity of fate. Three are usually reckoned, two of them kindly, one malignant; they controlled human destiny in the manner of the classical Fates (*q.v.*). In some forms of the myth they are called Past, Present and Future, dwelling beside the well of fate by the world-ash, Yggdrasil.

Norse Adjective preferably denoting the old language of Norway. Pertaining to the N. Germanic group of Indo-European languages, it was carried in the Viking age to Iceland where, down to the 15th century, it became enshrined in imperishable sagas. It also reached Greenland, the islands of N. Britain and remote parts of Scotland, especially Caithness, surviving in Orkney and Shetland down to the 18th century. The word also denotes synonymously all the early Scandinavian civilisation.

Northallerton Urban district and market town of Yorkshire (N.R.). It is 30 m. from York on the L.N.E. Rly. The chief town of the north riding, its industries include brewing and malting and some manufactures. The Battle of the Standard (*q.v.*) was fought near here in 1138. Pop. (1931) 4787.

Northam Market town and urban district of Devonshire. It stands on the Torridge about a mile from Bideford, and includes the watering place, Westward Ho! There are golf links on Northam Barrows. Pop. (1931), 5561.

Another Northam is a district in the city of Southampton, on the S. Rly. Pop. (1931) 11,594.

North America Term applied to the whole of the northern portion of the American continent, including the United States, Canada, Alaska, Newfoundland and Mexico. It has an area of some 8,200,000 sq. m., the length being approximately 5600 and the breadth varying from 200 to 3000 m. Pop. 138,000,000 (approx.).

The chief physical features are the Laurentian Plateau in the north of Canada, the hilly Appalachian area from Newfoundland to Alabama, the western highland which include the Rocky Mts., and the vast central plains or prairies. Important rivers are the Mississippi, St. Lawrence, Mackenzie, Columbia, Colorado, Hudson, and others.

It is an area of great fertility and considerable mineral wealth. Gold is plentiful in many districts; oil, coal, iron and most of the essential minerals are also found here. Fur-bearing animals are a source of considerable wealth, and large stretches of country have such rich soil that agriculture is a profitable industry.

The original inhabitants were the American-Indians of different tribes. These have tended to decrease until quite recent years when some increase in the Indian population has been observed. The history of the continent starts with its discovery by Christopher Columbus in 1492, though earlier voyagers had undoubtedly sighted parts of it, and there had been European settlers in Greenland.

Northampton County town of Northampton, England, 66 m. N.W. of London. The town is situated on the River Nene. Famous for the manufacture of shoes it has also tanning and textile works, breweries, iron foundries, brick works and an extensive cattle market. Both early British and Roman remains are found. In the 6th century it was the chief settlement of the Angles, and in the time of Edward the Elder was occupied by the Danes. Its charter was granted in 1460. S. Sepulchre's, one of England's four round churches, was built by the Templars, and S. Giles' and S. Peter's are both ancient. It played an important part in the Wars of the Roses and in the Civil War.

Northampton Marquess of. A title borne by the Parr family, the most important of whom was William, who was born in 1513, and was the brother of Catherine Parr, 6th wife of Henry VIII. He was created Earl of Essex in 1543, and Marquess of Northampton four years later. During the reign of Edward VI., he supported the cause of Somerset and Northumberland, and after Edward's death favoured the accession of Lady Jane Grey. For this he was sentenced to death, but the sentence was reduced to forfeiture of his title and estates. On the accession of Elizabeth, however, he returned to favour, and was again created marquess in 1559. He died on Oct. 28, 1571.

The second Marquess was Spencer Joshua Alwyne Compton, who received the title in 1812. He was a distinguished politician and man of letters, who assisted Wilberforce in the cause of negro emancipation and held the office of President of the British Association. The present Marquis (William Bingham Compton) succeeded in 1913. His heir, Edward Robert Compton, was born in 1891.

Northamptonshire County of England. In the E. of the country, it covers 998 sq. m. Northampton is the county town; other places of importance are Peterborough, Kettering, Wellingborough and Higham Ferrers. The chief rivers are the Welland, Nen and Great Ouse. Places of interest are Burghley House and Althorp, and there are remains of the forests of Whittlebury and Rockingham. Northamptonshire is a hunting county and a first-class county in cricket. It is in the diocese of Peterborough, and has two county councils, the county proper and the soke of Peterborough. Pop. (1931) 307,428.

The Northamptonshire Regiment was formerly the 48th and 58th of the line. The former was raised in 1741 and the latter in 1755. The depôt is at Northampton.

North Bay Town and pleasure resort of Ontario. In the N. of the province, it is on Lake Nipissing, 360 m. from Montreal and 190 from Toronto, by the C.N.R. and C.P.R., and also by the Temiskaming and Northern Ontario Rly., and is the centre of a mining district. There are some manufactures. Pop. (1931) 15,528.

North Berwick Burgh and seaside resort of East Lothian. It is 23 m. E. of Edinburgh by the L.N.E. Rly, and is situated on the Firth of Forth. It is a famous golfing centre, and here is Tantallon Castle. Pop. (1931), 3473.

Northbrook **Earl of.** British statesman. Born Jan. 22, 1826, Thomas George Baring was the son of Francis Thornhill Baring, First Lord Northbrook. The father had held several successive posts in Whig ministries, and the son was in turn Lord of the Admiralty, Under-Secretary for India, Under-Secretary for War, Governor-General of India (1872-1876), and First Lord of the Admiralty. After his term of office as Governor-General in India he was created an earl (1876). He died Nov. 15, 1904, being succeeded by his son, Francis George.

Northcliffe **Viscount.** English journalist. Alfred Charles William Harmsworth was born in Dublin, July 15, 1865, the eldest son of Alfred Harmsworth, a barrister. In 1880 he entered a newspaper office, and in 1882 he was made assistant editor of a journal called *Youth*. In 1885 he went to Coventry and here he worked on papers owned by Messrs Iliffe & Sons, returning later to London to serve in the office of Sir George Newnes.

In 1888 Harmsworth founded a weekly paper called *Answers*, which soon proved a success. Other papers were started and the foundation was laid of the great publishing business now known as The Amalgamated Press. After some years of success in launching weekly publications, he and his brother Harold bought, in 1894, *The Evening News*, a London daily paper. In 1896 they founded *The Daily Mail*, a halfpenny daily paper, the first issue appearing on May 4.

For the next 25 years Harmsworth was the most influential newspaper proprietor in the country. Continually acquiring new interests, he founded *The Daily Mirror* in 1903 and in 1905 bought *The Observer*. In 1908 he became chief proprietor of *The Times*. In 1911 he sold *The Observer* and later *The Daily Mirror*, but he kept control of *The Daily Mail* and *The Times* to the end.

In 1895 Harmsworth stood unsuccessfully for Parliament for Portsmouth. In 1904 he was created a baronet and in 1905 Baron Northcliffe. He took a great interest in motoring, and by the prizes he offered did a great deal to encourage aviation. He also financed an expedition to the North Pole. In 1914, on the outbreak of the Great War, he devoted all his energies to the furtherance of the cause of the Allies, and was continually urging more vigorous measures. In 1917 he went to the United States as head of the British mission and on his return was made a viscount. In 1918, having declined the office of Minister for Air, he became director of propaganda in enemy countries. He died after a long illness on Aug. 14, 1922. His widow, who married Sir Robert Hudson in 1923, was Mary Elizabeth, daughter of Robert Milner. He left no children, and his title died with him.

North-East Passage Route through the Arctic Ocean from Europe to the Pacific Ocean. In the 16th century and later several navigators tried to find it, but not one of them succeeded until 1878-79. In those years A. E. Nordenskiöld made the full voyage.

Northern Ireland Part of the United Kingdom of Great Britain and Northern Ireland. Under the Government of Ireland Act, 1920, Northern Ireland consists of the six counties of Antrim, Armagh, Down, Fermanagh, Londonderry and Tyrone, with the two cities of Londonderry and Belfast, the capital. Its constitution is federal in type, certain powers being reserved to the Imperial Parliament. The Northern Irish Parliament has a House of Commons of 52 elected members, and a Senate of 26 senators. The executive power is vested in the Governor, now (1936) the Duke of Abercorn, who was elected in 1934 for a further term of six years. The principal industries are linen manufacture, shipbuilding (Belfast being the chief industrial centre), and agriculture. Roughly a third of Northern Ireland's total acreage (3,351,444) is under cultivation, the chief crops being oats, potatoes, flax and hay. Of the total population (1¼ millions) there is a Catholic and Nationalist minority of 420,000.

Northern Territory Part of the Commonwealth of Australia, on the N. coast between Queensland and W. Australia and extending to S. Australia, lying almost entirely within the tropics. A central plateau, with grassy areas, slopes gradually to the low coastline. Farther south the Territory is sandy and dry. Some cattle are raised but little development has taken place. Gold was discovered at Tennant's Creek in 1933. The capital is Port Darwin, the area 523,620 sq. m. Pop.—native, 21,242; others, 4,193.

Northern Union League or association that exists to control a game of football that has developed from the Rugby game. The clubs belonging to it are composed of professionals and are chiefly in Lancashire and Yorkshire. The union came into existence in 1895 when the Rugby Union refused to allow professionalism. The number of players is 13 a side, and there is no line-out. Six players form the scrummage. The clubs form leagues to play matches for a championship against one another.

Northfleet Urban district of Kent. It is 22½ m. from London, and stands on the Thames just above Gravesend. Here are paper mills, and also chemical and cement works. Pop. (1931) 16,429.

North Foreland Chalk headland on the E. coast of Kent, about 1¼ m. N. of Broadstairs. It forms the N.E. corner of the Isle of Thanet, and has a lighthouse whose light is visible 20 m. away.

North Island Northern of the two chief islands of New Zealand. It covers 44,281 sq. m., and the chief cities therein are Auckland and Wellington. It is divided into four provincial districts—Auckland, Hawkes Bay, Wellington and Taranaki. It is famous for its sheep, and its warm climate is very suitable for the growing of fruit. Pop. (1932) 984,277. *See* NEW ZEALAND.

North Pole Northern terminus of the axis of the earth. It is at a latitude 90° N. and is in the Arctic regions.

Attempts to reach the pole failed until April 6, 1909, when Robert E. Peary (*q.v.*) reached it. Since then it has been reached by other explorers, while some of them have flown over it. *See* ARCTIC EXPLORATION.

North Sea Sea bounded by Norway and Denmark on the E., England on the W., Germany and the Netherlands on the S. and the Arctic Ocean on the N. It is part of the continental shelf on which the British Isles stand. It is shallow, averaging about 60 fathoms, and slopes from N. to S. It is a rich fishing ground. The most productive fisheries are the Dogger Bank in winter and the Continental coasts in summer.

North Sydney Seaport of Nova Scotia. It is on an arm of Sydney Harbour, 18 m. from Sydney, by the C.N. Rly. Around are coal mines, and from here coal is exported. Fishing and tanning are other industries, and it is a centre for the trade with Newfoundland. Pop. 6585.

Northumberland Most northerly county of England. Separated from Scotland by the Cheviot Hills and the Tweed, it has a coastline on the North Sea. Newcastle-upon-Tyne is the county town, other towns being Alnwick, Berwick-on-Tweed, Wallsend and Hexham. The county is rich in coal and contains large industrial areas centering largely on the Tyne, where are iron-works, blast-furnaces, shipbuilding yards and factories producing glass, electrical goods, pottery and machinery. Barley and oats are the chief agricultural crops, but sheep-rearing is the most important form of agriculture. Ten members are returned to Parliament.

The county has considerable Roman remains, including Hadrian's Wall. The abbeys of Hexham and Lindisfarne are famous, as are the castles of Alnwick and Warkworth.

Northumberland Duke of. English title held by the family of Percy. In 1377 Henry Percy was made Earl of Northumberland and the title was held by his descendants until 1670 when it became extinct. Concurrently from 1551 to 1553 John Dudley was Duke of Northumberland. In 1683 George, a natural son of Charles II., was made Duke of Northumberland, but he died without heirs in 1716.

In 1749 Algernon Seymour, 7th Duke of Somerset, who had married the heiress of the Percies, was made the Earl of Northumberland. His son-in-law, Sir Hugh Smithson, succeeded, by special arrangement, to his titles, taking the name Percy. In 1766 he was made a duke and the present duke is his descendant.

Alan Ian, the 8th duke, who died in 1930, was one of the proprietors of *The Morning Post*. The duke's chief seat is Alnwick Castle and his estates are in Northumberland. His eldest son is called Earl Percy.

Northumbria Name of one of the kingdoms of England in Anglo-Saxon times. It consisted of two smaller kingdoms, Bernicia and Deira, and came into existence about 600. For a time it was the strongest of the English kingdoms, but in less than a century it was subordinate to Mercia or Wessex. Its kings, however, remained until about 900. Later it was one of the great earldoms and was ruled for a time by Tostig.

North Walsham Market town and urban district of Norfolk. It is 14 m. from Norwich, and 131 from London, by the L.N.E. Rly. and a joint line. The Paston Grammar School is associated with Nelson. Pop. (1931) 4137.

North-West Frontier Province. Most northerly district of British India. It is situated roughly north of Baluchistan, between the Indus and Afghanistan. The capital is Peshawar, which, except for Dera Ismail Khan, is the only town of note in a province, which is mainly agricultural. The inhabitants are mostly Pathans, Mohammedans in religion, and speaking the Pushtu language. The province was created on Oct. 25, 1901. Its area is 13,419 sq. m. and its population (1931) 2,425,076.

North-West Passage Route from the Atlantic through the Arctic round the north coast of America to the Pacific. Its discovery was the object of many British explorers. In 1714 Parliament offered a reward of £20,000 to the first discoverer of the Passage. It was in the attempt to find this route that Sir Benjamin Franklin and his associates perished in 1845. The Cabots, Gilbert, Davis, Baffin and others attempted the passage; it was first navigated in 1903-05 by Roald Amundsen.

North-West Territories Administrative district of Canada. Originally Rupert's Land and the North-West Territory, it was purchased from the Hudson's Bay Co. in 1867 by the Dominion Government. Diminished in size by the formation of Manitoba (1870) and Saskatchewan and Alberta (1905), it now consists of the mainland west of Hudson Bay, east of the Rockies and north of latitude 60°N., including the northern archipelago. Its area is 1,258,217 sq. m., and it is divided into the districts of Mackenzie, Keewatin and Franklin. The population consists mostly of Indians and Eskimos. Fur is the chief product.

Northwich Market town and urban district of Cheshire. It is 18 m. from Chester on the L.M.S. and Cheshire Rlys. Here the River Dane falls into the Weaver, which is navigable. The chief industry is salt mining, and there are chemical works. The town has some picturesque, half-timbered houses. Pop. (1931) 18,728.

Northwood Part of the urban district of Ruislip Northwood. Greatly developed in the 20th century, it has become a residential suburb of London, from which it is 14 m. distant by the L.N.E. and Metropolitan Rlys. Here is the Mount Vernon Consumptive Hospital. Pop. (1931) 16,038.

Norton St. Philip Village of Somerset. Here is the George, which dates from the 15th century, and is said to be the oldest inn in England. Here Monmouth spent the night before Sedgemoor. It may be reached from Bath, which is 6 m. away.

Norway Country of N. Europe. A kingdom, it forms the W. portion of the Scandinavian Peninsula and has an area of 124,588 sq. m. Bounded on the N. by the Arctic Ocean, S. by the Skagerrak, E. by the frontiers of Sweden and Finland, its W. seaboard is on the North Sea and the Atlantic. The land forms a lofty plateau (altitude 1600 ft.), the N. and W. coasts deeply indented by fiords, and the E.

portion marked by valleys. There are numerous lakes. Owing to the rocky and mountainous nature of the terrain, the arable land is only a small proportion of the area, limited to the vicinity of the lakes and fiords, and the valleys.

The capital is Oslo (pop., 1930, 253,124) on the Oslo fiord. Important towns include Bergen (98,303); Stavanger (46,780); and Trondhjem (54,458). There are important fisheries. Natural water power has been extensively exploited, coal deposits being scanty. There are immense supplies of timber.

The present kingdom dates from 1905 when the union with Sweden (existing from 1814) was ended. The ruler is Haakon VII., formerly Prince Charles of Denmark, born 1872. In 1896 he married Princess Maud of England. The legislative assembly or Storting has two branches, the Odelsting and the Lagting.

Norwich City and county borough of Norfolk. The county town, it is on the River Wensum, close to its junction with the Yare. It is 115 m. from London on the L.N.E. Rly. Formerly a centre for the manufacture of worsteds, it still produces crape and other textiles. Boot and shoe-making is a leading industry, and there are engineering works, foundries, breweries and tanneries. Starch, mustard, cornflour, etc., are manufactured on a large scale. The cathedral (1096-1500) has two Norman chapels. S. Peter Mancroft Church and the Guildhall are 15th-century buildings; and S. Andrew's Hall, used for music festivals, dates from the same period. The castle, with a Norman keep, is now a museum. Pop. (1931), 126,207.

Norwood District of London. It is on the S. side of the river, mainly in the borough of Lambeth, and is divided into Upper, West and South Norwood, with stations on the S. Rly. The buildings include the Royal Normal College of Music for the Blind. There is a large cemetery at West Norwood and on Beulah Hill there was a spa.

There are several other places of this name in England. One is Norwood Green near Southall in Middlesex and another is a village in Derbyshire famous for its church.

Norwood Cyril. English educationist. The son of a clergyman, he was born Sept. 15, 1875, and was educated at the Merchant Taylors' School and S. John's College, Oxford. After a brilliant career, he passed first into the civil service, and for two years was a clerk at the Admiralty. In 1901 he left the Service and became a master at Leeds Grammar School; in 1906 he was elected head master of Bristol Grammar School; and in 1916 he went to Marlborough where he introduced some rather drastic reforms. He was headmaster of Harrow from 1926 to 1934. Dr. Norwood has written on educational subjects.

Nose Organ concerned with smell and respiration. In man it forms above the mouth a facial prominence whose shape varies racially and individually. Two bony cavities, divided by a partition or septum, partly of bone, partly of cartilage, are lined with specially modified mucous membrane constituting the essential organ of smell. This communicates with the olfactory nerves passing through perforations in the roof-bones. For respiration, openings outwards through the nostrils and inwards into the pharynx allow free passage.

NOSE-BLEEDING. Slight bleedings from the nose in young persons need not cause alarm. If the flow of blood persists, place the patient in an upright position with his mouth open, his arms above his head and an ice-bag or cold compress at the back of his neck and on the bridge of his nose.

Notary Official, usually a solicitor or other law agent, who attests or certifies documents, especially bills of exchange. To become a notary a man must pass an examination, and in England be admitted by the representatives of the Archbishop of Canterbury, a reminder of the time when the notary was an ecclesiastical official. There is a Society of Notaries in London.

Notation Written symbolisation of musical sounds. Notation may be phonetic or diastematic. The Ancient Greek system was phonetic; also the modern Arabian system, the old tablatures, certain "freak" systems and the Paris Galin-Chevé and Tonic Sol-fa methods of to-day. Sound, scale-relationship and key-distance are their bases. The diastematic system of "Notation by Intervals" comprised the "neumes," "figures" and "notes" of ecclesiastical practice from which our present notation has evolved. The pitch of sounds is now expressed by the positions of notes and the presence of clefs on sets of five lines called "staves." Their relative duration is defined by variously shaped notes. Key and rhythm are shown by signatures. The rhythmic scheme is shown by barlines which also affect the accentuation of the notes.

Notification Act of giving notice. It is chiefly used in Great Britain in connection with infectious diseases as in tuberculosis. Certain diseases are notifiable, that is, the doctor attending the case must notify it to the medical officer of health for the district. The ministry of health can declare any disease notifiable, and a local authority has the same authority within its area. Since 1901 certain diseases that arise from occupation, such as lead poisoning and anthrax, have been notifiable.

Nôtre Dame French term meaning "Our Lady." Many churches are dedicated to the Virgin and called by this name. The most famous is the cathedral in Paris. Begun in 1163 and finished 200 years later, it is a magnificent Gothic building standing on an island in the river. Its stained glass is one of many notable features. Another is the Sainte Chapelle.

Nôtre Dame de Paris is a novel by the 19th-century French author, Victor Hugo; and deals historically with Nôtre Dame Cathedral. It has been translated into English under the title of *The Hunchback of Nôtre Dame.*

Nottingham City and market town of Nottinghamshire. The county town, it stands on the River Trent, 123¼ m. from London on the L.M.S. and L.N.E. Rlys. S. Mary's Church (Perpendicular, 15th century), S. Nicholas' and S. Peter's are ancient buildings. There is a Roman Catholic cathedral. The castle is a museum and picture gallery. A new university building was opened in 1928 and the new Civic Hall in 1929. The city sends four members to Parliament. The leading industry is lace manufacture; others deal with clothing and hosiery; there are engineering and chemical works. Bicycles and machinery are made. It is the headquarters of

two noted association football clubs—Notts County and Notts Forest. Pop. (1931) 268,801.

Nottingham Earl of. English title held by the families of Mowbray, Howard and Finch successively. The most important holders were—

(1) Charles Howard (Lord Howard of Effingham), English admiral and general. He was born in 1536 and in 1588 had charge of the preparations against the Spanish Armada, as Lord High Admiral of England. He served as one of the commissioners for the trial of Mary, Queen of Scots (1586), and was ambassador to Spain in 1605. He was created Earl of Nottingham in 1599, and died in 1624.

(2) Daniel Finch, English politician. He was born in 1647 and entered Parliament in 1679. He became leader of the Jacobite Tories, and was appointed Secretary of State under William and Mary, but was forced to retire after the naval failures of 1692-3. He was in office again from 1702-4, and died in 1730.

Nottinghamshire County of England. In the north midlands, it is wholly inland and covers 844 sq. m. Nottingham is the county town, other boroughs are Newark, Mansfield, Worksop, and E. Retford. Southwell is the seat of the bishop whose see embraces the county. The chief rivers are the Trent and the Idle. The county is mainly agricultural in the E. and industrial in the W., where are extensive coal mines. A feature of the county is the woodland district called the Dukeries in which are Clumber, Thoresby and Rufford. Another fine house is Welbeck Abbey. Newstead is a place of interest. The county has a first-class cricket team, which won the county championship in 1929. It is also a hunting area. It sends 5 members to Parliament. Pop. (1931) 712,681.

Novarro Ramon. Film actor. Born at Durango, Mexico, in 1900, he received a thorough education in violin-playing, dancing and opera-singing, and is noted for his handsome face and pleasant voice. He acted in *Scaramouche, Ben Hur, The Student Prince*. He visited Britain in 1935-36.

Nova Scotia Maritime province of Canada. It has an area of 21,428 sq. m. and a pop. (1931) 512,027. The island of Cape Breton at the N.E. end of the peninsula from which it is parted by the Gut of Canso, has an area of 3120 sq. m. The peninsula is joined to the port of New Brunswick by the Isthmus of Chignecto, 11-12 m. wide. The capital is Halifax. Sydney, on Cape Breton, ranks next in importance. There are many lakes in both portions. The island has extensive coal deposits, and on the peninsula are found also copper, iron and gold. There are important fisheries. First settled by the French, Nova Scotia passed to England in 1621, its possession being contested by both nations thereafter till 1713, when by the Treaty of Utrecht it was ceded to Britain. It is governed by a ministry responsible to a House of Assembly of 38 members. The province sends 10 senators and 14 M.P.'s to the Dominion Parliament.

Novatianism Schism which arose in 3rd-century Christendom. Novatian, Bishop of Rome, protested against the lax readmission of communicants who, during the Decian persecution, relapsed into paganism. His followers spread over the Empire, calling themselves Catharists or Puritans; by the 6th century they were reabsorbed.

Novaya Zemlya Group of islands in the Arctic Ocean belonging to Russia. It consists of two large islands and many smaller ones between Barents Sea and Kara Sea. The area is 35,000 sq. m. There are a few inhabitants, but the interior is largely unknown.

Novel Work of prose fiction, primarily one that has a background of real life. It developed from the romance which deals with legendary matter and originated in the *novella* of Boccaccio and other writers. In the 18th century English and French writers began to express their ideas in the novel, and in the 19th and 20th centuries it became the most popular form of literature.

The history of the English novel has been summarised as follows: "In the 150 years that were the flowering time of English prose fiction, between the publication of Fielding's first novel and Meredith's and Hardy's last, the novel has been adapted to an infinity of different shapes, domestic, sentimental, realistic, philosophical, didactic, propagandist. But all great novels have this in common, that they are an interpretation as well as a presentation of life, that they view things temporal against a background of things eternal, and that they are an attempt to reconcile the known with the unknown." Since the Great War the literary novel in Europe has concerned itself very largely with the problems of psychology.

Novello Ivor. British actor and composer. Born Jan. 15, 1893, he was educated at Magdalen College School, was a chorister of Magdalen College and then studied composition under Dr Brewer of Gloucester. He wrote many songs, including "Keep the Home Fires Burning." He began management on the stage with *The Rat* in 1924. He has acted in several of his own plays—*The Rat, Symphony in Two Flats, I Lived with You, Glamorous Night* (1935). He has also acted star parts in many films.

Novello Vincent. English musician and publisher. Born in London, Sept. 6, 1781, the son of an Italian father and an English mother, he was a chorister at the Sardinian Chapel where he learnt the organ. He was organist in several chapels in London and was a founder of the Philharmonic Society in 1813. He wrote much sacred music, and introduced into England many unknown compositions by the great masters. His first work in 1811, a collection of sacred music, marked the founding of the publishing house of Novello. He died Aug. 9, 1861.

Novocaine Crystalline salt which is very soluble in water, novocaine is known also as ethocaine hydrochloride. It is a highly complex substance prepared in several stages from glycol bromohydrin, and is used as a local anaesthetic in surgery, particularly dentistry, as a less toxic though less efficient substitute for cocaine.

Noyes Alfred. English poet. Born in Staffordshire, Sept. 16, 1880, his first volume of poems was *The Loom of Years*, (1902), but his *Forty Singing Seamen* (1907) and *Drake* (1908) established his fame as a poet of the sea. He lectured in America in 1913 on *The Sea in English Poetry*, and from 1914 to 1923 he was Professor of English Literature at Princeton. Amongst his other publications are *A Salute from the Fleet* (1915), *Walking*

Shadows (1917) *Robin Hood* (1927) *The Immortal Legions* (set to music by Sir Edward Elgar), the *Last Voyage* (1930), *The Torchbearers* (1931) and (prose) *The Unknown God* (1934).

Noyon City of France. It is 67 m. from Paris on the little River Verse. The chief building is the cathedral, a beautiful edifice which was damaged during the Great War, when the city was occupied by the Germans. Noyon was one of the capitals of the Frankish kings and here John Calvin was born. Pop. 7000.

Nubia Region in Africa. Extending from the Red Sea to the Nile and from Egypt to Abyssinia, it was important in ancient times, later being known as Ethiopia. It is now largely in the Anglo-Egyptian Sudan, where the name is preserved as the **Nubian Desert.**

Nucleus Latin word, meaning "kernel," denoting the central mass round which matter gathers. In physics, it denotes a central particle, constituting with its electrons an atom, or the densest region of a comet's head or sun-spot. In biology, it denotes a roundish body included in and essential to the growth of an animal or vegetable cell (*q.v.*).

Nudism and **Nudist Movement.** *See* SUN BATHING.

Nuisance In law something that causes injury, loss or inconvenience to another. Public nuisances include the carrying on of offensive or dangerous trades, the depositing of rubbish in a public place, keeping a disorderly house, the ownership of foul drains and other things likely to damage the health or morale of the community. There are also private nuisances, such as making continuous noises near a dwelling house. The sanitary inspectors and other officials have power to stop public nuisances, which they do by obtaining an order from a Court of Law.

Nullity Word used in a legal sense in connection with marriage. The courts of law have power to declare a marriage null and void on several grounds. These include insanity or impotence on the part of one of the partners, a prior marriage or consanguinity. A marriage may also be declared null if the consent of one of the parties was obtained by fraud.

Numbers **Book of.** Fourth book of the Old Testament. The title indicates its statistical records of two national censuses, beginning and ending the wilderness wanderings (i.-iv., xxvi.). Notices of outstanding events include the rebellion of Korah, Dathan and Abiram, the visit of the twelve spies to Canaan and the Baalam mission. Much legislation is interspersed, and lost volumes of early poetry are quoted.

Numeral Figure used to express a number. The use of letters for expressing numbers was adopted by the Greeks and some other ancient nations, and later by the Romans, who used the seven letters—M. D. C. L. X. V. I.—in various combinations, a cumbrous method still in use to some extent. From about the 12th century European nations adopted the so-called Arabic system of notation, a modification of Hindu numerals, as being more convenient for use than the Roman numerals.

Numidia Name given by the Romans to a district now part of Algeria. It was seized by the Romans about 200 B.C., but remained under its own kings. A century later one of them, Jugurtha, revolted, and the land was conquered. In 46 B.C. Julius Caesar made it a province.

Numismatics Science of coins and medals. It deals with the history and art of coinage among ancient and modern nations and has its value as a historical record and as a study of the mythologic art of ancient peoples. Apart from coinage proper, the art of casting medals reached a high level in Italy in the 15th century.

Nunc Dimittis Psalm or canticle used in the worship of the Christian Church. It is the Song of Simeon (Luke ii.) after he had seen the child Jesus, and begins, "Lord lettest Thou Thy servant depart in peace." It is in the Prayer Book of the Church of England for use at evensong, and is used in the Roman Catholic Church at compline.

Nuncio (Latin *nuntius*, messenger). Term used for one sent from the Vatican on Papal business. He is thus the equivalent of an ambassador.

Nuneaton Municipal borough and market town of Warwickshire. On the River Anker, 9 m. from Coventry, and 97 from London, on the L.M.S. Rly., it has manufactures of ribbons, etc., glazed bricks, tiles and sanitary pipes. Here was born the novelist whose pen name was George Eliot. Pop. (1931) 46,305.

Nunhead District of London. It is 6 m. from the city by the S. Rly., and is part of the borough of Camberwell.

Nuremberg (Nurnberg). City of Bavaria. On the River Pegnitz, 95 m. from Munich, it is a centre for toy manufacture. Optical, electrical and other apparatuses are made, and there is a large production of pencils and allied articles. Printing is a leading industry. An ancient town, it still has the old walls and moat, with many buildings of the Middle Ages. Albrecht Durer was born here, and a number of his works are in the picture gallery. The high school was founded by Melanchthon. The castle, dating from 1050, was an imperial residence. It has a broadcasting station (239 M., 2 kW.). Pop. 392,500.

Nursery School Institution which provides for the healthy development of children between the ages of 2 and 5, thus bringing the gap (in England) between the Infant Welfare Centre and the Elementary School. The establishment of state Nursery Schools in 1929 was due largely to the pioneer work of Miss Margaret McMillan at Deptford. In them great stress is laid on the value of open-air, sunlight, play, rest and cleanliness.

Nursing Sick-nursing owes its development primarily to three factors —religion, war and science. Long as its history is, however, it was not until the 19th century that regular training was started in Germany—a movement which was to gain impetus from the work of Florence Nightingale (*q.v.*) in the Crimean War, and to be furthered by the needs of the sick and wounded in the American Civil War.

NURSING AS A CAREER. Since the passing of the Registration Act in 1919 nurses have been recognised as essential servants of the State.

The nursing profession may be divided into the following branches: institutional, state

services, local government, independent, educational, industrial, overseas, and district nursing.

Training in a hospital recognised by the General Nursing Council, under the Nurses' Registration Acts, is essential in all branches of the profession with the exception of that of Midwifery, which is organised by the Central Midwives' Board.

In choosing a training school the candidate must inform herself whether it be a training school approved by the General Nursing Council. She usually has a short period in a preliminary training school and a trial period in the wards, before signing her contract with the hospital authorities for three or four years' training.

During her three or four years' training she takes the State Examinations, the preliminary after eighteen months' training, and the senior at the end of three years (fees, five guineas in all). She may then place her name on the State Register. At the completion of her contract with her hospital she receives the hospital certificate and has the status of a trained nurse.

The rate of pay for probationers varies from £18 a year to £40 in the senior year.

Training may also be taken at various specialised hospitals for particular branches of the profession, but the general training certificate is usually required in addition.

The types of hospitals providing training are :

For young girls, 18-21 :

Sick Children's Hospitals—preparing candidates for registration as sick children's nurses.

Fever Hospitals—preparing candidates for registration as fever nurses.

Orthopaedic Hospitals.

Babies' Hospitals.

Eye Hospitals.

Children's Convalescent Hospitals.

For candidates of 21 and over :

General training at approved General Hospital Training Schools (see above).

Mental Hospitals—preparing candidates for registration as mental nurses.

Skin Diseases Hospitals.

Women's and Children's Hospitals.

Tuberculosis Hospitals.

Convalescent Hospitals.

Midwifery Training Schools.

The salaries for Institutional Nursing vary from about £60 for a staff nurse to £500 for a superintendent.

In the State Services rates of pay are usually higher, but regulations are more rigid, and army nurses may be called upon to do a period of service abroad.

District Nursing.—The work of the District Nurse is the nursing of the poor in their own homes. Appointments are made by District Nursing Associations, organised by Voluntary Committees; most are affiliated to the Queen's Institute of District Nursing, 58 Victoria Street, S.W.1.

Other **Public Health Nursing** work includes Health Visiting, Tuberculosis Nursing, and School Nursing. These appointments are made by local Maternity and Child Welfare and Education Committees, and some by voluntary committees. Health Visitors must undertake a special training and obtain the Certificate of the Royal Sanitary Institute approved by the Ministry of Health.

Private Nursing.—A nurse engaged in private as distinguished from hospital nursing usually resides in or belongs to a Nurses' Co-operation which may or may not be connected with a private nursing home. Cases are then taken in turn by the nurses, who make use of the "home" while not employed on a case.

Full information regarding the Nursing profession can be obtained from the College of Nursing (Henrietta Street, Cavendish Square, London, W.1).

Nutcracker Bird of the raven and crow family (*Nucifraga caryocatactes*). It has a brown body plumage speckled with white, black wings and tail; the beak is long and nearly straight. They are common in northern Europe and Asia.

Nutmeg Seed-kernel of the fleshy fruit of a bushy evergreen tree, (*Myristica fragrans*) indigenous to the Dutch E. Indies. It is used as an aromatic condiment, in cookery and in medicine; the fibrous network enclosing the nutshell is the spice called mace. The trees grow widely in Penang, the W. Indies and tropical S. America.

Nux Vomica Disk-shaped seeds of a small deciduous tree of the strychnos family (*Strychnos nux-vomica*), indigenous to India, and growing also in Farther India and N. Australia. They and the allied Ignatius beans of the Philippines yield most of the bitter alkaloid poisons, strychnine and its derivatives, employed medicinally as tonics and heart stimulants.

Nyasa Lake of Africa, the largest in the continent, discovered by David Livingstone in 1859. It is in the south-east and covers 15,000 sq. m., being 350 m. long. The western shores are British and the eastern British and Portuguese. Fort Johnston and Karonga are ports on the lake. A number of rivers flow into it and its waters are carried by the Shiré to the Zambesi.

Nyasaland British Protectorate in Central Africa, bounded by Lake Nyasa, Tanganyika, Rhodesia and Portuguese East Africa. The climate is tropical but cooler in the Shiré Highlands. Large areas are fertile and plantations of coffee, cotton, tobacco, tea, etc., are established. Native education is provided by Missionary Societies under Government grants. Blantyre, the chief settlement, is connected by rail with the port Beira. The railway now crosses the Zambesi by a bridge, over 12,000 feet long, opened in 1935 between Sena and Dona Anna. Capital, Zomba.

Area (land) 37,596 sq. m. Pop. (1931) 1,498,836 natives, 3447 others.

Nymph In classical mythology, a localised nature-spirit or minor divinity, to whom offerings of milk and honey might be made. They were classed as water-nymphs, Nereids and Naiads; mountain-nymphs, Oreads; tree-nymphs, Dryads, and the like.

Nystagmus Medical term for an involuntary movement of the eyeball, due to a nervous spasm of the muscles of the eye. It is either congenital, acquired, or a symptom of some cerebro-spinal disease. When the movement is horizontal the nystagmus is termed oscillatory, other movements are either rotary or oblique. It is frequently observed in miners who are constantly working in a dull light. This form of nystagmus is regarded as an occupational neurosis.

OAK Genus of deciduous or evergreen trees, (*Quercus*) and shrubs of the beech order, natives of N. temperate regions. Their nuts, called acorns, have cup-like receptacles. Of nearly 300 species one only, *Q. robur*, is indigenous to Britain; it is found in all temperate regions. Two forms occur, with stalked leaves and acorns; they may attain 120 ft. in height. The timber was largely used, notably in 16th-18th century Britain, for shipbuilding, roof-construction, wall-panelling and furniture. Home-grown oak still provides railway wagons, church furniture and wood-block flooring. Oak bark is a source of tannin, acorns a favourite swine food. *See* BOG-OAK, CORK, HOLM OAK

Oak-Apple Day In England name given by royalists to May 29th, the birthday in 1630 of King Charles II. On this date, in 1660, he returned to England, the Restoration. Oak leaves and boughs were then used as decorations, by the royalists, in remembrance of the king's escape at Boscobel, by concealing himself in an oak tree, after the Battle of Worcester in 1651.

Oakengates Market town and urban district of Shropshire. It is 13 m. east of Shrewsbury and 140 from London, by the G.W. Rly. Coal and iron industries are carried on. Pop. (1931) 11,189.

Oak Gall Excrescence on the surface tissues of oak trees. Varying in size and form, from oak-apples to oak-spangles, they occur on leaves, flower-stalks, bark and rootlets. They are mostly due to gall-wasps, *Cynips*, whose eggs are deposited with an irritant fluid which occasions the abnormal cell-growth. Some, especially the Levantine, yield tannin and gallic acid.

Oakham Urban district of Rutland, also the county town. It is 11½ m. west of Stamford, and 94 from London, by the L.M.S. Rly., being also served by the L.N.E. Rly. It has footwear manufactures. Pop. (1931) 3191.

Oaks The. English horse race. It is run at Epsom, two days after the Derby, and is open to fillies of three years old. It is named after a house near Epsom, once the residence of the Earl of Derby.

Oakum Substance obtained from old tarry ropes and ships' cordage, untwisted and picked into separate loose hempen fibres. It is employed in caulking the seams of wooden vessels and the deck-planking of steel ships, and is an emergency wound-dressing. Oakum-picking was formerly exercised in convict prisons and workhouses. Untarred ropes furnish white oakum.

Oakworth Urban district of Yorkshire. It is 3 m. from Keighley and 215 m. from London, by the L.M.S. Rly., and has textile manufactures. Pop. 4170.

Oamaru Town and port of South Island, New Zealand. It is 156 m. from Christchurch. Its industries are connected with the meat and wool produced. Pop. 7510.

Oar Fish Genus of large deep-sea spiny-finned ribbon fishes (*Regalecus*). The scaleless body, 12 to 20 ft. long, is surmounted by a continuous dorsal fin whose foremost rays are enlarged into a crest; the ventrals become long paddle-tipped filaments. During the past 150 years examples have been stranded on British coasts.

Oasis Geographical term for a fertile area in a desert. Oases are due either to the presence of wells or subterranean water, or again to the sinking of artesian wells as practised in North Africa and Australia. Usually in Africa doum and date palms are characteristic of oases, but in larger areas various cereals are cultivated.

Oates **Lawrence Edward Grace.** English explorer. Born in 1880, he was educated at Eton and became a soldier. He served with the cavalry in South Africa (1901-02) and later wars in India and Egypt. In 1910 he went with Scott on the expedition to reach the South Pole. On March 17, 1912, when they were returning and in dire straits, Captain Oates, who was crippled with frost, walked out into the open and met his death in order to make the task of his comrades easier. His epitaph is "a very gallant gentleman." A district in Antarctica is named after him.

Oates **Titus.** English conspirator. Born in 1649, he took Anglican orders, and after being dismissed from several posts, posed as a Roman Catholic in order to get inside knowledge of supposed Catholic plots. With the aid of Tonge, he pieced together the true and the false, and informed the king through his confidential servants. Charles II. did not believe his story, although the populace did, and acclaimed him as saviour of the country. By his unscrupulousness thirty-five people were wrongly executed. He was later found out, disgraced, flogged, and imprisoned for life, but after the Revolution of 1688 he was set at liberty. He died July 12, 1705.

Oath Solemn declaration attested by the name of God. In English Law nearly all evidence must be given on oath, save that since the Oaths Act of 1888, any one who objects to an oath on the ground of religious belief may make an affirmation instead. By the Oaths Act of 1909, the witness, when being sworn in, may hold a copy of the Scriptures in his hand, instead of "kissing the book."

Oatlands District of Surrey. It is near Weybridge and was once a park in which Henry VIII. built a palace. This was used by James I. and Charles I. but was destroyed by the Parliamentarians. It was rebuilt by the Duke of York, a son of George III., and is now an hotel.

Oats Annual cereal grass (*Avena sativa*), apparently first cultivated in bronze-age Europe. It is grown extensively in Central and N. Europe, Russia, the U.S.A., Canada, Argentina and elsewhere. The world-production is 66 million tons, of which Great Britain raises 3 million and Canada 6½ million tons. Mostly grown for horse-fodder, oats are also an important human food. Kiln-dried and freed from husks, they become groats, are ground into oatmeal for porridge or prepared as breakfast cereal *e.g.*, rolled oats, oat flakes, etc.

Obadiah Hebrew Minor prophet. The first sixteen verses of his Book

announce Edom's destruction; the last five, post-exilic, predict Israel's restoration and the coming of the Day of the Lord.

Oban Burgh, seaport, market town and pleasure resort of Argyllshire. It is 113 m. from Glasgow and is reached by the L.M.S. and L.N.E. Rlys., and also by steamer. It stands on a bay protected by the Island of Kerrera, which makes a fine harbour. It is a yachting centre, and here the Argyllshire Gathering is held in September. The scenery around is very beautiful. Pop. (1931) 5759.

Obelisk Tall four-sided monolithic pillar tapering towards the summit and having a pyramidal apex often covered by a copper sheath. Obelisks were used chiefly in Ancient Egypt and were erected either as memorials by some monarch or as pillars in relation to the entrance of a temple. One obelisk, erected by Queen Hatshepsut and still standing at Karnak, is over 107 ft. in height and weighs about 300 tons. The so-called Cleopatra's Needle in London is an obelisk brought from Heliopolis, where one erected by Senusert I. still remains. Others from the same locality have been brought to Rome and New York.

Oberammergau Village of Upper Bavaria, Germany. Situated in the Ammer valley, 45 m. S.S.W. of Munich, with electric railway connection, its peasant inhabitants are wood and ivory carvers, producing toys, crucifixes and other religious objects. After a plague in 1633 the villagers vowed to present every tenth year, as an act of devotion, a living representation of Christ's Passion, as already done from mediaeval times. This has been done ever since, almost without exception, the last occasion being in 1930. *See* PASSION PLAY.

Oberon King of the Fairies. He appears in a French romance of the 13th century, but is better known as a character introduced by Shakespeare into *A Midsummer Night's Dream*. *Oberon* is the title of a masque by Ben Jonson.

Obesity Condition of the body marked by over-accumulation of fat. It usually occurs immediately beneath the skin, as in the neck and thighs, or around the abdomen and various internal organs. Sometimes hereditary, it may betoken a luxurious, inactive life, with over-indulgence in sleep, food or malt liquors. Dieting sometimes affords relief.

Oblates In the Roman Catholic Church, secular persons devoted to a monastery without monastic vows. The term denotes also congregations of fathers or sisters at the bidding of the bishop in whose diocese they live, for preaching, educational or missionary work, *e.g.*, Oblates of S. Charles, 1578, Oblates of Mary Immaculate, 1815.

Oboe (or Hautboy). Treble reed-wood-wind instrument, with a conical bore and a double-reed mouthpiece. It is usually made of ebony, silver or boxwood, has fifteen keys, and two octave keys. The compass is from B flat below the treble stave, to F in alt, with all chromatic semitones. It gives rich, if penetrating notes, and is, technically, very efficient.

Obregon Alvaro. Mexican president. Born in 1880, with Villa and Gonzalez he took a leading part in Carranza's revolution, 1913. As head of the constitutional forces, he entered Mexico City, Aug. 15, 1914. When in 1915 Villa turned against Carranza, Obregon led the campaigns against Villa. Chosen President in Sept., 1920, he held that office till 1924. Succeeded then by Calles, he was again elected President four years later to follow Calles, but was assassinated on July 17, 1928.

Observatory Building where observations are made. They are of two main kinds, astronomical and meteorological, although some, Greenwich, for example, do both kinds of work.

There are three royal observatories in the British Empire, at Greenwich, Edinburgh and the Cape of Good Hope. In addition there are some 30 others scattered all over the Empire, one being at Canberra and another at Apia in Samoa. Some of these observatories are especially for the study of solar physics.

The finest astronomical observatories in the world are probably those of the United States. Among them are the Lick Observatory in California with the most powerful telescope in the world, the Lowell Observatory in Arizona, on a mountain 7000 ft. high, and the Carnegie Solar Observatory on Mt. Wilson, California.

Great Britain has eight meteorological observatories.

Observer Rank in the Royal Air Force. The observer accompanies the pilot, and his duties are indicated by his name. The equivalent rank in the navy is that of sub-lieutenant, or mate, and in the army that of lieutenant.

Obstetrics Branch of medical science covering treatment previous to and during child-birth and the after-treatment. Although an ancient science, marked improvements are comparatively modern as in the use of specialised instruments, the introduction of chloroform and hypodermic injections as anaesthetics. Improvements in surgical technique have removed most of the danger of major operations such as the Caesarean which may occasionally be necessary. The provision of properly qualified midwives in industrial and other areas has proved notably beneficial.

Occam William of. English schoolman. Known as Doctor Singularis et Invincibilis, he was born at Ockham, Surrey, about 1300. He joined the Franciscans and studied and taught at Merton College, Oxford, between 1312-24. He was one of the most important figures in the struggle between Pope and Emperor, and advocated the independence of civil rule, and attacked the temporal power of the Papacy. He also wrote much in philosophy, metaphysics and theology, and his chief work, summarising his views, was the *Dialogus*. He died at Munich in 1349.

Occlusion Term, "shutting up," denoting (1) fitting together of the masticating surfaces of the upper and lower teeth in biting; (2) absorption of gases by certain elements. Palladium absorbs 800-900 times its own volume of hydrogen when heated as a cathode for decomposing water; finely-divided charcoal absorbs deleterious gases, a power utilised for disinfection.

Occultation In astronomy, the hiding of one celestial body behind another. It may be the eclipse of a fixed star or planetary body by the moon or a planet, *e.g.*, that of one of its own moons by Jupiter. Occultations are utilised for determining longitudes, or measuring the occulting body's angular diameter.

Ocean Geographical name for the largest expanses of water which together

occupy about 72 per cent. of the earth's surface. Of these the Pacific Ocean is the largest, being equal to about three-eighths of the total oceanic area and having the greatest depths. Fringing the ocean basins are shallower marginal seas covering a continental shelf or platform over which at various periods in geological history the oceanic waters have encroached or even receded to the edge of the submerged shelf. *See* ATLANTIC, PACIFIC, etc.

Oceania Name applied to the islands in the Pacific Ocean from Australia to the Marquesa Islands and the Low Archipelago, and from New Zealand to the Hawaiian Group. The main divisions of the region are the three large islands: Australia, Tasmania and New Guinea, and three island groups Melanesia, including the Solomon Islands and the New Hebrides and partly New Caledonia, Micronesia, including the Caroline Islands and the Ladrone Group, and Polynesia, extending from New Zealand to Hawaii, and from the line from New Caledonia and the Gilbert Islands eastward.

Oceanus In legend, the name of the river supposed to encircle the earth. It was originally the name of a god.

Ocelot Handsome American cat (*Felis pardalis*), ranging from Arkansas to Paraguay. Corresponding to the clouded leopard of S.E. Asia, it is 3 to 4 ft. long, with 11 to 15 in. tail. Normally tawny-yellow, spotted with black-edged, fawn-coloured markings, several varieties occur. A forest animal, of savage disposition, it preys on small mammals and birds.

Ochil Range of hills in Perthshire and neighbourhood. They are in the south-east of the county and extend also into the counties of Stirling, Fife, Clackmannan and Kinross. The range is about 25 m. long and the highest points are just over 2000 ft.

Ochre Name given to certain earthy or clayey varieties of the oxides of iron. Yellow and brown ochres are forms of the hydrated oxide, limonite, whilst red ochre, or reddle, is a variety of the peroxide haematite. These ochres when ground and washed are used as pigments, but much of the commercial material is prepared artificially from iron oxides, although the manufactured pigment is inferior to the natural one. Ochres are obtained from France, Holland and the midland counties of England.

O'Connell **Daniel.** Irish patriot and politician, nicknamed "The Liberator." Born near Cahirciveen, County Kerry, on Aug. 6, 1775. He was called to the Irish Bar in 1798, and displayed a great gift for oratory. In 1828 he entered Parliament, and in 1829 the Irish Catholics were emancipated. He organised the Irishmen into the "Catholic Association," and began, in 1841, his agitation for the repeal of the Union. The Tory cabinet, under Peel, was not sympathetic, and mass meetings were held everywhere. O'Connell was imprisoned for sedition on the eve of success, and a few months later set free. He died on May 15, 1847.

Octave In music: (1) The perfectly consonant interval of an eighth formed by the sounding of any scale-note with that above it bearing the same name. (2) An organ-stop of 8 ft. on the pedals (or 4 ft. on manuals).

In poetry: (1) An eight-lined stanza. (2) The first two quatrains of a sonnet written on the same pair of rhymes.

The octave of a church feast occurs on the same name-day of the following week.

Octavia Roman matron. She was the sister of the Emperor Augustus (Octavian) and a niece of Julius Caesar. She married first Gaius Marcellus and secondly Mark Antony, who left her for Cleopatra and so brought about the renewed quarrel with Augustus which ended in Antony's death. Octavia died in 11 B.C.

Octavo Term used in bookbinding for a book or sheet of printed paper which has been folded three times or one-eighth of its original size, thus forming eight leaves or sixteen pages. The word octavo is usually abbreviated to 8vo, and certain sizes of books are named foolscap 8vo, demy 8vo, royal 8vo, etc.

Octopus Widespread group of eight-armed, head-footed molluscs. They have rounded bag-like bodies, large eyes and central mouths with horny jaws like parrot beaks. Besides the common octopus, with double rows of suckers to each tentacle, a lesser one also occurs on British coasts, belonging to another genus, with single rows of suckers. *See* CEPHALOPODA.

Oddfellow Name given to members of certain friendly societies. The first was founded in London early in the 19th century. It ceased to exist about the end of the century, but in 1810 the Independent Order of Oddfellows, Manchester Unity, was founded, and this is now one of the largest of the friendly societies. It has about 1,100,000 members, and funds amounting to over £25,000,000.

Ode Form of stately and elaborate lyrical verse, in astrophic arrangement. It derives from the Greek choir-song, and was originally a poem written to be sung to an instrumental accompaniment, supported by a chorus. Pindar, the master of the ode, developed it in a consciously elaborate form. Modern poets follow the lyrical ode of Sappho and Alcaeus.

Odense City and seaport of Denmark. It is on the river of the same name on the Island of Funen, 27 m. from Copenhagen. A ship canal connects it with the fjord of Odense. There is a good harbour and the city is one of the country's chief seaports. It has a beautiful Gothic cathedral, and the house in which Hans Andersen was born is now a museum. Pop. (1930) 56,759.

Oder River of Europe. It rises in Czechoslovakia, but soon enters Germany and flows mainly in a northerly direction to Stettin on the North Sea. It is 500 m. long, and most of its course is navigable for small vessels. Canals connect it with the Elbe and the Vistula. Its chief tributary is the Warta.

Odessa Seaport of the Ukraine. On the Black Sea, about 25 m. from the mouth of the Dniester and 90 m. south-west of Kherson, in the government of that name, Odessa is in the midst of a grain district. When the Dardanelles were closed by Turkey, in 1914, Odessa was cut off from the allies, and was bombarded by the Turks. Captured by German forces in March, 1918, it was taken by the Bolshevists in 1920. It has a broadcasting station (450.4 M., 4 kW.). Pop. 497,000.

Odin Chief god of the Northern pantheon; the Anglo-Saxon Woden. Originally a storm-god, "the frenzied one," he was represented as venerable, one-eyed, and attended by two ravens and wolves. He was worshipped

chiefly by the warrior nobles and their retainers, and called the All-father and receiver of the souls of the slain in Valhalla.

O'Donnell Ancient Irish family. They were lords of Tyrconnel, whose rivals were the Ulster O'Neills. They were descended from King Niall of the Nine Hostages, who reigned at the beginning of the fifth century. Tyrconnel comprised the greater part of modern Donegal.

The first great chieftain was Goffraidh, in the thirteenth century, who was the first to be called "The O'Donnell," and who successfully raided Tyrone and Connaught. Manus O'Donnell ruled Tyrconnel when his father pilgrimaged to Rome in 1511, but retained his authority after his return, with the help of the O'Neills. Later father and son fought the O'Neills, but they joined together with the O'Briens to form the Geraldine League, to restore the earldom of Kildare to Gerald, the stepson of Manus. He died in 1564.

Calvagh O'Donnell, eldest son of Manus, was captured by Shane O'Neill, tortured for three years, and when released, appealed to Elizabeth. He was restored to his rights, but died the following year.

Hugh Roe ("Red Hugh") O'Donnell was born in 1571 and fought against the English in Ireland. In 1602 he fled to Spain, leaving everything to his brother, Rory O'Donnell, born 1575. He paid allegiance to the king, but later plotted to seize Dublin Castle in 1607, was found out, fled to Rome, and died there in 1608.

Odysseus Alternative name for the Greek hero Ulysses (*q.v.*).

Oedipus In Greek legend, son of Laius, King of Thebes, and Jocasta. An oracle having warned Laius that Jocasta's offspring would cause his death, Oedipus was exposed, but was found by shepherds, and brought up ignorant of his parentage. Unwittingly he slew his father and wedded his own mother. The gods demanded the discovery of the king's slayer, and the result of the investigation led Jocasta to hang herself and Oedipus to become self-blinded. The story inspired two tragedies by Sophocles.

Oenolin Name given to the colouring matter of wines. It is a violet red or brownish red powder obtained from wine by precipitation with basic lead acetate.

Oesophagus Name given to the gullet, the straight tubular portion of the alimentary canal leading from the pharynx to the stomach in an animal. It has no digestive function but merely serves to carry food from the mouth. In the higher crustacea the hinder end of the oesophagus forms a kind of gizzard.

Offa King of Mercia. Of royal blood, he ejected a rival and obtained the crown, 757. He restored Mercia's shrunken condition, and by vigorous campaigns secured virtual control of Britain S. of the Humber. He was described as King of the English by the Pope, who sanctioned a new archbishopric at Lichfield. He died in 796.

Offal Refuse or waste. Butcher's offal comprises all besides the hanging carcase. During the Great War, when meat was rationed, liver, sweetbread, etc., were ranked as offal and unrationed. A hide's prime parts form the butts, shoulder and belly pieces being offal. In flour-milling, bran, with some flour attached, is offal, furnishing cattle-food.

Offaly County of the Irish Free State, formerly called King's County. It covers 733 sq. m and is wholly inland. The Shannon, which flows along its boundary, the Brosna and the Barrow are the principal rivers. There are hills in the south, and the shore contains much of the Bog of Allen. Tullamore is the county town; other places are Birr or Parsonstown, Banagher, Edenderry and Philipstown. An agricultural area, the Grand Canal passes through it. Pop. (1926) 52,600.

Offa's Dyke Ancient earthwork forming a boundary between Mercia and the Welsh. Built by King Offa, about 779, its remains still traverse discontinuously for 140 m. portions of four Welsh and three English counties from the Dee to the Severn estuaries. Mostly a rampart, seldom exceeding 12 ft. in height, its ditch lies on the W. side.

Offenbach **Jacques.** German-Jewish composer. Born at Cologne Jan. 21, 1819, in 1833 he went to Paris, where he conducted the orchestra of the "Théâtre Français" in 1848, and was manager of the "Bouffes Parisiens" in 1855. He was the composer of many light operas, including *La Belle Hélène*, *La Grande Duchesse*, *Orphée aux Enfers* and *Les Contes d'Hoffmann*, which is still popular. He died Oct. 5, 1880.

Officer Person holding a commission in the fighting forces. Army officers were at first required to collect and maintain, at the public expense, the men forming their troops, but now they only command and lead them. Training institutions include the Royal Staff College, the Royal Military Academy, Woolwich, and the Royal Military College, Sandhurst. The **Officers' Training Corps** is an organisation among the universities (senior branch) and schools (junior branch) whereby students receive training in military drill, musketry, signalling, etc., with the object of teaching them obedience, discipline and self-control. *See* NAVY, AIR FORCE, etc.

Official Receiver Legal official appointed to look after the affairs of bankrupts. They were first appointed in 1883. Some of the receivers are at the bankruptcy court in Carey St., London, W.C.2., while others are in the large cities and towns of the provinces.

Offset In printing, a process in which the impression of a design is transferred to a rubber cylinder from which it is printed or offset. It is specially suitable for reproducing designs on rough paper. In surveying, offsets are lines drawn perpendicular to a given straight line for the measurement of distances.

Ogive Architectural term used in France for the pointed type of arch which occurs in some early churches such as the Abbey of Cluny and some late Romanesque buildings, although it did not become common until the period of Gothic architecture. The pointed arch was used in Syrian, Persian and Saracenic buildings and probably was introduced into Europe by way of Sicily. In English architecture the term **ogive ribs** is applied to the main intersecting ribs of a vault.

Oglethorpe **James Edward.** English general and philanthropist. Born in London, Dec. 21, 1696, he was aide-de-camp to Prince Eugène in his campaign against the Turks (1716-17), distinguishing himself at the siege of Belgrade. He later entered Parliament, and was responsible for the settling of a

colony in America between Carolina and Florida, as a refuge for insolvent people and oppressed Protestants on the continent. This he called Georgia (*q.v.*).

Ogmore Urban district of Glamorganshire, in full Ogmore and Garw. It is 3 m. from Bridgend. It is a coal mining area. The place is named from the river Ogmore which flows through Glamorganshire to the Bristol Channel. Pop. (1931) 20,979.

O'Higgins Bernardo. Chilean soldier and statesman, the son of the Irishman, Ambrosio O'Higgins, Governor of Chile, he was born Aug. 20, 1776, and educated abroad. O'Higgins returned to Chile in 1802, and fought against the Royalists. As commander he superseded Carrera, whose rivalry caused him to flee to Mendoza. Here he met José de San Martin, with whom he began a long and loyal association, which resulted in the decisive victory of Chacabuco (1817). In 1822 O'Higgins called a congress, which adopted a constitution giving him dictatorial powers over Chile. Discontent and risings occurred, and in 1823 O'Higgins resigned his post of director-general and retired to Peru. He died Oct. 24, 1842.

O'Higgins Kevin Christopher. Irish statesman. Born in 1892, after the Easter rebellion of 1916 he joined the Sinn Fein Movement, and was interned. While in gaol, he was elected member for Queen's County. In 1922 he became Minister of Justice in the New Free State Government, and established the Civic Guard, which put down disorder firmly. While the controversy with de Valera on the taking of the Oath in the Dail was proceeding, O'Higgins was assassinated by unknown men, July 10, 1927.

Ohio State of the U.S.A., in the N.E. of the country, Lake Erie forming most of its northern boundary. The capital is Columbus, and there are several other very populous centres, including, Cleveland, Cincinnati, Toledo, Akron, Dayton, Youngstown, Canton and Springfield. The state is largely an agricultural area and great quantities of wheat and maize are produced. The rearing of livestock is also conducted on a large scale. Iron and coal are mined and the shipping on Lake Erie is an important industry. Ohio is governed by a legislature of two houses. It sends two senators and 24 representatives to Congress. Ohio covers 41,040 sq. m. Pop. (1930) 6,646,700.

Ohio River of the U.S.A. It rises near Pittsburg, being a union of the Monongahela and the Allegheny, and flows to the Mississippi, which it enters at Cairo. It is 975 m. long and is navigable by large vessels, being perhaps the most important waterway in the country. Its tributaries include, Tennessee, Cumberland, Wabash and Kentucky. Pittsburg and Cincinnati are the largest cities on its banks.

Ohm Term applied to the practical unit of electrical resistance, defined as the resistance of a column of mercury 186.3 cms. long, of a constant area in cross-section, and weighing 14.4521 grams at the temperature of melting ice. A megohm is one million ohms and a microhm one millionth of an ohm.

Ohm's law states that in a circuit carrying a constant current, the current is directly proportional to the electromotive force and inversely proportional to the resistance of the circuit.

Ohmmeter Form of electrical instrument used for measuring electrical resistance directly in terms of ohms and megohms. There are many forms of ohmmeters, one type consisting of two fixed coils with another coil placed at right angles to the other two and carrying a pointer which moves freely over a graduated scale, these coils being of low and high resistance. For testing the insulation resistance of cables, etc., some type of magneto generator is combined with the instrument.

Oil Fluid substance having a more or less viscous character and of either mineral, vegetable or animal origin. The **mineral oils**, consisting of hydrocarbons, are derived from the decomposition of organic matter in rocks and are represented by petroleum and its derivatives.

The **vegetable oils** consist of fixed or fatty oils and essential or volatile oils, the former being again divided into drying and non-drying oils. The fixed oils, composed of mixtures of glycerides of fatty acids, vary in consistence some being solid fats above 68° F., and others which remain liquid at ordinary temperatures. The drying oils undergo oxidation on exposure to light and air, forming a tough film, and consequently are used in paint and varnish manufacture, such oils are, linseed, poppy, cottonseed and rape. The non-drying oils such as olive, palm, coconut and almond oils are used as lubricants, edible oils, and in soap manufacture. Essential oils are volatile odorous liquids distilled from plants and used in pharmacy and perfumery.

The **animal oils** comprise fish and whale oils, seal oils, tallow, butter, etc., and are used as food or in soap and margarine manufacture or as lubricants.

For **oil fuel** see FUEL.

Oilcake Food given to cattle. It consists of compressed seeds, from which the oil has been expressed.

Oilcloth Type of floor covering. It comprises coarse canvas covered with successive coats of thick oil paint, each passed between heavy rollers, dried and rubbed smooth with pumicestone before the next is applied. The surface may finally receive an ornamental pattern in oil colours, derived from wooden blocks or analogous printing devices. *See* LINOLEUM.

Oil Palm *See* PALM OIL.

Oise River of Belgium and France. It rises in the Ardennes, flows through France, and joins the Seine at Conflans, St. Honorine. It is 187 m. long and about half its course is navigable. The chief tributary is the Aisne: others are the Ailette and the Buche and it passes Guise, Compiègne and other places. The Oise gives its name to a department of north-east France, of which Beauvais is the capital.

Ojibwas (or Chippewas). North American Indian tribe of Algonkian stock. The name, "roast-till-puckered," may allude to their puckered moccasins. In early colonial times they occupied the Sioux and Fox territory, W. and S. of Lake Superior, and sided with Britain in the War of Independence. They number 30,000, peaceably settled in the lake region of Canada and the U.S.A.

Okapi Native name of an African ruminant of the giraffe family (*Okapia Johnstoni*). Sir Harry Johnston discovered it in the Semliki forest near Lake Albert in 1901. It stands 5 ft. high at the

shoulder, with limbs and neck shorter than the giraffe's. The purplish pelt is varied on buttocks and legs with horizontal black and buff stripes. An Okapi, presented to the London Zoo by the King while Prince of Wales, died in Nov., 1935.

Okehampton Borough and market town of Devonshire. About 17 m. east of Launceston, it is situated at the junction of the East and West Okement rivers. Pop. 3450.

Oklahoma State of the United States. It is in the south of the country, lying wholly inland just to the north of Texas. Oklahoma City is the capital and the largest place: Tulsa is next in size. The chief industries are the growing of wheat, oats, cotton, etc., and the mining of oil, of which an enormous quantity is produced in the state. Government is by a legislature of two houses. The state sends two senators and nine representatives to Congress. It has a large Indian population. Pop. (1930) 2,396,000.

Olaf King of Norway and saint. Born in 995, he terrorised the coasts of Normandy and England, and secured the throne of Norway in 1016. He tried to exterminate paganism, with such severity that his subjects abandoned him for Canute, King of Denmark. Olaf fled to his brother-in-law, Jaroslav of Russia, who gave him 4000 men, and in 1030 Olaf fought Canute at Stiklestad, but was defeated and killed. He was later proclaimed patron saint of Norway.

Old Age Pension In Great Britain and other countries a pension paid by the state to all persons who reach a certain age. In Great Britain it is paid to persons, with certain exceptions on reaching the age of 70, but persons who are insured under the national health insurance scheme, and also the wives of the men, can obtain a pension on reaching the age of 65. Blind persons can claim at 50.

To be entitled to a pension at the full rate of 10s. a week, a person's income from investments and the like must not exceed £26 5s. a year, but before calculating this, he or she is entitled to deduct the first £39 of unearned income. In practice, therefore, a person can obtain a full pension if his unearned income is £65 5s. a year or less. If the income is in excess of this sum a smaller pension is paid, until a person with £88 17s. 6d. a year cannot claim one of any kind. In the case of a married couple living together these sums are doubled. Thus a man whose unearned income is under £130 10s. a year can claim a full pension for himself and his wife. To obtain a pension a person must apply for a form at a post office. The pensions are paid at the post offices every Friday. *See* HEALTH INSURANCE.

Old Bailey Street in London. It goes from Ludgate Hill to Newgate Street, and at its junction with the latter is the Central Criminal Court, usually called the Old Bailey. A court was built here in 1834 and in 1902-07 this was rebuilt. The hall contains mural paintings by Sir W. B. Richmond.

Oldbury Market town and urban district of Worcestershire. It is 5 m. north-west of Birmingham. There are manufactures of hardware and chemicals. Pop. (1931) 35,918.

Oldcastle **Sir John.** Leader of the Lollards. He served in the fighting on the Welsh marches, where he formed a friendship with Henry, Prince of Wales, afterwards Henry V. Espousing the Lollard cause, he had the works of Wycliff transcribed and distributed. After good service in France in 1411, he was condemned as a heretic in 1413. He escaped from the Tower, but was recaptured after four years, and hanged and burnt as a heretic.

Oldenburg Republic of Germany. Formerly it was a grand-duchy of the German Empire, comprising, besides the grand-ducal territory with a seaboard on the North Sea, the former principalities of Lubeck, north of the state of that name, and Birkenfeld, situated in the midst of the Rhine province. The capital is Oldenburg, 27 m. from Bremen, Eutin and Birkenfeld are the capitals of the other divisions of the republic. Area, 2480 sq. m. Pop. 545,200. *See* LÜBECK.

Oldham County borough and market town of Lancashire. On the Medlock, 188 m. from London and 6 m. from Manchester, it is a leading centre for cotton spinning and other branches of that industry. Textiles produced include satins, sateens, fustians, sheetings. There are engineering works and collieries near by. The town sends two members to Parliament. Pop. (1931) 140,309.

Old Red Sandstone Name given by geologists to palaeozoic rocks between the Silurian and Carboniferous, to distinguish them from the New Red Sandstone above the Carboniferous, now renamed. Represented in Scotland by beds of great thickness, their fossil remains attest lagoon formation. With contemporary marine deposits occurring elsewhere, as in S.W. England, they constitute the widespread Devonian system.

Old Testament Collection of 39 books of the Bible, recording Jewish history and religion from the beginning down almost to the times of Jesus Christ and his apostles. Written between the 8th and 2nd century, B.C., in Hebrew or Aramaic, the Jewish grouping, Law, Prophets and Writings, marks the stages which established the Hebrew canon. The Law or Pentateuch was canonised first, probably under Ezra, *c.* 444 B.C. The Prophets, all except Daniel, with Joshua, Judges, Samuel and Kings, gained acceptance, *c.* 200 B.C. The writings, comprising the rest, were subsequently admitted, all receiving final sanction at the Jewish synod of Jamnia, *c.* A.D. 90. *See* APOCRYPHA.

Old Trafford District of Manchester. To the west of the city. It is chiefly known because it is the headquarters of the Lancashire county cricket club.

Oleander Evergreen shrub of the dog bane order (*Nerium oleander*), native of the Mediterranean region. The erect stems bear leathery willow-like leaves which exude a poisonous milky juice when bruised. The showy clustered flowers, resembling those of the periwinkle, but rose-coloured or white, are greenhouse favourites in Britain, with double-flowered varieties.

Oleaster Genus of deciduous or evergreen shrubs and small trees (*Elaeagnus*) akin to the spurge laurel order, natives of Europe, Asia and N. America. Several ornamental species are cultivated. The common oleaster, *E. angustifolia*, 15-20 ft. high, is grown round the Mediterranean for its edible berries.

Olein Trade name for triolein, the triglyceride of oleic acid. This is a colourless oil, with almost imperceptible smell and taste, liquid above 21° F., and soluble in alcohol. With tripalmitin and tristearin, solid at ordinary temperatures, it enters into most animal and vegetable oils and fats. These are usually natural species of varying chemical composition; the so-called olein expressed from palm-oil and especially coconut oil contains various other glycerides. Much olein is converted into stearin by hydrogenation.

Oleograph Name given to a picture done in oil colours by a chromo-lithographic process, the print being mounted on canvas and varnished to imitate an oil painting.

Oléron Island of France. It is off the west coast, at the mouth of the Charente, and has an area of 66 sq. m. The chief towns are Chateau d'Oléron and St. Pierre.

Oléron is famed because it gave its name to a code of law for seamen. This consisted of the decisions of the maritime court in the island and the accepted rules of the sea. It was introduced into England in the 12th century.

Olfactory System *See* NOSE.

Olga Saint of Russia. The daughter of a peasant, she married the Grand Duke Igor in 913. After the death of her husband in 945, she acted as regent for her son for a period of ten years. She went to Constantinople where she became a Christian. Olga was canonised, her feast being July 11.

Oligarchy Word of Greek origin, meaning the rule of the few. It is generally regarded as a bad form of government, the idea being that the few rule in their own interests. It was so classed by Aristotle. Since the time of the Greek states the most notable oligarchy has been the republic of Venice.

Oligocene System Geological term for the second division of the Cainozoic or Tertiary period following the Eocene system. In England these strata form an estuarine series in the Hampshire Basin and are seen well on the coast of the Isle of Wight. The system is divided into four subdivisions, the Hamstead, Bembridge, Osborne and Headon Beds, consisting of marls, clays and limestones containing marine, estuarine, freshwater and land fossils. Oligocene beds are widely distributed over central and southern Europe.

Olive Small evergreen tree typical of the olive order (*Olea europaea*). Cultivated in antiquity, it abounds in the Mediterranean region, and flourishes also in Australia, California and S. Africa. Its small fleshy berry, when unripe, is pickled or salted. The ripe pericarp yields under pressure 60-70 per cent of an edible oil which replaces in S. Europe butter and animal fats, and is used farther north for salads and various culinary and medicinal purposes. Inferior grades serve for soap-making.

Olives **Mount of.** Limestone ridge E. of Jerusalem. Rising about 300 ft. above the city beyond the Kidron valley, it was closely associated with the final scenes of Our Lord's life. On one of its four summits he wept over Jerusalem; some part of it, probably not the traditional summit, was the scene of the Ascension. *See* GETHSEMANE, KIDRON.

Ollerton Town of Nottinghamshire. It is 9 m. from Mansfield and 139 from London by the L.N.E. Rly. and adjoins Sherwood Forest.

Olney Town of Buckinghamshire. It stands on the Ouse, 60 m. from London, on the L.M.S. Rlv. The place is known for its associations with Cowper.

Olympia Religious centre of ancient Greece, famous as the scene of the Olympic games. It stands on the banks of the Alpheus in the Peloponnese. The modern Olympia is a place of amusement in London. It is in Addison Road, Hammersmith, and is used for exhibitions of all kinds. There Captain Bertram Mills has his annual circus and the Naval and Military Tournament is also held here.

Olympiad A period of four years, in Greek chronology, used for dating for literary purposes. The four years were reckoned between celebrations of the Olympic games, the first Olympiad beginning in 776 B.C. and the last A.D. 394. Timaeus of Sicily was the first writer to start using this system, about 264 B.C.

Olympic Games Athletic contests held at Olympia in Greece in ancient times. The festival took place every four years and had a religious basis. Candidates were tested at Elis and had to train for some ten months. The games were open to competitors from all Greece, and the contests included chariot racing, horse racing, running, wrestling, boxing, and the pentathlon, a contest involving jumping, quoit-throwing, javelin-throwing, running and wrestling. The list of Olympic victors goes back to 776 B.C., and the classical games ceased to be held probably about A.D. 393.

To the Baron de Coubertin, a Frenchman, who organised the Games at London in 1908, much of the credit is due for these four-yearly contests. They represent a revival of the old Greek games, were first held at Athens in 1896, and have been restaged every four years since, save for a break occasioned by the war. Those in 1928 were held at Amsterdam, and those of 1932 at Los Angeles, while the 1936 Games will be held at Berlin. The United States are the most successful country.

Olympus Name of a mountain range in Greece. It separates Thessaly from Macedonia and the highest point rises to about 10,000 ft. Olympus is famous in Greek legend and literature.

Omagh Market town and urban district of Co. Tyrone, Northern Ireland; also the county town. It is 34 m. from Londonderry. The industries are flour mills and linen factories. Pop. (1926) 5124.

Omaha City of Nebraska, U.S.A. On the Missouri River, it is an important railway centre. Here are railway works of the U.P. Rly., and other engineering and machinery works. Smelting and refining is carried on extensively, and there are many manufacturing industries. South Omaha, formerly a separate city, and united to Omaha in 1915, has large meat canning works. Pop. (1930) 214,006.

Oman State of Arabia. It lies on the east of the Arabian desert, a narrow strip of maritime land, bordering on the Persian Gulf, the Gulf of Ormuz and the Arabian Sea. The total coast-line is 900 m.

in length with an area of 82,000 sq. m. Its sultan, Saiyid Taimur, rules over a population of 550,000. The chief port and capital is Muscat (*q.v.*).

Omar Successor of Mahomet. He became a follower of the prophet, and in 634 was chosen caliph in succession to Abu Bekr. He held the position until his murder in 644 and continued the policy of conversion by force, conquering Palestine, Syria and Egypt. He was called the commander of the faithful.

Omar Khayyám Persian mathematician, astronomer and poet. He was the son of a tent maker (Khayyám). At the order of the Sultan, he reformed the Moslem calendar. His treatise on Algebra made him famous as a mathematician even in the Western world. He died A.D. 1123.

In Europe he was unknown as a poet until 1859, when Edward Fitzgerald (*q.v.*) translated several of his "Rubáiyát" or quatrains. The beauty of the "translation" is to be attributed more to the genius of Fitzgerald than to the original Persian.

Omdurman Town of Egypt. It is situated on the Nile opposite Khartoum in the Sudan. Here, on Sept. 2, 1898, Kitchener, at the head of an Anglo-Egyptian force defeated the Dervishes and avenged the death of General Gordon (*q.v.*).

Omnibus Name given to a public conveyance first introduced into London in 1829 by Shillibeer. Previous to this, stage coaches had been employed for some time for conveying passengers, and in Paris three-horse public coaches had been popular for many years. Shillibeer's omnibuses carried 22 persons inside, and were drawn by three horses, but in 1849 smaller vehicles were introduced followed by roof accommodation in 1857. Further developments came with the formation of the London General Omnibus Company. Under the London Passenger Transport Act (1933), Omnibuses, with tramways, tubeways, etc., were transferred to the London Passenger Transport Board.

Omsk Town of West Siberia. It stands at the junction of the Irtish and Om rivers, and is 265 m. from Akmolinsk, on the Trans-Siberian Railway.

Onager Name of several races of wild ass ranging from Syria, Arabia and Persia to Baluchistan and N.W. India (*Equus onager*). Standing 11 hands high, sandy or chestnut-coloured and broadly striped along the back, they are remarkably fleet-footed, being seldom run down by horsemen.

Onega Lake of Russia. The lake covers 3800 sq. m. and is the largest in Europe save only Ladoga. It is 150 m. long. Its waters are carried to Lake Ladoga and it is connected by means of canals with both the White and the Baltic Seas.

Onega River of North Russia. It rises in Lake Ladoga and flows N.E. and N.W. to the Gulf of Onega, on the south of the White Sea. It is about 240 m. long. The town of Onega is at the mouth of the river, on the bay of the same name, 84 m. S.W. of Archangel

O'Neill Ancient Irish family. They were descended from King Niall of the Nine Hostages, who were Lords of Tyrone, and the hereditary enemies of the O'Donnells of Tyrconnel. Con O'Neill (1484-1559), was a warlike chieftain who, on making submission to Henry VIII. in 1542, was made Earl of Tyrone. Shane O'Neill, born about 1530, the eldest legitimate son of Con, was second earl, and nominally paid allegiance to Elizabeth, but fought against the Scots, and continually against the O'Donnells. He died in 1567.

Hugh O'Neill, the son of an illegitimate son of Con, born about 1540, succeeded to the title in 1587, but intrigued with the Irish rebels and with Spain against Elizabeth. He was defeated at Kinsale, and made submission, but later intrigued against James I. with Spain, and in 1607 fled to Rome, and died there in 1616.

Owen Roe O'Neill, born about 1590, went to Spain, and fought in the Spanish army with distinction, later coming to Ireland in 1642, when he fought against Scotland and England with great success, until his death in 1649.

Phelim O'Neill was the leader of the insurrection against the English and Scots settlers in Ulster, in which occurred the Ulster massacre of 1641.

O'Neill **Eugene Gladstone.** American dramatist. Born in New York, Oct. 16, 1888, he tried commerce, the sea and other callings before he began to write. He went to Harvard University, 1914-1915, and in 1916 spent the summer at Provincetown, where he met the group who produced nearly all his short plays. He rapidly became the most famous of the younger American dramatists. He has written, *Beyond the Horizon* (1920), *Anna Christie* (1922), *Emperor Jones* (1922), *The Hairy Ape* (1922), *The Great God Brown* (1926), and *Strange Interlude* (1928), amongst others. *Days Without End* was produced in London in 1935.

One Thousand Guineas

English horse race. It is an event of the Newmarket spring meeting, and is open to three-year old fillies.

Ongar Market town of Essex, known officially as Chipping Ongar. It is 23 m. from London by the L.N.E. Rly., and is situated on the Roding. Pop. 10,140.

Onion Hardy bulbous biennial herb of the lily order (*allium cepa*). It is now widely grown for culinary purposes, usually raised annually from seed. Some forms are produced for pickling, some for storing. The potato onion is a variety throwing out lateral bulbs developed underground. The Welsh, a bulbless form of Siberian origin introduced into mediaeval Europe, is grown for spring salads. *See* LEEK, SHALLOT.

Ontario Lake of North America. One of the Great Lakes, it is the smallest of the five, covering 7260 sq. m. It is also the most easterly and the lowest of the five. The waters of Lake Erie are brought to it by the Niagara River and the Trent, Oswego and other rivers enter it. Its waters go to the St. Lawrence. Canals connect it with the important waterways of Canada and the United States. The lake is 185 m. long; its northern shores are Canadian, and its southern, American. On the former are Toronto, Hamilton, Kingston, Oshawa and some smaller ports. On the latter are Oswego and Charlotte.

Ontario Province of Canada. With an area of 412,262 sq. m., it extends from Detroit, U.S.A., to Hudson Bay, and includes part of Lakes Ontario, Erie, Huron and Superior, which separate the province from the U.S.A. The area known as the Lakes Peninsula is the most thickly settled region. It has the greatest output of any province in manufactures (the chief industry), mining and agriculture, the principal crops including, besides grain, apples, grapes, peaches and other

fruit, tomatoes and tobacco. Gold is the most valuable metal mined, and the province produces silver and copper in large quantities and dominates the world's market for nickel. Petrol is also found. There are very large timber resources. Plentiful electric power is obtained from Niagara and other natural sources. Toronto on Lake Ontario is the capital of the Province; Ottawa is the Dominion capital; London and Hamilton are the chief towns. Pop. 3,426,488.

Champlain (*q.v.*) was the first European to visit Ontario, followed by Jesuit missionaries and fur traders. It became British in 1763 and in 1774 became part of the province of Quebec. In 1792, however, it was separated from Quebec, becoming the province of Upper Canada with its own legislature. John Graves Simcoe (*q.v.*) was the first governor. Little development took place until after the war of 1812, when the Americans took and burned the capital, York (now Toronto). Following a rebellion in 1837-38, it was once again united with Quebec under a common parliament in 1842, remaining thus till the achievement of Confederation in 1867. Since then the province has been governed by its own legislature of 112 members under a lieutenant-governor, assisted by an executive council.

Ontology Name given to a branch of metaphysics dealing with the nature and principles of pure being and the essence of things, or, as defined by Hegel, the doctrine of the abstract characteristics of being. The different problems of ontology are concerned with such theories as those of monism, dualism and pluralism.

Onyx Name given to certain kinds of agate in which there is a parallel banded structure, the milky white layers alternating with dark or coloured chalcedony. Owing to this structure onyx is used for cameos, the white later being cut in relief upon the darker material. In the sardonyx the coloured bands are red, consisting of carnelian or sard.

Onyx marble is a stalagmitic form of marble from Mexico, S. America and Algeria, used as an ornamental stone.

Oolite Geological term for the upper and middle divisions of the Jurassic system. The Oolite consists of hard limestones alternating with sands, sandstones and calcareous clays and containing chiefly marine fossils. It is divided into Upper, Middle and Lower Oolite, which stretch across central England from Dorset to Yorkshire, and yield many important building stones such as the Portland, Purbeck and Bath stones.

Oology Name given to a specialised branch of ornithology dealing with the study of the eggs of birds, especially with regard to the methods of collection; also the study of their shapes, markings and colouration, characters which are of importance as a means of identification.

Ooze Name given to organic deposits occurring on the floor of the ocean basins. An ooze is almost entirely composed of the remains of minute organisms and is more plastic and coherent than muds. The best known of the oozes is the globigerina ooze of the Atlantic Ocean, consisting of the remains of foraminifera.

Opal Mineral consisting of hydrated silica and occurring in non-crystalline form as layers, nodules, stalactitic masses, or filling cavities in rocks. It has a greasy lustre and hardness lower than that of quartz, while the colour of common opal is bluish-white, milky or yellowish. In the precious opals there is a remarkable play of colours due to reflection and diffraction of light from thin laminae.

Opera Virtually drama set to music. After early pioneer attempts, the *Euridice* of Peri (1600) must be considered as the forerunner of opera. Early writers of opera were mainly German and Italian, as for example, Mozart, Monteverde and Rossini, but France owes its earlier operas to Méhul and Meyerbeer, and England to Purcell. With Wagner (*q.v.*) the opera actually became a distinct genre of music, and those to follow this more dramatic style were Bizet (*Carmen*), Strauss and Débussy (*Pelleas*). To Sir Thomas Beecham's efforts to put it on a firm footing, we owe the presentation of works by Dame Ethel Smyth, Vaughan Williams, Holst, Boughton and Delius. Other modern writers of opera include Stravinsky and Puccini. The various forms of opera include Recitative (often introductory), Opera-Buffa (Italian comic opera with recitative), comic opera and grand opera, where every word is sung.

Ophir Country mentioned in the Old Testament. It was famous for its gold which was brought to Jerusalem in the time of Solomon. It was probably in Africa.

Ophthalmia Inflammation of the eye, usually the mucous membrane in front of the eyeball and inside the lids. New-born babes are liable to purulent ophthalmia, sometimes epidemic among school children. Sympathetic ophthalmia is inflammation of one eye consequent on disease or injury of the other.

Ophthalmoscope Instrument introduced by Helmholtz in 1851 for examining the interior of the eye by means of reflected light. There are several forms, but the one commonly used consists of a small concave mirror of 10 ins. focus, pierced with a central hole, and having a series of lenses attached.

Opium Narcotic drug consisting of the dried latex obtained by incision of the walls of the unripe capsules of the white poppy (*Papaver somniferum*). The latex which rapidly coagulates, is scraped off and dried in the sun, forming dark brown masses. Opium contains the alkaloids morphine, codeine, narcotine and narceine, each of which is used in medicine as a sedative. The opium poppy is grown in Asia Minor, Persia, India and China. In 1928, an international convention came into force to suppress the illicit traffic in opium and other narcotic drugs. From 1935 exports from India were greatly restricted by the Government.

When eaten or smoked as a narcotic, the first effect of opium is a pleasant stimulation of the mental activity, followed by sleep. The after-effects are unpleasant and harmful, and the opium habit, once acquired, is very difficult to relinquish. The opium produced in India and consumed in China formerly provided one of the main sources of Indian revenue.

Oporto Seaport of Portugal. On the north bank of the Douro, it is 209 m. from Lisbon by rail. Oporto is the centre of the port wine trade, and is also a great manufacturing district, producing textiles, paper and pottery. There are tanneries, distilleries and sugar refineries. The

shipping is handled by the harbour at Leixoes, four miles north. Pop. (1930) 232,380.

Opossum Family of American marsupial mammals. They inhabit central and S. America except the largest, the cat-sized Virginian opossum, which ranges northwards. The pouch is sometimes rudimentary or wanting, the tail often long, scaly and prehensile. They are nocturnal and arboreal, except the web-footed yapok or water-opossum. Australian phalangers are also called opossums.

Optician Name of a trade concerned with the manufacture and sale of lenses and optical instruments such as telescopes, microscopes, spectacles, etc., also one branch of the trade which specialises in the testing of eyesight and prescribing suitable spectacles. The work presupposes a training in the principles of optics and the practical application of the science especially in the cutting and grinding of lenses. For sight-testing a knowledge is required of refraction in relation to eyesight, and the methods adopted to overcome errors of refraction.

Optics Term applied to the science of light and the principles underlying the various phenomena of light and vision. The science is divided into two main divisions, physical and geometrical optics. In physical optics a study is made of the nature of light and the phenomena of colour, refraction, reflection, interference, diffraction and polarisation, while geometrical or mathematical optics is concerned with the laws governing these phenomena, the formation of images and the principles underlying lenses, etc. The Greeks and later the Arabs were conversant with the laws of reflection, but the science did not assume its present form until the days of Kepler, Newton and Huyghens.

Optophone Name given to an instrument invented by Fournier D'Albe for changing light rays into their equivalent sounds for use by the blind in reading books. The instrument consists essentially of a revolving disc having eight holes proportional to the vibrations of the notes of an octave. Light directed upon the printed page is interrupted and passes through the apertures of the disc on to a selenium tablet connected with a telephone receiver, each letter being heard with a characteristic sound.

Oracle Response, supposedly divine, given by an inspired priest or priestess to the inquiry of a votary, or the sacred place of utterance itself. As a ritual of divination, oracles profoundly influenced public life in ancient Greece, the most renowned being those of Zeus at Dodona and Apollo at Delphi. At the latter the attendant priests communicated in hexameter verses the utterances of a young woman seated on a tripod over a cave from which a vapour arose.

Oran Seaport of Algeria. It is on the Gulf of Oran, 260 m. from Algiers by railway. A naval station, it is the capital of the department of Oran. Wine and grain are exported, and the production of esparto grass, a raw material of paper manufacture, is important. Cattle and minerals are shipped, also hides and cork. Pop. (1931) 163,743.

Orange French family settled in the Netherlands. It takes its name from the town of Orange which was the capital of a little state. In 1500 this came to a member of the family of Nassau who had lands in the Netherlands and were known as the House of Orange-Nassau. William the Silent and his descendant who became William III. of Great Britain belonged to this family. Another branch is now represented by the Queen of the Netherlands.

Orange Fruit of an evergreen tree (*Citrus aurantium*). Emanating from the Indo-Chinese peninsula, and cultivated in ancient India, Arabs introduced it into S.W. Asia before the 9th century, and thence into Spain. Its introduction from the Levant into 15th century Italy preceded its importation direct from the East into 16th century Portugal. It is now cultivated in many localities outside the Mediterranean region, including S. Africa, the W. Indies, Florida, California and Australia. The sweet or China orange occurs in many forms, including Malta blood-oranges and flattened thin-peeled mandarins and tangerines. It is a valuable food, being rich in mineral salts and vitamins A, B, and especially C. *See* CITRUS.

Orange Town of New South Wales. It is 190 m. by railway from Sydney, and is the centre of a district where wheat and fruit are grown. Pop. (1931) 8640.

Orange River of South Africa known also as Gariep or Groote River. Rising in the Drakensberg Range, Basutoland, it flows 1300 m. to the Atlantic, which it reaches 45 m. N.W. of Port Nolloth. Its principal tributary is the Caledon, about 200 m. long. During part of its course, the Orange River constitutes the north boundary of Cape Province.

Orange Free State Province of the Union of South Africa. It has an area of 49,647 sq. m., and joins Cape Province on its West and South borders, Natal and Basutoland on the East, and the Transvaal on the North. Bloemfontein is the capital (Eur. pop., 1931, 28,496). The province has a pop. of 628,900; Eur. pop. (1931) 205,324. The Cape to Cairo Railway runs through the province. In 1899 the Orange Free State joined with the Transvaal in the war against Great Britain. Annexed by the latter in 1900, and named the Orange River Colony, in 1910 it entered the Union of South Africa and resumed its earlier name, which dated from the proclamation of an independent republic in 1854, when British sovereignty terminated.

Orange Society Irish political society. Founded in 1795, the first lodge was formed at Armagh, and the movement spread rapidly, gaining adherents in England and elsewhere. The professed objects were the defence of the Protestant faith and succession. The society was named after William III. It drew upon itself Parliamentary action at different times. *See* IRELAND.

Orang-Utang Malay name, "man of the woods," of the reddish-brown manlike ape of Borneo and Sumatra (*Simia satyrus*). Powerfully built, standing 4 ft. 4 ins., when erect, the long arms almost touch the ground. This and other anatomical characters render it less manlike than the gorilla and chimpanzee. The males often have warty cheek callosities and enormous pouch-like neck distensions. Inhabiting low-lying forests, which they traverse from tree to tree, they construct family sleeping-platforms 20-50 ft. above the ground. They subsist mainly on fruits.

Oratorians Familiar term applied to Roman Catholic Congregations of the Oratory. That of S. Philip Neri, founded in a hall or oratory in Rome, in 1564, received papal sanction in 1575. It comprises simple priests under no vows. J. H. Newman, becoming an Oratorian in Rome, founded in England the Edgbaston Oratory, 1847; the Brompton Oratory, with F. W. Faber as first rector, followed. The Oratory of our Lord Jesus Christ, founded by Cardinal de Berulle in Paris, 1611, was overthrown at the Revolution; another arose, 1852.

Oratorio Sacred counterpart to secular opera. Originally, as devised by S. Philip Neri, and used in his Little Oratory about 1574, oratorio was a dramatic representation of sacred history (with scenery and costumes) used as a devotional exercise. The oldest surviving Italian example is Cavaliere's "The Soul and the Body" of 1600. In Germany, as a congregational devotion, oratorio survived and flourished after the Reformation. Schutz's "The Resurrection" in 1585 founded a tradition which culminated in the masterpieces of Bach. Bach's "Christmas Oratorio" and "Passion Music" dispensing with theatrical properties, combined solos, chorus, double chorus, orchestra and congregation into a musical and devotional whole. With Handel began the era of oratorio as a musical entertainment. Handel, Haydn, Mendelssohn and Elgar are the greatest composers in this form.

Orbit Term used in astronomy to denote the path of a celestial body in the heavens, as for example, the earth's, whose annual orbit round the sun is elliptical in form.

In zoology the term orbit is applied to the bony cavity containing the eye in vertebrate animals and arched over above the skull. In some mammals the orbit is enclosed completely by bones as in the primates, but in other types the back of the cavity is less ossified.

Orchardson **Sir William Quiller.** Scottish painter. Born at Edinburgh, March 27, 1832, his work was exceptionally quiet in colour, and it was some time before he became popular. Among his more popular works are, "On Board H.M.S. *Bellerophon*" (1880), (In the Tate Gallery) "Mariage de Convenance (1884), "After" (1886), and "The Young Duke" (1889). He was elected A.R.A. in 1868, R.A. in 1877, and knighted in 1907. He died April 13, 1910.

Orchestra Term applied originally to the central circular space in the ancient Greek theatre and used for dancing by the chorus. Later the orchestra became semi-circular and in Roman theatres, choric dancing being no longer in fashion, it was merged into the stage. In more modern times the term has become applied to the band of musicians.

Orchid Herb of an extensive natural order of plants with one seed-leaf, growing in all climates except the very cold. Orchids comprise many genera, with 5000 species, some terrestrial, with fleshy or tuberous roots, some growing on other plants, with pseudo-bulbs. Many, perhaps all, have a specific partner-fungus or mycorrhiza essential to the orchid's growth. The one or more flowers have perianths of six coloured segments, that forming the lip being sometimes spurred. Transfer of pollen by insects from one plant to another for cross-fertilisation is secured by various ingenious mechanisms. About 40 species are British, including the bee orchis, twayblade, and lady's-slipper. *See* VANILLA.

Orczy **Baroness Emmusca.** Pen name of Mrs. Montagu Barstow, novelist and playwright. Born at Tarnaórs in Hungary, she was educated at Brussels and Paris, and began writing in 1900 with *The Old Man in the Corner*, a series of detective stories. In 1905 she wrote *The Scarlet Pimpernel*. Two other plays appeared in 1910 and 1918, *Beau Brocade* and *The Legion of Honour*. She is the author of numerous novels, several being sequels to *The Scarlet Pimpernel*, which has been dramatised.

Ordeal Form of trial for detecting guilt or innocence. In primitive culture an aspect of divination, administered under priestly direction and relying upon Providence, mediaeval Europe called it the judgment of God. Tests of innocence by ordeal are exemplified in Num. v., and incidentally in Dan. iii. Early England recognised ordeals by hot iron, boiling water, plunging into a stream to sink or swim, consecrated bread and personal combat. Trial by ordeal ceased in 1218, except by combat, which lasted until 1818.

Order-in-Council In Great Britain and other parts of the British Empire an order issued by the sovereign on the advice of the Privy Council. They were first used in the 18th century, and are of two kinds. Some are issued when great urgency is essential, as during a war or a general strike, when there is not time to pass legislation through Parliament. More usually they are issued to carry out the details of legislation. Acts are often passed giving powers to ministers to do certain things, for instance, raise the school age or prohibit the export of old horses by Order in Council.

Ordinance Decree or order that is not strictly speaking a law. Such were issued by the kings of France, and in England in the time of Charles I. the Long Parliament passed the Self-Denying Ordinance. These ordinances, although not fully laws, had the force of law.

Ordination Ecclesiastical ceremony. It is the special service for the setting apart of Christian ministers to their life-work. In the Greek, Roman and Anglican churches the rite is carried out by a bishop, and is regarded by the two former as sacramental. In the Free Churches it is administered by one or a number of senior ministers. In each case ordination is by "laying on of hands" in conformity with the New Testament (Acts vi., 1-7; xiii., 1-4).

Ordnance General term for all kinds of cannon or other forms of firearms (other than small arms) and their ammunition. It was used originally to include the organisation as well as the equipment of artillery and its staff. The ordnance department in the army is charged with the provision, care and distribution of military stores, arms and ammunition as well as the miscellaneous equipment of the army. For the training of officers for these duties there is an Ordnance College at Woolwich. A similar Ordnance Department is established for naval purposes, to provide and maintain armaments for ships.

The **Ordnance Survey** is a topographical survey of Great Britain for the preparation of official maps of the country, and is carried out by the Royal Engineers, with headquarters

at Southampton. The original maps were on a scale of 1 in. to the mile, but later a 6 in. survey was started, followed by maps on a scale of 6 ins. and 25 ins., also 5 ft. and 10 ft. to the mile. The maps in most general use are on the 1 in. scale and are issued in 3 forms showing the contours, etc., either uncoloured, or in relief and hatchings in colour.

Ordovician Word used by geologists for a formation in the earth's crust between the Cambrian and the Upper Silurian. Found in Europe, Asia, and the Americas, it contains iron, lead, silver and other minerals, as well as the fossils of the less developed forms of life and of fishes. The stones found include shales, limestones, grits and slates. The formation is best seen in Wales where it is in three divisions known as Arenig, Llandeilo and Bala.

Ore Term used in mining for mineral deposits containing metals in sufficient quantity for profitable extraction. Metals occur in ores as oxides, sulphides, carbonates, silicates, etc., and in a few in the metallic state, such as gold, platinum, iridium, silver, mercury and copper. Ores occur either in veins or lodes, beds, irregular masses or pockets, or superficial deposits, and before they are ready for smelting or other methods of extraction, they usually undergo considerable treatment or " ore dressing." *See* LODE.

Ore Coin of Norway, Sweden and Denmark. It is a one-hundredth part of the krone and is coined in both bronze and silver, the silver coins being 5, 10, 25 and 50 ore pieces.

Oregon State of the U.S.A. On the Pacific coast, it is 96,699 sq. m. in area. West of the Cascade Range is a fertile valley region drained by the Williamette, Rogue and Umpqua Rivers, and separated from the Ocean by a coastal range. East of the Cascade Range is a prairie region with many peaks. Other rivers are the Snake (E.) and Columbia (N.) constituting the frontiers to some extent. Agriculture, cattle raising, lumbering and fisheries are the main industries, and mineral deposits comprise coal, iron, copper, silver, nickel and gold. The capital is Salem, and the principal commercial city Portland, both on the Williamette River. Pop. (1930) 953,786.

Orestes In Greek legend, son of Agamemnon and Clytaemnestra. When his father, returned from the Trojan War, was murdered by his mother and her paramour Aegisthus, Orestes' nurse, or his sister Electra, saved him from a like fate. Returning to revenge his father's death, he escaped to the Tauric Chersonese with his friend Pylades, to seize the heaven-sent statue of Artemis. They were shipwrecked, but were saved by his sister Iphigenia (*q.v.*). He is the hero of tragedies by Aeschylus and Euripides.

Orford Village of Suffolk. It is near the coast, 20 m. from Ipswich. An object of interest is the ruined Norman castle. Orford Ness is a cape on the coast nearby with a lighthouse.

The title of **Earl of Orford** was borne by the family of Walpole and earlier by the family of Russell. In 1697 the sailor, Edward Russell, was made Earl of Orford, but the title became extinct when he died in 1727. In 1742 Sir Robert Walpole was made Earl of Orford, but the title again became extinct when his noted son, Horace, died in 1797. In 1806 Horatio, Baron Walpole, a kinsman, was created Earl of Orford. The earldom became extinct in 1931.

Organ Complex musical instrument. Originally a syrinx, the early organ became " a box of whistles " consisting variously, or in combination, of stopped, open and reed pipes, and later adding a wind chest. It was played by the lips and breath of one performer. Next came the pneumatic or hydraulic organ with bellows worked by hand or by the weight of boy assistants. Its pipes were of copper. The first key boards were really systems of levers which were struck with the fists or forearms of the player. Present-day pedals and reed-pipes first appeared in the 15th century. Modern organs consist of : (1) Pipes (flue and reed) ; (2) Bellows, wind-trunks and wind-chest ; (3) The Console (including manuals, pedals, stops, swell pedal, great swell, choir, solo, echo, couplers and accessories) ; (4) The Action (comprising the tracher, pneumatic, electric and connecting mechanisms).

To modern cinema organs are added stops registering orchestral and naturalistic effects.

Oriel Architectural term applied to a bay window in a Tudor or Gothic building, either on the ground floor or projecting from an upper floor, in this case supported on corbels. Many examples of oriel windows are seen in manor houses of the Tudor period and at Christ's College, Cambridge.

Oriel College, Oxford, takes its name from a tenement, La Oriole, granted to the college in 1327.

Orient Region where the sun rises, *i.e.*, the east. The word denotes more specifically the geographical region E. and S.E. of Europe, including Turkey, Persia, India and China, whose inhabitants are collectively called Orientals.

Orientation Setting of a building or person with reference to the compass points. It refers especially to the placing, at the E. end, the main entrance, as in ancient Greek and other temples, or of the altar, as in various Christian churches after the 6th century.

Origen Greek father of the church. Born at Alexandria, of Christian parentage about A.D. 185, he himself taught in the catechetical schools at 18. His learning was such, especially on the philosophical side, that he influenced the course of church history for centuries, formulating its dogmas and founding Biblical criticism. He suffered at intervals during the imperial persecutions, and died at Tyre about 254. His works include *Hexapla*, the first polyglot of the Old Testament, and a defence of Christianity against Celsius.

Original Sin Corruption of man's nature inherited from Adam's fall. This doctrine, generally accepted in 5th century Western Christianity under S. Augustine's guidance, asserted the need of baptism for remission of sins, and of divine grace for attaining goodness. It was confirmed by the Council of Trent. Actual Sin is defined as the individual's voluntary act. *See* SIN.

Orillia Town of Ontario, Canada. On Lake Couchiching, 86 m. from Toronto, it is a summer resort. There are foundries, motor vehicle works, and an important industry is the manufacture of agricultural implements. Pop. 7700.

Orinoco River of Venezuela. Rising in the Parima Mts. on the Brazilian border, it flows round the range, and thence East to the Atlantic, following a course of about 1500 m. and reaching the sea near

Trinidad. A tributary, the Cassiquiare, communicates with Rio Negro, a tributary of the Amazon. Other rivers entering the Orinoco are the Apure, Guaviare and Meta. Between the two last are the falls of Malpures and Atures.

Oriole Family of perching birds, natives of temperate and tropical regions of the Old World. The golden oriole, *Oriolus galbula*, 9 ins. long, with brilliant male yellow plumage and black wings and tail, is a regular spring visitant to Britain, formerly breeding there; it now breeds in Europe and S.W. Asia, spending the northern winter in S. Africa.

Orion In Greek mythology, a handsome giant and hunter. Clearing Chios of wild beasts for its king, Oenopion, whose daughter he desired, he was inebriated and blinded, regaining his sight when confronting the rising sun. He was slain hunting in Crete in company with Artemis, and became the constellation bearing his name. This, mentioned in the Old Testament, is a conspicuous constellation near the equinoctial line, containing, among others, three brilliant stars forming Orion's belt, and a majestic nebula.

Orkneys Group of islands forming a county of Scotland. Separated from the mainland by the Pentland Firth, they number 68, with a total area of about 370 sq. m. Less than half are inhabited. The largest is Pomona, on which are the capital, Kirkwall, and Stromness. The most important islands in the group are Hoy (parted from Pomona by Scapa Flow), N. and S. Ronaldshay, Flotta, Stronsay, Rousay, Westray, Shapinsay, Eday and Sanday. Fishing and agriculture are the chief pursuits. Pop. (1931) 22,075.

Orlando Vittorio Emmanuele. Italian statesman. Born in Sicily, Mar. 19, 1860, he became Professor of Constitutional Law at Palermo, and in 1916 was Minister of the Interior. He was criticised for his lenience with pacific agitators, and changed his policy. In 1917 he succeeded Boselli as Premier, and raised Italy to a pitch of high enthusiasm and strong resistance, in spite of the disastrous defeat of General Cadorna at Caporetto. He was one of the "Big Four" at the Paris Peace Conference in 1919, and seceded from it on the Fiume question, but returned with a compromise, and helped with the Yugo-slavian question. On the growth of Fascism, he retired from politics.

Orleans French town. Chief town of the department Loiret, it stands on the right bank of the Loire. The cathedral (begun in 1601) is one of the noblest Gothic edifices in the country. In May, 1429, Joan of Arc defeated the English under the Duke of Bedford and raised the siege of the town. Her house may still be seen there as well as three different statues of the heroine. Orleans manufactures hosiery, cotton, etc., and receives some commercial importance from the canal which joins the Loire and the Seine. Its Roman name was Civitas Aureliani. Pop. (1931) 71,606.

Orleans House of. French noble family of royal blood. The title Duke of Orleans was created by Philip VI., who conferred it on his natural son Philip in 1344. On the accession of the third Duke to the throne in 1498 as Louis XII., the title lapsed. It was next held by Jean Baptiste Gaston, a son of Henry IV. who received it from his brother Louis XIII. in 1626. On his death, it was not revived till Louis XIV. conferred the dukedom on his brother Philippe in 1660. The latter's grandson, of the same name, who succeeded to the title, was regent of France during the minority of Louis XV. Louis Philippe Joseph (1747-93) a man of liberal views, acquired in England through his friendship with the Prince of Wales (afterwards George IV.), joined the *tiers état* at the head of the seceding noblemen, but perished by the guillotine. Henri (1867-1901) was a distinguished traveller and explorer. Louis Philippe Robert (1869-1926) was born in England and served with the British army in India.

Orme's Head Great. Rocky promontory near Llandudno in Caernarvonshire. It is 679 ft. high and the top is reached by a cable tramway. A marine drive has been constructed round the cliffs. On the hill are S. Tudno's church, a 15th century building, and a lighthouse.

On the other side of Llandudno is **Little Orme's Head**, famous for its caves.

Ormolu Name given to an alloy resembling gold in colour and composed of copper, tin and zinc, the first metal predominating. It is used for making statuettes and clocks, also as a metal base for a form of champlevé enamel work. The name ormolu is sometimes used as a general term for bronzed articles.

Ormonde Duke of. Irish title held by the family of Butler. James Butler was born in 1610, and succeeded to the earldom of Ormonde in 1632. He distinguished himself in the service of Charles I., and was rewarded with the ducal title of Ormonde at the Restoration. Colonel Blood tried to take his life in 1679, but he escaped, and lived until 1688. James Butler, second Duke of Ormonde, grandson of the above, was born in Dublin in 1665. He commanded William's life-guards at the Battle of the Boyne, and in 1702 commanded the troops in Rooke's expedition to Cadiz. He was Lord-Lieutenant of Ireland in 1703, and in 1711, commander-in-chief against France and Spain. Impeached in 1715 for high treason against George I., his estates were attainted, and he spent the rest of his life in France intriguing for the Pretender, until his death in 1746.

Ormskirk Market town and urban district of Lancashire, 12 m. N.E. of Liverpool and 209 from London by the L.M.S. Rly. Its industries include the making of gingerbread and market gardening. Pop. (1931) 17,121.

Ormuz Name of the strait that connects the Persian Gulf with the Gulf of Oman; also the name of an island in the strait. In the 4th century a city was founded on this island and became very prosperous as the meeting place of great trade routes. In 1515 the Portuguese took it and in 1622 it was seized by the Persians, aided by an English force; about this time its importance declined and it no longer exists.

Ormuzd Aryan deity. In the teaching of Zoroaster, this god, under the name of Ahura Mazda is regarded as the principle of good in opposition to Ahriman (*q.v.*) the principle of evil. The dualism is only apparent, for the final victory of Mazdan over the forces of evil is assured. "Zoroaster," says Dean Inge, "is to all intents and purposes a monotheist."

Ornithology Systematic study and knowledge of birds (*q.v.*).

It deals with the classification of birds, their habits, migrations, economic uses, etc. Societies devoted to the study or culture of birds include the American Ornithologists' Union, Washington, D.C., the British Ornithologists' Union, London, and the Avicultural Society, London. These publish quarterly or monthly journals. There are also societies for the protection of birds, provision of bird sanctuaries, etc.

Ornithorhynchus Generic name of the duck-billed platypus or water-mole, a mammal restricted to S. and E. Australia and Tasmania. It forms with the echidna (*q.v.*) the lowermost mammalian order, distinguished by having a single outlet for both solid and liquid excretions, as in birds. Although it is usually described as egg-laying, some authorities question whether the eggs are hatched within or without the body of the female. *See* DUCK-BILL.

Orontes River of North Syria. Other names are Axios and Nahrel Asi. Rising in the Anti-Lebanon, it flows 250 m. to the Mediterranean, passing near Antioch and entering the sea 40 m. N. of Latakia.

Orpen **Sir William.** British artist. Born in County Dublin, Nov. 27, 1878, he was educated at Dublin Metropolitan School of Art and the Slade School. He was President of the International Society and several other Art Societies. During the Great War he was appointed an official artist, and in 1918 he held a great exhibition of his war pictures, many of which he presented to the nation. Elected A.R.A. in 1910 and R.A. in 1919, he was perhaps best known as a portrait painter. He wrote *An Onlooker in France* (1921) and *Stories of Old Ireland and Myself* (1924). He died Sept 29, 1931.

Orpheus In Greek legend, son of Oeagrus, King of Thrace, and the muse Calliope. He played so exquisitely upon a lyre presented by Apollo as to charm all Nature. He accompanied the Argonauts on their quest of the Golden Fleece, wedded the nymph Eurydice, and followed her to Hades, but failed to bring her back to earth. His constancy to her memory so angered the Thracian women that they slew him. His lyre, carried to heaven, was placed among the stars.

Orpington District of Kent. It is 9 m. from Sevenoaks and 5½ m. from Chiselhurst, on the S. Rly. It is a fruit-growing district. Pop. 7047.

Orpington fowls were originated by W. Cook, and are excellent utility birds, big in frame, good layers and sitters, and good table birds. The varieties are: white, black, buff, spangled, blue, cuckoo and jubilee. *See* POULTRY.

Orrell Urban district of Lancashire. A centre of the cotton industry, it is 3 m. from Wigan and 199 from London, by the L.M.S. Rly. Pop. (1931) 6957.

Orris-Root Rhizome, or underground stem, of various species of iris, which when dried has a delicate violet-like smell. It furnishes so-called essence of violets, "violet-powder," and some scented dentifrices; it has medicinal and breath-sweetening uses also. Exported from N. Italy and Mogador, the best comes from the Florentine iris.

Orsay **Comte d'.** French dandy. The son of General d'Orsay, he was born at Paris in 1801, and was for 20 years the intimate friend of Lady Blessington, the English author, and friend of Lord Byron. An authority on fashion and a brilliant conversationalist, he also showed talent as a painter and sculptor. He was a friend of Louis Napoleon (Napoleon III.) who made him Director of the Beaux Arts at Paris before his death in 1852.

Orthoclase Mineralogical name for potash felspar, a common rock-forming mineral consisting of silicate of aluminium and potassium. It occurs in monoclinic prisms of a lustrous white, grey or reddish colour in granites and other crystalline igneous rocks. Its pearly variety, moonstone, and the spangled variety, sunstone, are cut *en cabochon* for use as gem stones.

Orthodoxy Term meaning "right opinion." It denotes soundness of belief, especially religious. It involves the formulation of a standard generally accepted. Protestant orthodoxy is deemed heterodox by Roman Catholics. The Eastern Church claims the title of Holy Orthodox Apostolic Church.

Orthography Art or practice of writing words with the proper letters according to accepted usage. The same applies to the representation of tones and effects in proper musical notation. In draughtsmanship it denotes the geometrical representation of a building's elevation or of a section through it.

Orthopaedic Surgery Branch of medical science dealing with deformities. Modern methods owe much to the developments during and after the Great War, when constructive operations and repairs to soft tissue and bone were so frequently necessary. Special mechanical instruments, which have been developed, enable excisions to be made and material for renewal purposes to be applied with comparatively little serious shock to the patient. The use of X-rays is an important adjunct.

Ortolan Species of bunting (*Emberiza hortulana*). It spends the summer in Europe and W. Asia, wintering in Africa. The male, 6½ in. long, is attractively plumaged. Hardly ever visiting Britain, it acquired repute among 18th-century epicures, and is still netted in S. Europe during its southward migration, and fattened on grain for the table.

Orwell Estuary of the river known as the Orwell, or the Gipping. The river rises in the N. of Suffolk and flows past Ipswich to the North Sea.

Osaka City of Japan. It stands on the bay of the same name at the mouth of the River Yodo. Numerous canals and steamers ply between Osaka and Kobe, for which the harbour was constructed. It has an electric railway service, and its industries include sugar refineries, iron works, cotton spinning mills, as well as a trade in tea, rice, etc. Among its buildings are the university, arsenal, and Shinto and Buddhist temples. The most populous city of Japan, its boundaries were extended in 1915. Pop. (1930) 2,453,573.

Osborne Judgment Judicial decision of the House of Lords. It was given on Dec. 21, 1909, in the case of W. V. Osborne against the Amalgamated Society of Railway Servants, after the decision of the King's Bench had been reversed in the Court of Appeal. The judgment declared void a Trades Union rule, which provided for an enforced levy from its members towards the payment of M.P.'s salaries, and dealt a blow at the political activities of the Trade Unions. *See* TRADE UNION.

Oscar Name of two kings of Norway and Sweden. **Oscar I.**, born in 1799, was the son of General Bernadotte, who afterwards became Charles XIV. He became king in 1844 and established the freedom of the press but refused reform of the obsolete constitution. In 1848 he supported Denmark againstGermany and was one of the guarantors of the integrity of Denmark. He died July 8, 1859.

Oscar II., a son of Oscar I., born at Stockholm, Jan. 21, 1829, succeeded his brother, Charles XV. on July 18, 1872, and was crowned on July 18, 1873. His remarkable intelligence and great diplomacy in dynastic matters affecting European sovereigns resulted in Great Britain, Germany and America requesting him to appoint the chief justice of Samoa in 1889, and he became umpire in the Anglo-American arbitration treaty of 1897. His works include *Memoirs of Charles XII.* He died at Stockholm, Dec. 8, 1907.

Oscillograph Electrical instrument for showing and recording the form of the waves of alternating currents and high-frequency oscillations. In the Duddell oscillograph and the Irwin hot-wire oscillograph, the record is shown by a spot of light reflected from a mirror.

Oshawa City and port of Ontario. On Lake Ontario, it is 33 m. from Toronto, on the C.P. and C.N. Rlys. Its chief industries are carriage and motor works, foundries, flour and woollen mills, etc. Pop. 11,940.

Osier Name applied to those native or cultivated forms of willow trees and shrubs whose tough, flexible branches serve for basketry and wickerwork. Besides the common osier, *Salix viminalis*, with forty varieties, British osier-beds also contain the brown or French willow, *S. triandra*, much hybridised, the red *S. purpurea*, and the golden osier, a yellow variety of the white willow.

Osiris Ancient Egyptian deity. Originally the local god of Busiris, interred at Abydos, he was during the Old Kingdom revered as the legendary source of Egypt's well-being, and a centre of widespread worship. Around him grew up mythical stories, making him the husband of Isis and brother of Set, the god of darkness. Later religion made him the judge of the dead and god of the after-life, represented in mummified form with a plumed crown.

Oslo Capital city of Norway. It is picturesquely situated on the S.E. coast at the head of the Christiania Fiord. Its Danish name of Christiania was changed to Oslo on Jan. 1, 1925, in deference to national sentiment. The city was designed and laid out by Christian IV. in 1624 and possesses several ancient buildings as well as a university, museum and state theatre. Its harbour is ice-bound during the winter. Its manufactures include iron, wool, cotton, paper, tobacco and matches. It has a broadcasting station (1053 M., 60 kW.). Pop. 258,341.

Osman Sultan of Turkey. Founder of the Ottoman Empire, he ruled in Asia Minor from about 1288 to 1326. **Osman II.** reigned from 1616 to 1621.

Osman Turkish pasha and soldier. Born at Tokat in Asia Minor in 1832, he distinguished himself at Plevna in 1877. With the help of his engineer, Tewfik Pasha, Osman entrenched himself in such a formidable position that he delayed the Russians for five months before capitulating, thus causing them to cross the Balkans in mid-winter. He was richly rewarded on his return from imprisonment, and in 1878 became War Minister, which post he held until 1885. He died on April 14, 1900.

Osmium Rare metal, having the symbol Os, atomic number 76, and atomic weight 190.8. It is bluish-white with a brilliant lustre. The metal is very hard and has a higher density than any other known substance. It is associated with platinum and occurs as a natural alloy with iridium as osmiridium in Russia, Tasmania, South Africa and elsewhere. The alloy, osmiridium, is used for tips of fountain pen nibs and electrical contacts. Osmic acid is of value as a microscopic stain for nerve tissue.

Osmosis Term applied to the process of diffusion of two liquids of different density through a permeable but non-porous membrane, the pressure controlling this diffusion being known as osmotic pressure. To illustrate this, a bladder filled with strong sugar solution is suspended in a vessel of water, and it is found that the water rapidly passes through the membrane into the bladder (endosmosis), and a small quantity of the syrup diffuses outwards (exosmosis). Osmosis is an important factor in the root absorption of plants.

Osmund English saint. As a chaplain he accompanied his uncle, William the Conqueror, to England, and in 1072 became Chancellor. Bishop of Salisbury from 1078, he built the cathedral of Old Sarum, introduced a form of church service, engaged in the preparation of Domesday Book, and died 1099. He was canonised in 1457.

Osnabrück Town in the Prussian province of Hanover, on the Hase, 70 m. from Hanover, and 31 from Münster. It was a member of the Hanseatic League, and contains, besides the cathedral and the Gothic Marienkirche, examples of Gothic and Renaissance domestic architecture. Here in Oct., 1648, the peace Treaty of Westphalia was signed. Important manufactures include machinery, iron, steel, paper and chemicals. Its linen trade in the 18th century helped to restore the ravages of the Thirty Years' War. Pop. (1933) 94,277.

Osprey Cosmopolitan bird of prey, distantly related to the honey-buzzards, *Pandion haliaetus*. Also called fish-hawk, it feeds solely on fish. The male, 24 in. long, has dark-brown plumage laced with white, and white underparts. The birds nest on trees or lonely rocks near water; two or three red-blotched eggs are laid. The so-called osprey plumes of the feather trade come from the egret (*q.v.*).

Ossa Mountain of Greece. Its modern name is Kissava and it is 6400 ft. high. It is in Thessaly near Olympus and is chiefly known because here the gods and the giants engaged in warfare. The giants are said to have built the neighbouring mountain of Pelion on Ossa in order to reach the sky.

Ossett Borough and market town of Yorkshire, 180 m. from London and 3 from Wakefield, on the L.M.S. and L.N.E. Rlys. Its industries are cloth manufacture and coal mining. Pop. (1931) 14,838.

Ossian Legendary Irish hero and bard. Associated with Fionn and other 3rd-century warriors at the court of Tara, he and his followers traditionally suffered defeat at Gabhra, 293. Mythically spending many years in fairyland, he eventually encountered

S. Patrick, who baptised him. His literary work has disappeared, unless it be embodied in the poems which James Macpherson, a student of Gaelic, claimed to have discovered and "translated."

Ossification Bone-formation. Cartilage is normally converted into bone, both before birth and during childhood, at various centres of ossification, or around fractures. In old age certain cartilages, *e.g.*, the larynx, may become unnaturally ossified. The word is incorrectly extended to morbid processes simulating bone-making, *e.g.*, the thickening of the arterial walls. *See* BONE.

Ossington Viscount. English politician. John Evelyn Denison was born at Ossington, Notts., Jan. 27, 1800, commenced his political career in 1823, and soon came to the fore as an orator. He was chosen Speaker of the House of Commons in 1857, a position he retained until his retirement in 1872, when he was created Viscount Ossington. He died March 7, 1873. *The Speakers' Commentary of the Bible* was undertaken at his instigation.

Ossory Former kingdom of Ireland. It covers the counties of Leix, Offaly, Kilkenny and Carlow. The term is used to-day for dioceses in the Roman Catholic and Anglican Churches, both of which have their cathedral at Kilkenny. The Marquess of Ormonde holds the title of **Earl of Ossory**, given to one of his ancestors in 1527.

Osteitis Inflammation of the substance of bone. That of the marrow-filled cavities of long bones is called osteomyelitis; it often arises from septic conditions in young children. Chronic osteitis may be rarefying, when the bone substance diminishes, or condensing, when it increases. It may be due to injury, syphilis or inflammation.

Ostend Town, seaport and watering place of Belgium, 77 m. from Brussels and 60 E. of the Kentish coast. It has commodious modern docks to accommodate the ships of heavy tonnage which cope with the enormous passenger, food produce and other traffic with England and elsewhere. The promenade, 3 m. long, is constructed of granite, with a casino and the Royal Châlet. Its manufactures include linen and sailcloth.

From 1914-18 Ostend was occupied by the Germans as a submarine base, but aerial bombardment made it indefensible and the sinking of the *Vindictive* in 1918 practically blocked the entrance to the harbour. A lighthouse, replacing the one destroyed in 1916, was completed in 1924. Pop. (1931) 47,313.

Osteology Branch of anatomy dealing with the bony framework of the body. *See* SKELETON, ANATOMY.

Osteopathy Method of medical treatment based on the belief that health can be maintained by attention to the proper mechanical adjustment of the body rather than by the use of drugs. It includes surgical treatment for fractures and wounds, attention to diet, hygiene, etc. In some states in the U.S.A. practitioners are legally on the same basis as other qualified medical men.

Ostia Ancient town and harbour of the city of Latium, Italy. At the mouth of the Tiber, 14 m. from Rome, it became an important harbour during the Punic Wars. The Emperor Claudius had a new harbour constructed 2½ m. to the N., about A.D. 46, connected with the Tiber by a canal, and Trajan, in A.D. 103, made still further extensions. The canal became blocked in the Middle Ages until the beginning of the 17th century.

Ostia gradually declined until it was abandoned. In the 15th century a castle was erected E. of the ancient city by Guiliano della Roverre. In 1875 extensive draining of the marshes around Ravenna took place.

Ostracism Greek equivalent for banishment. Votes were recorded on fragments of pottery (*ostraka*), and in Athens, if 6000 citizens voted against a man he was ostracised or exiled for 10 years, or for 5. Miltiades, Themistocles and Alcibiades were all ostracised.

Ostrich Two-toed flightless bird (*Struthio camelus*), with keelless breast-bone, indigenous to Africa and S.W. Asia. It is the largest living bird. The males, 8 ft. high, have short black body-feathers and long white rump and wing-feathers; those of the female are dusky grey. Dwindling in S.W. Asia, they still occur wild in Africa, and are reared in extensive ostrich-farms in S. Africa, Kordofan, Argentina, California and elsewhere.

Ostrogoths Eastern branch of the Goths. They flourished in the 4th and 5th centuries and were one of the branches into which the Goths were divided, the other being Visigoths or West Goths. *See* GOTHS.

Ostwald **Wilhelm.** German chemist. Born at Riga, Sept. 2, 1853, he was educated at the University of Dorpat, after which he spent five years in Riga. In 1887 he became Professor of Physical Chemistry at the University of Leipzig and then Director of the Physico-Chemical Institute there. In 1906 he retired, and in 1909 was awarded a Nobel prize. He wrote a number of books on chemistry, including *Principles of Inorganic Chemistry*. His work lay chiefly in the field of electrochemistry and solutions. He devised the viscometer known by his name, and discovered a method of oxidising ammonia to form oxides of nitrogen. His knowledge greatly assisted the manufacture of explosives in Germany during the Great War.

Oswald King of Northumbria. A son of Ethelfrith, King of Bernicia, he succeeded his brother as king in 635. He was successful as a soldier and united Bernicia and Deira into the kingdom of Northumbria which, during his short reign, was the strongest in England. He was killed at Oswestry in 642 in a battle against Penda, the heathen king of Mercia. Oswald is known for the work he did for Christianity, and was made a saint.

Oswaldtwistle Urban district of Lancashire, on the Leeds and Liverpool Canal and the L.M.S. Rly. Its chief industries are cotton mills, chemical works and printing works. Near are collieries and stone quarries.

Oswego City and port of New York State. On Lake Ontario at the mouth of Oswego River, it is well served by railways, canal barges and lake steamers. The city has a fine modern harbour, miles of quays and extensive accommodation for its gigantic trade in grain and lumber with Canada and elsewhere. Its river water power is also well developed and utilised in its manufactures, which include cotton, woollen goods, cocoa, etc. The Oswego Canal was completed in 1828. Pop. (1930) 22,652.

Oswell **William Cotton.** English explorer. Born April 27, 1818, at Leyton-

stone, he was educated at Rugby and the East India Co.'s College at Haileybury. In 1837 he went to Madras and became known for his prowess as an elephant catcher, whilst he took up the study of surgery, medicine and languages. He next went to S. Africa and explored parts hitherto untraversed by Europeans, including the expedition with David Livingstone and Mungo Murray, when they discovered Lake Ngami and found that it was possible to cross the Kalahari desert with the aid of oxen and wagons. In 1853 he returned to England and served in the Crimean War. He visited N. and S. America, and died May 1, 1893.

Oswestry Borough of Shropshire, 20 m. from Shrewsbury, on the G.W. Rly. It is in an agricultural area and one of its chief industries is tanning. Pop. (1931) 9754. **Old Oswestry** is a strongly fortified encampment about a mile away.

Otago Provincial district at the S. end of South Island, New Zealand. First settled in 1848, it has an area of 25,220 sq. m., and a population of (1932) 222,600. The capital is Dunedin, and it has two seaports, Oamaru in the N. and the Bluff in the S. It produces oats, rye, fruit, and one-third of New Zealand's gold.

Otaru Seaport on the W. coast of Yezo, Japan, 100 m. N. of Hakodate. It is a centre for herring fishing. Pop. 144,887.

Otford Village of Kent, on the Darent, 3 m. from Sevenoaks and 24 from London, by the S. Rly. Here are ruins of a castle. Pop. 1785.

Otho **Marcus Salvius.** Roman emperor. Born April 28, A.D. 32, he was sent in 58 by Nero, whom he had displeased, to govern Lusitania. In 69 he supported Galba in a revolt against Nero. He next rose against Galba who was slain. He then proclaimed himself Emperor and reigned only three months, when Vitellius completely overthrew his forces. He committed suicide on April 16, 69.

Otitis Inflammation in the organ of hearing. It may concern the skin of the external ear, and be acute or chronic, sometimes with discharge and more or less deafness. Earache frequently consists of inflammation of the middle ear, also acute or chronic, with or without the formation of pus, which may involve drum-perforation or discharge. Inflammation of the inner ear, producing nerve-deafness, may be due to an affection of the drum or to disease within the brain.

Otley Urban district and town of Yorkshire (W.R.), on the River Wharfe, 10 m. from Bradford, on the L.N.E and L.M.S. Rlys. Its industries include spinning, tanning, leather dressing and the manufacture of printing machines, and here also are stone quarries. S. of the town is the ridge of Chevin, famous for its extensive views. Pop. (1931) 11,020.

Otley is also the name of a village in Suffolk, 6 m. from Woodbridge.

Otranto Seaport and town of Apulia, Italy, 45 m. from Brindisi. Founded by Greek colonists, in the Middle Ages, it was the principal trading port with Greece. It has ruins of a castle which Horace Walpole used in the title of his romance. It has a small harbour. Fishing is its principal industry.

The **Strait of Otranto** is 44 m. across. Here is a lighthouse; a cable runs to Corfu and elsewhere.

Ottawa River of Canada. The most important tributary of the St. Lawrence, it rises 300 m. N. of the capital of Ottawa and has important tributaries on each bank, the largest being the Gatineau. Its total course is about 685 m., of which only a third is navigable. At Ottawa the river forms the Chaudière Falls, 40 ft. high. The Rideau Canal connects it with Lake Ontario.

Ottawa Capital of the Dominion of Canada, on the Ottawa River, between the Chaudière and Rideau Falls. Champlain describes the site in his *Voyages* as early as 1613, but no settlement was attempted, owing to the hilly nature of the district, until well on in the 19th century, when a canal was built from the Chaudière Falls to Lake Ontario. This settlement soon developed into a wealthy and important factor in the lumber trade. Ottawa was incorporated as a city in 1854, and in 1858 was chosen as the capital of Canada.

Finely situated, Ottawa numbers among its important buildings, the Parliament buildings, Royal Mint, National Museum and National Art Gallery. It is served by the C.N. and C.P. Rlys. and is cut in two by the Rideau canal. Pop. (1931) 124,988.

An important conference was held at Ottawa in 1932, when representatives of the self-governing states of the British Empire met to discuss the possibilities of increasing intra-imperial trade.

Otter Widely distributed sub-family of carnivorous mammals of the weasel family. The common European river-otter, *Lutra vulgaris*, 27 in. long, with 15 in. tail, has short limbs, rounded webbed feet, and small external ears. It hunts fish, especially by night, swimming horizontally through the water. Common throughout Britain, it rests in river-banks or in seashore caves. The larger American *L. canadensis* furnishes the most valuable of N. American furs. Otters occur in India, the Cape and S. America. The sea-otter (*q.v.*) forms a distinct sub-family.

Otterburn Village of Northumberland, 4½ m. from Woodburn station, on the L.N.E. Rly. Near is an obelisk marking the spot where the battle of the Chevy Chase (*q.v.*) was fought between the Douglases and the Percies on Aug. 19, 1388. Pop. 350.

Otter-Hound Breed of dog maintained for otter-hunting. Descended from the old southern breed, it is distinguishable from the rough Welsh harrier only by its broad, splayed feet and its abundant oily waterproof undercoat. Standing 23 in. high, with sweeping ears, deep-set eyes and long neck, it is essentially a water-dog. Several packs exist in W. England. Otter-hunting lasts from mid-April to mid-September. *See* HARRIER.

Ottery St. Mary Urban district and market town of Devonshire, 12 m. N.E. of Exeter and 163 from London, by the S. Rly. The town has lace manufactures. The fine Church of St. Mary is a replica, on a smaller scale, of Exeter Cathedral. Here S. T. Coleridge was born. Pop. (1931) 3713.

Otto Name of four emperors of the Holy Roman Empire. **Otto I.**, called the Great, was born Nov. 23, 912, the son of Henry I., and crowned German King in 936. He spent some years subduing his dissatisfied nobles, the Bohemians, Danes and Wends. In 951 he defeated Berengar II., and in 955 the Magyars. His first wife was Edith, daughter of Edward the Elder; his second wife, Adelaide, Queen of Lombardy. He died May 7, 973.

Otto II. Born 955, son of Otto the Great, was crowned German King in 961 and joint Emperor of Rome in 967. During his reign he subdued a revolt of the Duke of Bavaria, expelled the French from Lorraine, and unsuccessfully laid claim to part of S. Italy. He died Dec. 7, 983. **Otto III.**, called The Wonder of the World, born July, 980, the son of Otto II., was chosen king as his father's successor and crowned in Dec., 983. His mother, Theophano, governed until her death in June, 991, and he took over the reins of government on May 21, 996. His ambition was to make Rome an empire surpassing in greatness anything hitherto conceived, but he died before accomplishing this, Jan. 23, 1002. **Otto IV.** Born about 1174, the son of Henry the Lion, was chosen German King, Nov. 11, 1208, and crowned Emperor in Rome, Oct. 4, 1209. He quarrelled with the Pope who excommunicated him, and in 1212 declared him deposed, upholding Frederick II. in opposition to him. Otto espoused England's cause against France, and, defeated in 1214, escaped with difficulty to Cologne. He died May 19, 1218, at Harzburg.

Otto I. King of Greece. The son of Louis I. of Bavaria, he was born June 1, 1815. Elected by the Conference of London to occupy the newly created throne of Greece when only 17, he was forced to rely on Bavarian troops and ministers to maintain his position. With the help of Ludwig, Count of Armansperg, his Bavarian Chancellor, he kept the Greeks in subjection. In 1861 the nation revolted after an attempt to murder the Queen Amalie, and in 1862 Otto and Amalie were forced to leave Greece and return to Bavaria. He died July 26, 1867.

Otto, or Attar, of Roses

Essential oil obtained by distilling or macerating the petals of damask and other fragrant-flowered roses. Most otto on the market comes from the Balkans, where 20,000 Bulgarian peasants cultivate small plots of roses; 150 lb. of petals yield 1 oz. of pale-yellow oil. The distillate water, treated with fresh flowers, furnishes the rosewater of perfumers.

Ottoman Name of a Turkish people. Osman, or Othman (1288-1326) was the leader of a tribe which was called the Ottoman Turks. They became very powerful and in 1453 took Constantinople.

The name Ottoman is applied to a form of cushioned seat without a back, which originated in Turkey.

Ottoman Empire

See TURKEY.

Otway, Thomas. English dramatist. Born at Trotton in Sussex, Mar. 3, 1652, he was educated at Winchester and Christ Church, Oxford. He failed as an actor, but had some success with his tragedy, *Alcibiades* (1675). He followed this success with a series of comedies and tragedies, including translations of Racine and Molière. His greatest work is *Venice Preserved* (1682). He died April 16, 1685.

Oudenarde Flemish town, on the Schelde, 17 m. S.S.W. of Ghent. On July 11, 1708, it was the scene of a battle in the War of the Spanish Succession, when the Duke of Marlborough and Prince Eugène defeated a superior French force, and drove Louis XIV. to make peace overtures, which were not accepted.

Oudh Province of N.W. India occupying the basin of the Gumti, Gogra and Rapti rivers. It stretches from the N. bank of the Ganges to the lower Himalayas. Entirely agricultural, it exports crops of wheat and rice. Its largest town is Lucknow. In the 12th century Oudh became subject to the Empire of Delhi, previous to which it was one of the earliest centres of Aryan civilisation. It was annexed by the British in 1856 after being an independent state for about a century. The population is one of the densest in the world. Pop. 12,833,000.

Ouida Pseudonym of Louise Ramée, the English novelist. Born at Bury St. Edmunds, Jan. 7, 1839, she lived in London for a time and then made her home in Italy. Of her many novels *Under Two Flags* and *Moths* are considered her best productions. She died Jan. 25, 1906.

Oulton Lake or broad of Suffolk. It is near Lowestoft, and on it is the village of Oulton, famed for its connection with George Borrow. Also called Lake Lothing, it is visited for boating and fishing.

Ounce (or **Snow Leopard**). Large spotted cat (*Felis uncia*) inhabiting the mountainous regions of Central Asia. Obtuse-muzzled, 7 ft. long, including 3 ft. tall, the long, woolly fur, greyish above, pure white beneath, has large black irregular spots. It preys on wild sheep, goats and rodents, descending to 6000 ft. in winter, and ascending to 18,000 ft. in summer. *See* LEOPARD.

Oundle Urban district and market town of Northamptonshire, on the Nen, 13 m. from Peterborough, on the L.M.S. Rly. Its chief industry is lace making. Pop. (1931) 2001.

Oundle School was founded by Sir William Laxton in 1550. It is controlled by the Grocers' Company and in the 19th century became a great public school under F. W. Sanderson.

Ouse River of East Anglia, known as the Great Ouse, 160 m. long. It rises in the hills between the counties of Oxford and Northampton and flows for 160 m. to the Wash. It flows past Buckingham, Newport, Pagnell, Bedford, Huntingdon, St. Ives and King's Lynn, and is navigable to Bedford. Its tributaries include the Little Ouse, Cam, Lark, Ouzel and Tove. Two artificial channels called the Bedford rivers take some of its water across the district.

Ouse River of Yorkshire. It is formed by the union of the Ure and the Swale at Boroughbridge. It passes York, Selby and Goole and then joins the Trent to form the Humber estuary. It is 60 m. long and is tidal to Selby. Its tributaries include the Nidd, Aire and Don, Derwent and Wharfe; by means of canals it is connected with other waterways in the N. of England.

Ouse River of Sussex. It rises near Horsham and flows to the English channel at Newhaven, 30 m. long. It passes Lewes, to which town it is navigable by small vessels.

Outlawry Art of placing a person outside the protection of the law. It was a very common punishment in the Middle Ages, but is never employed to-day. An outlaw, having no rights, could be killed by any one and his property taken. Outlawry was not, therefore, quite the same as banishment.

Outram Sir James. English soldier. Born at Butterley Hall in

Derbyshire, Jan. 29, 1803, he began his service in India with the Bombay native infantry in 1819. Almost his whole career was spent in India and Afghanistan. Returning from his successful command of the Persian expedition, he was one of the heroes of the Indian Mutiny. With Havelock he relieved Lucknow and then held it until relieved by Sir Colin Campbell. Created G.C.B. in 1857, he was made Lieutenant-General in that year, and a baronet in 1858. He died March 11, 1863.

Ouzel Name denoting the blackbird in Anglo-Saxon times, and still occasionally so used in N. Yorkshire. The word appears in compound forms, such as the ring-ouzel, *Turdus torquatus*, an allied thrush which reaches Britain every spring for breeding, mostly going southward in October; the water-ouzel, *Cinclus aquaticus*, is better known as the dipper (*q.v.*).

Ovary Organ of the female in which reproductive cells are developed. The operation known as **ovariotomy** consists of the removal of cysts and tumours, or of the complete organ itself. Previous to the introduction of antiseptic and aseptic surgical methods this operation was a most serious one, but is now accompanied by lower mortality than other major operations.

Over District of Cheshire. It is on the Weaver, 4 m. from Middlewich, on the L.M.S. and Cheshire Lines Rlys. The chief industry is the mining of salt. Over is part of the urban district of Winsford (*q.v.*) and Over.

Overload Term used in engineering for an excessive mechanical load on an electric motor preventing the economical working of the machine. An overload may cause a slowing down of the armature, thus reducing the electromotive force and causing waste of energy by the heating of the coils due to the passing of an increased amount of current.

Oversea Settlement Committee. British government committee appointed in 1909 to bring the government into closer touch with the settlement of British subjects in the Dominions and elsewhere. It is non-political and widely representative, and advises on land development, settlement schemes, assisted passages, training, etc. The government's contribution in any one year is limited to three million pounds.

Overseas Trade Name given to a department of the British Government that exists to promote trade with foreign countries. It was set up in 1917 and is under the joint control of the Board of Trade and the Foreign Office. The offices are at 35 Old Queen Street, London, S.W.1, and 9-12 Basinghall Street, London, E.C.2.

Overseer Officer formerly appointed by justices of counties or boroughs, parishes and townships. There could not be less than two or more than four for one parish or township. The duties of an overseer included the appropriation, distribution and collection of poor rates, but after the passing of the Poor Law Amendment Act of 1834, such duties as the distribution of poor relief, etc., were transferred to the boards of guardians. The office was abolished in April, 1927, by Order of Council.

Overture A musical composition, primarily intended to introduce a play, opera or other larger work. Originally consisting only of some introductory bars, it was developed by Lulli into the fixed form of a slow introduction followed by a quick fugal *Allegro*. Gluck made the overture analagous to what succeeded it, and in *Iphigenie en Tauride* made no break between the overture and the opening scene. Later composers incorporate in the overture themes from the main work.

Ovid Roman poet. Publius Ovidius Nosa was born at Sulmo, in the Paeligni, March 20, 43 B.C. Destined for the law, he early abandoned public life for poetry, and became a master of the elegiac couplet. He enjoyed the favour of the Emperor Augustus, and was a friend of Propertius and Tibullus. In A.D. 9 he was banished to Tomi, on the Black Sea, where he died A.D. 17. The *Amores* contains his work.

Owen Sir Richard. English biologist. Born on July 20, 1804, at Lancaster, after studying medicine at Edinburgh and London, he was influenced by Abernethy to take up scientific research, and in 1856 he became superintendent of the Natural History Department of the British Museum. In 1884 he completed his scheme of making a separate National Natural History Museum, which was established at South Kensington. He wrote profusely on zoology and anatomy. He died on Dec. 18, 1892.

Owen Robert. British social reformer. Born at Newtown, Montgomeryshire, May 14, 1771, when 10 years old he started work, at 19 he was the manager of a cotton mill, and at 28 part owner of the New Lanark cotton mills. He encouraged his workpeople in thrift and cleanliness, helped to establish infant education, and endeavoured unsuccessfully to run experimental communities on co-operative lines. In 1828 he left New Lanark, and, his wealth exhausted, spent the rest of his life in socialistic and spiritualistic propaganda, establishing an unsuccessful colony at New Harmony, U.S.A. He died Nov. 17, 1858.

Owen Sound Town and lake port of Ontario. It stands on the Sydenham River, where it falls into Owen Sound, an arm of Georgian Bay and therefore of Lake Huron. It is 120 m. from Toronto, and is served by both the transcontinental lines and lake steamers. There is a good harbour and the industries include flour mills and lumber mills. Pop. (1931) 12,839.

Owl Generic name for nocturnal birds of prey. They have large heads, shortened faces, hooked bills and large forward-looking eyes, usually set in a ruff of feathers, many having feathered ear-tufts or horns. The softness of the plumage enables very noiseless flight. They feed on small mammals, birds and reptiles. Of about 200 species four, the barn, the tawny, the long-eared, and the little owl, are resident in Britain. Two others, the short-eared and the snowy, are regular summer visitants; there are other occasional stragglers.

Oxalic Acid Organic acid occurring in the wood sorrel, *Oxalis acetosella*, as a free acid and acid potassium oxalate. It is a white crystalline and poisonous substance, prepared commercially by fusing sawdust with a mixture of caustic soda and potash. Oxalic acid is used in dyeing, calico-printing, straw and flax bleaching, and the cleaning of metals.

Oxford County town of Oxfordshire. It is situated on the River Thames, 51 m. W.N.W. of London. In Saxon times it was an

important military fortification, and its academic associations begin as early as the 12th century with Theobald of Etampes' School, and, in 1185, the establishment of a guild of wandering scholars by Giraldus Cambrensis. The 13th century marked the beginning of a long period during which Oxford played a prominent part in English history. Several parliaments, notably the Mad Parliament, were held here, and a charter was granted in 1248. The power of the University has hindered Oxford's growth as a town, but it has developed considerably, and the establishment of the Morris Motor Works at Cowley has made Oxford an important industrial centre. Pop. (1931) 80,540. *See* OXFORD UNIVERSITY.

Oxford Robert Harley, 1st Earl of. English statesman. Born in London, Dec. 5, 1661, he entered Parliament, as a Whig, but later seceded from the Whigs and led the Tories. In 1704 he was Secretary of State, and in 1710, Chancellor of the Exchequer. In 1711 he was Lord High Treasurer, and was raised to the peerage. He fell into disfavour with Anne and Lord Bolingbroke before her death, and soon after the accession of George I., he was impeached for treason. Imprisoned for 2 years he died on May 21, 1724.

Oxford and Asquith Earl of. English politician. Born at Morley, Yorkshire, Sept. 12, 1852, Herbert Henry Asquith was educated at the City of London School and at Oxford, where he had a distinguished career. He was called to the Bar, entered Parliament for East Fife, in 1886, and represented that constituency until 1918. He became Home Secretary in the Liberal Government of 1892, on the fall of the Salisbury Government, and was attacked vigorously for his conduct in sending troops to suppress the Featherstone Colliery strike. In 1905 he became Chancellor of the Exchequer in the Campbell-Bannerman Government, and succeeded Campbell-Bannerman as Premier in 1908. In 1911 an Insurance Act was passed, and in 1912 there followed the famous constitutional struggle with the House of Lords. Asquith tried to give Southern Ireland Home Rule, while pacifying Ulster, and on the outbreak of war, in 1914, he appointed Lord Kitchener War Minister. Differences arose on the conduct of the war, and a coalition cabinet was formed, but Asquith resigned the premiership in Dec., 1916.

In 1918 he was defeated for Fife, but returned for Paisley. The Coalition fell, and the Labour and Liberal parties later ousted the Tory Government under Baldwin. After the defeat of the first Labour Government in 1924, he was again without a seat, but was made Lord Oxford and Asquith in 1925. In 1926 he quarrelled with Lloyd George over the General Strike. In his last years he wrote his reminiscences, *Fifty Years of Parliament*. He died on Feb. 15, 1928. Asquith's second wife, Margot, née Tennant, is known as the witty and brilliant author of *The Autobiography of Margot Asquith* and several other books.

Oxford Group Religious movement in the Church of England. Founded by the Rev. Frank Buchman, an American Methodist minister, it first took root in England at Oxford and represents an attempt to revive the spirit of 1st century Christianity. Stress is laid upon confession, self-dedication and guidance. The movement has spread rapidly over the British Isles and in America, and has been extended to the Continent, South Africa and India.

Oxford House Settlement in Bethnal Green, London, E.C. It was founded in 1884 by members of the University of Oxford to carry on religious and social work among the poor under the auspices of the Church of England. The original building is in Mape Street, but the settlement includes several others, among them S. Margaret's House, a centre for work among women.

Oxford Movement Movement for the reform of the Church of England, called sometimes the Tractarian movement. The Rev. E. B. Pusey is usually regarded as its founder, and its principles were laid down in sermons which he preached in Oxford in 1833 and in the *Tracts of the Times* published in 1834. The movement aimed at bringing more reverence and order into the worship of the church, but its proposals were disliked by many. The centenary of the Oxford movement was celebrated in 1933.

Oxford University One of the great English universities. Founded about the 12th century, it has 21 colleges: University, Balliol, Merton, Exeter, Oriel, Queen's, New College, Lincoln, All Souls, Magdalen, Brasenose, Corpus Christi, Christ Church, S. John's, Trinity, Jesus, Wadham, Pembroke, Worcester, Keble, and Hertford. There are four women's colleges: Somerville, Lady Margaret Hall, S. Hugh's and S. Hilda's, one academic hall, S. Edmund's, and four independent theological foundations: Pusey House and Wycliffe Hall (Anglican) and Mansfield and Manchester colleges (Nonconformist). Non-collegiate students are called members of S. Catherine's college, and women home students are admitted.

Among other buildings are the Bodleian Library, the University Schools, Sheldonian theatre, Ashmolean museum and the university church of S. Mary. The university has other museums, an observatory, and a botanical garden. The Oxford Union Society is the chief debating society, and there is a well-known dramatic society, the O.U.D.S.

The university has about 4600 students of whom about 800 are women. At its head is a chancellor, but the acting head is the vice-chancellor, nominated annually by the chancellor. Two proctors are appointed annually. The university legislates through convocation, controlled by the Hebdomadal Council (*q.v.*). Degrees in a variety of subjects are granted by the ancient house of congregation. Individual colleges are ruled by a head, whose title varies from college to college, and fellows, the disciplinary officer of the college being the dean.

Among its famous alumni may be mentioned Sir Philip Sidney, Pitt, Wesley, Cardinal Newman, Cecil Rhodes, and more recently, Lord Asquith, Lord Birkenhead, Sir John Simon and others.

The university has a famous press, the Clarendon Press, with offices in Oxford and London. The university sends two members to Parliament.

Oxfordshire County of England. In the south of the country, it is wholly inland and has the Thames as its southern boundary. The chief town and the largest is Oxford; others are Banbury, Bicester, Henley, Woodstock, Thame, Chipping

Norton and Witney. It also contains Dorchester and Burford, as well as Blenheim, Nunsham and many other places of beauty and interest. The Chiltern Hills are in the county, which is mainly agricultural. The rivers include the Windrush, Evenlode, Thame and Cherwell. Oxfordshire sends two members to Parliament. It is a hunting county. Pop. (1931) 129,059.

The **Oxfordshire and Buckingham Light Infantry** was originally the 43rd and 52nd Foot, two of the most famous regiments in the British army. These were raised in 1741 and 1755 respectively, and were part of the light division that served in the Peninsular War. The depôt is at Oxford.

Oxidation Term applied to the process by which various substances combine with oxygen to form oxides. In the case of metals oxidation is often the cause of corrosion, a familiar example being the formation of rust, an iron oxide, upon iron or steel when exposed to the air, especially if moisture is present.

Oxides Term used in chemistry for a compound formed by the combination of an element with oxygen. All the non-metallic elements, except hydrogen, which form oxides combine with water to produce acids, these being termed acidic oxides. Metals when burnt in air or oxygen form basic oxides, which, uniting with water, produce hydroxides; often peroxides occur containing a higher quantity of oxygen. Many metallic ores are oxides, such as haematite, limonite and magnetite, the oxides of iron, cuprite, an oxide of copper, and cassiterite, an oxide of tin. Other mineral oxides are quartz or silicon oxide and corundum or aluminium oxide.

Oxlip Perennial herb of the primrose order (*Primula elatior*), native of Europe and Siberia. Mentioned by Shakespeare, it grows sparingly in four E. counties of England. The scentless flowers form a stalked umbel, the corolla limbs being broader and flatter than in the primrose. Garden hybrids between primrose and cowslip are also called oxlips.

Oxus River River in Central Asia, also known as Amu Daria. Running from Lake Victoria (13,870 ft. elevation) in the Pamir highlands to the Sea of Aral (160 ft.), it is about 1500 m. long, forming for nearly 700 m. the boundary between Afghanistan and Turkestan.

Oxy-Acetylene *See* ACETYLENE.

Oxygen Gaseous element having the symbol O and atomic weight 16. It exists in a free state in the atmosphere, of which it forms about 21 per cent. by volume, while in combination it constitutes nearly one-half by weight of the solid crust of the earth and eight-ninths by weight of water. Oxygen is colourless, odourless and tasteless, supports combustion, but is itself incombustible. As it has become of great commercial importance, being used in medical practice and in the production of high temperatures, etc., oxygen is prepared now on a large scale by liquefaction of air and the electrolysis of water.

Oxyrhynchus Ancient town near Behnesa on the Bahr Yusuf, Upper Egypt. It has yielded many valuable papyri.

Oyster Cosmopolitan genus of bivalve molluscs (*Ostrea*). The common edible *O. edulis* of British and European coasts is very prolific, each oyster producing seasonally 600,000 to 1,800,000 eggs. It attaches the convex valve to a bank or reef, where it remains until dislodged. Natural banks contribute a diminishing proportion of the supply, which comes more and more from cultivated oyster-beds in Britain, France, Holland and elsewhere. During the spawning period, May-Aug., they are out of season. Pearl oysters form a distinct family. *See* BIVALVE, PEARL.

Oyster Bay Watering place of New York State. It is on the north of Long Island, and is reached from New York by railway and steamer. It takes its name from the oysters found here.

Oyster-Catcher Widespread genus of wading birds of the plover tribe (*Haematopus*). The European *H. ostralegus*, 16½ in. long, resident in Britain, was called sea-pie down to Stuart times. It has short coral-red bill and feet, the male plumage being black and white; 3 to 4 blotched clay-coloured eggs are laid in slight hollows near the shore. It feeds on marine worms, mussels, limpets etc. There are Japanese, American and Australian species.

Oystermouth Watering place of Glamorganshire, near Mumbles Head. It has a ruined castle. At one time oysters were cultivated here.

Ozokerite Wax-like hydrocarbon found associated with petroleum in many parts of the world, the chief source being in the district around the Caspian Sea. When pure it is transparent, pale yellow to greenish in colour, with an odour resembling that of benzine, and of the hardness of beeswax. The commoner varieties are harder, and vary in colour from brown to black. Purified with sulphuric acid, ozokerite forms a white wax known as ceresin used in the manufacture of candles and boot polishes, and as an insulating material. The residue from the refining stills when mixed with rubber is used under the name of okonite for insulating cables, etc.

Ozone Gas having a distinctive odour and formed in dry oxygen or air when subjected to a series of sparks from an electrical machine. It is also present in small quantities in the atmosphere. Ozone represents a form of oxygen with three atoms in the molecule instead of two. It is a powerful oxidising agent, bleaching vegetable dyes and destroying organic matter, and is used on a large scale in purifying drinking water, bleaching, the thickening of oils, and ageing of spirits.

PAARDEBERG Battle of. Action in S. African War, fought Feb. 18, 1900, between the British under Lord Kitchener, and the Boers under Cronje. The British failed in their attack, but nine days later Cronje surrendered to Lord Roberts.

Pacific Ocean Largest of the oceans of the world, the Pacific has an area of about 55 million sq. m. and contains many islands and partially enclosed seas. In the north it is bounded by the Bering Strait, but on the south it is widely open, and its mean depth is much greater than that of the Atlantic Ocean. The deepest soundings known occur in the Pacific at Tuscarora Deep to the north of Japan with a depth of 4700 fathoms, and near the Philippines with 5348 fathoms. In addition to the numerous trade routes a submarine telegraph cable runs from Vancouver by way of Norfolk Island to New Zealand and Australia.

Packfong (or **Paktong**). Hard, white, malleable metal. Chiefly produced in China, it is an alloy of copper containing 44·7 per cent zinc, 15·3 per cent nickel and about 40 per cent copper. The percentage of the former two varies greatly and sometimes 2 per cent of iron is added.

Paddington N.W. Metropolitan borough of London with north and south Parliamentary divisions, each returning one member. Here is Paddington station, the terminus of the G.W. Rly. It belonged at an early date to the Abbey of Westminster, and was later granted to the See of London by Edward VI. It possesses a borough council with mayor, 10 aldermen, and 60 councillors. Area, 1356 acres. The borough includes Bayswater. Pop. (1931) 144,950.

Paddy (Malay *padi*). Commercial term for unhusked rice. Rice fields are also known as paddy fields.

Paderewski **Ignace Jan.** Polish musician, composer, and statesman. Born Nov. 18, 1860, in Podolia, Russian Poland, he practised as a pianist from earliest childhood, and was a student at the conservatoire at Warsaw under Janotha, and later at Berlin under Kiel. He was a teacher at the Warsaw Conservatoire at the age of 18, and professor at Strasbourg from 1885 to 1886. He made his début at Vienna, 1887, followed by visits to Paris, London and New York. He has since toured in U.S.A., Australia, S. America, S. Africa and New Zealand.

During the World War he organised a relief fund for Polish sufferers and formed a corps of Polish volunteers. He represented Poland at Washington in 1917-18, took the lead in the establishment of Polish Republic, in 1918-19, and was first Premier of Poland in 1919. He was a delegate for Poland to League of Nations, 1920. In 1921 he abandoned politics, returning to music as a career. In 1925 he was knighted by King George V. for his efforts on behalf of British ex-service men. His wife died in 1934.

Padiham Market town and urban district of Lancashire. It is on the River Calder, 8 m. from Blackburn and 3 from Burnley, and on the L.M.S. Rly. The chief industry is the manufacture of cotton. Coal mines and stone quarries are in the neighbourhood. Pop. (1931) 11,632.

Padstow Urban district, market town and seaport of Cornwall, on the bank of the River Camel, 260 m. from London and 12 from Bodmin. It has a harbour and some fishing. Pop. (1931) 1929.

Padstow Bay is an inlet between Stepper Pointland and Pentire Head.

Padua City of N. Italy on the River Bacchiglione, 25 m. west of Venice. The oldest city in N. Italy, it contains the Palazzo della Ragione, begun 1172 and finished in 1219. Other fine buildings include a basilica dedicated to S. Anthony and the famous university founded by Frederick II. in 1238. Among its professors and alumni were Galileo, Tasso, Scaliger and Sozieski. Padua contains flourishing factories and automobile works. After the fall of the Venetian Republic in 1797 the history of Padua followed that of Venice till 1866 when, after the Battle of Königgratz, it became part of the kingdom of united Italy.

Paeony Genus of perennial herbs (*Paeonia*) natives of Europe, Asia and N.W. America. The carmine flowers of the common paeony, introduced from S. Europe into Tudor England, occur in single and double-flowered cultivated forms; from the fragrant white paeony of W. Asia have come pink, crimson and flesh-coloured hybrids.

Paestum Ancient Greek city, formerly Poseidonia, now named Pesto, it is in Lucania, 24 m. S.E. of Salerno. The old Greek colony is believed to have been founded about 600 B.C., and is mentioned by Strabo and Herodotus. In 273 B.C. it became a Latin colony, and its wonderful roses are referred to by several Roman poets. Interesting ruins remain, the most famous being the so-called Temple of Neptune (c. 420 B.C.). The district is now very malarious.

Paganini **Nicolo.** Italian violinist. Born at Genoa, Feb. 18, 1784, the son of a porter, he first appeared in public in 1793. After touring Italy he visited Austria and Germany in 1828-9, and Paris and London in 1831, always creating a great sensation by his marvellous playing. He left a fortune of £80,000. He died May 17, 1840.

Page **Walter Hines.** American diplomat and man of letters. Born Aug. 15, 1855, he became literary editor of the *New York World* in 1881, joined the staff of the *Forum*, 1887, and became editor, resigning in 1895. A member of the New York publishing house, Doubleday, Page & Co., in 1898 he became editor-in-chief of the *Atlantic Monthly*, and editor of the *World's Work*, which post he held till 1913.

In 1911 he supported Woodrow Wilson's candidature for the Presidency, and in 1913 was appointed by him ambassador to London. During the Great War he observed an attitude of strict neutrality, but in private correspondence with Wilson warmly supported the Allies. After the sinking of the *Lusitania* he urged the declaration of war against Germany. His health breaking down in 1918, he retired, and died on Dec. 21 of that year. His *Letters* have been published.

Pahang One of the Federated Malay States under British protection. It is on the east coast of the Malay Peninsula within 200 m. by sea from Singapore. Pop. (1931) 180,111. It is one of four protected native states administered by a Chief Secretary, and under agreement to furnish a contingent of troops for service in the colony should the British Government be at war with any foreign power.

Paignton Watering place of Devonshire, on the Tor, 1 m. to the west of Torquay. The new town is on the sea, the old one behind. Here are the remains of a bishop's palace, in the tower of which Miles Coverdale (1487-1563) is said to have made his translation of the Bible. There is a considerable production of cider in the town. Pop. (1931) 18,405.

Pain Uneasiness or distress of body or mind. In the medical sphere it may be cautionary, corrective, local, general, acute, chronic, throbbing, stabbing, gnawing or burning. To dull pain by bromides, opiates or other anodynes is often harmful.

RELIEF OF PAIN. Pain in the stomach, or bowel, arising from congestion or other disturbance, will be relieved by hot water bottles or hot fomentations. A dose of castor oil will often give immediate relief to pain and will help to cure the condition, or a soap and water enema (1-2 pints at 100° F.) may be used to clear the bowel if the pain is in the lower part of the abdomen. If a more serious cause is suspected (*i.e.*, ulcer, appendicitis, etc.) consult a doctor. *See* INDIGESTION; COLIC.

Painlevé Paul. French politician. Born in Paris, Dec. 5, 1863, he became a professor of mathematics at the Sorbonne, and in 1906 was elected an independent Socialist deputy for Paris, but it was not until he became a member of M. Briand's cabinet in 1915 that he became important. He was Minister of War in March, 1917, in Ribot's cabinet, and formed his own cabinet in Sept., 1917. He met Lloyd George and Orlando at Rapallo, and their discussions resulted in the foundation of the Supreme Allied Court of Versailles. He was defeated by Clemenceau in Nov., and was not again Premier until 1925, since when he has been War Minister in several cabinets. In 1932 he joined the government of M. Herriot. He died in 1933.

Paint Preparation of a pigment mixed with an appropriate vehicle. Some pigments are of mineral origin such as umbers, ochres and siennas, others are derived from plants, such as madders, gamboge and indigo. A few such as sepia, carmine and Indian yellow are of animal origin, while many synthetic dyestuffs are used as pigments.

Pigments are prepared by washing and grinding, and finally mixing with a medium such as linseed oil and turpentine in oil painting, water in water colour, size in distemper, and wax in encaustic painting.

The Painter's Company is one of the ancient livery companies of the City of London, and has its offices in Little Trinity Lane, E.C.

Painting One of the fine arts. It dates back to palaeolithic times when early man made remarkable drawings on the walls of caves in flax tints and brilliant polychrome fresco, using as pigments various earthy substances. In later times in Egypt and Greece mineral and some organic pigments were used with gum as the usual medium. In mediaeval Italy the artists painted in fresco and tempera, but the early work was flat, then with the Renaissance came the study of light and shade, and the beginnings of perspective, the pioneer artists being Masaccio, Uccello, Mantegna and Leonardo.

With the Van Dycks in the Netherlands originated **oil painting**, later carried to a high level of excellence by the Dutch and Flemish schools under Rubens, Rembrandt, Hals and others. In Italy the new method was taken up by Leonardo, Perugino and other great artists, and used by the Venetian School under Tintoretto and Veronese. From these times onward, great progress in oil painting has been made in France, Spain and England, as represented by the works of many great masters.

A further development came with the rise of **water-colour painting** in England during the 18th century. This is now an important branch of the art.

Paisley Burgh of Renfrewshire. It stands on the Cart near its junction with the Clyde about 7 m. S.W. of Glasgow. It is the centre of important cotton thread manufacture. Formerly it was famous for its shawls. Shipbuilding is now an industry owing to the widening of the Cart. Extensive starch, cornflour, bleaching, dye, chemical, fireclay, pottery and engineering works have been developed. Pop. (1931) 86,441.

Palaeobotany Study of fossil plants. From the remotest times they occur in more or less recognisable forms as external plant impressions and casts, petrifactions of stems, seeds and other organs, and mummified masses of plant material such as coal. By tracing the relationship of groups now widely divergent through common ancestors now extinct, they throw light both on geographical distribution and on the successive appearance of more and more highly organised forms. During the long pre-Cambrian age unicellular forms were gradually accompanied by cryptograms, represented in the palaeozoic by immense horse tails, lycopods, conifers and cycads. Flowering plants occur from mesozoic times onwards.

Palaeography Study of ancient handwriting, specifically on flexible materials. Ancient MSS. were written with reeds, stiles or quills. From ancient Egypt onwards literary and non-literary forms of script existed side by side. The one, beginning as separate capital letters, passed into the book-hands which in the 15th century determined the form of printed types. The other, comprising swift cursive scripts, passed into national handwritings. Palaeography throws light upon the date, origin and genuineness of MSS. *See* EPIGRAPHY.

Palaeolithic Term denoting the rudely chipped and flaked flints and other implements produced by man during the older phase of the prehistoric stone age. These palaeoliths are intermediate between eoliths and neoliths. Scattered throughout Europe, they accompany other evidences of a primeval civilisation, collectively called palaeolithic, associated with animals now extinct and with human remains of primitive form. It spread throughout the world before the neolithic phase began, and survived into recent times in Tasmania and elsewhere.

Palaeontology Study of past life on the globe, especially as revealed by fossil remains. It comprises palaeobotany (*q.v.*) and palaeozoology; the term sometimes denotes the latter alone. The

description of the fossil organisms themselves is called palaeontography. *See* FOSSILS.

Palaeozoic Name given to the division of fossiliferous rocks extending from the Cambrian system through the Ordovician, Silurian, Devonian and Carboniferous to the Permian. They comprise sandstones, shales and slates, often highly metamorphosed, with limestones in places, and coal. They contain abundant remains of invertebrates, fishes, reptiles, amphibians and non-flowering plants.

Palate Roof of the mouth. It forms a partition between the mouth and the nasal cavity above it. Comprising in front the fixed bony plate or hard palate, it projects behind into a muscular layer or soft palate, ending in a free border or uvula, all covered with mucous membrane on both sides. *See* CLEFT PALATE.

Palatine Originally signified "pertaining to a palace," and consequently invested with special privileges. A **Count Palatine** was a feudal lord with supreme judicial authority over a province, and a **County Palatine**, a province under such a ruler. The only **County Palatine** remaining in England is Durham, the palatine privileges of which are believed to have been conferred during the Norman Conquest. Certain ancient customs of the palatinate are retained.

One of the hills of Rome (*q.v.*) is called the **Palatine.** Augustus, Tiberius and Nero had palaces here.

Pale **The.** Portion of Ireland which, from the time of Henry II. to that of Elizabeth, was subject to English, not Celtic, law. Its size varied according to the strength of the authorities. The Anglo-Saxon rulers were called **Lords of the Pale.** There was a "Calais pale" in France till 1558, and an "English palo" in Scotland under the Tudors.

Palermo Capital and seaport of Sicily in N.W. of the island. Originally a Phoenician colony of 8th-6th century B.C., it was also an important Carthaginian centre until acquired by Rome in 254 B.C. There were successive Byzantine, Saracenic, Norman, Spanish, Italian, and French occupations. Finally Palermo was liberated by Garibaldi who entered it in triumph on May 27, 1860. It has a university founded in 1779, and a new harbour, including a shipyard and a dry dock. It has a broadcasting station (542 M., 6 kW.). Pop. 458,979.

Palestine The Holy Land of Christianity and the scene of most of the events of Biblical history. It is bounded on the N. by Syria, on the W. by the Mediterranean, on the E. by the Syrian and Arabian deserts, and on the S. by Arabia. Conquered by the Ottoman Turks in the early part of the 16th century, it was reconquered in 1917 by a British force under Gen. Allenby, who entered Jerusalem on Dec. 9, and subsequently cleared the whole country of Turkish troops. After the war Great Britain was granted a mandate for Palestine by the League of Nations on July 24, 1922.

The area under the British mandate is about 10,000 sq. m. and the pop. in 1931 was 1,035,154, of whom 759,952 were Moslems, 175,006 Jews, and 90,607 Christians, the remainder being Druzes, Samaritans, Bahais, Sikhs, Hindus, and Metawilehs. The chief town is Jerusalem (*q.v.*). Arab villages number about 750. Jewish colonies are grouped in four districts, Judaea, Samaria, Lower and Upper Galilee.

The head of the British Administration is the High Commissioner. There are three administrative districts, Northern (Haifa) Jerusalem, Southern (Jaffa), each under a governor. The chief ports are Jaffa, Haifa and Acre. The country comprises four zones, a maritime plain, an inland plateau, a great valley, and Trans-Jordania, east of the Jordan, which merges into the Arabian Desert. A singular feature is the Dead Sea, which is about 1300 ft. below sea-level, is 46 m. long, and has an average width of 8½ m.; is intensely salt.

Palestrina **Giovanni Pierluigi Da.** Italian composer. Born in 1526, he devoted his talents to the service of the Church and became chapel-master at the Vatican in 1551. In 1555 he lost the post and went to S. John Lateran, but was restored to the Vatican in 1571. One of the greatest polyphonic composers, he left behind him many motets, masses, hymns and other works. He died Feb. 2, 1594.

Palgrave **Francis Turner.** English poet and critic. Born Sept. 28, 1824, he was educated at Balliol and became Fellow of Exeter College, Oxford. He became private secretary to Earl Granville, official in the education department, and professor of poetry at Oxford (1886-1895). His works include *Idylls and Songs* (1854), *Essays on Art* (1866), *Lyrical Poems* (1871), and *Visions of England* (1881). He also edited various collections of lyrical and religious poetry, notably the *Golden Treasury of English Songs and Lyrics* (1861, re-edited 1896). He died Oct. 24, 1897.

Sir Francis Turner Palgrave, father of above was born in July, 1788. He was the son of a Jewish stockbroker named Cohen, but assumed his mother-in-law's maiden name on his marriage in 1823. He was called to the Bar, 1827, and knighted 1832, and was appointed Deputy Keeper of H. M.'s Records, 1838-1861. His works include *The English Commonwealth* (1832) and a *History of Normandy and of England* (1851-1861). He died July 6, 1861.

Pali Language and form of script of Buddhist sacred books. It was the living tongue of cultured India from the 7th century B.C. onwards, and continued in use for at least ten centuries, being ultimately displaced as Brahmanism regained its hold. Its use was retained by Buddhist scholars in Ceylon, Burma and Siam.

Palimpsest Ancient manuscript imperfectly effaced and its material, usually parchment, re-used. Chemical and photographic means occasionally restore the original writing, sometimes recovering valuable texts; thus, the 12th-century Ephraem Codex in Paris revealed 5th-century portions of Greek Biblical texts. There are some double palimpsests. Palimpsest monumental brasses or stone slabs, reversed for re-use, also exist.

Palissy **Bernard.** French potter. Born at Agen in France about 1510, he became a glass painter and settled at Saintes. He spent sixteen years in attempts to make enamelled ware, but finally won fame as the producer of pieces bearing coloured plants and animals in high relief. He was imprisoned as a Huguenot in 1562, but released by royal favour, and granted a workshop at the Tuileries. Re-arrested in 1585, he was thrown into the Bastille where he died in 1589.

Palladio **Andrea.** Italian architect and founder of the Palladian style of architecture. Born Nov. 30, 1518, Palladio

published in 1570 *Quattro Libridell Architettura.* This greatly influenced Inigo Jones (*q.v.*), who, after studying in Venice, introduced the Palladian style into England, and wrote notes on the *Quattro Libri*, which are incorporated in the English translation, published 1715. Palladio's masterpiece is the Church of the Redeemer at Venice. He died in 1580.

Palladium In Greek legend, an archaic wooden image of Pallas Athena kept in the citadel of Troy for safeguarding the city. Its abstraction by the Greek heroes Odysseus and Diomedes led to the fall of Troy. Another legend claimed that Aeneas took it or another to Italy, where it was preserved in Rome.

Palladium Rare metallic element having the symbol Pd and atomic weight 106·7, palladium is silvery white in colour and like platinum is unaltered by exposure to air, but is slowly attacked by nitric acid. It has been used for parts of chronometers and astronomical instruments, also in certain silver alloys, but the supply now is very limited.

Pallas (**Athene**). Goddess of wisdom, war and the liberal arts in the Greek mythology. She is said to have sprung fully armed from the brain of Zeus, and is represented armed and carrying a shield bearing the Medusa's head.

Pallium (**or Pall**). Ecclesiastical vestment. The Roman Catholic Church reserves it for the Pope, archbishops and by ancient usage seven specified continental bishops. It comprises a narrow shoulder-band of white lamb's wool, with short lappets before and behind, embroidered with six crosses and decorated with three jewelled pins.

Pall Mall Thoroughfare in London, so called from the game of *Paille Maille* played here in the time of James II. Originally an open green in part of St. James's Palace, houses began to be built about 1650, and a street was completed about 40 years later. Nell Gwynn lived at No. 79 from 1671 to her death in 1687. Pall Mall, which runs from Trafalgar Sq. to St. James's St., contains many famous clubs.

Palm (*Palmæ*). Natural order of endogenous plants, mostly large trees, natives, of tropical and subtropical regions. Variously estimated at 600-1000 species, bearing crowns of spreading fan-shaped or feathery leaves, their economic products are important for habitations, clothing, utensils, food and drink. The coconut's seed-kernels, the date-palm's pulpy fruit, the sago-palm's farinaceous pith, and the cabbage-palm's terminal buds are edible. Other species yield palm-sugar or jaggery, palm-wine or toddy, candle wax, oil, vegetable ivory, fans, rattans, leaf-stalk fibre, leaves for thatch, and the like. The only European species, *Chamærops humilis*, the Mediterranean fan-palm, is utilised for basketry, hats and vegetable horse hair. *See* DATE, PALM OIL, PALMYRA, ETC.

Palma **Jacopo.** Italian painter, known as Vecchio (old). Born at Serimalta near Bergamo in 1480, he was famous for the richness of his colouring, and for his portraits of women. His most celebrated pictures are six paintings in the Church of S. Maria Formosa at Venice, with S. Barbara in the centre, and "The Three Graces" in the Dresden Gallery. He died in 1528.

Palmas **Las.** Chief city of the Canary Islands and a popular health resort. It has a considerable harbour, and is a coaling station and port of call for numerous ocean-going steamships. Shipbuilding and fishing are the principal industries. Fruit and cochineal are exported. Pop. (1931) 79,444.

Palmer Mendicant pilgrim. He bore in his hand a branch of palm betokening the fact that he had visited the Holy Land. He had no dwelling place, but journeyed from shrine to shrine, existing entirely on charity.

Palmerston **Viscount.** English statesman. Born at Broadlands, near Romsey, Hants., Oct. 20, 1784, Henry John Temple became 3rd viscount in 1802, entered Parliament in 1806 and was Junior Lord of the Admiralty and Secretary-at-War, 1809-1828. In 1830 he became Foreign Secretary under Earl Grey, but went out with the Whigs in 1841. He was Foreign Secretary again in 1846 under Lord John Russell. In 1850 a vote of censure on his foreign policy was carried in the House of Commons, but defeated in the Lords. In 1851 he angered the queen by expressing approval of the *coup d'état* of Louis Napoleon without consulting her, and was forced to resign. He was Home Secretary under Aberdeen in 1852 and Prime Minister in 1855, when he vigorously prosecuted the Russian War. Defeated in 1857, he came back, was again defeated, and in 1859 again Prime Minister, retaining office until his death Oct. 18, 1865. He is buried in Westminster Abbey.

Palmistry Art or practice of reading the hand. It comprises chirognomy, or character-reading, and chiromancy, or foretelling the future, and operates by inspection of lines and markings on the human palm. This form of divination, of great antiquity, has developed a complex system of interpretation, entirely non-rational, which names the thumb and fingers after certain planets, and draws lines over the palm to represent life, fate and love, crossed by others which represent head and heart. *See* FORTUNE-TELLING.

Palm Oil Fatty substance from the fruits of several palms, preeminently the W. African oil palm, *Elaeis guineensis*. The boiled pericarp yields an orange-red fat, comprising tripalmitin and triolein, which melts at 80·5°F. It serves for making soap, candles and railway carriage grease. Palm kernels yield a white oil used like coconut oil in making margarine.

Palmyra Ancient city of Syria. Situated in a desert oasis 120 m. N.E. of Damascus, its Old Testament name Tadmor still survives. Under the Roman Empire its position on the Euphrates caravan route made it influential and opulent, as magnificent ruins attest. Prominent under Hadrian, it enjoyed a brief 3rd century independence, culminating in Queen Zenobia's capture by Aurelian, 272.

The **Palmyra Palm** is a tree indigenous to India and Indo-China, with a tropical African variety (*Borassus flabellifer*). It yields sugar, toddy, matting, basketry, fans and timber.

Pamir Mountainous region of Central Asia, mostly Russian. It forms a central knot 13,000 ft. high and upwards, from which radiate ranges and rivers into N.W. India, Russia, Chinese Turkistan and Afganistan. The N. slope drains into the Aral

Sea and the Tarim basin, the S., connects the Hindu Kush and Karakoram ranges.

Pampas Plains of Argentina. They extend from the Andean foothills to the Paraná River and the Atlantic coast. The sandy and clayey soil resembles Russian steppeland. The E. treeless grasslands support cattle, sheep and horses, and produce wheat. The more sterile W. includes saline deposits. The grasslands produce pampas grass, *Cortaderia argentea*. It forms tufts of feathery leaves 5 to 7 ft. long, and stems bearing dense silky silvery-white panicles 10 to 12 ft. high.

Pampas Indians is the collective name for S. American Indians of the Argentine plains.

Pan In Greek mythology the god of shepherds, huntsmen and rural people, also protector of flocks and herds, wild beasts and bees. Chief of the Satyrs and inventor of the syrinx or Pan's pipes, he is supposed to have inspired sudden fear, hence the word *panic*. He is represented with two small horns and lower limbs of a goat.

Panama Central American republic. Its area is 32,380 sq. m. Pop. (1930) (excluding Canal Zone) 467,459. The inhabitants are mostly a mixed race of Spanish, Indian and Negro origin. The state is administered by a president assisted by three vice-presidents and a cabinet of five ministers, and is divided up into nine provinces. The capital, Panama, had in 1930 a pop. of 82,827. There is a university at Panama.

Panama Canal Canal connecting the Atlantic and Pacific Oceans. It was constructed as the result of a treaty (1903) between U.S. and Panama granting the use and control of a zone 5 m. wide on each side of the canal route. The canal is about 40 m. long from deep water in the Caribbean to deep water in the Pacific. The width is from 300 to 1000 ft. and the minimum depth 41 ft. The average time of passage is 7 to 8 hours. Informally opened to traffic Aug. 15, 1914, landslides caused interruptions up to 1917, but since then the channel has been kept clear. The official opening was on June 12, 1920. The Hay-Pauncefote Treaty (1901) provides for the use of the canal under equal terms by vessels of all nations. In 1934 over 5500 vessels passed through the canal.

Pancras Patron saint of children. Born in Phrygia of noble parentage, he refused to renounce Christianity at Diocletian's bidding, and was beheaded *c.* 293 when 14 years old. He is commemorated on May 12. A London borough and several British churches bear his name, as did the Cluniac Priory, Lewes.

Pancreas Large glandular organ situated behind the stomach and having a duct opening into the small intestine close to the bile duct. It secretes an alkaline digestive fluid which converts starch into sugar, fats into glycerine and fatty acids, and peptones into aminoacids. In addition an internal secretion, insulin, is concerned in the assimilation of glucose.

Pandora In Greek mythology, according to Hesiod, the first woman upon whom the gods lavished their choicest gifts. Though forbidden to do so, she opened a box containing all human ills and allowed these to escape, but managed to save the good gift of hope.

Pangbourne Village of Berkshire, on the Thames, 5½ m. N.W. of Reading, and on the G.W. Rly. It is much frequented by anglers. It has a college for training officers for the mercantile marine. Pop. 1235.

Pangenesis In biology the name given to a theory put forward by Charles Darwin to explain the power of the egg-cell to reproduce the different parts of the body. According to this hypothesis each cell of the body throws off minute germules which ultimately become stored in the egg-cells, and on development reproduce each part of the body.

Pangolin Genus of toothless mammals (*Manis*) occuring in S. Asia and tropical Africa. Short-legged, with lizard-like bodies and tails protected by overlapping horny scales, they roll into a ball when disturbed. Called also scaly anteaters, they capture termites with their long, worm-like tongues. There are three Asiatic and four African species, the largest 6 ft. long.

Pankhurst Emmeline. British suffragist. Born July 14, 1858, she was the daughter of Robert Goulden of Manchester, and married, 1879, R. M. Pankhurst, barrister and advocate of woman's suffrage (d. 1898). She helped to found the Woman's Franchise League (1889). In 1903 she was instrumental, with her daughter, Christabel, in founding the Women's Social and Political Union. Arrested in 1908 for breaches of the peace, she was imprisoned, but was released on grounds of health. Imprisoned in 1912, she went on hunger strike, and was released. In 1913 she was sentenced to 3 years' penal servitude, but again refused food and was released. During the Great War she lent her organisation to the cause of recruiting and munitions. With the extension of the suffrage to women in 1918, she joined the Conservative Party. She died June 14, 1928.

Pansy Perennial herb of the violet order (*Viola tricolor*), indigenous to Europe, N. and W. Asia and N. Africa. From various species and subspecies have been derived innumerable hybridised forms much esteemed by gardeners, including selfs, white grounds and yellow grounds, besides the bedding varieties called tufted pansies or violas. The French name is *pensée*, "thought." *See* HEARTSEASE.

Pantheism Metaphysical doctrine which identifies the universe with God. The term, "all-God," introduced by John Toland, 1705, denotes a system of thought or attitude of mind traceable in ancient India, in certain of the Greek philosophers and in such modern philosophers as Spinoza, Fichte, Schelling and Hegel. A form of monism, it is a theism or an atheism according to the emphasis placed upon personality.

Pantheon Name, "belonging to all gods," applied to the best preserved ancient temple in Rome. Erected by Hadrian, A.D. 120-4, it occupied the site of an earlier temple built by Agrippa in 27 B.C. Consecrated 609, it is now the Church of Santa Maria Rotonda. The Panthéon in Paris, built in 1754-90, dedicated as a church to S. Geneviève, was set apart as a mausoleum for illustrious Frenchmen, 1792.

Panther Large carnivorous mammal of the cat family, indistinguishable from the Old World leopard (*q.v.*). Medieval fabulous bestiaries regarded them as distinct. Modern sportsmen tend to call panthers the larger, and leopards the smaller examples. In

N. America the name, colloquialised as "painter," denotes the puma (*q.v.*), which in S. America is sometimes called the cougar (*q.v.*).

Papacy The. Term employed in two senses (1) ecclesiastical, denoting the system under which the Pope, as successor of S. Peter and Vicar of Christ, governs the Catholic Church as its supreme head, and (2) historical, signifying the papal influence viewed as a political force in history. Up to, and including, the Middle Ages the history of the Papacy was to a considerable extent the history of Europe, and under Innocent III. in the 13th century the Pope became a sort of emperor, England for a time being practically governed by his legates.

Thanks to bequests and voluntary grants, a temporal Papal State grew up with, at length, an area of 17,000 sq. m., and Rome as the centre of government. After the Austro-Italian War of 1859 nearly two-thirds of this territory was added to the kingdom of Italy, Rome and its environs being preserved for the Pope by the French. In 1870 Rome was adopted as the seat of government of united Italy, and the Papacy restricted to the Vatican. The temporal power of the Pope remained in suspense until 1929 when, by the Treaty of Feb. 11, the full and independent sovereignty of the Holy See in the city of the Vatican was recognised, and payments were agreed upon in settlement of the Vatican's claims for compensation for loss of temporal power. The outstanding ecclesiastical event in the recent history of the Papacy was the affirmation of the infallibility of the Pope in 1870.

Papaw Small evergreen tree akin to the passion flower order, of S. American origin (*Carica papaya*). Now widely naturalised throughout the tropics, its long-stalked seven-lobed leaves, 2 ft. across, shelter melon-shaped yellow fruits 10 in. long. They are eaten raw, boiled or pickled. The unripe fruit yields the digestive ferment papain.

Papen **Franz von.** German politician. Born Oct. 29, 1879, he entered the army, later joined the diplomatic service, and in 1914 was an attaché in Washington. There he worked hard in his country's interests and against the Allies; on this account the United States Government secured his recall to Germany in 1915. He then went to Gallipoli as a staff officer. In 1931 Papen was elected a member of the diet of Prussia, and became the chief proprietor of the newspaper *Germania*. A member of the centre party he supported the ministry of Dr. Brüning, whom he succeeded as chancellor in May, 1932. In March, 1933, he became Reich Commissioner for Prussia, and in July, 1934, special German minister in Vienna.

Paper Material made from fibrous vegetable pulp and used for writing and other purposes. The art of paper making was practised by the Chinese and Japanese in early times, by the Arabs after the 7th century, and by the Moors in Spain in the 12th century. From Spain it spread over Europe to England, where the first paper mill was established in the 15th century.

The first paper was hand-made from rag fibres, but now numerous fibrous materials are used in addition, including straw, esparto grass and chemical and mechanical wood pulp. The introduction of machinery about 1798 revolutionised papermaking, and the invention of the sulphite process for making chemical wood pulp brought about the production of cheap paper for newspapers, etc.

Papier Mâché Name given to a hard, light material made from paper pulp and used for making boxes, trays and similar articles, for internal architectural decoration. It is prepared by pressing pulp into moulds or by subjecting pasted sheets of paper to high pressure. Papier mâché may be japanned, varnished, gilded or inlaid.

Papua **(British New Guinea).** South-eastern part of the island of New Guinea (*q.v.*) with other small islands in the vicinity. Area, 90,540 sq. m. of which 87,786 are on the mainland. Pop. (1932), Europeans, 1144; Papuans (estimated), 275,000. Papua is administered by the Australian Commonwealth under the Papua Act of the Federal Parliament (1905). Ports of entry are Port Moresby, Samarai and Daru. There is an important mining industry. Rubber, coconuts and sisal hemp are cultivated, and valuable mineral deposits and timber growths are worked. There is a regular steamer trade between Port Moresby and Sydney.

Papyrus Kind of paper used by the ancient Egyptians. It was prepared by cutting into long strips the central pith of the stems of the paper-rush, *Cyperus papyrus*, laying others across, moistening, pressing, drying, polishing and writing upon it with a reed-pen. The rush, formerly plentiful in the delta, has receded to the Upper Nile, but grows occasionally elsewhere. Thousands of papyri have been collected in Egypt, including classical Greek texts. Their study is called papyrology.

Pará City and port of Brazil. Sometimes called Belem, it is situated on the banks of the Pará River, and is the capital of the Brazilian State of Pará. It is the chief commercial centre of the Amazon districts, the rubber trade being the most important. It has a good harbour. Pop. (1930) 279,491.

Parabola Term in geometry for a curved figure or conic section formed by the intersection of a cone and a plane parallel to one side. The form of the parabola varies as the cutting plane approaches the side of the cone.

Paracelsus German physician. Born about 1493, his real name was Theophrastus Bombastus von Hohenheim, his father being a Swiss physician. He himself studied medicine, and, acquiring fame as a practitioner, was appointed lecturer at Basle University. His objectionable habits and violent temper brought about his expulsion, and for twelve years he was a wanderer, settling finally at Salzberg, where he died Sept. 24, 1541.

Parachute Form of life-saving apparatus used by aeronauts to descend safely from a height. In its usual form it consists of a silk fabric made in the shape of an umbrella with cords attached at the circumference, and fastened to straps on the back of the person. The parachute is carried in a bag fastened to the body of the operator, and is released either automatically or by means of a rip-cord. Parachutes have been known since the end of the 18th century, and the first successful descent from a balloon was made in 1797 by the French aeronaut, Garnerin.

Paradise Word, denoting an Oriental monarch's park or pleasance, variously translated in the Old Testament. It is used of an orchard of pomegranates in Cant. ii. R.V. margin. It is the septuagint Greek version of Eden (*q.v.*), and is used in the New

Testament of an intermediate state (Luke xxiii., 2 Cor. xii.), or of the heavenly counterpart of Eden, Rev. ii.). The mediaeval conception of the Christian paradise was elaborated by Dante and Milton. The Koran depicts in picturesque imagery the rewards of the Islamic paradise.

Paraffin Term used in organic chemistry for a large series of hydrocarbons possessing similar chemical properties though differing in physical characters and molecular complexity. More generally the term is used for a burning oil obtained from petroleum and shales, also for the solid wax-like substance from the same source. Paraffin wax varies considerably in consistency from a jelly to a hard cake, and is used in pharmacy, candle, match and waterproofing industries, also as an electrical insulator.

Paraguay South American Republic situated between the Paraguay and Parana rivers, and bounded on the north by Brazil and Bolivia and on the south by the Argentine. Paraguay proper has an area of about 62,000 sq. m., but there is a larger tract of territory (the Chaco, *q.v.*) claimed by both Paraguay and Bolivia (*q.v.*). The total pop. is about 800,000. It is a fertile country with excellent grazing land supporting millions of cattle. Agriculture is the basis of the country's wealth. One of the chief exports is Yerba maté or Paraguay tea. Tobacco is also grown, and there is an important timber industry.

The capital is Asuncion (*q.v.*) from which there is a railway to Encarnacion on the Parana River. Roman Catholicism is the established State religion. There is a small defence force of about 100 officers and 2500 men. Legislative authority is vested in a Congress of two houses, a Senate and a Chamber of Deputies, the executive being in the hands of a President elected for a term of four years, assisted by five ministers. In Aug. 1932 the dispute with Bolivia over the frontier territory broke out anew, and led to the Gran Chaco War. In 1933 the combatants refused the mediations of the League of Nations, and in 1935 Paraguay signified her intention to withdraw from the League. In June, 1935, an agreement was reached and hostilities came to an end.

Parallax Astronomical term for the apparent change in position of a celestial body caused by a change in position of the observer, and especially applied to the amount of apparent motion due to this displacement. It is of great importance, as upon the determining of the parallax, astronomers can calculate the distance and magnitude of celestial bodies. Diurnal or geocentric parallax is the apparent difference in position of a body as seen from the earth's surface and from the centre of the earth.

Parallel Term applied in geometry to lines in the same plane that do not meet in either direction. With reference to latitude a parallel is a small circle whose plane cuts the earth's axis at right angles and which, therefore, has an east and west direction. In military science parallels are trenches dug parallel to the defences of a fortress to give cover to the besiegers.

Paralysis Loss of the power of muscular action, sensation or function in any part of the body. Associated, organically or functionally, with disorder in the brain, spinal cord or peripheral nerves, it may be general; affect one side only, hemiplegia; the lower half of the body, paraplegia; or be localised, *e.g.* facial paralysis, drop-wrist. Hysterical paralysis, without any discoverable lesion, may simulate any organic form. Paralysis agitans, shaking palsy, is a chronic disease of advanced life.

Parana City and port of Argentina. Founded in 1730 by colonists from Santa Fé, from 1852 to 1861 it was the capital of the Argentine Confederation. Pop. (1931) 66,204.

Paranoia Chronic mental disorder characterised by systematised delusions of persecution. Disturbances of various fundamental emotions and sentiments, such as vanity and fear, combined with a credulous constitution, may result in delusions of grandeur or persecution; other forms of the disease are amatory or querulous.

Parasite In biology, any organism, animal or vegetable, nourished wholly or partially at the expense of another organism upon or within which it lives. Except for a few fishes animal parasites are invertebrate, including lice, scale-insects, ticks, leeches, tape-worms and still lowlier forms. Among parasitic flowering plants are dodders, broomrapes and mistletoe. Parasitic plants are most frequently fungi and bacteria, and occasion many parasitic diseases in men, other animals and plants. The study of parasites is called parasitology.

TREATMENT FOR PARASITES. *Internal.*—The usual remedy for tape worms is oil of male fern (1 drachm), given before breakfast after a fast from 6 p.m. the previous evening. Four hours after the dose, *and not sooner*, give castor oil.

External.—There are three species of animal parasites acquired in uncleanly surroundings: the Body Louse infests the underclothes, which should be thoroughly disinfected with steam; the Crab Louse is found on the hairy parts of the body and is got rid of by the application of antiseptic lotions and ointments; the Head Louse lays its eggs (nits) on the hair near the roots, which must be soaked with crude paraffin or oil of sassafras for three nights.

Paravane Appliance used in the Great War against mines and submarines. The paravane was somewhat kite-shaped, with a torpedo-like body. It was towed by a wire from a ship, being kept away from the sides by the action of hydrovanes, and at a prescribed depth by a rudder controlled by hydrostatic valves. The head was armed with a cutter for severing the moorings of a mine, or with a striking device for exploding a depth charge when used against submarines.

Parcel Post System of transport and delivery by the Post Office of packages not exceeding specified weights and dimensions. Highly organised in Great Britain, it includes carriage of parcels throughout the Empire and to most foreign countries; also facilities for registration, insurance and payment of cash on delivery of purchased articles. Limits of weight for inland parcels, 11 lb.; limit of size, length 3 ft. 6 in., length and girth combined, 6 ft. Parcels for abroad are subject to customs duty, and if containing dutiable articles a declaration respecting them must be signed by the sender.

Parchment Writing material used for deeds and other documents of a permanent character, and prepared from the skins of various animals. Ordinary parchment is made from the skins of the sheep and

goat. Vellum from the skins of the calf, kid or lamb, a tough variety for book-binding from pig skin, and a parchment for drums from asses' skins. The hair or wool is removed and the skin, after steeping, is stretched on a frame, scraped and rubbed with pumice.

Pardon Dispensation granted by the Pope, remitting that temporal punishment of sin which would otherwise be inflicted, either in this world by penance, or in Purgatory. Such pardons are called Indulgences and in the 16th century were the cause of much scandal owing to the sale of them by Pope Leo X., as a means of obtaining funds for rebuilding St. Peter's Church at Rome. The Romish doctrine of "pardon" is repudiated by the Church of England in the 22nd Article of Religion.

The name Pardon is also given to religious gatherings in Brittany associated with the desire of obtaining absolution for sins or cure for bodily ailments. The religious ceremonial is sometimes followed by a sort of village feast.

Pardon In law the remission of the penalty attached to the commission of a crime. By English law pardon is the sole prerogative of the king, and is now exercised by delegation, the king acting on the representation of the Home Secretary. The king, however, cannot pardon a private, as distinct from a public offence, so as to prejudice a person injured by the offence; and the king's pardon cannot be pleaded as a bar to impeachment by the House of Commons. Pardon may be actual or constructive, the latter being obtained by endurance of the punishment. It may also be free or conditional on commutation of the sentence. An Act of Indemnity is a species of pardon.

Parent Father or mother. The parents of a child are its natural guardians till it attains the age of 21, or unless it marries before reaching that age. The primary right resides in the father, but custody of the child may be granted to the mother under the Divorce Acts, the Infants' Custody Act and the Guardianship of Infants Act. Parents' liability for maintenance of their children is governed by statutes, the Act of 57 and 58 Vict. imposing on them the duty of providing adequate food, clothing, medicinal aid and lodging for children in their custody until the boys attain 14 years and the girls 16. Education of children and parents' responsibility for it is regulated by various Elementary Education Acts. *See* EDUCATION.

Pariah Name applied by Europeans to any casteless Hindu, and hence to any social outcast. The Paraiyans or Parinhs of the Tamil country in Madras are an agricultural caste, classed as untouchable, but not the lowest. Pariah dogs in Oriental towns and villages are animals of domesticated origin which have become half-wild.

Pari-Mutuel System employed in France and elsewhere in order to collect a tax on the amount staked in betting on the Turf. It is on much the same principle as a cash register, every bet made being registered, and both the amount staked on each horse in a particular race and the total amount staked on all the horses in the race being shown publicly. In the Totalisator (*q.v.*), which is superseding the Pari-Mutuel, human agency is replaced by electrical power.

Paris Small genus of perennial herbs of the lily order, indigenous to temperate Europe and Asia. Their short unbranched stems, rising from creeping rootstocks, bear a whorl of 4 to 9 leaves with a single yellow-green flower whose fetid smell, attractive to flies, assists cross-fertilisation. A red-berried species, *P. polyphylla*, is grown in gardens. *See* HERB PARIS.

Paris In Greek mythology a son of Priam, King of Troy. Abandoned as an infant on Mt. Ida in consequence of a prophecy that he would cause the destruction of the city, he was reared by a shepherd, and later gave judgment in the claim of the three goddesses, Hera, Pallas and Aphrodite, to a golden apple inscribed "For the Fairest." Deciding in favour of Aphrodite, he was rewarded by the love of Helen (*q.v.*), wife of Menelaus. Her abduction by Paris led to the siege of Troy, in which Paris was slain.

Paris Capital city of France. The city occupies both banks of the Seine and two islands, 110 m. direct from the river's mouth. One of the world's greatest and most beautiful cities, it has developed in 2000 years from a group of huts (the Romans called it Lutetia, "the muddy") to be one of the world's leading centres of culture.

Its historical importance dates from A.D. 508, when Clovis (*q.v.*) chose it as his capital, building on the Ile de la Cité. The decay of feudalism and the rise of the guilds in the 11th century hastened the city's growth, while the first municipal authority dates from the 13th century. A great scholastic centre also, Paris, however, became more and more of political importance. After 1559 the kings resided in the Louvre (*q.v.*) which had been rebuilt by Charles V. (1337-1380), in whose reign also the Bastille was built. In 1422 the English took the city and held it against Joan of Arc in 1429.

Modern Paris dates from the Renaissance. Catherine de Medici began to build the Tuileries (*q.v.*) in 1564, and the Pont Neuf was begun in 1577. Quays were constructed and the city spread, its rate of growth increasing under Louis XIV., the "Grand Monarque" (1638-1715), who, however, removed the royal residence to Versailles.

Paris itself regained its importance during the Revolution and under Napoleon, becoming an industrial and economic centre throughout the 19th century and gradually merging with its suburbs. To-day more than thirty bridges cross the Seine, and the public boulevards and squares are renowned for their beauty.

Paris is rich in famous buildings. Besides those already mentioned, there are the cathedral of Notre Dame (1163-1330), the Hotel de Ville, Palais Royal, Champs Elysées, Palais de Justice, the Conciergerie (an ancient prison), Bibliothèque Nationale, Hôtel des Invalides (where Napoleon lies buried), the Sainte Chapelle, the Panthéon, burial place of France's great men, the Arc de Triomphe, the Palais du Luxembourg with its wonderful gardens, the Opéra, Champ de Mars, and the Eiffel Tower. St. Germain l'Auxerrois is a well-known church, and the cemetery of Père Lachaise is famous. Montmartre, the Quartier Latin, the Bois de Boulogne, Auteuil and Longchamps are districts too well known to require description. The chief educational institutions are the University of Paris and the Sorbonne.

Transport by road, river and rail is well organised, while from the air Paris is well served by the great aerodrome at Le Bourget. It has eight broadcasting stations, the two most powerful operating on 1725 M., 75 kW., and

447.1 M., .07 kW. The city's shops and restaurants are world-famous; her manufactures include almost every form of industry. The city is still a fortified stronghold with two rings of detached forts. Besieged and captured by the Prussians in 1870, it narrowly escaped a second capture in Sept., 1914, when taxicabs were hastily commandeered to rush every available soldier into the line of defence. Area about 30 sq. m. Pop. (1931) 2,871,039.

Park Mungo. Scottish explorer. Born at Foulshiels on the Yarrow, Sept. 20, 1771, he was, by profession, a doctor. His services were accepted in 1795 by the African Association, and, starting from Senegal, he reached the Niger at Sega, after an adventurous journey. He traced the course of the river for some distance but fell ill and was brought back to Senegal after an absence of nineteen months. From 1801-1803 he practised as a doctor at Peebles. In 1805 he undertook another African journey, this time at government expense. Starting from Pisania on the Gambia, he reached the Niger, but was attacked by natives and drowned in Jan. 1806.

Parker Sir Gilbert. British novelist. Born in Canada, Nov. 23, 1862, he was educated at Trinity College, Toronto. After travelling extensively he organised the first Imperial Universities Conference in London, 1903. He was M.P. for Gravesend from 1900-18, was knighted in 1902 and created a baronet in 1915. He was Chairman of S. African Association for nine years, and took charge of American Publicity in the Great War. His writings include poems, plays and novels, the last-named dealing largely with French-Canadian life. He also wrote a *History of Old Quebec* in 1903. A later publication was *The Promised Land* (1928). He died in 1932.

Parkes Sir Henry. Australian statesman. Born at Stoneleigh in Warwickshire, May 27, 1815, he emigrated at the age of 24 and engaged in journalism at Sydney. His able discussion of public questions led to his being elected in 1854 a member of the Legislative Council. In 1866 he became a member of the ministry in which he subsequently held several offices, becoming Premier of New South Wales in 1872. He was premier five times, and was a warm supporter of Free Trade. He died April 27, 1896.

Parkhurst District in the Isle of Wight, called Parkhurst Forest. At one time there was a military station near. The prison can accommodate more than 700 convicts.

Park Lane Fashionable London thoroughfare overlooking Hyde Park and running from Piccadilly to Oxford St. It has important historical associations and contains the mansions of many well-known figures in modern life. Some of the old houses have now been demolished, and hotels erected in their place.

Parkstone Summer resort in Dorset, lying between Poole and Bournemouth, on the S. Rly. Pop. 6550.

Parliament Word used for the legislature of Great Britain and other self-governing parts of the British Empire. It should be distinguished from the parlements of France before the Revolution, which were in the main judicial bodies.

The English Parliament has been developed from the Witan of the Anglo-Saxon kings, and the King's council of the Normans. Those bodies met to advise the king on important matters of state; they were without any rules of membership and met when the king required them. In the 13th century knights of the shire and representatives from the town joined the barons, abbots and bishops who had hitherto formed the council, and with their arrival parliament in the modern sense began. Simon de Montfort first called men from the towns, and has been called the founder of parliament, but it was Edward I. who assembled, in 1295, the model parliament that was a pattern for later legislatures.

At first parliament was an assembly of one house, but early in the 13th century it was divided into two, a form it has since retained, the House of Lords and House of Commons. The Lords were much more powerful, the Commons being merely asked for their assent, which was usually taken for granted, but gradually the Commons made themselves equal to the Lords and in the 19th century became definitely the dominant partner. This was due to the control they acquired over finance, and after a time it became the rule that finance was the province of the Commons.

At first, like a witan or a council, a parliament met wherever the king happened to be and sat for as long as he wished. A careful king could do without a parliament perhaps for years, but one who wanted a good deal of money, as did Henry IV., was obliged to call frequent parliaments. The Tudor sovereigns managed to make their parliaments register their will, but in the time of the Stuarts there was the memorable struggle between king and parliament, which became a civil war. In 1689 parliament made a settlement of the crown, and in 1694 passed a triennial act, which said that not more than three years must pass without the calling of a parliament. This was due to the action of Charles I. and Charles II., each of whom ruled without a parliament for a long period.

Parliamentary government, or the control of the executive by the legislature, especially by that branch which represents the people, was a direct consequence of the victory of the parliament in the Civil War; but it only took shape at the Revolution of 1688. In 1715 a septennial act was passed by which a parliament could sit for seven years, and this remained the law until 1911, when the Parliament Act reduced the period to five years. Nevertheless, parliament, being a sovereign body, can prolong its own existence as it did during the Great War. The Parliament Act of 1911 made the House of Lords subordinate to the House of Commons. The Lords is now a revising chamber only. It can delay the passing of a bill into law for two years, but that is all. If the Commons, under the required conditions, pass a measure three times that bill becomes law, whether the Lords oppose or not. Money bills cannot be touched by the Lords.

A parliament is called together by the sovereign. Its sittings are divided into sessions, each occupying a year or thereabouts, and each opened by the king or his representative. Each session is prorogued, but a parliament is dissolved. This is done on the advice of the Prime Minister and a general election must follow.

The parliaments in Canada, Australia, South Africa and elsewhere follow very largely the British model, both in constitution and practice, except that their second chambers contain no hereditary elements and have rather more

power than the House of Lords. *See* COMMONS, HOUSE OF; LORDS, HOUSE OF.

Parma City of Italy. It lies in a fertile tract of the Plain of Lombardy. The Royal University of Parma, founded 1601, now has faculties in law, medicine and natural science. Considerable trade is carried on in grain, cattle and dairy produce. Pop. (1931) 71,282.

Parma **Duchy of.** Papal possession from 1512-1545, when the Pope Paul III. (Alexander Farnese) invested his bastard son, Pierluigi, with the duchies of Parma and Piacenza. There were eight dukes of Parma from 1545 to 1731. The duchy then passed and repassed alternately into the hands of Spain and Austria till 1860, when it was formally incorporated into the Kingdom of Italy, becoming a province with an area of 1334 sq. m. and a pop. (1931) of 373,695. Capital, Parma.

Parmoor **Baron.** English politician. Charles Alfred Cripps was born Oct. 3, 1852, and educated at Winchester and New College, Oxford. Called to the bar in 1877, he became a Q.C. in 1890, and made a great reputation as an ecclesiastical lawyer. He was elected M.P. for the Stroud Division of Gloucestershire in 1895, representing that constituency until 1900. Later he represented Stretford, Lancs., and Wycombe Division of Bucks. He was made a K.C.V.O. in 1908 and elevated to the peerage in 1914. Specially appointed a judicial member of the Privy Council in 1914, he became Lord President of the Council in the Socialist Ministry of 1924 and held this post again from 1929-31. He has written on *Principles of Compensation* and *The Laws of Church and Clergy*.

Parnassus Mountain range in the Greek province of Phocis, the principal feature of which is the mountain of the same name, 8000 ft. in height, and famed in Greek mythology as the abode of the Muses. Near the summit was the Castalian spring, draughts from which were supposed to give poetic inspiration. On the lower slopes was the cave of Delphi (*q.v.*) from which oracles were delivered by the Pythoness.

Parnell **Charles Stewart.** Irish Nationalist politician. Born June 27, 1846, he studied at Cambridge and in 1875 was returned as a Home Ruler for County Meath. Throwing himself energetically into Irish political affairs, he skilfully organised the Irish Party in the House of Commons and ruled it with a rod of iron. Having initiated a system of deliberate obstruction in Parliamentary business he and his followers acquired considerable influence and, after wrecking the first Salisbury Government, contracted an alliance with Mr. Gladstone in the hope of realising Irish Home Rule ambitions. Attacked by *The Times* for his supposed complicity in Irish crime Parnell brought an action and obtained £25,000 damages. An entanglement in a divorce case led to the loss of his leadership of the Irish Party and his withdrawal into private life. He died at Brighton, Oct. 6, 1891.

Parotid Gland Name given to the largest of the salivary glands, situated below and in front of the ear and filling the recess beneath the angle of the lower jaw. An inflammatory condition of the parotid gives rise to the disease known as mumps, and it is also the seat of tubercular abscesses.

Parr **Thomas.** English centenarian. Believed to have been the longest lived of British centenarians, although the reputed year of his birth, 1483, has been questioned. "Old Parr," as he is traditionally called, was a Shropshire farm servant and after marrying his second wife at the age of 120, went on working for a further ten years. He went to London to see Charles I., and died from a surfeit of royal hospitality in 1635.

Parrakeet Name indefinitely applied to various small parrots, often with long and slender tails. Among aviary favourites are the red-billed genus *Palaeornis*, including the Indian rose-ringed, ring-necked and blossom-headed parrakeets. Australian budgerigars and other grass-parrakeets are favourite cage-birds. There are also swamp-parrakeets and ground-parrakeets. *See* LOVE-BIRD.

Parramatta Town of New South Wales. It is noted for its orchids and orangeries. It has a well-known public school, King's School. Pop. (1931) 16,760.

Parrot Order of birds of high intelligence and organisation, inhabiting tropical and subtropical regions (*Psittaci*). The upper jaw is hinged to the skull. They are usually expert climbers, each foot having two toes forward and two backward. Of 500 species S. America has most, followed by the E. Indies, Australia and Polynesia, a few in Asia and Africa, and one in N. America. Many have gorgeous colouring, the sexes being usually alike. Some readily learn to talk, especially the African grey parrot. *See* COCKATOO, LORY, MACAW, PARRAKEET.

Parry **Sir Charles Hubert.** English composer. Born at Bournemouth, Feb. 27, 1848, he was educated at Eton and Exeter College, Oxford. He obtained his Mus. Bac. at age of 18, Mus.D., Cambridge, 1883, Oxford, 1884, Dublin, 1891 and was knighted, 1898. He became First Professor and later Principal of the Royal College of Music, Choragus of Oxford University, 1883, and Professor of Music in 1900. His works include concertos, symphonies and other compositions. He also wrote on music in Grove's Dictionary and his *Studies of Great Composers* and *The Evolution of the Art of Music* are recognised classics of musical literature. He died Oct. 7, 1918.

Parry **Sir William Edward.** Arctic explorer. Born at Bath, Dec. 19, 1790, the son of an eminent physician, he entered the Royal Navy and served against the Danes in 1808. In 1810 he was sent to the Arctic for protection of the whale fisheries. Later he took part in five Arctic expeditions, four of which he commanded throughout. The first, under Sir John Ross (*q.v.*), was in 1818, the others in 1819, 1821-23, 1824-25, and 1827. The last was an unsuccessful attempt to reach the North Pole on sledges from Spitzbergen. To his credit is the discovery of Barrow Strait and Melville Island. Knighted in 1829 and appointed Departmental Comptroller in 1837, he became Superintendent of Haslar Hospital in 1846. He was made rear-admiral, 1852, and governor of Greenwich Hospital, 1853. He died July 8, 1855.

Parsees (or **Parsis**). Religious community in India and parts of Persia. At the 7th century Arab conquest many Persians who refused to embrace Islam fled to Gujarat, taking with them their Zoroastrian faith; most of them afterwards settled in

Bombay. Their descendants, still speaking Gujarati, now comprise 111,853 in India, and about 10,000 in Persia.

Parsley Biennial umbelliferous herb, perhaps of Mediterranean origin (*Petroselinum crispum*). Introduced into Tudor England, its crisp, curled, mossy leaves are much used when fresh for garnishing, and either fresh or dried for flavouring. A Hamburg variety, with turnip-shaped root, is boiled for use in soups or eaten as a separate dish.

Parsnip Biennial umbelliferous herb, native of Europe and Siberia (*Peucedanum sativum*). Wild in Britain, its thin, woody root has become, under cultivation since Roman times, a long, succulent, whitish, tapering root, palatable and nutritious, containing sugar, and surpassing the carrot as a milk-producing cattle-food. It also serves for making country wine. *See* COW PARSNIP.

Parsons **Sir Charles Algernon.** British engineer and inventor of the steam turbine. Born June 13, 1854, the fourth son of the 3rd Earl of Rosse, he was educated privately and at St. John's College, Cambridge. He founded the firm of C. A. Parsons & Co., Engineers, Heaton, Newcastle-on-Tyne, and was also Chairman of the Parsons Marine Steam Turbine Co., Ltd., and Chairman of Rosse Ltd., Optical Works, Clapham Common. He was created K.C.B., 1911 and given the O.M., 1927. He was President of the Institute of Physics, British Association, and North-East Coast Institution of Engineers and Shipbuilders. He died Feb. 12, 1931.

Parsonstown (or **Birr**). Town in Offaly, Irish Free State, 62 m. W.S.W. of Dublin. In the castle, belonging to the Rosse family, there is an observatory containing the great reflecting telescope installed by Lord Rosse, with which important astronomical discoveries have been made. Pop. (1926) 3,391.

Parthenogenesis Term in biology for a method of reproduction in which an individual is developed from an unfertilised egg-cell. In some types parthenogenesis has reached a stage where the male is absent entirely as in some gall flies and saw flies in others such as the aphides or green fly males appear after a succession of parthenogenetic stages. In the honey bee the eggs of the queen bee if unfertilised develop nevertheless and become males.

Parthenon Temple at Athens dedicated to Pallas Athene. Considerable ruins are still in existence. It was begun about 450 B.C., under the direction of the sculptor, Phidias. It was 227 ft. long and 101 ft. in breadth and was pure Doric in style. In beauty of design and decoration it has no equal. It suffered damage during a siege by the Venetians in 1687, and some of the sculpture was removed by Lord Elgin in 1812. These pieces are in the British Museum under the name of the Elgin Marbles (*q.v.*).

Parthia In ancient geography a country S.E. of the Caspian and E. of Media. The Kingdom of Parthia, which had previously belonged to the empire of the Seleûcidae, lasted from about 250 B.C. to about A.D. 190. The Parthian Army consisted chiefly of mounted archers, and from their habit of turning and shooting their arrows when in feigned retreat the term "Parthian glance" is derived. The Parthians were long in conflict with Rome, and in 53 B.C., defeated and slew Crassus. They were finally subdued by Trajan, Antoninus and Caracalla.

Partick Suburb of Glasgow, separated from it by the Kelvin. It has shipbuilding yards and paper-staining, flour-milling, machine-making and other hardware industries.

Partnership Defined in the Partnership Act of 1890 as "the relation which subsists between persons carrying on a business in common with a view to profit." The relation, however, between members of a company registered under the Companies Act or formed by Royal Charter is not a partnership within the meaning of the Act. A private partnership cannot be formed of more than 10 persons for banking or 20 for any other business. A "sleeping partner" may participate in the profits without taking any active share in the management and without appearing to the world to be a partner, but, like any other partner, he is responsible for the firm's debts. Many other regulations and conditions are set forth in the Act.

Partridge Name denoting various game-birds of the pheasant sub-family. The British grey partridge, *Perdix cinerea*, preferring arable land, extends throughout Europe, being associated in Asia with related forms. The red-legged or French partridge, *Caccabis rufa*, a native of S.W. Europe introduced into Britain about 1770, is now common, especially in eastern England, preferring uncultivated moorland. Partridge-shooting in Great Britain and Ireland is legal from Sept. 1 to Feb. 1. *See* GAME.

Partridge **Sir Bernard.** English artist. Born in London, Oct. 11, 1861, son of Professor Richard Partridge, F.R.S., President of Royal College of Surgeons, he was educated at Stonyhurst College and worked from 1880-84 in stained glass designing and decorative painting, subsequently in book and press illustration. He joined the staff of *Punch* in 1891, later becoming its chief cartoonist, and was knighted in 1925.

Pascal **Blaise.** French philosopher, mathematician and scientist. Born June 19, 1623, at Clermont-Ferrand in Auvergne, he was the son of a president of the Court of Aids who settled later first in Paris and subsequently in Rouen. At the latter centre Blaise came into close touch with the Jansenists, with whose doctrines he became identified. To this period belong various scientific studies and researches, including the Puy de Dome experiments on atmospheric pressure and the invention of an ingenious calculating machine. In 1647 Pascal returned to Paris, and in 1654 underwent a second conversion. His famous *Provincial Letters*, an ironical exposition of Jesuit moral theology (1656-57), created a profound sensation and are still regarded as models of style. Of his *Pensées*, first published posthumously in 1669, numerous editions—French and English—have appeared. He died Aug. 19, 1662.

Pasha Turkish and Egyptian title. Originally it was bestowed only on military commanders who were graded according to the one, two or three horse-tails which they were empowered to display when on a campaign as symbols of authority. Later the title was granted also to civilian high officials, Christian as well as Moslem, in Turkish or Egyptian service.

Passchendaele Low ridge in Belgium, about 7½ m.

N.E. of Ypres, the scene of heavy fighting in the Great War. In June, 1917, the Second British Army under Sir Herbert Plumer advanced and stormed the Messines-Wytschaete Ridges, but it was not until Nov. 6 that the Passchendaele Ridge was carried, and the Third Battle of Ypres concluded. In the great German offensive of March-April, 1918, Passchendaele was necessarily abandoned, but was recaptured in the general advance of the Allies shortly before the conclusion of the Armistice.

Passfield Baron. Sidney James Webb was born July 13, 1859. At one time he was a clerk in the lower division of the War Office. A noted economist, he became, in 1912, professor at the London School of Economics. In 1922 he entered Parliament. He has been a member of several royal commissions and numerous departmental committees. In the Socialist Ministry of 1924 he was President of the Board of Trade, and in 1929 he became Secretary of State for the Colonies. He is the author of many works on economic and social subjects.

Lady Passfield, better known as Beatrice Webb, is the daughter of Richard Potter, at one time Chairman of the G.W. Rly. She is keenly interested in social and industrial questions, and was a member of the Royal Commission on Poor Law and Unemployment, 1905-09. She is the author of *The Co-operative Movement in Great Britain* and, with her husband, whom she married in 1892, of the *History of Trade Unionism* and other works. She published an autobiography in 1926. In 1933 appeared a biography, *Sidney and Beatrice Webb*, by Mrs. Mary Agnes Hamilton.

Passion The. Term denoting the sufferings of Jesus Christ from the agony in the Garden to the death on the Cross. The recital of these sufferings in the early church at Passiontide was accompanied by the chanting of the narrative portions by selected male voices, and the choral representation of the crowds. Under Reformation influence musicians wrote definite compositions, exemplified pre-eminently in J. S. Bach's *Passion of St. Matthew* Representations in art are also called Passions, *e.g.*, Albert Dürer's.

Passion Flower Large genus of climbing herbs and shrubs (*Passiflora*) natives of tropical S. America. The common blue passion flower, *P. caerulea*, is hardy in Britain. *See* CORONA.

Passionist Roman Catholic priestly order, entitled the Congregation of Discalced Clerks of the Most Holy Cross and Passion of our Lord Jesus Christ. Founded by S. Paul of the Cross, 1720, it received papal sanction, 1737, and reached Britain, 1841, the headquarters since 1876 being at Highgate.

Passion Play Religious drama presenting scenes of Christ's passion. A form of mystery or miracle-play characteristic of Mediaeval Europe, it has survived at Oberammergau (*q.v.*). In 1930 the play was presented 33 times, May-Sept. by about 600 of the villagers as a religious act.

Passive Resistance Term used to describe deliberate refusal on conscientious grounds to comply with laws, regulations or orders, coupled with willingness to undergo the prescribed penalties. Anyone submitting to imprisonment in consequence of non-payment of what he or she considers to be unjust rates or other dues is a passive resister.

Passover Jewish festival. It was traditionally instituted by Moses to commemorate the passing over of the Hebrew thresholds, on which the blood of the sacrificial lamb had been sprinkled, when Egypt's firstborn were smitten at the time of the Exodus. With it was associated a seven-day festival of unleavened bread. The twofold feast was observed down to the destruction of Jerusalem, A.D. 70. That of unleavened bread alone is still observed by Jews, that of the Pentateuchal Passover by the Samaritans.

Passport A permission to travel necessary in the case of most foreign countries, and, when granted, ensuring some measure of protection. Passports are granted by the Foreign Office to natural-born British subjects, and to persons naturalised in the U.K., in the British Dominions and Colonies and in India. Applications must be accompanied by two copies of the applicant's photograph and a signed declaration in accordance with the Regulations. British passports are only available for travel to the countries named thereon, but may be endorsed for additional countries. They must be renewed after two years from date of issue.

Pasteur Louis. French chemist. Born at Dôle, Dec. 27, 1822, he studied at Besançon and Paris, where in 1867, after holding academic posts at Strasburg and Lille, he became Professor of Chemistry at the Sorbonne. He was elected member of the French Academy in 1882. His researches in fermentations proved of great value in the manufacture of vinegar and the prevention of wine diseases. Thanks to his experiments prophylactic treatment of diphtheria, tubercular disease, cholera, yellow fever and plague, as well as hydrophobia, has become possible. He died Sept. 28, 1895.

In 1888 the **Pasteur Institute** was founded by public subscription, as a research laboratory.

PASTEURISATION. Method of preserving milk, and rendering harmless any disease germs it may contain, particularly tubercle bacilli. The milk is kept for half an hour at a heat of 145-150° F., and then cooled. In some countries pasteurisation is enforced by law before milk can be sold.

Pastorale (1) A kind of operetta on rustic themes originating with the Renaissance stagings of Virgil's *Eclogues* and culminating in the spectacular ballets of the French Court in the 17th century, of which Lully's *Acis and Galathée* is an example. (2) An idyllic composition conventionally in compound time with simple melody and sometimes a drone bass.

Patagonia Region of S. America. Discovered by Magellan in 1520, it comprises the southern extremity of S. America and has been divided politically since 1881 between Chile and the Argentine, the Andes forming the boundary. The aboriginals, who were of unusually large stature, are now nearly extinct. Coal is found in the Argentine section, and in the Chilean large tracts are devoted to sheep-farming. East of the Andes Patagonia is largely an elevated plateau. Western Patagonia is damp and forested.

Pateley Bridge Market town of Yorkshire, W.R., 28 m. north west of York and 213 from London by the L.N.E. Rly. Situated on the Nidd, it is a centre for livestock farming and has stone-quarries and lead mines. Pop. (1931) 5555.

Patent Grant from the Crown by Letters Patent to an inventor of the sole right of making, using or selling his invention during a specified period. It is essential to the validity of the patent that the subject-matter of it should be an invention, that the invention should be new, and that it should be useful, *i.e.* fulfil the purpose for which it was designed by the patentee. In applying for a patent it is usual to submit a Provisional as well as a Complete Specification, and the former, if filed separately and accepted, gives protection for nine months. The Complete Specification is the final basis of the patent and, if unopposed and the regulated fees are paid, the grant of the patent remains in force for a period not exceeding sixteen years. Infringement is actionable. Most foreign countries have their own patent laws and the cost of a world-wide patent may run into hundreds of pounds.

Patent Office Department of the British government. It deals with all applications for Letters Patent in Great Britain and is situated in Southampton Buildings, Chancery Lane, London, W.C.2. At its head is a Comptroller-General. The Patent Office publishes specifications of accepted inventions. It has an excellent reference library.

Pater **Walter Horatio.** English critic and man of letters. Born in London, Aug. 4, 1839, he was educated at King's School, Canterbury, and Queen's College, Oxford. His works, which are famed for their style, include *Studies in the History of the Renaissance* (1873); *Marius, the Epicurean* (1885); *Imaginary Portraits* (1887); *Appreciations* (1889) of Lamb, Wordsworth, Coleridge and others; and *Miscellaneous Studies*, posthumously published in 1895. He died at Oxford, July 30, 1894, leaving unfinished a medieval romance, *Gaston de la Tour*, which was subsequently published in 1897.

Paternoster Row London thoroughfare. It was famous in Queen Elizabeth's time for its taverns. Pepys, in 1660-66, paid several visits to the mercery shops which then flourished here. At No. 38 *Robinson Crusoe* was published in 1720. Nos. 48-49 occupy the site of the "Old Chapter" Tavern, frequented by Goldsmith. This became the Chapter Coffee House, at which Charlotte and Anne Bronte lodged on their first visit to London in 1848.

Pathan Name applied throughout India to the Iranian peoples of the N.W. Frontier Province and to related trans-frontier tribes in E. Afghanistan. Of Moslem faith, their language is Pashto.

Pathology Study of disease. It seeks to determine the causation of diseases, their anatomical and physiological features, and the structural changes and morbid processes which they present. Besides human and animal diseases, bodily and mental, plant-diseases are also the concern of pathology. Experimental pathology studies morbid processes induced artificially in other organisms.

Patina Greenish, varnish-like film which forms on ancient bronze and copper through exposure to atmospheric conditions. It can also be produced by the action of certain chemical substances.

Patio Architectural term derived from the Spanish and applied to the open courtyard or enclosure connected with many houses in Spain and Spanish-American countries.

Patmore **Coventry Kersey Dighton.** English poet and critic. Born at Woodford in Essex, July 23, 1823, he was a librarian at the British Museum from 1847 to 1868. His first volume of poems was published in 1844, his second in 1853. His best-known work, *The Angel in the House*, dealing with domestic love, appeared in 1854. Collected editions of his poems were issued in 1878 and 1886. He died Nov. 26, 1896.

Patmos Aegean island. Small and mountainous, one of the Sporades, in the Grecian Archipelago off the W. coast of Asia Minor, it formerly belonged to Turkey, but is now part of Greece. Here S. John is supposed to have lived in exile about A.D. 90, and to have seen the vision described in the Book of Revelation. There is a monastery dedicated to S. John the Divine in the island. Pop. 2550.

Paton **Sir Joseph Noel.** British painter. Born at Dunfermline, Dec. 13, 1821, he studied at the Royal Academy, London. Subsequently he became a member of the Royal Scottish Academy, and was Queen's Limner for Scotland from 1865. He was knighted in 1867. He excelled in the treatment of allegorical, religious and legendary subjects, among his most notable pictures being "The Pursuit of Pleasure," "Christ and Mary at the Sepulchre" and "Mors Janua Vitae." He was a competent sculptor, and published two volumes of poems. He died Dec. 26, 1901.

Patriarch Head of a family or tribe. The name denotes specifically various O.T. figures, either fathers of the human race, *e.g.*, Noah, or progenitors of the Hebrew people, *e.g.*, Abraham, Isaac and Jacob, their forefathers and Jacob's twelve sons. Applied to the head of the Jewish Sanhedrim, it denoted in early Christianity outstanding metropolitan bishops, being limited in the 7th century to the bishops of Alexandria, Antioch, Constantinople, Jerusalem and Rome. The pope is styled patriarch of the West. *See* EASTERN CHURCH.

Patricia District of Ontario, Canada. Its area is 146,400 sq. m. Formerly part of the N.W. Territories, it was added to Ontario in 1912, and named after Princess Patricia, daughter of H.R.H. The Duke of Connaught, who was Governor-General of Canada at the time.

Patrick Saint. Patron saint of Ireland. Born about 387, probably near Dumbarton, Scotland, he was captured by Irish raiders when 16 years old, escaped to the continent and studied at Tours. Pope Celestine I. consecrated him bishop, entrusting him with Ireland's conversion. Landing in Wicklow, he established missionary settlements in Armagh and elsewhere. He died at Saul, near Downpatrick, according to some legends as late as 493 but more probably in 461. He left a Confession, an epistle to Coroticus and a hymn. He is commemorated on March 17.

Patron (and Patronage). Term originally applied to a Roman patrician to whom plebeians, under the name of clients, attached themselves for protection. Now largely used in connection with Church benefices, patrons of which have the right of nominating, subject to episcopal confirmation, incumbents when the living falls vacant. The patronage of many benefices is in the hands of bishops, colleges and other institutions.

Patteson **John Coleridge.** English bishop. Born April 1, 1827,

after a brilliant Oxford career, he took Orders and joined Bishop Selwyn in missionary work. Consecrated Bishop of Melanesia in 1861, he served 10 years in that capacity, and was attacked and murdered by natives, Sept. 20, 1871.

Patti Adelina. Famous singer. Born in Madrid, Feb. 19, 1843, she made her operatic début in 1859 in "Lucia di Lammermoor." She first appeared in London in 1861. She was received everywhere throughout her career with extraordinary enthusiasm. She made her last appearance at the Albert Hall in 1906. She married three times, and died Sept. 27, 1919.

Pau City of S.W. France. It is a noted winter health resort. Henry VI. is said to have been born in one of the rooms of the castle (1553). Pop. (1931) 38,962.

Paul Saint and Apostle. Born at Tarsus in Asia Minor, he was trained as a Rabbi under Gamaliel at Jerusalem. As a young Pharisee he took an active part in the persecution of Christ's followers, but on his way to Damascus for the purpose of making further arrests, he saw Christ in a vision and was converted. After three years' preparation he revisited Jerusalem, and then embarked on his first mission tour in Cyprus, Pisidia, Pamphilia and Lycaonia. On his return he engaged in a controversy with S. Peter concerning the admission to the Christian Church of Gentiles, whom he championed, and to whom his subsequent missionary efforts were devoted. His second and third missions took him through Galatia and Phrygia to Macedonia and Achaia. Tried at Caesarea for causing disturbances he was sentenced to imprisonment and, appealing to Caesar, was sent to Rome where, after two years' captivity, tradition says, he was executed under Nero in A.D. 64.

It is impossible to overestimate the importance of S. Paul in Christian history. More than any other he was responsible for the spread of Christianity throughout the Roman Empire, while his theological and moral principles have exerted a profound influence on later thought and on the civilised world.

Paul, Epistles of. *See* ROMANS, CORINTHIANS, GALATIANS, EPHESIANS, PHILIPPIANS, COLOSSIANS, THESSALONIANS, TIMOTHY, TITUS, PHILEMON, HEBREWS, EPISTLE TO.

Paul I. Tsar of Russia. Born Oct. 1, 1754, he was the second son of Peter III. and the Empress Catherine II., at whose death in 1796 he succeeded to the throne. He rapidly became unpopular by reason of his violent temper and disposition. Having first declared in favour of the Allies against France, he quarrelled with England and then joined Bonaparte. His nobles conspired to compel him to abdicate, and in a scuffle with them he was strangled and killed, March 11, 1801.

Paul-Boncour Joseph. French politician. He was born at S. Aignan, Aug. 4, 1873. As an independent socialist he was elected to the Chamber and became labour minister (1911) in the Cabinet. After the war, in which he served, he took an important part in the work of the League of Nations, as a French representative. In 1932 he became minister for war in the Cabinet headed by Edouard Herriot (*q.v.*).

Pauperism In England a pauper is a person who receives poor law relief for himself, or his dependents, and before he can do so, must prove himself destitute and incapable of providing the physical necessities. The relief is either "indoor," which means maintenance at a workhouse, infirmary, asylum or school; or "outdoor," when allowances are made in money, kind or medical attendance. In 1934 1,516,933 persons obtained poor law relief in England, as against 1,488,173 in 1933.

Pavia Town of Lombardy, Italy. Situated on the Ticino, 2 m. above its junction with the river Po, it is on the main line from Milan to Genoa. Here in 1525 Francis I. of France was defeated and captured by Lannoy, Viceroy of Naples. The battle was one of the first to show the superiority of firearms over pike and lance. Formerly a fortress it was captured and sacked by Napoleon in 1796. Volta made his first electrical experiments here. There are numerous iron foundries, military engineering and electrical production works. Pop. (1931) 50,325.

Pavlova Anna. Russian dancer. Born at St. Petersburg, Jan. 31, 1885, she entered the Imperial Ballet School at the age of 10. Attached to, and later *prima ballerina* of, the Marianski Theatre, St. Petersburg, she subsequently appeared at the Imperial Opera House, and first visited London with Michael Mordkin in 1910. In 1923-24-25 she appeared with her own company at the Covent Garden Opera House, always meeting with enthusiastic reception. She died Jan. 22, 1931.

Pawnbroker Pawnbroking, or the lending of money on articles pawned or pledged, is of great antiquity; pawnshops existing in China at least two or three thousand years ago. Greeks and Romans were familiar with pawnbroking, but among the Jews it was expressly inhibited under the Mosaic Law. The Jews, however, in mediaeval times were almost the only pawnbrokers in England till they were succeeded by the Lombards, who introduced the now familiar trade sign of the three golden balls. The pawnbroker's licence dates from 1785, and there has since been considerable legislation in England on the subject of pawnbroking. The latest enactment was the Pawnbrokers' Act of 1922, which included numerous regulations respecting interest, the sale of unredeemed pledges and so forth.

Paxton Sir Joseph. British architect. Born Aug. 3, 1801, his principal claim to fame is his design for the Crystal Palace in 1851. He began his career as head gardener to the Duke of Devonshire at Chatsworth, where he exercised his ingenuity in designing glass houses. He was knighted in 1851, was elected Member for Coventry in 1854 and died June 8, 1865.

Paysandú City of Uruguay. Situated on the E. bank of the Uruguay, 170 m. N. of Buenos Aires, it is the capital of the Paysandú department, occupying 5115 sq. m., and raising cattle and sheep. Their products, livestock, wool, hides, refrigerated, salted and canned meats and tongues, constitute the town's prosperity. Metal ores are mined. Pop. (1932) 26,000; dept. 72,257.

Pea Annual climbing leguminous herb (*Pisum sativum*). Introduced into Tudor England, field peas preceded the garden forms, which have arisen from cross-fertilisation and selection. The sweet-pea (*Lathyrus*) is closely allied.

Peabody George. American merchant and philanthropist. Born at S. Danvers, Mass., Feb. 18, 1795, he came to

London in 1837, where he spent his large fortune in philanthropic schemes. The Peabody Trust was established in 1862. It was designed to provide houses for the working classes of London. He died in London, Nov. 4, 1869, and was buried in America.

Peace River of Canada. It rises in the Rocky Mts., in British Columbia, and flows into Alberta. It is about 400 m. long and falls into the Great Slave Lake. Its tributaries include the Smoky and the Finlay. The Valley of the Peace contains a very rich coal field, and plans have been formulated for developing the district.

Peach Fruit-tree of the rose order, (*Prunus persica*). Cultivated in ancient Persia and China, perhaps derived from the almond, it was introduced into Tudor England. The roundish fleshy drupes, 2-3 in. across, covered with down, ripen in Britain in favourable situations, being usually grafted on plum or almond stock and fan-trained to walls with S.W. aspect. Large market supplies are grown in France, Delaware and California, which has developed a large canning and drying industry.

Peacock Male bird of a genus of game-fowl (*Pavo*), indigenous to India and S.E. Asia. In the breeding season, its upper tail-coverts develop spray-like webs interspersed with glittering "eyes," the whole train being displayed vertically in a semi-circle. The more plainly feathered peahen lacks the train. The Common *P. cristatus* of India and Ceylon, was domesticated in antiquity; albino examples furnish white peafowl. The Burmese *P. muticus*, extending to Malaya and Java, is more brilliant still.

Peak District of Derbyshire, extending from Chesterfield to Buxton, and from Ashbourne to Glossop. It forms the S. end of the Pennine Hills. Kinder Scout is the highest point; it is 2088 ft. At Castleton is found the famous Blue John (purple fluospar). Chatsworth (*q.v.*) is situated in this district.

Pear Fruit-tree of the rose order (*Pyrus communis*), native from E. Europe to W. Asia and the Himalayas. The wild pear of British thickets is doubtfully indigenous. There are innumerable varieties, usually grafted on free or pear stock, or, for the dwarf and pyramidal trees of gardens, on quince stock. Fermented pear-juice furnishes the alcoholic beverage called perry. Pearwood, hard and even-grained, serves for drawing-squares and curves, and when ebonised for camera-shutters.

Pearl Calcareous secretion formed in many bivalve molluscs, but chiefly in the so-called pearl oysters (*Meleagrina*), and the freshwater mussels of the genus *Unio*. A pearl consists of extremely thin concentric layers of calcium carbonate deposited around some foreign object or parasite, and the iridescent colours are due to interference of light caused by the thinness of the layers. Pearls vary in colour from white to pink or black, their value depending upon their size and purity of colour. The principal fisheries are in the Persian Gulf, the Gulf of Manaar in Ceylon, the South Pacific and the Gulf of Mexico.

Peary **Robert Edwin.** American explorer. Born May 6, 1856, he joined the American Navy, and, after working on the survey for the Nicaragua Ship Canal, was enabled to carry out the Arctic exploration. In 1891-92 he led a sledging expedition towards the North Pole, a journey of 1300 m., and, after other expeditions, succeeded in discovering the North Pole, 1909. He died Feb. 19, 1920.

Pease Quaker family founded by Joseph Pease, a woollen manufacturer at Darlington, somewhere about 1760. His son, Edward (1767-1858), extended his activities to the coal and iron industries, and also to banking. Joseph and Henry, Edward's sons, were both Members of Parliament, as were members of the next two generations. Sir Joseph Whitwell Pease (1828-1903) became a baronet in 1882. His son Alfred Edward was well-known as a sportsman, while Joseph Albert was a politician and was created Lord Gainford in 1916. Herbert Pike Pease was also a politician, and in 1923 became Baron Daryngton.

Peat Partially decomposed vegetable matter found on or near the surface in many of the cooler parts of the world in swampy places. Its carbon content is sufficiently high to enable it to be used for fuel.

Peccary Genus of hoofed mammals constituting the indigenous swine of America (*Dicotyles*). They are tailless, have the upper tusks directed downwards and lack the outer toe on the hind feet. Fierce and gregarious, the collared peccary, 3 ft. long, ranges from Arkansas to Patagonia, the somewhat larger white-lipped variety from British Honduras to Paraguay.

Peckham London district in the metropolitan borough of Camberwell, S.E. Peckham Rye Park was opened in 1894 and has more than 42 acres.

Pectin Series of vegetable mucilages obtained from various seeds, fruits and roots. In the beetroot, carrot and the pulp of ripe fruits such as the apple and pear, a soluble colloidal material, pectrose, occurs, and by the action of a ferment is converted into pectum, which forms the basis of fruit jellies and jams.

Pediculosis (or **Phthiriasis**). Skin affection occasioned by lice on the body. These are wingless, suctorial parasitic insects related to bugs and bird-lice. Both the head-louse and the crab-louse, which infests the pubic hair and sometimes armpits and eyebrows, are removable by paraffin preparations. The clothes-louse or body-louse requires bathing in baking soda, applying sulphur ointment, and baking the clothing in a disinfecting oven. Apart from their irritation, lice are noxious because they may spread typhus and some relaxing fevers.

Pediment Architectural term for the low sloping gable, usually triangular in shape, on the front of classic buildings and revived as an ornamental structure in Renaissance architecture usually over porticoes and windows, supported by carved brackets. Sometimes the pediment is bowed, or when the central part is omitted it is termed a broken pediment.

Pedometer Instrument resembling in form a watch, used for registering the number of steps taken by a person in walking, thus determining the distance covered. A weight which swings with the movement of the body causes the mechanism to revolve and this movement is recorded on a dial, adjustments being made for the length of the step.

Peebles Burgh and county town of Peeblesshire. Situated on the Tweed, it has cloth manufactures. It is served by the L.N.E. and L.M.S. Rlys. Pop. 5537.

Peeblesshire County of Scotland, otherwise known as Tweeddale. It has an area of 347 sq. m. It is watered by the River Tweed and its affluents, and is mainly a pastoral, sheep-rearing county. Its county town is Peebles. It is served by the L.N.E. and L.M.S. Rlys. Pop. 15,300.

Peel Small fortified tower, usually square and of massive construction, it was common in the border counties of England and Wales in the 15th and 16th centuries. They were used as refuges from bands of raiders. Several examples are still standing in Cumberland and adjacent counties.

Peel Watering place and fishing town on the W. coast of the Isle of Man. It has historical associations and interesting ruins of the 12th century. Pop. 2455.

Peel **Viscount.** English title, created in 1895 and bestowed upon Arthur Wellesley Peel, youngest son of Sir Robert Peel. Born Aug. 3, 1829, he was educated at Eton and Balliol College, Oxford, had a distinguished parliamentary career and held various offices, being chosen Speaker in 1885. He was created a viscount when he retired in 1895, and died Oct. 24, 1912. He was an ardent temperance reformer.

William Robert Wellesley Peel, the 2nd viscount, was born Jan. 7, 1867, the eldest son of the 1st viscount, and was educated at Harrow and Balliol College, Oxford. He was called to the bar in 1893, and sat in Parliament, first for a division of Manchester (1900-06), and then for Taunton (1909), until he entered the House of Lords at his father's death in 1912. He held various offices; in 1922 he was Secretary of State for India, and in 1931 became Lord Privy Seal in the National Government, an office which he held for a short period only. He was made an earl in 1929.

Peel **Sir Robert.** British statesman. Born near Bury, Lancs., Feb. 5, 1788, he was educated at Harrow and Christ Church, Oxford, and entered Parliament at the age of 21, holding office as Secretary for Ireland when he was 24. In 1822 he became Home Secretary, and in this capacity formed the new police force, known to this day as Peelers. He was three times Prime Minister, in 1834, 1839 and 1841, on this last occasion holding the office for five years. Peel now restored the disorderly national finances, passed the Bank Charter Act which still regulates the country's currency, and repealed the penal laws against Catholics. Finally, in 1846, he repealed the Corn Laws in face of tremendous opposition, but was defeated on the Irish Coercion Bill, resigned, and went into opposition. He died July 2, 1850.

Peel **John.** Cumberland yeoman. Born Nov. 13, 1776, he is chiefly known as the hero of the song, "D'ye Ken John Peel?" which was written by J. W. Graves about 1829. He was born and lived at Coldbeck, where he died Nov. 13, 1854.

Peele **George.** English dramatist. Born about 1558, and educated at Christ's Hospital and Christ Church, Oxford. he wrote historical plays and masques which had considerable influence on Shakespeare and Milton. These include *Edward I.*, *The Arraignment of Paris*, and *David and Fair Bethsabe*. He died about 1598.

Peerage Name used for the peers as a body and also for all members of their families. Only countries with a hereditary ruler possess a peerage. English peers and representative peers from Scotland and Ireland sit in the House of Lords.

There are five ranks in the British peerage, duke, marquess, earl, viscount and baron. The law lords, although they sit in the House of Lords, are not peers. The position of the bishops is more ambiguous. It is held that they are peers, because they sit in the House of Lords by right of succession. Peers have the right to be tried, when necessary, by their peers. A peerage is created by letters patent, and this states how the title shall descend. It may, therefore, be limited to sons, or may pass to a daughter or a nephew. A woman can be a peeress, but cannot sit in the House of Lords.

Pegasus In Greek mythology the winged steed of Bellerophon, who slew the Chimaera with his aid. He came into being from the blood of the gorgon, Medusa, when Perseus cut off her head. The Pegasus Club is an association of members of the Bar who are interested in hunting and racing. It holds an annual point-to-point meeting. The name is taken from the crest of the Inner Temple, which is a winged horse.

Pekinese Dog Breed of lap-dog. Of Chinese origin, it differs from English toy spaniels in having a flat skull and tail curled over the loins. Preferably weighing 5 to 6 lb., it is heavy in front, with short broad muzzle, falling away lion-like behind. Long-haired, with thick undercoat, it is light-red or yellow, mottled with white.

Peking Former capital of China, now known as Peiping, a very ancient and populous city lying about 100 m. from the Gulf of Chih-li. Kublai Khan established it as capital of the Chinese Empire in 1264, and it consists of the Chinese city and the Tartar city, the latter being surrounded by walls built in 1421, while those of the Chinese city were built in 1544. Inside the Tartar city is the imperial city, while inside that again is the Forbidden city. Here are many ancient and wonderful buildings, including the Temple of Confucius and the Temple of Heaven. The population is about 1,300,000.

Pelargonium Genus of herbs of the geranium order. Often half-shrubby, they are distinguished from geraniums by having stalked umbels of flowers with irregular corollas and upper sepals spurred. *See* GERANIUM.

Pelée **Mont.** Volcano, 4400 ft. in height, on the island of Martinique in the French West Indies. The lower slopes of the mountain consisted of dense wooded country, but in 1902 two eruptions occurred and totally destroyed the neighbouring town of St. Pierre and adjacent villages.

Pelham **Henry.** British statesman. Born 1696, the younger brother of Thomas Holles Pelham, afterwards Duke of Newcastle, he was educated at Westminster and Oxford, entered Parliament in 1717 as member for Seaford, and held various offices, becoming Prime Minister in 1743, an office which he held for 11 years. He died March 6, 1754.

Pelias Character in Greek mythology. Having usurped the throne of Jason's father, he despatched Jason to find the Golden Fleece, hoping that he would not return.

Pelican Genus of waterfowl (*Pelecanus*), allied to cormorants, widely distributed in tropical and sub-tropical regions.

Their long furrowed beaks have extensible pouches attached to the lower mandible for collecting fish-food. They have rough, harsh plumage and short, rounded tails. The common pelican (*P. onocrotalus*) 5 ft. long, inhabits S.E. Europe, S.W. Asia and N.E. Africa.

Peloponnese Southern portion of ancient Greece, now known as Morea. It was connected with Greece proper by the Isthmus of Corinth. The word means the "Island of Pelops." Various races inhabited it, beginning with the Pelasgians, and followed by the Achaeans, Ionians and others. Later it was under the supremacy of Sparta until the Thebans conquered the Spartans at the Battle of Leuctra in 371 B.C.

Peloponnesian War War between Athens and Sparta, from 431-404 B.C. In the first period, which was concluded by the Peace of Nicias (421 B.C.), both sides had their successes. In the second, Sicily was the centre of hostilities; in the third, Sparta had the advantage. Athens was captured by Lysander in 405, the city's walls were destroyed and her power broken, leaving Sparta temporarily supreme.

Pelops In Greek mythology, grandson of Zeus and son of Tantalus, King of Phrygia. He married Hippodamia, daughter of Oenomaus, King of Elis, and succeeded him as king. Legends concerning him deal with his being killed by his father, cut to pieces and boiled as a repast for the gods. Hermes eventually put the pieces together again, and restored him to life.

Pelorus Jack Name given to a famous grampus in the Pelorus Sound, which for many years accompanied vessels for a given distance between Wellington and Nelson, New Zealand. It was protected by a special resolution of the legislative council.

Pelvis Name given to the bony framework or hip girdle forming a basin-like cavity protecting certain abdominal viscera and giving attachment to the lower limbs. It consists of two innominate bones, each composed of three elements, ilium, ischium and pubis, which are separate bones in early life but soon become fused into one bone. The pelvic bones are united behind to the sacrum of the backbone and in front to one another by the pubic symphysis.

Pembrey *See* BURRY PORT.

Pembroke Municipal borough and county town of Pembrokeshire. A walled town with a medieval castle, and the nearest harbour to Ireland, it was at one time an important fortified post, and was taken by Cromwell in the Civil War. The modern town grew up around the naval dockyard, which, however, was closed in 1925. Pop. (1931) 12,008.

Pembroke Manufacturing town of Ontario, Canada, situated on the Allumette Lake. It has varied industries, including mills, brickyards, lumbering and tanning. Pop. (1931) 9368.

Pembroke Earl of. British title held in turn by the families of Clare, de Valence and Herbert, as well as by certain members of the royal house at different periods. It was created in 1138 and bestowed upon Gilbert de Clare, who was followed by his son Richard (Strongbow). He was succeeded by William Marshall, his son-in-law, but in 1245 the title became extinct. William de Valence then secured it by marriage, and it was held by his family until 1324. In 1551 Sir William Herbert was made Earl of Pembroke, and the present Earl, Reginald Herbert, is his descendant. The family seat is Wilton House, near Salisbury.

Pembroke Dock Dockyard on Milford Haven in Pembrokeshire, Wales, formerly known as Paterchurch. It was inaugurated as a government dockyard in 1814, being transferred from Milford, and forms part of the borough of Pembroke, two miles away. The dock was closed in 1925.

Pembrokeshire County of Wales, the most westerly in the principality. It has an area of 614 sq. m. Pembroke is the county town, and its chief ports are Fishguard and Newport. Haverfordwest and Tenby are municipal boroughs. The county contains part of the South Wales coalfield. Pop. (1931) 87,179.

Pembrokeshire is very rich in early remains, both megalithic and Romano-British. Its contacts with Ireland and Brittany made it a centre of Celtic Christianity, and many Celtic crosses remain. Its importance in mediaeval times is attested by the many castles. Long a county palatine, it lost this distinction with the passing of the Act of Union in 1536.

Pemmican Dried buffalo meat or lean venison pounded and mixed into flat cakes with boiling fat. Originally a North American Indian food, it is now manufactured from beef for use in Arctic explorations, being of value owing to its capacity for remaining good for an indefinite period if kept dry.

Penal Servitude Form of punishment which superseded that of transportation in English law by the Penal Servitude Act of 1853. Such imprisonment may be for a maximum of three years or for life, but some degree of remission may be earned by the good conduct of the prisoner, who is then granted a ticket of leave. Prisoners undergoing penal servitude wear the distinctive broad arrow dress and have to do some form of useful work.

Penance Variant form of the word "penitence," denoting specifically the outward acts manifesting repentance, either voluntary or performed under ecclesiastical discipline. Protestants hold that Divine forgiveness follows true sorrow for sin irrespective of imposed acts. The Roman Catholic Church, ranking penance as one of the seven sacraments, regards it as comprehending contrition, confession to an approved priest, satisfaction by accomplishing penitential works, and absolution.

Penang British Crown Colony, one of the Straits Settlements, consisting of Penang Island and Province Wellesley on the main land. George Town, an important port, is on Penang Island, which is 111 sq. m. in area, while Province Wellesley is 282. It is traversed by a railway running from Siam to Singapore. Pop. (1932) 367,177.

Penarth Seaport of Glamorganshire. An urban district and watering place, it stands 4 m. from Cardiff, on the G.W. Rly. It owes its prosperity to its docks. Pop. 17,097.

Pendlebury Name given to a district of Lancashire, lying 3½ m. N.W. of Manchester, and served by the L.M.S. Rly. Pop. 10,130.

Pendleside Series Geological formation seen typically at Pendle Hill, Lancs., between Stoke-on-Trent and Settle. It consists of shales and black limestones, 1000-1500 ft. thick, and lies between the upper Carboniferous Limestones and the Millstone Grits.

Pendulum Term applied to a weight or rigid body so suspended as to swing freely on a horizontal axis, the oscillations being due to the influence of gravity. The pendulum has many applications; Galileo applied it to measure the human pulse. In certain types of stationary engines it forms part of the counter-balance mechanism. In clocks it is a device for regulating the working of the parts, and Foucault used it to demonstrate the rotation of the earth.

Penelope In Greek legend, the wife of Ulysses or Odysseus. During the protracted absence of her husband she was besieged by suitors, but she told them that before she could accept any of them she must finish the robe she was making for her father-in-law. She worked at this all day and at night undid all she had done.

Penge Urban district of Kent, and a suburb of London, lying 6 m. to the south by the S. Rly. Part of the Crystal Palace park is in the district. Pop. 26,430.

Penguin Family of flightless sea-birds inhabiting S. temperate and antarctic regions. The backward position of the short legs, the webbed feet, stiff tails and erect station on land give them an ungainly appearance: the wings are transformed into paddles covered with scaly feathers. From Antarctica they extend north to the Cape, Australia, New Zealand, Falklands and other islands, forming in places immense breeding "rookeries." The largest are the king and emperor penguins, *Aptenodytes*; rock-hoppers, *Eudyptes*, are crested. *See* JACKASS.

Penicuik Police burgh of Midlothian, Scotland. It lies 10 m. from Edinburgh, by the L.N.E. Rly. Pop. (1931) 2673.

Peninsula Term used in geography for a piece of land nearly surrounded by water. For example, Spain and Portugal form the Iberian Peninsula, which is bounded by the Bay of Biscay on the north, the Atlantic on the west, the Mediterranean on the south and south-east, but is joined to France on the north-east.

Peninsular War (1808-1814) Fought against France in the Iberian Peninsula by Great Britain, Spain and Portugal. The immediate cause was the revolt of the Spanish people against Napoleon's brother, Joseph, whom he had made King of Spain. The Allied forces were under the command of Sir Arthur Wellesley, afterwards Duke of Wellington, and outstanding victories were won at Vimiero, Albuera (1811), and Salamanca (1812). There were further victories at Vittoria and Orthez. Napoleon's abdication in 1814 concluded the war.

Penistone Market town of Yorkshire (W.R.), 12 m. from Sheffield. Its industries include brewing, steel works and saw-mills, and the neighbourhood is rich in coal and stone. It is served by the L.N.E. and L.M.S. Rlys. Pop. 3791.

Penkridge Town of Staffordshire. An agricultural centre, it is 10 m. N. of Wolverhampton and 134 m. from London by the L.M.S. Rly. Pop. (1931) 2570.

Penmaenmawr Watering place and urban district of Caernarvonshire. It lies 4 m. from Conway amid beautiful scenery and is served by the L.M.S. Rly. Pop. 4000.

Penn Sir William. British admiral. Born in 1621, he fought on the Parliamentary side in the Civil War, but in 1660 accompanied Montagu to bring Charles II. back, and was knighted aboard the *Naseby*. He died on Sept. 16, 1670.

His son, **William**, was a prominent Quaker, the founder of Pennsylvania. Born Oct. 14, 1644, he was expelled from England in 1661 because of his faith, travelled abroad, and later suffered imprisonment on the same account. He founded Pennsylvania in 1671, where he spent some years between 1684 and 1701. He died at Ruscombe on May 30, 1718.

Pennant Long, narrow flag, usually pointed at the end. It is carried by lancer regiments on their lances, and is flown in the Navy at the mast head of a vessel in commission. The paying-off pennant, or pendant, is a very long streamer with a bladder at the end, and is flown by a ship when she returns to port to pay off. Originally the pennant was the knight bachelor's flag which he bore at the end of his lance.

Pennine Chain Mountainous region forming a high plateau cut by deep river valleys, extending from the Scottish border in the north to the Vale of Trent in the south and including the Peak tableland of Derbyshire. The chief heights are Cross Fell, 2892 ft., Mickle Fell, 2591 ft., Whernside, 2414 ft., Ingleborough, 2373, ft., Penyghent, 2270 ft., and Kinderscout in the Peak district, 2088 ft.

Pennsylvania State of the U.S.A. It lies between New York State on the N., New Jersey on the E., Maryland and West Virginia on the S. and Ohio on the W., and touches Lake Erie in the N.W. Its area of 45,126 sq. m. is traversed by the Appalachian Mountains. The chief rivers are the Delaware, Susquehanna and Allegheny. Harrisburg is the capital; other large cities are Philadelphia and Pittsburg.

Pennsylvania is ruled by a governor elected for four years, a senate of 50 members, and a house of 208 representatives. The state is enormously rich in minerals, particularly coal and iron, limestone and glass sand. Its most important manufactures are iron and steel, silk, machinery, electrical goods, books, etc., and knitted goods. Pop. (1930) 9,631,350.

Pennsylvania was first settled by Swedes and Dutch, but owes its true foundation and first constitution to William Penn (*q.v.*). The state played an important part in the War of Independence, and it was at Philadelphia that the Declaration of Independence was adopted. The state entered the federation in 1787, but the present constitution dates from 1873.

Penny Bronze coin of the value of one-twelfth of a shilling, introduced in 1860 to supersede the copper coins in use since 1672. Previous to this latter date silver pennies were coined but they gradually decreased in weight and the only silver coins of this value now made are issued as Maundy money. The early silver pennies were marked with a cross-like indentation to allow of separation in halfpennies and farthings. The standard weight of a bronze penny is 145.83333 grains troy.

Pennyroyal Perennial labiate herb, (*Mentha pulegium*), native of Europe and W. Asia. Abundant in England and parts of Ireland, sometimes grown in Scottish gardens, its much-branched prostrate leafy stem, up to 12 ins. long, with small ovate-oblong toothed leaves, bears dense whorls of small, hairy, tubular, lilac flowers. It was formerly much used medicinally.

Pennywort (*Cotyledon umbilicus.*) Species of the order, *Crassulacea*, known also as navelwort. A flowering wild plant that flourishes on dry walls and in rocky crevices. It has succulent leaves depressed in the centre and greenish yellow flowers borne on erect spikes.

Penology Branch of criminology, dealing with the study of punishment. Punishment for offences against the community goes back as far as history, and was largely based on the idea of retribution, if not of vengeance. Modern development, of quite recent growth, endeavours to select punishment which permits reclamation while protecting society.

Penrhyn Slate quarrying district of Caernarvonshire, situated near the entrance of the Menai Strait. This facilitates the shipping of the slate from Port Penryhn.

The title of **Baron Penrhyn** was created in 1763 and is now borne by the family of Douglas Pennant, the original creation, which was held by Richard Penrhyn, having become extinct with his death in 1808. The family seat is Penrhyn Castle.

Penrith Ancient market town of Cumberland, near Carlisle, on the L.N.E. Rly. It has an agricultural trade as well as brewing and tanning industries. Pop. 9065.

Penryn Market town of Cornwall, situated on the Penryn River and served by the G.W. Rly. A prosperous seaport of the Middle Ages, its chief industries to-day are tanning, brewing and granite polishing and exporting. Paper and chemicals are also manufactured. Pop. 3151.

Penshurst Village of Kent, chiefly distinguished for Penshurst Place and its park of 350 acres. Here, Sir Philip Sidney was born and the mansion is still owned by his descendant, Lord de L'Isle and Dudley. Pop. 1570.

Pension Retiring allowance, or a grant made to an aged or needy person. A pension may be non-contributory, as those granted to members of the fighting services and to civil servants after a certain term of service; or contributory, as when it is given as a superannuation provision by a trade union. Many large employers of labour have a pension fund to which they contribute a portion, the remainder being provided by the workers' contributions.

The State schemes include the old age pension (*q.v.*) introduced in 1908, and the pensions granted under National Health Insurance Acts (1925-9). The latter scheme provides a pension of 10s. per week each for the insured worker and his wife at the age of 65. The workers make weekly payments in contribution by means of stamps affixed to a card. The Health Insurance scheme also provides a pension of 10s. for the widow of the worker, receiving 5s. for the first and 3s. for other children. Orphaned children of an insured worker receive 7s. 6d. each. The same acts provide for a blind person receiving a pension of 10s. per week at the age of 50.

What are termed civil list pensions are granted by the crown to necessitous persons who have attained distinction in art, literature or science, or to their dependents.

Pensions Ministry of. British Government department, formed in 1916 for the administration of pensions to members of the war services and their dependents. The headquarters are at 18 Great Smith Street, Westminster.

Pensnett Coal-mining town of Staffordshire. Other industries are the manufacture of iron and glass.

Pentateuch Greek name meaning "five-volume book," used since the 2nd century A.D. for the first five Old Testament books, Genesis, Exodus, Leviticus, Numbers, Deuteronomy. They constituted the Hebrew *Torah* or Book of the Law, and were inscribed on a single roll. The Samaritan Pentateuch, in the Samaritan script, derived from the roll taken to Samaria in Ezra's day, exists in various ancient copies, which furnish valuable textual confirmation of this portion of the LXX. Greek version of the Hebrew Bible. *See* HEXATEUCH.

Pentecost Greek word meaning "fiftieth," used in the Greek New Testament to denote the Jewish harvest festival or feast of weeks, held on the 50th day after Passover, and preceding the Jewish New Year by 113 days. It acquired a supreme significance to the Christian Church because on that day, called in English, Whitsunday, the Holy Spirit descended on the apostles (Acts ii.). The Roman Catholic Church preserves the name, all the following Sundays until Advent being called " after Pentecost."

Pentland Firth Strait off Scotland between Caithness and the Orkneys connecting the North Sea with the Atlantic Ocean. It is navigable but dangerous, owing to tidal currents and whirlpools. At the Eastern entrance are the Pentland Skerries with two lighthouses. The channel is 14 m. long.

Pentland Hills Range of hills in Scotland. They are in the counties of Edinburgh, Peebles and Lanark and extend for some 16 m. The highest point is Carnethy (1980 ft.).

Pentonville District of London. To the north of the city, it is in the borough of Islington. Therein is Pentonville Prison. The district owes its name to the fact that in the 18th century the land belonged to Henry Penton, M.P.

Pentstemon Large genus of perennial half-hardy herbs of the figwort order, natives of N. temperate and subtropical America, especially California. Showy garden varieties have been developed.

Penumbra Term in optics for the partial shadow surrounding the umbra or total shadow formed on a screen when an opaque body is placed so as to intercept the light from a luminous object. An example is the region of partial shadow seen round the darker disc in an eclipse.

Penzance Seaport and watering place of Cornwall, situated at the head of Mount's Bay, 8 m. from Land's End. It has a good harbour and docks, is a fishing centre, especially for pilchards, and exports tin, copper and china clay. Pop. 12,100.

Pepper Perennial climbing shrub (*Piper nigrum*) typical of the pepper order, indigenous to the Malabar coast of India. Widely cultivated in Malaya, especially Penang, as well as the Philippines, W. Indies and other tropical lands, it produces a black or white spice derived from the dried fruits, respectively ground with and without the husks. *See* CAYENNE PEPPER.

Peppermint European perennial labiate herb (*Mentha piperita*). Growing wild in Britain, with creeping rootstock, opposite coarsely-toothed leaves and loosely-spiked flowers, it is cultivated in black and white varieties in England, continental Europe and the U.S.A. for its pungent essential oil, which contains menthol. This comes still more freely from allied Japanese and Chinese forms.

Pepper Tree Tropical American tree of the cashew order (*Schinus molle*). It is grown in warm countries for shade and ornament, the aromatic berries furnishing a vinous beverage and pepper-substitute in S. Europe, and an astringent for the gums in Peru, called Peruvian mastic. Riviera visitors sometimes misname "pepper tree" the Indian bead tree (*Melia azedarach*).

Pepsin Proteolytic ferment or enzyme occurring in the gastric juice secreted by the gastric glands in the wall of the stomach. In the presence of hydrochloric acid pepsin converts food proteins into soluble peptones which are assimilated readily by the stomach. For medical purposes pepsin is used in a dried form or in various solutions.

Pepys Samuel. English civil servant and diarist. He was the fifth son of a tailor, and was born on Feb. 23, 1633, in London, where most of his life was spent. Educated at St. Paul's School and Magdalene College and Trinity Hall, Cambridge, he secured a post in the Navy Office, while he held several important public appointments in the course of his life and sat in Parliament for Castle Rising. He died on May 26, 1703. His diary, written in cipher, runs from Jan., 1659, to May, 1669, and is a masterly picture of the times in which he lived, as well as being a unique revelation of character. It was first deciphered in 1819-22 by John Smith, and published in 1825. Since then innumerable editions have been issued.

Perak One of the Federated Malay States with an area of 7,800 sq. m. It has tin mines and rubber plantations, while rice and fruit are also grown here. It is ruled by its own sultan, but is under British protection. Pop. (1931) 765,989.

Perch Genus of spiny-finned freshwater fishes (*Perca*). The common perch (*P. fluviatilis*), seldom exceeding 3 lbs., inhabits rivers and lakes in Britain and elsewhere. It is bronze-green with golden reflections, having five or seven dark cross-bands and red fins.

Percy English family which has held various peerages since the day of the first William de Percy, one of the Conqueror's barons. The 12th Baron Percy became Earl of Northumberland in 1377, and the Dukes of Northumberland, after many lapses and recreations of the title, are still Percies, though Sir Hugh Smithson, created duke in 1766, assumed the name by deed poll. The famous Hotspur, who was killed at Shrewsbury in 1403, was Sir Henry Percy, son of the first Earl of Northumberland.

Père-Lachaise Parisian cemetery, named after Father François de La Chaise (*q.v.*), superior of the Jesuits in Paris, to whom the land originally belonged. It covers about 212 acres. Many famous people are buried here, including Abélard and Héloïse and other more recent celebrities, literary, artistic and military. A Mohammedan cemetery with its mosque lies alongside. It became a municipal cemetery in 1804.

Perennial Plant that lives more than two years. All trees and shrubs being perennial, the term denotes more particularly herbs which are not annual or biennial. They may have perennial tap-roots, hardy bulbs or fibrous roots arising anew annually or periodically. Tropical perennials often become annuals when transplanted to colder climates.

Perfume Substance which has a pleasant sweet-smelling odour, as in the case of certain gums, essential oils of plants, some animal products and synthetic compounds. For incense, odoriferous gums such as frankincense or olibanum, and gum benzoin, are used along with sandalwood. Musk, civet and ambergris are animal perfumes, and the essential oils are represented by otto of roses, the oils of lavender, rosemary, patchouli, etc. Many synthetic perfumes are used as substitutes for the natural ones.

Pergola Term derived from the Italian word for an arbour and applied to a long series of light arches erected over a garden path, and constructed of trellis, iron with brick or stone foundations, or of undressed oak and fir wood. A pergola is used for climbing plants such as roses, jasmine, etc.

Peri Beings of a nature partaking of demon and fairy, existing in Persian myth. Although not malevolent they are not deemed fit for the Persian Paradise.

Pericarditis Inflammation of the pericardium (*q.v.*). It may be dry or accompanied by liquid effusions, with the formation of adhesions. Rarely independent, it is most commonly associated with acute rheumatism, but also attends Bright's disease, scarlatina and other fevers. There are pains over the heart, rapid and feeble pulse action and difficult breathing.

Pericardium Conical membranous sac containing the heart and the origins of the great vessels. A dense unyielding fibrous layer is lined with a serous layer whose inner surface secretes a thin lubricating fluid which facilitates the heart's natural movements. The apex lies behind the breastbone, the base being in relation to the diaphragm.

Pericles Athenian statesman, son of Xanthippus and Agariste. Born about 499 B.C., he began to take part in public affairs in 469 B.C., and distinguished himself as a general as well as a statesman, notably in his recovery of the rebellious island of Euboea in 445 B.C. He also subdued Samos in 440 B.C. Under his administration Athens was developed and embellished, and he was the patron of the sculptor Phedias. His policy during the Peloponnesian Wars was one of concentration in Athens, leaving the rest of Attica to its fate. In 430 B.C. he lost both his sons during the terrible outbreak of plague. He died in 429 B.C.

Peridot Name given to the transparent olive-green and bottle-green

varieties of the mineral olivine, a silicate of iron and magnesium, used as gemstones.

Perigee Term in astronomy for the point in the lunar orbit where the moon is nearest to the earth, the opposite position being termed apogee (*q.v.*).

Perihelion Astronomical term for the position in the orbit of the earth, a planet, or comet, at which that body is at its nearest distance to the sun.

Perim British island in the Straits of Bab-el-Mandeb at the southern end of the Red Sea. It is a coaling and cable station, but is otherwise of small importance.

Periodic Law Chemical classification of the elements. The task first engaged the attention of chemists late in the 18th century. In the 19th, an arrangement in order of atomic weights was suggested, which Mendeléeff elaborated, observing that certain properties became periodic, notably the valency. It is now incorporated in the modern concept of atomic structure.

Periscope Optical instrument used in trench warfare and in submarines for enabling an observer to see surrounding objects from a lower level. In its simple forms it consists of two mirrors set at an angle on a frame, or of reflecting prisms and mirrors fixed in a vertical tube, the upper mirrors or prisms reflecting an image to the lower set, and thence to the eye. The submarine periscope has in addition lenses and eyepieces to magnify.

Peritoneum Membrane lining the walls of the abdominal and pelvic cavities and investing their contained viscera. The two layers, parietal and visceral, comprise a thin elastic serous sac, entirely closed except in the female, whose Fallopian tubes communicate with it. Numerous folds hold the parts in position; the frontal apron called the great omentum is liable to increased deposition of fat in the corpulent. The mesenteries connect the intestines with the backbone, and ligaments support some organs.

Peritonitis Inflammation of the peritoneum (*q.v.*). Often called loosely inflammation of the bowels, by confusion with enteritis (*q.v.*). In acute forms this disease is usually indicated by severe abdominal pains, and may be caused by micro-organisms entering through wounds from outside, or internal perforations due to strangulated hernia, obstruction of the bowels, appendicitis, burst abscesses and the like. The chronic form is either tubercular in origin and secondary to consumption, or local and non-tubercular. Should perforated bowel be suspected, operation is essential.

Periwinkle Cosmopolitan genus of marine snails (*Littorina*). Shore-dwellers, in some tropical regions they ascend mangrove trees and are found far inland. Of several British species the commonest, *L. littorea*, with stout stony shell and strong horny operculum, is a favourite food, especially in inland towns, being also used as cod-bait off Newfoundland.

Periwinkle Genus of perennial evergreen herbs or trailing undershrubs of the dogbane order (*Vinca*), natives of temperate Europe, Asia and N. Africa. Long naturalised in Britain, the greater, *V. major*, and lesser *V. minor*, with bluish-purple, salver-shaped corollas, are cultivated in gardens, there being double-flowered white varieties and others with gold or silver variegated foliage.

Perjury Making a false statement on oath, a misdemeanour punishable by fine, imprisonment, or penal servitude. The oath must be a lawful one, and the statement must be material to the issue. To suborn perjury, *i.e.*, promise another to swear falsely, is a misdemeanour with like penalties.

Perkin Sir William Henry. English chemist and founder of the aniline dye industry. He was born in London, March 12, 1838, and educated at the City of London School, choosing chemistry as his career. The famous Perkin's purple dye was discovered while he was trying to prepare quinine synthetically, and other commercially important discoveries followed. He was knighted in 1873 and died July 14, 1907.

Permanganates Name applied to the salts derived from permanganic acid, the most important being permanganate of potash which, in aqueous solution, is a deep purple liquid readily decomposed with evolution of oxygen when in contact with organic matter. Hence its use as a disinfectant and chemical oxidising agent. Condy's fluid is a solution of crude sodium permanganate.

Permian Series of rocks formerly known as New Red Sandstone; but named by Murchison after Perm in Russia where the beds are well developed. The Permian System consists of beds of red sandstone, marls, breccias and magnesian limestone, overlying the Carboniferous rocks. In north-east England the magnesian limestone, which supplied good building stone and lime, is associated with marl slates, gypsum and rock-salt. In the Midlands breccias occur, and in S. Devon red sandstone and coarse breccias.

Permutation Term in mathematics for the linear arrangement of numbers or letters in every possible order, thus *a* and *b* may be arranged as *ab* and *ba*, giving two permutations, or *a*, *b*, *c* as *abc*, *acb*, *bac*, *bca*, *cab*, *cba*, giving six permutations. Algebraic formulae are used for calculating permutations of any given quantity.

Pernambuco Province of Brazil. On the eastern coast, it covers 49,560 sq. m., pop. 2,369,814, and produces sugar, cotton, etc. The capital, which has the same name, is also known as Recife. It is an important port with exports of cotton, sugar, etc. The harbour is a good one, the town being built on a reef, an island and the mainland. Pop. 340,543.

Perpendicular Name given to a period of Gothic architecture in England from about 1350 to 1547. The Perpendicular style was characterised by the persistent expression of verticality throughout a building even in the window tracery and the extensive use of panelling, having numerous vertical lines, over walls, buttresses, parapets, etc. Other distinctive features were the fan tracery vaulting, flatter arches, flying buttresses and open timber roofs.

Perpetual Motion Idea long prevalent that some machine could be constructed which, when once in motion, would continue to do useful work without any outside supply of energy. The idea is impracticable, as inertia and friction can only be overcome by the expenditure of energy which cannot be "created."

Persephone (or **Proserpine**). In Greek legend, daughter of Zeus and the earth-goddess Demeter. Carried off while flower-gathering by Pluto, ruler of the underworld, she became its queen. In her absence Demeter forbade the earth to yield increase, and Zeus had to send Hermes to fetch her back. Her rape and return symbolise the sowing and growth of corn.

Perseus In Greek myth, the hero son of Danaë by Zeus. He was sent by Polydectes, King of Seriphos to win the head of Medusa, the Gorgon. He succeeded, aided by Athena, and on his return journey saved Andromeda from the sea monster and married her. Later he became King of Argos and is the legendary founder of Mycenae.

In astronomy **Perseus** is a constellation traversed by the Milky Way, extending from Cassiopeia to Taurus.

Pershing **John Joseph.** American soldier. Born, Sept. 13, 1860, he served as a lieutenant against the Indians, and in 1898 fought in the Spanish-American War. In 1902 he commanded an expedition against the Moros of Mindanao, and held various administrative appointments. When the U.S.A. declared war on Germany in 1917 he became commander-in-chief and was on the Western front with the American Expeditionary Force until the Armistice. He was chief of staff from 1921-24. In 1931 he published *My Experiences in the World War*.

Pershore Town of Worcestershire. It stands on the Avon, 113 m. from London and 8 from Worcester on the G.W. Rly. The town is the centre of a district wherein fruit and vegetables are grown and jam making is an industry. Pop. 3400.

Persia (**Iran**) Country of Asia, lying between Turkey and the Persian Gulf on the West and South Turkestan and Afghanistan on the East, Transcaucasia and the Caspian Sea on the North. It has an area of 628,000 sq. m., consisting of tableland with a mean altitude of 3000-5000 ft. There is only one navigable river, the Karun. The climate is mostly dry and very hot. Dates are cultivated and cereals grown, while opium and tobacco form profitable crops. Oil, of which Persia has great resources, is the principal export, followed by carpets, for which the country is famous; opium, fruit and raw cotton are also exported. Teheran is the modern capital, Isfahan the ancient one. Abadan is the chief oil-producing centre, and Bushire the chief port. The population is 10,000,000, of which a third are nomadic.

Persia is a constitutional monarchy under a monarch known as the Shah. It has a long and interesting history, beginning with the Sumerians, continuing through the Medes to Alexander the Great and the Arab and Turkish conquests, and the present day. Great archaeological finds have been made on the sites of Persepolis and Susa. The religion to-day is divided between Mohammedans, Sunnites, Jews and Armenian and Nestorian Christians. There is a rich and ancient literature, and its art is among the most remarkable of the pre-Christian world.

Persian Gulf Arm of the Indian Ocean, lying between Persia and Arabia. It is 550 m. long and 75,000 sq. m. in area. It contains the Bahrein Islands, and its principal harbours are Bushire and Bander Abbas. The Shatt-el-Arab flows into it.

Persimmon (**or Date-plum**). Deciduous tree of the ebony family (*Diospyros virginiana*). It produces a sweet, orange-yellow, 1 in. plum. Its dark close-grained timber serves for weaving-shuttles, golf club-heads, etc. The larger Japanese persimmon (*D. kaki*), of which 800 varieties are cultivated in E. Asia, U.S.A., and elsewhere, is of apple size.

Personation English legal term meaning a pretence of being another person—what in ordinary speech would be called "impersonation." The False Personation Act of 1874 makes personation a felony if it be designed to extract money or property. Among the most famous of personation cases is the Tichborne case of 1871.

Perspective Term used in art for the method of delineation of objects upon a plane surface as they appear to the eye. Perspective is divided into linear and aerial, the former being concerned with the form and arrangement of objects as they appear to be modified by distance, and the latter with the impression of atmosphere and space in regard to colour and distinctness. Aerial perspective was first clearly interpreted by Claude Lorraine in the 17th century.

Perspiration Term applied to a process by which water is excreted from the skin by means of the sweat glands, simple tubular structures occurring in large numbers all over the body. The lower portion of a sweat gland is coiled into a knot and lies in the deeper layer of the true skin, while the upper part forms a duct leading to the surface. Perspiration aids in regulating the temperature of the body and is increased by dry heat and exercise—also by certain emotions.

PERSPIRING FEET.—This condition is due to a disturbance of the nerves supplying the sweat glands, and medical advice should be sought as there is usually some fault in diet or constitution.

Treatment.—Plunge the feet alternately into quite hot and very cold water night and morning. Repeat this six or seven times, the last immersion being in cold water, after which the feet should be dried thoroughly with a rough towel and dusted with a powder consisting of equal parts of powdered starch, boric acid, and salicylic acid. Use this powder to dust the insides of the socks, which should be of silk or wool and never of cotton, and make sure that the shoes do not cramp the feet.

Perth County town of Perthshire, situated on the Tay, and known as the "Fair City," owing to its beautiful position. It is served by the L.M.S. Rly., and has large industries of which dyeing is the chief. Others are glass and linen making, while brewing, ironfounding and the manufacture of floor cloth are important. Pop. 34,807.

Perth has interesting historical associations. It was the capital of Scotland until the 15th century. It has been the scene of many sieges and battles. Here is a magnificent bridge across the Tay.

The **Earl of Perth** is a title borne by the family of Drummond since 1605 and has a strong Jacobite tradition. A dukedom was bestowed on the earl by James II., but this, which had no real validity, was abandoned in 1853, by George Drummond, who remained Earl of Perth and Melfort.

Perth Capital of Western Australia, at the mouth of the Swan River and

founded in 1829. In 1856 it was made a municipality, but its prosperity and growth date from the discovery of gold in the neighbourhood in 1891. Fremantle (*q.v.*) is the port. Pop. (1931) 209,729.

Perthshire Midland county of Scotland lying to the North of Stirling, with an area of 2528 sq. m. Of the Grampians many heights rise to 3000 ft. and more. It is watered by the Tay, and has many lochs, including Tay, Katrine and Achray. Other famous spots are the Carse of Gowrie and the pass of Killiecrankie, where Viscount Dundee at the head of the Jacobite forces defeated the royal force under General MacKay in 1689. The county town is Perth (*q.v.*). Blairgowrie, Dunblane, Auchterarder, Pitlochry and Aberfeldy are other towns.

The county is mainly agricultural and is served by the L.M.S. and L.N.E. Rlys. Pop. (1931) 120,772.

Peru Republic of South America, lying between Ecuador and Colombia on the North, the South Pacific on the West, Brazil on the East, and Bolivia and Chile on the south. It has an area of 482,133 sq. m., and a population est. at 6,147,000 (1927), half of which consists of aboriginals. Lima is the capital and Callao is the principal port. The country is mountainous, and is rich in minerals, of which the most important is copper, but petroleum and silver are also found. There is coal, but it has not yet been utilised. Vegetation is luxuriant and profitable; and includes sugar, coffee and cotton.

Peru is a centre of ancient civilisations. The Inca civilisation which Pizarro found when he conquered Peru in the mid-sixteenth century was virtually destroyed by the advancing Spaniards.

The Government is a republic under a president who holds office for four years, with a cabinet, senate and representative house.

Perugia City of Italy. The capital of the province of Perugia, it is of ancient Etruscan origin and played a considerable part in history. In mediaeval times it was long independent, supporting the Guelphs, but fell before the Farnese family in 1534. Occupied by the French in 1797, in 1849 it was seized by Austria, finally being united to Piedmont in 1860.

Among its many notable buildings are a Gothic cathedral, the Palazzo Comunale (begun 1297), containing an important art collection, and other famous buildings and churches, decorated by Perugino, Raphael and others. Its famous university dates from 1307.

The modern city manufactures liqueurs and silk, and is a centre of the wine and oil trade. Pop. (1931) 79,270.

Perugino Italian painter whose real name was Pietro Vannucci. He was born at Citta della Pieve about 1446, and worked in Florence, where he had received his training in the school of Verrocchio, and in Perugia. In 1480 Pope Sixtus IV. commissioned him to work on the decoration of the Sistine Chapel. Later, when he was once more in Florence, Raphael was among his pupils. He painted mostly religious subjects. He died 1524.

Peruvian Bark Name formerly applied to the bark of various species of *cinchona*, natives of the valley forests of Peru, Bolivia and Ecuador, from which quinine and allied alkaloids are extracted. Widely grown in Java, Sikkim, Ceylon, Jamaica and elsewhere, yellow or calisaya bark yields the most quinine, red bark the most cinchonidine.

Peseta Monetary unit of Spain. A silver coin whose standard value is 9½d. There is a gold piece of 25 pesetas.

Peshawar District and town of the North-West Frontier Province, India, belonging to Great Britain. The district is watered by the Kabul River. It has an area of 2611 sq. m. and a population of 865,000. The town is important because of its strategic position at the entrance of the Khyber Pass. It is a great trade centre and has a pop. of 121,866 (1931). It passed into British hands in 1848. In 1930 there was fighting between the Afridi and British.

Peso Monetary unit. Derived from the old Spanish dollar, it is now a monetary unit comprising 100 centavos represented by actual silver coinages, and theoretically gold ones, in Mexico, Argentina, Chile, Colombia, Guatemala, Panama, Cuba, Paraguay, and Uruguay. In some Central and S. American countries national synonyms, *e.g.*, quetzal in Guatemala, occur.

Pestalozzi **Johann Heinrich.** Swiss reformer and educationist. He was born at Zurich, Jan. 12, 1746, and interested himself in education. By 1780 he had established a school for waifs and strays at Neuhof, and from 1798-99 he organised a school for orphans at Stanz. His educational system was based on the importance of observation with its consequent perception. His writings include *The Evening Hours of a Hermit*, and *How Gertrude Teaches her Children*. He died Feb. 17, 1827.

Pétain **Henri Philippe.** French soldier. Born April 24, 1856, he passed out of St. Cyr in 1878, and in 1902 was instructor of the musketry school at Châlons. When the Great War broke out he commanded the 4th brigade. He did notable service during the war, including the command of the defences of Verdun in 1916. In 1918 he was made commander-in-chief of the French armies under Foch as *generalissimo*, and in Nov., one week after the Armistice, he became a Marshal of France. In 1925 he supervised reinforcements sent against rebels in Morocco.

Petal Botanical name for the floral leaves forming the corolla or inner whorl of a flower. In most plants the petals are coloured and form a single whorl as in the foxglove, but sometimes there is a double whorl as in the poppy. Petals are free or united, and as their chief function is to attract insects for purposes of pollination there are many other variations in colour, form and insertion upon the floral axis.

Petard Device formerly used in warfare for destroying a gate or palisade of a fortress. A petard consisted of an iron case shaped like a half cone and containing a heavy charge of gunpowder, which was fired by means of a fuse. The petard was fastened to a plank having hooks for attaching it to the gate or palisade.

Peter One of the twelve apostles. Named Simon, son of Jonas, and originally a Galilean fisherman, he was one of Christ's earliest disciples, forming with James and John His innermost circle. His confession concerning the Messiahship of Jesus, the bestowal of his second name Cephas or Peter, and the risen Lord's commission to "feed My sheep," prepared him for a dominant

place in the infant church. He was traditionally martyred under Nero in Rome, being commemorated on June 29.

Peter Epistles of. Two New Testament books. The first exhorts the scattered Christian community in Asia Minor to live worthily in a hostile world. Its traditional ascription to the apostle is generally upheld. The second, differing in style and language, presents problems which occasioned controversy even in the 3rd century. It may have been the work of a writer utilising the apostle's name, and was the last of the catholic epistles to receive canonical rank.

Peter King of Serbia. Born at Belgrade, July 11, 1844, he was a member of the great Karageorgevitch family. He was elected king after the assassination of Alexander in 1903. He fought with the Serbian army during the Great War, but when his country was reconquered and became Yugoslavia, he retired to Belgrade. He died Aug. 16, 1921.

Peter I. Tsar of Russia, known as The Great. Born May 30, 1672, he became tsar in 1682 together with his brother, Feodor. He was a keen soldier and devoted himself to the reorganisation of his army and navy, having for a time studied shipbuilding at Deptford. In 1696 he went to war with Turkey, and three years later with Sweden, when he was beaten at Narva by Charles XII. He married Catherine, the wife of a Swedish soldier, who eventually succeeded him as Catherine I. In 1703 he founded St. Petersburg. He died Jan. 28, 1725.

Peter II., grandson of Peter the Great by his only son Alexis, was born Oct. 21, 1715, and came to the throne in 1727; but, after a reign of little importance, died Jan. 29, 1730.

Peter III., was another grandson of Peter the Great by his daughter Anne. Born Feb. 23, 1728, he succeeded to the throne in 1762, but was deposed by his wife, Catherine II., and was strangled, July 18, 1762.

Peterborough City of Northamptonshire. Situated on the River Nene, it is an important railway junction, served by the L.M.S. and L.N.E. Rlys. It is the chief town of the Soke of Peterborough, a separate administrative county with a population of 51,845. The city has several industries of which the chief is the manufacture of agricultural implements and railway stock. The present cathedral stands on the site of a Saxon one and is largely Norman. Pop. 43,558.

Peterborough Manufacturing town of Ontario, Canada, 72 m. from Toronto, on the River Otonabee. Its principal industries are lumbering and flour mills. Pop. (1931) 22,327.

Peterhead Fishing port of East Aberdeenshire, situated on Peterhead Bay. Besides the herring fishery, here is a granite polishing industry and some lesser manufactures. The harbour has graving docks. Pop. 13,700.

Peterloo Massacre of. Popular name—suggested by Waterloo—given to the events which occurred at St. Peter's Fields, Manchester, in August, 1819, when a huge reform meeting, while it was being addressed by "Orator" Hunt, was dispersed by a body of Yeomanry and Hussars, with casualties amounting to 11 killed and over 500 wounded.

Petersfield Market town of Hampshire, on the S. Rly., 20 m. N.N.E. of Portsmouth and 54 from London. Pop. 4900.

Peter the Hermit Medieval preacher associated with the first crusade. He was a priest at Amiens when Pope Urban II. declared a crusade at Clermont, thereafter becoming famous for his inspiring advocacy of its claims. His legendary share in originating the crusade is unhistorical. He died c. 1115, and was buried at his abbey, now ruined, near Huy, Belgium.

Petiole Botanical name for the stalk of a foliage leaf, a petiole is typically cylindrical, but usually has a slightly flattened upper surface with the basal portion often grooved to carry off water. It is present in most dicotyledons, but not usually in monocotyledons. Its function is to expose the leaf to suitable illumination.

Petition In law it is a formal application made in writing to the sovereign, to Parliament, or to a court of law. It is loosely applied to any formal written request, such as that made to the home secretary by the friends or relatives of a person condemned to death, asking for a reprieve.

The Petition of Right was drawn up by Parliament in 1628 and presented to Charles I. It embodied constitutional demands which were agreed to by the king under pressure, and became a statute called "The Bill of Rights." A subject who wishes to proceed against the crown to-day must do so by means of a "petition of right."

Petra Ancient stronghold of Edom, situated on the Wadi Musa brook in a valley between the Dead Sea and the Gulf of Akaba. Excavations have revealed some wonderful buildings, notably the Temple of El-Deir, a Greek structure hewn out of the red rock. Some of the older work shows Egyptian influence, but the finest is Graeco-Roman. Petra was used in the Great War as a base for Colonel Lawrence's attack against the 4th Turkish army.

Petrarch Italian poet, more properly, Francesco Petrarca. He was born in Arezzo, July 20, 1304, the son of an exiled Florentine notary, and was educated at Avignon and afterwards at Montpellier and Bologna. Here he became an enthusiastic classical scholar, especially of Cicero and Virgil. After he returned to Avignon, in 1327, he met Laura, who was to become his inspiration. Her identity is unknown, but she may have been Laure de Noves.

Petrarch wrote both in prose and verse, but he will be remembered principally by his lyrics and by the sonnets to the form of which he gave his name. He died July 18, 1374.

Petrel World-wide sub-family of oceanic birds of powerful flight. The name denotes the habit some have of apparently walking on the water like S. Peter. The fulmar (*Fulmarus glacialis*), 19 ins. long, breeds in Shetland and the outer Hebrides; the sooty storm-petrel or Mother Carey's chicken (*Procellaria pelagica*), 6 ins. long, breeds in the Scillies and Lundy. Visitors to the Cape and Australia encounter respectively the Cape pigeon or pintado petrel and the great petrel, 32 ins., seldom N. of the equator.

Petrie Sir William Matthew Flinders. English Egyptologist. He was born at Charlton, Kent, June 3, 1853. Since 1880 Egyptian archaeology has been his special province. In the Fayum (1888-9) he unearthed important papyri, and investigated the ancient

Lachish in 1890. His subsequent researches have for the most part been carried on in the great tombs of Egypt. From 1892 to 1933 he filled the Chair of Egyptology in University College, London. He has written extensively on the results of his discoveries.

Petroleum Mineral oil consisting of hydro-carbons and varying in colour from dark green, brown to black. Petroleum is derived from the decomposition of organic matter in rocks, usually porous sandstones or limestones. From the crude oil by fractional distillation are obtained petrol or motor spirit, paraffin oil and wax, fuel oils and asphalt. *See* OIL.

Petrology Specialised branch of geology dealing with the composition, structure and classification of rocks, their origin and sequence of formation. In this study the geological relations of the rocks, their constituent minerals and the method of aggregation of these have to be considered. Microscopic examination entails the cutting of thin rock sections and a special technique dealing with the optical characters of minerals as determinative and discriminative characters particularly in igneous rocks.

Petty Officer Rank in the British Navy, corresponding to that of non-commissioned officer in the Army. They are usually men of education and intelligence chosen from among the leading seamen and examined in elementary seamanship.

Petty Sessions In England the sitting of a court of law. It consists of two or more justices of the peace or of a stipendiary magistrate. Such a court can deal summarily only with certain minor offences, and its powers of punishment are restricted.

Petunia Genus of perennial ornamental herbs of the deadly nightshade family, chiefly S. American. Averaging 12-18 in. high, sometimes with viscid leaves, the funnel-shaped or salver-shaped solitary flowers are white, red, blue and violet.

Petworth Village of Sussex. It is 55 m. from London and 24 m. from Chichester, on the S. Rly. **Petworth House**, the seat of Lord Leconfield, occupies the site of a castle.

Pevensey Watering place of Sussex. It is on Pevensey Bay, 6 m. from Eastbourne, on the S. Rly. Pevensey occupies the site of Anderida, the Roman fortress, whose outer walls remain, and here William the Conqueror landed in 1066. Pevensey was then a seaport and as such it flourished until the receding sea made the harbour useless. The keep and four round towers of the castle are well-known. Pop. 750.

Pewsey Town of Wiltshire, on the Avon, 7 m. from Marlborough and 76 m. from London by the G.W. Rly. It is the centre of the rich agricultural district known as the Vale of Pewsey. Pop. 1700.

Pewter Alloy of lead and tin used for making flagons, jugs, plates, etc. The common metal consists of 80 per cent. tin and 20 per cent. lead, but the finest pewter is mostly tin with only a little lead and copper. Other metals, antimony or zinc, may be added for special purposes. The **Pewterers' Company** is one of the oldest City of London Livery Companies, dating from 1474, and has its hall in Lime Street, E.C.

Phaedra In Greek legend, daughter of Minos, King of Crete and Pasiphae. Wedding Theseus, King of Athens, she fell in love with her stepson, Hippolytus. When her advances were rejected she hanged herself, leaving a letter containing a false accusation. The story is the subject of tragedies by Sophocles, Euripides and Racine.

Phaethon In Greek mythology, son of the sun-god Helios and the nymph Clymene. Attempting to drive his father's chariot his strength failed, he approached the earth so closely as to scorch it, and Zeus struck him with a thunderbolt into the River Eridanus or Po.

Phagocyte Biological term. It refers to white corpuscles (leucocytes) of the blood which can consume bacteria or other cells and envelop particles, which invade the body. The phagocytes can leave the blood vessels, and they take part in natural recovery in inflammation and in healing damaged tissue.

Pharaoh Kingly title in ancient Egypt. The Egyptian word, "great house," denoting in the pyramid age the royal estates, was used symbolically from the Middle Kingdom onwards, just as the Sublime Porte formerly designated the Turkish sultan. The first pharaoh named in the Old Testament is Shishak; those preceding him in Hebrew history still lack precise identification.

Pharisee Religious party among the Jews originating in the Maccabaean age. A branch of the Chasidim, their teaching upheld the precise observance of the Mosaic law, both canonical and traditional; they believed in the resurrection of the body and the existence of angels and spirits, thus rejecting the positions held by the Sadducees.

Pharmacopoeia Standard and authoritative work on the composition, preparation and dosage of drugs and pharmaceutical compounds issued in various countries. The British Pharmacopoeia is issued from time to time by the General Medical Council.

Pharmacy Art of preparing drugs and compounding medicines. In its cruder form it was practised in early times by the priests, and in the Middle Ages in Europe by the monks. In its modern form it requires a knowledge of *materia medica* and chemistry, as well as the system of dosage.

The **Pharmaceutical Society**, established in 1841, is the examining body for those qualifying for registration as pharmaceutical chemists under the Pharmacy Acts.

Pharos Small island off the coast of Egypt. Here stood the great lighthouse, or Pharos, built by Ptolemy I., about 260 B.C., which was one of the Seven Wonders of the World. Alexander the Great built a great mole to unite the island to his new city of Alexandria on the coast opposite.

Pharynx Cavity at the back of the mouth and extending from the posterior nares to the epiglottis and larynx, where it joins the oesophagus. Into the upper portion of the pharynx open the eustachian tubes on either side. The pharynx is liable to inflammation giving rise to acute or chronic pharyngitis, the former being due to a common cold or to scarlet fever, etc. Chronic pharyngitis or relaxed throat occurs from over strain of the voice or excessive smoking.

Pheasant Genus of game-birds of Asiatic origin (*Phasianus*). They have short slightly-curved bills, short wings

and long tails. Introduced into Roman Britain, the common *P. colchicus*, is now mostly reared by hand; the shooting season lasts from Oct. 1 to Feb. 1. Several other species occur in English coverts, *e.g.*, Reeve's from N. China, with 5-6 ft. black and white tail, Chinese ring-necked and Japanese green pheasants.

Pheasant's Eye Genus of annual or perennial herbs of the buttercup family (*Adonis*), natives of temperate Europe and Asia. Having much divided leaves the annual form, growing wild in Britain, with dark-centred crimson petals, is a garden favourite. Perennial forms with bright-yellow flowers from S.W. Europe are also cultivated.

Pheidias Greatest of the ancient Greek sculptors. He was born *c.* 490 B.C. Under Pericles he superintended all the works of art designed to beautify Athens. The frieze in the Temple of Athena, called the Parthenon, much of which still survives in the British Museum, was designed by him and executed by his pupils under his immediate supervision, while he himself sculptured the statue of Athena. His statue of Zeus at Olympia was one of the wonders of the ancient world. He died in prison, a victim of the jealousy of his enemies, in 432.

Phenacetin Carbolic derivative of coal tar used in medicine. Comprising colourless, tasteless and odourless crystals, slightly soluble in water, it is employed in 5 gr. or 10 gr. doses, either in cachets or powdered in water, for relieving pain and reducing feverish temperatures.

Philadelphia One of the principal cities of Pennsylvania, U.S.A., and an important port, situated on the Delaware River. It is a great industrial and educational centre and has a university. Its area is nearly 130 sq. m. Founded and named by William Penn in 1682, it has always been in the forefront of American intellectual and political life. Its industries include shipping in all its branches, locomotives, and all industries connected with educational work. It has medical and legal schools, and a vigorous artistic life nourished on its famous art galleries. It has two broadcasting stations (49.5 M., 0.5 kW. and 31.3 M., 0.5 kW.). Pop. 1,950,961.

The ancient city of **Philadelphia**, one of the seven churches of Asia, was in Lydia, and on its site now stands Ala-Shehr, a walled city, 80 m. from Smyrna.

Philately Science of stamp-collecting. It originated in France in 1862, and in England dates from the Royal Philatelic Society's first meeting, April 10, 1869. World famous stamp collections are those of the late King George V. and the late Philippe von Ferrari; part of the latter realised £402,965 at auction in 1922-1925.

Philemon Greek dramatist, born about 360 B.C. and dying in 263 B.C. He wrote nearly a hundred plays and founded the New Greek Comedy.

Philemon Influential Christian citizen of Colossae in S. Paul's day. The apostle's New Testament letter to him is a charming personal note, appealing to his kindliness to condone the offence of his runaway slave, Onesimus, who was now returning to his duty and, like his master, was one of the apostle's spiritual children.

Philip Christian saint. He was one of the seven entrusted by the early Christian community with certain temporal affairs as deacons, thereby relieving the apostles. After his colleague Stephen's martyrdom he preached in Samaria, baptized Queen Candace's Ethiopian eunuch, and subsequently entertained S. Paul at Caesarea when journeying to Jerusalem. Philip the deacon is commemorated on June 6.

Philip Six kings of France. Philip I. (1059-1108) increased the power of the French crown by adding to the royal domains. Philip II. (Philip Augustus, 1180-1223) established a strong monarchy. He took from the English kings the greater part of their lands in France, and secured his possession by his victory over the combined forces of John and the Emperor Otto IV. at Bouvines in 1214. He strengthened the royal authority by crushing rebellious vassals, allying with the towns and the merchants and organising a good administration. His policy was followed by his successors. Philip IV. (1285-1314) was involved in a struggle with Pope Boniface VIII., in which he gained the victory, again strengthening the authority of the French Crown. In the reign of Philip VI. (1328-1350) the Hundred Years' War with England began. Philip himself led the French forces, which were routed at Crécy, 1346.

Philip Five kings of Spain, of whom the most important was Philip II. Born May 21, 1527, he succeeded his father, the Emperor Charles V. (*q.v.*) in 1556. His second wife was Mary, Queen of England. A bigoted Catholic, his chief object was to restore the supremacy of the Catholic Church, overthrown by the Reformation. This policy resulted in war with his subjects in the Netherlands and led eventually to the establishment of the independent United Provinces. In France he supported the Catholic party, led by the Guises. He carried on a long struggle with Elizabeth of England, supporting plots in favour of Mary, Queen of Scots. Elizabeth in turn gave help to the Netherlands, and English seamen plundered Spanish galleons returning from America. The complete defeat of the Great Armada in 1588 finally broke the power of Spain. Philip died Sept. 13, 1598, and was succeeded by his son, Philip III.

Philip of Macedon. King of Macedonia from 359-336 B.C. On his accession he entered upon a career as a military leader, which made him ruler of the whole of Greece. Against his ambitious designs the Athenian orator, Demosthenes (*q.v.*) directed his famous *Philippic* orations. He was murdered at the age of 46 on the eve of his departure for a Persian campaign, but not before he had laid the foundations for the even greater conquests of his son, Alexander.

Philippi City founded by Philip of Macedon in Macedonia. S. Paul founded a church here to which he addressed an epistle.

The **Battle of Philippi** was fought in 42 B.C., and was a victory gained by Octavian and Antony over Brutus and Cassius.

Philippians **Epistle to the.** New Testament book comprising the last letter of S. Paul now extant. Its authenticity is fully established. It was sent from prison, apparently in Rome, to Philippi, the scene of the apostle's earliest European labours.

Philippine Islands Group of islands between the Pacific Ocean and the China Sea, discovered

by Magellan in 1521 and ceded by Spain to the U.S.A. in 1899. The largest are Luzon, 40,814 sq. m. and Mindanao, 36,906 sq. m. Manila, on Luzon, is the capital. The islands are very productive and well timbered. Rice, coconuts, sugar, hemp and tobacco are the principal crops, while the forests yield valuable timber. Education is well organised and there is a university. Pop. (1932) 12,590,369.

Philistines Ancient people occupying the Palestine coast-lands S. of Joppa. Apparently of Anatolian origin, their confederacy of five cities, Ekron, Ashdod, Gath, Ashkelon and Gaza, came into conflict with Israel under Samson, Samuel and David. Legendary association with a giant race lacks archaeological support. They accepted Assyrian domination, *c.* 700 B.C.

Phillpotts Eden. British novelist and dramatist. Born in India, Nov. 4, 1862, and educated at Plymouth, he published a series of novels with a Devonshire and especially a Dartmoor setting. These include *Children of the Mist* (1898), *The American Prisoner* (1904), *The Mother* (1908), and *Widecombe Fair* (1913). *The Owl of Athene* appeared in 1936. Of his plays, *The Farmer's Wife* (1917) and *Yellow Sands* (1926) were outstanding successes.

Philology Term denoting originally the study of what is said and written, now reserved for the study of the words themselves. It may investigate the beginnings of human speech or the origin, meaning and use of an individual language's component parts. Comparative philology arose when Sir W. Jones, 1786, observed that Sanskrit, Zend, Greek, Latin, Celtic and Gothic constituted one, the Aryan, family. Other groups are the Semitic, Altaic, Austric, Bantu, etc. Human speech is classified as isolating or monosyllabic, each word having a radical value only, *e.g.*, Chinese, or inflectional, certain elements expressing grammatical relations. Some, *e.g.*, Turkish, with inflections of independent form and meaning, were formerly called agglutinative. Some, *e.g.*, Latin, attaching inflections to roots, are called synthetic; some, *e.g.*, English, replacing inflections by independent elements, are analytic.

Philomela In Greek legend, daughter of Pandion, King of Athens. The Thracian King Tereus married her sister, Procne, whom he concealed and, pretending that she was dead, married Philomela also. In revenge the flesh of his own son, Itys, was served up to him. Tereus pursued her with an axe and she became the nightingale.

Philosophy Term meaning the knowledge of, or search for, the ultimate principles of knowledge or being. It is derived from Greek words meaning "love of wisdom." Schwegler defines philosophy as "reflection, the thinking consideration of things." Philosophy, the same writer says, distinguishes itself from the empirical sciences not by its matter, which is the same as that of the latter, but by its form, or method, its mode of knowing.

Socrates used the term, in contradistinction to the name of sophists (wise men) adopted by Protagoras, Prodicus, Gorgias and other of his contemporaries, to denote his own attitude towards the questions debated by the Greek teachers. The term philosophy had a wider meaning in the Middle Ages than now, being divided into natural philosophy, moral philosophy and metaphysical philosophy. The first is now called physical science, and the second ethics, while metaphysics denotes the philosophy of cause and effect, or the nature of being.

Phlebitis Inflammation of the veins. It results from inflammation of the surrounding tissue, blood poisoning, etc., and may lead to the formation of blood-clots. in some cases surgical treatment is necessary, while in all cases complete rest is essential, especially where a clot may have formed.

Phlox Genus of herbs, mostly perennials, allied to Jacob's Ladder, of N. American origin; one occurs in Siberia. With simple leaves and salver-shaped flowers, panicled or single, many garden forms have come from the perennial *P. paniculata* and *P. maculata*, and the dwarf moss-pink, *P. sabulata*. The half-hardy annual, *P. drummondii*, has also yielded vivid blooms.

Phoenicia Strip of Syrian coast-land between Lebanon and the Mediterranean. The Phoenicians (the Sidonians of the Bible) were great colonisers. They founded Carthage (*q.v.*) and were the greatest merchants and seamen of the period. Tyre and Sidon were their principal cities, and the Tyrian purple, a rich dye, one of their main objects of commerce. They penetrated as far as Cornwall and the Scilly Isles where they traded for tin. Their place in history ends with the fall of Tyre to Alexander the Great in 332 B.C.

Phoenix Mythical bird of gorgeous plumage. Only one male bird was supposed to exist, and it lived, according to various accounts, from 500 to 12,954 years. At the end of this time it burnt itself on its nest, a new phoenix arising from the ashes.

Phoenix Industrial city situated on the Salt River in Maricopa Co., Arizona, U.S.A. It is the capital of the state and has a trade in fruit, olives and livestock. It has a population of 48,118 (1930).

The **Phoenix Islands** are a small uninhabited group lying between the Equator and Samoa.

Phoenix Park Public Park of Dublin, comprising 1752 acres, and surrounding the Viceregal Lodge and other official residences. The zoological gardens are also included. In 1882 Lord Frederick Cavendish and T. H. Burke were murdered here.

Phonetics Study of speech-sounds, especially in man. The human voice, inarticulate or articulate, results from the passage of air through the larynx. Modified by the vibrating vocal cords and the relation of the mouth-parts to the mouth and nose-cavities, which act as sounding boards, the volume and resonance of the sounds produced are determined by physiological principles. Modern authorities classify consonants according to the place of articulation as labials, sibilants, interdentals, dentals, palatals and gutturals. Vowels are modified voiced sounds without audible friction. The **International Phonetic Association** uses a system of script which clearly individualises the pronunciation of words in a language.

Phonograph Machine for recording and reproducing sounds, invented by Edison. In its earlier form it consisted of a revolving metal cylinder with a spiral groove cut in its surface which was covered with tinfoil, the groove forming the path of a needle connected with a delicate diaphragm. Sound waves entering a receiver set up vibrations in the diaphragm, causing

the needle to indent the tinfoil. The metal cylinder is now replaced by one of wax.

Phosphates Compounds of phosphoric acid and various bases. In commerce it means, chiefly, phosphates of lime, occurring as mineral deposits and used largely as fertiliser. The impure massive form of the mineral apatite known as phosphorite consists of calcium phosphate, fluoride and chloride, and is an important source of phosphates. Other phosphatic deposits represent mineralised guano or other organic material. For manurial purposes the natural phosphates are converted into superphosphate by treatment with sulphuric acid.

Phosphorescence Power possessed by certain animals and plants of emitting light, a property shared also by some minerals. It occurs in the glow worm, firefly and many marine creatures, especially the deep sea fauna. The phosphorescence of the sea is largely due to swarms of minute protozoa (*Noctiluca*). Some minerals, such as the diamond and fluor-spar, become luminous in the dark, either by friction, heat or previous exposure to sunlight.

Phosphorus Non-metallic element having the symbol P and atomic weight 31.0. It is widely distributed in nature as phosphates, occurring mostly as calcium phosphate. It is a yellowish wax-like solid, which readily oxidises in the air, emitting a pale greenish light. By heating to between 240° and 250° C., it is converted into an allotropic, non-poisonous and non-luminous form, red phosphorus, used in match manufacturing. Phosphorus is employed in making vermin killers, phosphor bronze and various organic compounds.

Photo-Chemistry Branch of physical chemistry. It covers the chemical effects of electromagnetic radiations of various wave-lengths, from the invisible infra-red rays at one end of the scale through visible light rays to ultra-violet, X-rays and the most penetrating gamma rays at the other. Photography is the best known development, but the effects of the invisible rays are the subject of special study leading to important results in the higher branches of chemical science.

Photo-Electricity Branch of physics dealing with the electrical effect of radiations on metallic and other surfaces. It was long known that certain radiations facilitated the passage of electrical discharges, now recognised as due to their power of causing the emission of electrons. The photo-electric cell is a development now widely used, especially in connection with television and the sound film.

Photo-Engraving Printing term. Exposure of a prepared plate under the negative of a line drawing renders the lines insoluble while the balance may be removed, enabling reproductions to be printed. Pictures must first be photographed through a "screen," breaking the image into dots. Exposure and development of a prepared copper plate under the negative permits the copper plate subsequently to be etched into similar dots from which reproductions may be printed.

Photography Process by which pictures are produced by the action of light upon surfaces treated with chemicals sensitive to light. In the 18th century chemists had noticed the action of light upon silver salts and other substances and the production of fugitive images upon a suitable material, but about 1826-29 a Frenchman, Niepce, succeeded in producing pictures or "heliographs" by means of a sensitive film of bitumen and in collaboration with Daguerre further improved his process.

In 1839 Daguerre invented the daguerrotype in which metal plates coated with silver iodide were used. Meanwhile Fox-Talbot discovered the art of fixing silver nitrate negatives with common salt, thus producing permanent prints. This process was improved further by the use of hyposulphite of soda by Herschel, and the introduction of glass instead of paper for negatives followed by the use of sensitised albumen films. The next advance was made in 1851 by a sculptor, Scott Archer, who introduced the wet plate with collodion sensitised by silver iodide. In turn the wet plate process was superseded by the dry plate or gelatine bromide process in 1871 and more recent developments have been in colour and motion photography and the use of roll films.

Photometer Optical instrument used for measuring the intensity of light and the comparison of the illuminating power of light from different sources. In photometry the unit is the light from a standard sperm candle burning 120 grains per hour, the illuminating power of light from any source being expressed in terms of candle power. The different forms of photometers are constructed so as to enable the observer to judge the equality of illumination of two adjacent surfaces.

Photophone Apparatus devised by Prof. Graham Bell in 1880 for transmitting articulate speech to a distance along a beam of light. The principle involved in the photophone is the sensitivity of the element selenium, its electrical conductivity being increased by exposure to light.

Photosphere Name given in astronomy to the luminous envelope or radiating surface of the sun, from which light is emitted. Its surface is not uniform in texture, as by aid of the telescope it is seen to have a mottled appearance formed by brilliant areas in a less luminous network, the "rice grains" of Langley and Janssen.

Phrenology Empirical system of psychology claiming that mental faculties and disposition may be gauged from the shape of the skull. Founded early in the 19th century by F. J. Gall, and developed especially by J. K. Spurzheim, who left him in 1813, it asserted that mental powers comprise innate faculties independently located in definite brain-regions whose size corresponds with the skull's individual configuration. Popularised for a time in Great Britain and America, the system utilised phrenological charts, locating 42 faculties, emotional or intellectual.

Phthisis Greek word, "wasting," formerly applied—like consumption—specifically to the wasting lung-disease now called tuberculosis (*q.v.*). It should be distinguished from chronic interstitial pneumonia.

Phylloxera Genus of insects belonging to the aphides or plant-lice family. One, *Phylloxera vastatrix*, a native of North America, is the most dreaded insect pest of the grape vine. It appeared in France about 1860 and spread over Europe, ruining the vineyards, and later ravaged in turn many other parts of the world.

Physician One skilled in the art and practice of medicine. Only those who are qualified in medicine, surgery and midwifery are allowed to practise as medical practitioners and are registered as such under the Act of 1858.

The Royal College of Physicians, whose headquarters is in Pall Mall East, was established in the early 16th century. It gives degrees of licentiate and fellowship, L.R.C.P. and F.R.C.P.

In Scotland the Royal College of Physicians of Edinburgh was founded in 1681 and has its hall in Queen Street; there is a similar institution in Dublin.

Physics Term applied to the branch of science dealing with physical phenomena and with the laws governing these natural events. The science is based necessarily upon experimental work to obtain data for the stating of the mathematical laws which rule this material universe. In this investigation a study is made of the properties of matter and the phenomena relating to the manifestation of energy in its various forms. The range of study being so wide, physics is broken up into sub-divisions, such as mechanics, dynamics, optics, sound, heat, electricity, magnetism and radiation. In each branch the subject may be considered from a practical or mathematical standpoint.

Physiognomy Art of judging the character of a person from the countenance or external appearance. Although a belief in this art is very old and widespread it has been found difficult to formulate definite rules in accordance with scientific ideas. At the same time physiognomical methods have been found useful in pathology and criminology.

Physiology Section of biology concerned with the functions or life processes, as distinct from morphology, the study of form and structure. In its earlier phase the study of living organisms was mainly from the point of view of morphology, but in comparatively recent years it became recognised that form and structure must be interpreted in terms of the life activities of plants and animals.

Owing to the ever increasing range of investigation, physiology has widened out into the study of the organism in relation to its environment, forming the branch of ecology. Another branch, comparative physiology, deals with the comparative study of the functions in different groups of organisms. Further, the progress of physiology has been dependent upon the advances made in the allied sciences of chemistry and physics, a knowledge of the special technique of these being essential for physiological investigation.

Pianoforte Percussive musical instrument. Cristoferi, born in 1651, evolved from the dulcimer his *Clavicembalo col piano e forte*, the first of true pianofortes. Silbermann improved it, Stein, Shadi and Broadwood added the pedals, and Clementi and Beethoven influenced its subsequent evolution. The keyboard comprises a seven times recurrent group of seven white and five black digitals, each of which, when depressed, moves internal mechanism causing a felt-covered hammer to strike one of a series of wires of graduated length and varied gauge and tension. Unwanted vibrations are checked by dampers, which can be put out of action by the right pedal. The left pedal diminishes sound-volume by preventing in three ways (varying according to the pianoforte's make) the full impact of hammer-force on the wires.

Piastre Coin denomination. The Turkish lira, nominally 18s., contains 100 piastres each 40 paras. Silver pieces of ½, 1, 5, 10 and 20 piastres are coined, besides copper fractions, and theoretically gold pieces also. The Egyptian pound, nominally 20s. 6½d. is coined in similar denominations, besides nickel and bronze fractions. French Indo-China uses a silver piastre, nominally 2s.

Piave River of Italy. It rises in the Carnic Alps and flows through the north of the country until it falls into the sea by two mouths near Venice. It is about 140 m. long. There was some fighting along the river during the Great War. After their defeat at Caporetto in Oct., 1917, the Italians fell back behind the Piave, where, with the assistance of some British troops, they prevented the Austrians from advancing further. In June, 1918, there was renewed fighting. The Austrians crossed the river, but were driven back. Towards the end of the following October the Italians and the British contingent advanced from the Piave and drove the enemy before them until the armistice.

Piazza Italian word for a square or open space. The most famous is the piazza of St. Mark in Venice. They are found in other Italian cities.

Picardy Province of France before the Revolution. It now covers the department of Somme and portions of those of Aisne, Oise and Pas de Calais. Its principal city was Amiens, on the Somme. The province was ceded to Philip the Good, Duke of Burgundy, in 1435, and annexed to the crown of France in 1477.

Picasso Name taken by Pablo Ruiz, Spanish painter. Born at Malaga, on Oct. 23, 1881, he came to Paris and was associated with Braque (1906-12), becoming known for his cubist works. He was influenced by Cézanne and El Greco. Later he reverted to the manner of Ingres, turning out pictures in a less challenging style. In 1931 an exhibition of his works was held in London.

Piccadilly London thoroughfare. It runs from Hyde Park corner to Piccadilly Circus. Here are a number of the principal clubs, several hotels, and Burlington House, occupied by the Royal Academy, the Royal Society of Arts, etc. Regent St. crosses Piccadilly Circus, and Coventry St., Shaftesbury Ave., and Glasshouse St. lead out of it.

Piccolo Smallest flute. It sounds an octave higher than the concert flute, and than its written part. It is pitched in D for ordinary orchestral use, in B flat and F for military band purposes.

Pickering Market town and urban district of Yorkshire (N.R.), 32 m. from York, on the L.N.E. Rly. (junction). The church (partly Norman) contains ancient mural paintings. Pop. (1931) 3668.

Picketing Term denoting the posting of persons about a works, during a strike, to dissuade the employees from working. Made illegal in 1875 (so far as any compulsion was brought to bear by the pickets), what is termed peaceful picketing was legalised by an Act of 1906. An enactment of 1927, following on the general strike of 1926, made picketing illegal, if committed in respect of a strike declared unlawful. *See* TRADE UNION.

Pickford Mary (*née* Smith). American cinema actress. Born in Toronto, April 8, 1893, she married Douglas Fairbanks, March 28, 1920. Appearing on the stage in 1898, she afterwards acted in New York, and began screen work under D. W. Griffith. The Mary Pickford Film Corporation was formed in 1916 and gave her the highest salary in the profession. She appeared in many films, including *Rebecca of Sunnybrook Farm*, *Daddy Long-Legs* and *Coquette*. In 1919 she became an independent producer.

Picric Acid Synthetic compound, also known as trinitrophenol, prepared by the nitration of phenol or carbolic acid, or by the nitration of monochlorbenzene, picric acid is a poisonous, yellow crystalline substance used in the manufacture of explosives (lyddite), as a dye for cotton, and in medicine as an antiseptic, and in the treatment of burns.

Pictography (or Picture writing). Use of pictorial symbols to denote facts, events or ideas. Derived from the primeval arts of design, it was man's earliest method of making a more or less self-explanatory record. In the early metal ages of the Old World it was destined to pass into a alphabetic writing. Carried during the pre-metallic age into America, it developed local systems of picture-writing among the N. American plains Indians, and a more complex symbolism among the pre-Columbian Maya and Aztec peoples.

Pictou Seaport of Nova Scotia, Canada. It is on the north side of Pictou Bay, an inlet of Northumberland Strait, 118 m. from Halifax. Coal is exported. Pop. 3000.

Picts People occupying E. Scotland from pre-Roman times onwards. Apparently sharing N. Britain with the 3rd-century Caledonians, and first mentioned in Constantius Chlorus' campaigns, 296 and 306, their subsequent incursions S. of Hadrian's Wall helped the Scots to harass the Roman power. Their turbulent history is scantily recorded down to Kenneth MacAlpin, a Pict by maternal descent, who united Pict and Scot under one rule, 844.

Piedmont Department (*compartimento*) of N.W. Italy, including the provinces of Alessandria, Novara, Cuneo, Turin, Aosta and Vercalli. Lake Maggiore is on its E. border, and its French and Swiss borders are mountainous, enclosing fertile plains which produce fruit, chestnuts, olives, rice and wine. The Po and its tributaries traverse the district, which covers an area of about 11,300 sq. m. For centuries it formed part of the dominions of Savoy, was occupied by the French, 1796, passing to Sardinia in 1814. It became part of the kingdom of Italy in 1859.

Pier Architectural term applied to an isolated mass of masonry, forming the wall between two adjacent windows or openings or to the massive columns of a Norman arcade, also to the clustered columns of some Romanesque churches as in the nave of S. Miniato, Florence. Norman piers of the 11th and 12th centuries are usually massive with a rubble core faced by ashlar, and are rectangular or more or less circular, the two types often being used alternately in an arcade.

Pietà Term in art used for a representation of the Virgin embracing the dead body of Jesus, or of similar scenes at the deposition from the Cross. La Pieta, a group of sculpture of this type executed in S. Peter's, Rome, was one of the early masterpieces of Michelangelo, and this subject also has been the theme of many paintings.

Pietermaritzburg City of South Africa, also called Maritzburg, the capital of Natal. Founded by the Boers in 1839, it stands near the Umsindusi River, 73 m. by rly. from Durban. Industries comprise brickmaking, tanning and brewing. Pop. 20,671 (whites).

Pig Animal belonging to the family *Suidae* of the order *Ungulata*. The group comprises, besides the true pig, the wart-hog, bush pig and babyrussa. Domesticated pigs are derived from the wild boar. Principal British breeds include the large white, middle white, small white, Tamworth, large black, small black, Lincoln and Berkshire. Though in a wild state the pig frequents marshy regions it is a mistake to suppose that the domesticated animal is dirty or loves to wallow in mud. It pays to provide pigs with cleanly, roomy and well ventilated sties. An omnivorous feeder, the pig requires proper, well-varied diet, and will not thrive on garbage. *See* Bacon.

Pig Iron Crude iron, the product of the blast furnace, containing about 3 per cent. of carbon and small quantities of silicon, manganese, sulphur and phosphorus. It is hard, brittle and moderately fusible, and is cast in U-shaped moulds called " pigs."

Pigeon In general, all birds belonging to the order *Columbiformes* (true pigeons, doves and certain extinct birds, *e.g.*, the dodo). In its more limited meaning the name is given to members of the genus *Columba*, comprising about 70 species, the typical pigeons. Widely distributed over all but the coldest regions, the genus is particularly numerous in Australia, Malay Archipelago, New Guinea and adjacent islands.

British species include the wood pigeon, stock dove and blue rock. Domesticated pigeons include many fancy varieties with widely differing characteristics. The homer is used for message carrying, the carrier being a purely fancy strain. The pouter has an extremely large crop; the tumbler is distinguished for its manner of flight: the fantail by its widely expanding tail. Much attention is paid to the training of homing pigeons for long distance flights and periodical contests are held, the birds being flown from far distant starting places to their home.

Pigment Colouring matter. In painting it may be of mineral, vegetable, animal or synthetic origin. As a rule, mineral pigments are the most permanent, while animal and vegetable are fugitive. Synthetic substances such as alizarin and aniline derivatives now replace many of the older natural pigments.

Pigment is present in the epidermis of many mammals, in birds chiefly in the feathers, and in fish, insects and crustaceans in special secreting cells. Apart from pigments the colours of plumage, hairs, etc., are due largely to reflection, interference and other optical effects. Haemoglobin, the colouring matter of blood, and its derivatives form the commonest of the animal pigments.

Pig Sticking Sport of hunting the wild boar, popular in India. Huntsmen in parties of three or four pursue the animal, when beaten out of cover, and endeavour to ride it down and spear it.

Since the boar, when wounded, may turn and show fight, pig sticking involves some danger, and demands coolness, nerve, and excellent horsemanship.

Pike Infantry thrusting weapon. It comprised a long straight shaft and sharply-pointed metal head, conical or flat and spearlike, the butt being sometimes spiked. It dominated the infantry equipment of 15th century Europe, especially among the Swiss, who used 18 ft. pikes besides various types of halberds. The 17th century bayonet displaced the pike.

Pike Family of soft-finned, freshwater fishes inhabiting N. temperate regions. The voracious common pike, *Esox lucius*, of Britain and Europe, prefers lakes and sluggish reaches. Its long compressed body, up to 30 lb. and more, is covered with small scales, the large mouth being armed with strong teeth. The young are called jack.

Pilaster Architectural term for a flat rectangular column, either fluted or non-fluted, built into and partly projecting from a wall. In Renaissance architecture slender pilasters often separated the round-headed windows from one another in secular Italian buildings, and in the Tudor and Stuart period walls were often covered with classical pilasters.

Pilate Pontius. Roman procurator of Judaea, Samaria and Idumaea, under whom Jesus Christ suffered crucifixion. Coming from Tiberius' household, apparently a freedman, his unsympathetic ten years' governorship, A.D. 26-36, is noted with indignation by Josephus and Philo. His attitude during the trial of Jesus has in all ages been variously interpreted. The Abyssinian Church commemorates him as a saint on June 25; the Eastern Church his wife, Proc(u)la, on Oct. 27. Legend exiles him to Gaul, ascribing his end to suicide.

Pilatus Mountain of Switzerland, about 5 m. from the south arm of the Lake of Lucerne, 6996 ft. high. The name has no connection with Pontius Pilate, but is derived from Mons Pileatus, "the cloud capped mountain."

Pilchard Marine food-fish of the herring family (*Sardina pilchardus*), abundant in the Mediterranean and on the Atlantic coasts of N. Europe to the English Channel. The sardines of the W. coast of France, 5-7½ in. long, tinned in oil for export, are immature fish of the same stock as that up to 14 in. long, which furnishes the pilchard fishery off Cornwall and adjacent coasts. An allied species occurs on the Pacific coast of America, New Zealand and Japan.

Pile-Dwelling Primitive habitation built on piles. This constructional method arose in neolithic Europe, especially on shallow lake-margins, and continued through the early metal ages. It still occurs in aboriginal Africa, pile-granaries for protection from animal depredation being also used, as formerly by the Maori. Borneo raises piles 40 ft. high. In New Guinea and neighbouring islands pile-villages resembling those of neolithic Europe often extend far out to sea. They occur also in the Burmese Shan States and the Nicobars. *See* LAKE-DWELLING.

Piles (or **haemorrhoids**). Dilated condition of the veins at the lower end of the rectum, sometimes protruding through the anus and accompanied by bleeding. Since they are usually caused by constipation or some internal disorder, strict attention should be paid to the diet and general health. Diet should be simple and contain plenty of fruit and vegetables; alcohol is prohibited; drastic purges should be avoided, but the bowels can be regulated with liquid paraffin. Scrupulous cleanliness of the parts is essential, and the application of vaseline will aid in defecation. If the condition is severe a doctor should be consulted.

Pilewort (or **Lesser Celandine**). Perennial herb of the buttercup family (*Ranunculus ficaria*). The fibrous roots develop annually several small stout cylindrical tubers, used by herbalists for curing piles, and when boiled an agreeable pot-herb. The shining stalked heart-shaped leaves contrast with the starry, single bright-yellow, 1 in. flowers. *See* CELANDINE.

Pilgrim One who, from religious motives, journeys to a place held sacred. Pilgrimages are undertaken for penance, in discharge of religious obligation, or in quest of bodily or spiritual benefit. The practice, traceable to ancient Greece and W. Asia, still prevails in India, and is enjoined upon Moslems to Mecca and elsewhere. Christian pilgrimage to Palestine especially developed after Constantine. Medieval Europe also fostered visiting the tombs of saints, as those in Rome, S. James of Compostela, Becket at Canterbury and Our Lady of Walsingham; while curative pilgrimages are still made to Lourdes.

Pilgrim Fathers Earliest settlers of the Plymouth colony, Massachusetts, and specifically the first company of emigrants who sailed from Plymouth, Devon, in the *Mayflower*, reaching Plymouth Rock, Massachusetts, 1620. They were Puritans, largely from S.E. England, who left the homeland under a royal promise of non-interference with their freedom of worship oversea. The tercentenary of their sailing occasioned enthusiastic celebrations in England, Holland and America, 1920. The oldest Congregational church in London, founded in the New Kent Road, 1616, was enlarged by American subscribers in memory of Southwark men who sailed in the *Mayflower*, 1856, being called the Pilgrim Fathers Memorial Church. *See* MAYFLOWER.

Pilgrimage of Grace Insurrection in the N. of England, 1536-7. Occasioned by the dissolution of the smaller monasteries and various economic grievances, a Lincolnshire rising was quickly suppressed. A more formidable one, headed by Robert Aske and other Catholic gentry, broke out in Yorkshire; the leaders were executed, and a Council of the North established.

Pilgrim's Way Road used by pilgrims through Winchester to the shrine of St. Thomas à Becket at Canterbury, following, in part, a more ancient track. It is about 120 m. long and goes *via* Alresford, Farnham, Albury Pk., Burford Bridge, Merstham, Chevening, Mosham, West Malling, Hollingbourne and Charing.

Pilgrim Trust Fund founded in 1930 by an American, Edward Stephen Harkness. He set aside a sum of £2,000,000, the interest of which is devoted to assisting charitable causes in Great Britain, in recognition of the way the country had discharged its obligations since the war. A trust was formally instituted with Mr. Stanley Baldwin, M.P., as president and Mr. Thomas Jones as secretary.

Pillory Form of punishment used in England and some European countries. It consisted of a wooden frame supported upon a post, the culprit's head and hands being thrust through holes in the frame. In the 17th century it was used for punishing offences such as unlicensed publishing of books and seditious libel. At the beginning of the 19th century it was still in use for perjury, but was abolished in 1837.

Pilot Person who navigates a ship or controls an aircraft. A licensed pilot is employed to navigate a ship into or out of a port or harbour, through a river, channel or road. When a vessel wishes to enter, *e.g.*, a port, a recognised signal is made and a local pilot goes out to board the vessel for the purpose. An outgoing ship drops the pilot after he has conducted her into open water. Generally it is compulsory for a ship to be conducted by a licensed pilot when entering or leaving a port. The master or mate, however, may be a qualified pilot. Licensing is carried out by the local chief officer of customs.

Pilots for aircraft are certificated after completing specified training and passing appropriate tests.

Pilot Fish Subtropical marine fish of the horse-mackerel family (*Naucrates ductor*). About 12 in. long, spindle-shaped, steel-blue with dark vertical bars, it often accompanies sharks and ships, doubtless for the food supply. The popular notions that it warns sharks of the baited hook and sailors of the proximity of land are alike fabulous.

Pilsudski **Joseph.** Polish statesman. A Lithuanian, born in Nov., 1867, he was in conflict with the authorities while still a student, on account of his nationalist and socialist tendencies, and was exiled, spending 4 years in Siberia. Escaping from a later imprisonment in St. Petersburg, 1901, he visited Britain and the East, but the outbreak of the Great War found Pilsudski again in Poland, whence he invaded Russia with a Polish army. He was chosen President of the new republic set up in Poland, 1919, resigning, 1922. He was made Marshal, 1920. He headed a revolt in 1926 which brought about the fall of the government, himself becoming Premier and Minister of War. Resigning the major office, 1928, he became virtual dictator. Pilsudski again became Prime Minister in 1930, but in March, 1932, he was appointed Minister of Military Affairs, and Alexander Prystor took office as Premier. Pilsudski died on May 12, 1935. He wrote many historical works dealing mainly with Poland's struggles for independence, including *Historical Corrections* (1931).

Piltdown Skull Fossil human bones discovered at Pilt Down, Sussex, 1911-15. Quaternary gravels yielded fragments of a skull, partly mineralised, the right half of a lower jaw and some teeth. Subsequently an implement hewn from an elephant's thigh-bone emerged close by. Named *Eoanthropus*, "dawn-man," the remains represent the oldest known human race in Europe.

Pimento (or **Jamaica Pepper**). Dried fruit of a W. Indian evergreen tree of the myrtle order (*Pimenta officinalis*), widely grown in Jamaica and Central America. Also called allspice, because its flavour supposedly combines those of cinnamon, nutmeg and cloves. Its essential oil, largely eugenol, is used in pharmacy like oil of cloves, and for perfuming soaps.

Pimlico District of London between Chelsea and Westminster, in the city of Westminster. It is bounded by the Thames on the S. and E., Chelsea on the W., and Belgravia and Victoria St., Westminster on the N. Pimlico Road connects Royal Hospital Rd. and Buckingham Palace Rd.

Pimpernel Genus of herbs of the primrose order (*Anagallis*), natives of Europe, Asia and N. Africa. The wheel-shaped corollas of *A. arvensis*, scarlet in Britain, blue in continental Europe, expand in clear forenoons; hence the name poor man's weather-glass. The allied bog-pimpernel has rosy, funnel-shaped corollas.

Pinchbeck Reddish-yellow alloy of copper formerly much used in the manufacture of cheap jewellery and cases for watches, its composition varying from 80 to 93 per cent. copper, with 20 to 7 per cent. zinc. It was named after Christopher Pinchbeck, an 18th century London watchmaker who is said to have invented it.

Pindar Greek lyric poet. Born near Thebes, about 522 B.C., he composed, at the age of 20, a choral ode in honour of a victor at the Pythian games. His *Epinicia* or odes are divided into four books dealing respectively with the Olympian, Pythian, Nemean and Isthmian games. He died in 443 B.C.

Pine Genus of large evergreen cone-bearing trees (*Pinus*), widely distributed in the N. hemisphere. Pines differ from firs in having the needle-shaped leaves clustered in twos to fives. The only species indigenous to Britain is *P. sylvestris*, 70-100 ft. high, popularly called the Scotch fir. The most important timber-tree of N. Europe, it also yields turpentine, resin and tar.

Pineapple S. American perennial herb of the *Bromelia* order (*Ananas sativus*), now naturalised throughout the Old World tropics. The edible fruit consists of the flower-spike consolidated into a richly perfumed succulent mass, much improved under cultivation. Introduced into 17th century Europe, it is raised in hothouses, while large canning and export industries have arisen in Singapore, the Azores, Fiji, Hawaii and Natal. Fibre prepared from the leaves yields the grass-cloth of Formosa, Java and the Philippines.

Pinero **Sir Arthur Wing.** British dramatist. Born May 24, 1855, he was an actor, 1874 to 1881. He produced comedies at the Court Theatre, 1885-93, including *The Magistrate*, *The Cabinet Minister*, *The Amazons*. Elsewhere he staged *The Profligate*, 1889, and *Sweet Lavender*, 1888. *The Second Mrs. Tanqueray* gave Pinero a leading position among British playwrights. Other plays include *Trelawney of the Wells*, *The Gay Lord Quex*, *Mid Channel* and *A Cold June* (1932). He was knighted in 1909. He died on Nov. 23, 1934.

Ping Pong Table tennis game introduced about 1901. It is played on a table 9 ft. by 5 ft., divided by a low net, into two courts. Light wooden racquets and a small celluloid ball are used. Each player serves five times in succession, and the ball must hit the table on the player's side and thence bounce into the opponent's court. No volleying is permitted. Game is 21 up, but it goes beyond that figure if the players are 20 all.

Pink Name denoting cultivated forms of various species of *Dianthus* (*q.v.*). The pinks of English gardens, single or double,

derive from a Mediterranean form, *D. plumarius*, naturalised in parts of Britain since Stuart times, with rough-edged leaves and fragrant rose-purple flowers, often fringe-petalled. Some tufted rock-pinks come from the native Cheddar and Maiden pinks. Brilliant blooms are furnished by the China or India and Japan pinks.

Pinkerton **Allan.** American detective. Born Aug. 25, 1819, he emigrated to America in 1842, and opened a detective agency in Chicago in 1850. In 1861 Pinkerton organised the U.S. Secret Service, and was Lincoln's guard. He brought about, in 1876, the suppression of the Molly Maguires, an Irish secret society which had terrorised the coal-producing regions of Pennsylvania. He died on July 1, 1884.

Pinkerton's Detective Agency was carried on by his sons, and became famous for the part it played in solving notable crimes. Allan Pinkerton, a grandson, died in 1930.

Pink Eye Contagious and infectious disease of horses (equine influenza). The membranes of the eye become red and swollen, so that the eye takes on a deep red tinge. The name is also applied to an infective conjunctivitis in human beings.

Pinkie **Battle of.** Fought Sept. 10, 1547, near Musselburgh, between an English army of 16,000, led by the Protector, Somerset, and the Scots, 23,000 strong. The purpose of the invasion was the enforcement of a treaty of marriage between Edward VI. and Mary, Queen of Scots. The Scots were completely defeated.

Pinnace Name given to a small sailing boat, often schooner-rigged, and provided with oars for use if needed; also to an eight-oared boat. Pinnaces are used generally as tenders for larger vessels and form part of the equipment of a warship, the modern pinnace, however, usually being motor driven.

Pinner District of Middlesex, 3 m. from Harrow-on-the-Hill and 13 m. N.W. of London, on the Pin (Metro., L.M.S. and L.N.E. Rlys). The flint stone church of S. John the Baptist dates from the 14th century, and contains a mural monument to H. J. Pye, the poet laureate.

Pint Measure of capacity both for liquids and dry goods. The English pint is one-eighth of an imperial gallon, equivalent to 4 gills. In compounding medicines a fluid measure is used, a pint being equal to 20 fluid ounces. A Scottish pint is approximately equal to three imperial pints.

Pinxton Market town of Derbyshire, 6 m. from Mansfield, by L.M.S. and L.N.E. Rlys. Extensive coal mines are near, and lace is made. Pop. 5348.

Piozzi **Hester Lynch.** English authoress. Born at Bodvel, Caernarvonshire, Jan. 16, 1741, she married, in 1763, Henry Thrale (*d.* 1781), a wealthy brewer. They lived at Streatham, London, and here began their famous friendship with Dr. Johnson. Mrs. Thrale, in 1784, married Gabriel Piozzi, an Italian music master, and went with him to Florence. In her *Anecdotes* is a vivid account of Johnson. She also wrote *The Three Warnings*, a novel, and an autobiography. She died at Clifton, May 2, 1821.

Pipe Cylindrical instrument with holes through which air passes, making musical sounds. All wind instruments, including the organ, are "pipes."

There are: (1) Whistle pipes (like Panpipes); (2) Reedpipes, single-reed (like the clarinet), double-reed (like the oboe), and free (like the harmonium); (3) Pipes with cup mouthpieces (like the trumpet).

Organ pipes can be "flue," "reed," "stopped" or "open." *See* REED.

The **tobacco pipe** was invented in pre-Columbian America, specimens being found in ancient Indian mounds. Introduced into England by Raleigh in 1586, it was first regularly manufactured out of clay in London in 1619. Briar pipes, a later development, are made from the Mediterranean tree-heath, or *bruyère* root, of E. France and Italy. *See* TOBACCO.

Pipe Clay Fine white plastic clay containing a higher percentage of silica than kaolin or china clay, and used for making pipes, tiles and as cleaning material for leather.

Pipe-Fish Name of a group of long, slender, tuft-gilled fishes akin to the sea-horse, generally found in the waters of tropical and temperate seacoasts. The males mostly have pouches for safeguarding the eggs until hatched. Five species in British waters include the sea-adder, 2 ft. long, the great pipe-fish, 18 in., and the worm pipe-fish, 6 in.

Pipe Line Continuous line of pipes for carrying water from a reservoir, or for the transport of petroleum from the oil well to the refinery or port. Oil can thus be brought over great distances, as in the United States where there are over 90,000 m. of underground pipes of 4 to 12 in. in diameter, also in Persia where oil is carried for 150 m. across deserts and over mountains.

Pipe Roll Name given to the early financial records of the Exchequer consisting of a series of parchments originally rolled up together into a pipe-like roll. The first record dates from the reign of Henry I., and a continuous series exist from the time of Henry II. down to 1834.

Pipit Genus of song-birds akin to the wagtails (*Anthus*), widespread especially in the Old World. Of three British species the commonest, the meadow-pipit or titlark, is partly resident, partly migratory. The tree-pipit, a summer visitor, is called the woodlark in Scotland.

Pippin Name for several varieties of apple, pre-eminently Newtown, Ribston, golden, Blenheim, lemon and Cox's orange pippin. It formerly denoted any apple raised from pips, not by grafting.

Piquet Card game, The two players use 32 cards, twos to sixes being eliminated. Derived from the Italian 16th century *rouja*, and played in Tudor England in a Spanish form called cent, it was renamed piquet when Charles I. married Henrietta Maria. Each player receives twelve cards, the other eight being available, face downwards for exchange. Points count for various combination and tricks. Since about 1880 rubicon piquet, playing 100 points or six hands, has largely superseded the older five-hand rule.

Piracy Any act of robbery and depredation which if committed upon land, would constitute felony is piracy if committed upon the high seas. Certain other offences are statutory piracies, namely, an act of hostility at sea by a natural-born British subject under colour of a foreign commission; the assisting of an enemy at sea by the same

in time of war; mutiny; the running away with a ship, guns, ammunition or goods; the voluntary yielding up of these to a pirate. The penalty was formerly death, the pirate being tried by an admiralty court; now it is penal servitude for life or less, and offenders are tried in the ordinary way. Piracy is still common in Chinese waters.

Piraeus Seaport of Greece, on the Saronic Gulf, 6 m. S.W. of Athens. Founded by Themistocles and Pericles, it was connected to Athens by two walls. Piraeus was destroyed by Sulla, 86 B.C., and rebuilt in 1835, after Greece regained independence from the Turks. Piraeus is now connected with Athens by railway, and its modernisation was started in 1929. Po. 251,330.

Pirandello Luigi. Italian dramatist and novelist. Born near Girgenti, Sicily, June 28, 1867, after graduating at Bonn University, he taught in Rome, producing his first book, *Mal Gioconda*, in 1889. In 1910, having published many novels and stories, he began to write plays, the best known being *Six Characters in Search of an Author* (1921), *Henry the Fourth* (1922), *Ciascuno a Suo Modo* (1924). *The Life That I Gave Him* appeared in London in 1934. His plays have won him wide recognition by their brilliance and originality.

Pisa City of Italy, on the Arno, 7 m. from its mouth in the Ligurian Sea and 50 m. by railway from Florence. The Gothic cathedral (1063-1118) is a magnificent white marble structure with an elliptical dome 190 ft. high, and the campanile or Leaning Tower (1174-1350) is notable. In 1409 the Council of Pisa was held to deal with the schism which arose as a result of the residence of the rival pontiffs at Avignon. Pop. (1931) 73,041.

Pisano Andrea. Italian sculptor and architect, born at Pontedera, *c.* 1270. He decorated, in relief, a set of bronze doors for the baptistery at Florence. He died, *c.* 1349. Niccola Pisano, born *c.* 1206, produced the sculptured pulpit in the baptistery of Pisa, his birthplace, and also that of the cathedral at Siena. He died in 1378. Giovanni, his son, born *c.* 1250, built the tomb of Benedict XI. at Perugia. He died *c.* 1330. Vittore Pisano or Pisanello, was an artist and medallist. Born at San Vigilio, *c.* 1380, he was responsible for portrait medals of many of the contemporary princes. He died in 1456.

Piscina Latin word denoting in ecclesiastical usage a shallow stone basin draining to the earth, used by the priest for ablutions after the Mass. Usually niched in the sanctuary wall on the altar's S. side, it often survives in English pre-Reformation churches from the 13th century onwards, sometimes in elaborate architectural settings.

Pistachio Nut Kernels of fruit born by the *Pistachio verae*. They are bright-green in colour and taste like sweet almonds. They contain over 50 per cent. of oil and about 23 per cent. of albuminoids, and are much used in cookery.

Pistol Small firearm. It was invented at the beginning of the 16th century; the wheel-lock mechanism being used in these and later forms of pistols, although about a century later the flint-lock came into use. The introduction of the percussion cap for larger firearms in the early 19th century led to its use in pistols, superseding the older methods. The revolver with rifled barrel and revolving cartridge cylinder also came into favour, displacing the old type of pistol, as the modern automatic pistol is tending to supersede the revolver.

Pistole Former gold coin of Spain, a double escudo, now obsolete, worth about 17s. The name (French) was also used for the French louis d'or and other gold coins.

Piston Part of a pump or engine. It is a circular plate or short cylinder of metal or other material fitted into a hollow cylinder, in which it moves backward and forward, the movement being caused by fluid or steam pressure. Pistons are used in pumps and various forms of engines.

Pitcairn Small island in the Pacific, equidistant from Lima, Peru and Auckland, N.Z. It was discovered in 1767 by an officer of the *Carteret*, and is occupied by descendants of the mutineers of H.M.S. *Bounty* (1790). It was annexed by Great Britain in 1839. Its area is 2 sq. m.

Pitch Height or depth of sound. Low pitch is produced by slow, high pitch by rapid, vibrations. Standards of pitch have always varied. Apart from ancient practice, there have been the following standards:

1. **Classical Pitch**, estimated at A = 415 to 429 vibrations per second, C = 498 to 515 vibrations per second.

2. **High Pitch** (caused through the increasing brilliance of orchestral playing) which was in 1859 legalised in France as: A = 435 vibrations per second, C true = 522 vibrations per second, C by equal temperament = 517 vibrations per second.

3. **New Philharmonic Pitch.** In 1896 the Philharmonic Society adopted a standard of A = 439 vibrations at 68° Fahrenheit, or A = 435 at 59° Fahrenheit. This low standard is now general in concert use.

English military bands played at High Pitch until 1928 when they were instructed to adopt the Philharmonic Pitch: A = 439 vibrations per second, B flat 465.1 vibrations per second, C = 522 vibrations per second—at 68° Fahrenheit.

On Armistice Day, 1930, the Brigade of Guards publicly set the new standard.

Pitch Term used in mechanics for the distance between the centres of gear teeth or the crests of screw threads. The pitch is generally referred to as so many threads to the inch, thus four per inch would mean four threads and four spaces per inch in length, the pitch in this case being termed ¼ in.

Pitch Black, viscous substance obtained from coal tar as a residue in the still after fractional distillation. It is obtained also from the distillation of oils and wood tar. **Mineral pitch** is the name often given to natural asphalt or bitumen, and **Burgundy pitch** is the resinous exudation from the spruce fir, *Picea excelsa*.

Pitchblende Mineral consisting of a mixture of uranium oxides with oxides, sulphides and arsenides of lead, iron and other metals. Dark brown or black, with a pitch-like lustre, it is the chief ore of uranium and radium as well as various rare metals. Pitchblende occurs in small veins in gneiss, schist and slate in Cornwall, Norway, Joachimstal in Bohemian, and North America. The Bohemian pitchblende is worked chiefly for sodium uranate and indirectly for radium.

Pitch Lake Name given to a lake of asphalt at La Brea, in the extreme S.W. of the Island of Trinidad. Its area is about 100 acres and while the asphalt is firm and solid near the shore it is soft and boiling at the centre.

Pitcher Plant Insectivorous plant, with pitcher-shaped leaf-organs. A large genus of shrubs, *Nepenthes*, found in eastern tropical forests, bears such receptacles; the thick, corrugated mouths produce sweet excretions attractive to running insects, which collect within and are digested by other glandular secretions. In the E. United States the side-saddle plant, *Sarracenia*, also bears insectivorous pitchers.

Pitlochry Village and summer resort of Perthshire, on the Tummel, 28 m. from Perth, on the L.M.S. Rly., near the Pass of Killiecrankie and Loch Tummel. Pop. 2341.

Pitman **Sir Isaac.** Inventor of the Pitman System of Shorthand. He was born at Trowbridge, Wilts., Jan. 4, 1813, and became a schoolmaster. He published his *Stenographic Sound Hand*, 1837, and two years later set up a printing establishment at Bath. His main object became the teaching and development of his phonographic system of shorthand, which met with extraordinary success. The *Phonetic Journal*, afterwards known as *Pitman's Journal*, was begun in 1842. He was knighted in 1894. He died at Bath, Jan. 12, 1897.

Pitt **William.** British statesman. Born May 28, 1759, second son of the Earl of Chatham, he took his degree at Cambridge, 1777, and was called to the bar in 1780. Elected M.P. for Appleby, 1781, he was made Chancellor of the Exchequer by Shelburne, July, 1782, but the government fell in the following February. In Dec., 1783, North and Fox's coalition came to an end and Pitt formed a government in which he had to face the opposition of a large parliamentary majority. In 1784 he returned to power, and introduced a number of financial reforms, reorganising the East India Co., and doing away with many sinecures in the Customs Service. He established the sinking fund in 1786.

The outbreak of the French Revolution made many difficulties, and in 1793 Britain went to war with France, Pitt being Minister of War. He suppressed the Irish Rebellion of 1789 and effected the union of the two parliaments by the Act of 1800. He had intended to include a measure for Catholic emancipation, but, owing to the opposition of the king, abandoned this and resigned office early in 1801. He returned in 1804 when fear of a Napoleonic invasion brought him support from all parties. Hearing the tidings of Napoleon's success at Austerlitz, Pitt, then in poor health, returned from Bath to London where he died on Jan. 23, 1806.

Pittenweem Seaport town and burgh of Fifeshire, on the Firth of Forth, 9 m. from St. Andrews. The industries are fishing and the curing of fish. Pop. (1930) 1619.

Pittsburg City of Pennsylvania, U.S.A., situated at the point where the Monongahela and Alleghany rivers join to form the Ohio River. On a number of railway lines (Pennsylvania, Baltimore and Ohio, etc.), Pittsburg is one of the chief iron and steel working districts of the world. Other industries include the manufacture of locomotives, rails, piping machinery and apparatus, tinplates, bricks, glass, cement and chemicals. Andrew Carnegie came here in 1848 and set up iron and steel works. He founded the Carnegie Institute for technical education in 1900. The city has three broadcasting stations (48.86, 25.25 and 19.72 M.). Pop. (1930) 669,817.

Pityriasis Name of various scaling skin affections. *Pityriasis alba* is commonly known as dandruff. *P. rosea* attacks the trunk and upper parts of lower limbs, where pinkish spots develop. These shed greasy scales from the edges. *P. versicolor* is a parasitic disease, due to a fungus, the patches being irregular and brownish. A more serious disease, often fatal, is *P. rubra*. There is a widespread redness, and large paper-like scales are shed.

Pius Name borne by a number of Popes. **Pius X.**, born June 2, 1835, was pontiff from 1903 until his death on Aug. 20, 1914. He had to deal with the situation created by the separation of Church and State in France, by Briand. He also adopted strenuous measures against the modernists.

Pius XI., born May 31, 1875, was chosen pope in 1922, on the death of Benedict XV. The notable achievement of his pontificate was the ending of the anomalous condition between state and church existing since 1870, and the re-establishment of the temporal power of the papacy in 1929, which involved the creation of the Vatican City as a state ruled by the pontiff. An enthusiastic mountaineer in earlier years, his *Climbs on Alpine Peaks* appeared in 1923.

Pizarro **Francisco.** Spanish conqueror of Peru. Born at Trujillo, Estremadura, *c.* 1478, he entered the Spanish Army and saw service in Italy. He made a voyage of exploration to America and was with Balboa when the latter discovered the Pacific (1513). The conquest of Mexico (1520) aroused in Pizarro the desire to secure Peru. He made a voyage there in 1526, but had insufficient forces to attempt a settlement, and it was not till six years later that Pizarro, Almagro, and 183 men landed at Tambez. By an act of treachery he captured and executed Atahualpa, and set up Manco as ruler. Cuzco was taken in 1533 and on Jan. 6, 1535, Pizarro founded the city of Lima as the new capital. Almagro conquered Chile, while Pizarro retained control of the N. part of the territory. In 1537 Almagro came to the relief of Cuzco, then besieged by an Indian army, and the revolt was suppressed. Later, war broke out between the two factions and Almagro was defeated and executed by the Pizarrists in 1538. Pizarro himself was assassinated on June 26, 1541, at Lima by the Almagrists.

Placer Term used in mining for alluvial deposits containing gold and tin ores, as well as rarer metals, and consisting of sands, grits and fine to coarse gravels. They represent generally river and lake deposits of recent geological formation, but in Australia and California the placers or "deep leads" are ancient river beds buried beneath basalt.

Plague Term formerly embracing various epidemic diseases, now restricted to a malignant fever whose specific cause, *Bacillus pestis*, was identified, 1894. Epidemics occurred during the Roman Empire in mediaeval Europe, notably in the 14th century Black Death, and in modern times in Hong Kong, Australia, India, Russia and elsewhere. Three

fourths of all plague cases are bubonic; the remainder are septicaemic, without localised glandular swellings, or pneumonic, with cough and dark expectoration. Mortality is high, especially among Orientals. No specific remedy is known. Haffkine's anti-plague serum has had some success. *See* GREAT PLAGUE.

Plaice Marine food-fish of the flatfish family (*Pleuronectes platessa*), inhabiting N. European waters, from Iceland to S. of Britain. Allied to the dab and flounder (*q.v.*), but orange-spotted, it may attain 8-10 lb., measuring 30 in. or more, but mostly marketed at half that size. Unlike the turbot, its two eyes occupy the same transverse line.

Plaistow District of London. Between Canning Town and West Ham, 4½ m. from London (Fenchurch Street), on the L.N.E. and L.M.S. Rlys., it houses a number of factories, chemical works and engineering establishments. Pop. 35,900.

Plane Genus of large trees (*Platanus*), constituting an order allied to the walnut, natives of N. temperate regions. They have large deciduous palm-shaped leaves and smooth, whitish bark, scaling off annually in patches, the fruits being small, long-stalked spiky balls. The oriental plane was introduced into Tudor England. The western plane or buttonwood, N. America's tallest deciduous forest-tree, reached Stuart England. The London Plane, *P. acerifolia*, is a hybridised derivative from both; its timber is valued for cabinet-work.

Plane Term used in geometry for any perfectly level surface—that is, one upon which a straight line joining any two points will lie entirely on the surface. In aeronautics the term is applied to the plane or curved structures acting as wings and tail of an aeroplane for purposes of flight.

Planet Name given to one of the bodies in the solar system that revolve round the sun in elliptical orbits. The four planets, Mercury, Venus, Earth and Mars are nearest to the sun and are often termed the inner planets. Beyond Mars lies the belt of Asteroids and the outer planets, Jupiter, Saturn, Uranus and Neptune. Uranus, formerly known as Herschel, was discovered in 1781, and certain irregularities in this planet's movements led to the further discovery of Neptune in 1846. The presence of a still more remote planet was suspected, and in Jan., 1930, its existence was confirmed, and to this outermost member of the Solar System the name Pluto was given.

Planimeter Instrument for measuring the area of a plane figure and usually consisting of two hinged rods, the end of one of which is fixed, while the end of the other moves freely, tracing the boundaries of the figure to be measured. The difference between the readings of a small graduated wheel attached to the tracing arm before and after the tracing gives a number proportional to the area.

Plankton Biological name for the floating animal and plant life of the sea, also of rivers and lakes. These organisms are for the most part microscopic, and their immense numbers in many instances give a green or reddish tint to the water. The plankton forms the food of many fishes and other marine animals. As part of the food of the cod it is the origin of the vitamins A and D contained in its liver.

Plant General term for vegetable organisms from the simplest unicellular type to the highly complex herb or tree. In structure and form there is the greatest diversity, for while in the lower types the plant body is but little differentiated, in the flowering plants there is a well-defined root, stem, leaf and flower. Plants feed upon simple inorganic materials and are essentially passive and anabolic organisms. Reproduction ranges from simple fission in bacteria and budding in yeast to the complex sexual process seen in the floral mechanism of the higher plants.

Plantagenet Surname applied to the Angevin kings of England. The house included Henry II., Richard I., John, Henry III., Edward I., Edward II., Edward III., Richard II., Henry IV., Henry V., Henry VI., Edward IV., Edward V. and Richard III. At the death of Richard II. the house of Plantagenet became divided into the two branches of Lancaster and York, so that the line may be regarded as ending with the death of Richard II. in 1399. The name is derived from the *planta genista*, or broom plant, the badge of the house.

Plantain Name denoting various broad-leaved plants. *Plantago* is a genus of herbs, mostly noxious weeds with inconspicuous flowers, distributed over all temperate regions. There are five British species, the fruit-spikes of the waybread or greater plantain being a favourite bird-food; the lamb's-tongue is a lawn-pest. Water plantain, *Alisma plantago*, grows in marshland. *See* BANANA.

Plantain Lily Genus of perennial herbs of the lily order, (*Funkia*) of Japanese origin. The roots form a bundle of tubers from which emerge large oval or heart-shaped leaves, parallel-veined, sometimes white-striped. The flower-stems bear spikes of white or lilac bell-shaped flowers.

Plassey Village of Bengal. It is about 90 m. N. of Calcutta, and was the scene of a battle between the Nawab of Bengal, Suraj-ud-Dowlah, and Clive, June 23, 1757. The Nawab's army consisted of 18,000 cavalry and 35,000 foot with 50 guns. Clive's numerically weak forces included 1000 whites and 2100 sepoys with 10 guns. The complete defeat of Suraj-ud-Dowlah secured Bengal for the British.

Plaster Cementing material used for making casts of objects and for covering walls and other parts of buildings with a protective and binding layer. For internal walls, ceilings, mouldings, etc., plaster of Paris and various modifications, such as Parian and Keene's cements are used, the aim being to obtain a plaster whose setting is slow enough to be easily worked and which will take paint quickly. For external work Portland Cement, mixed with sharp, clean sand, is used as a covering for brickwork, etc.

The Plasterers' Company is one of the City of London Livery Companies.

Plaster of Paris Form of cement composed of calcined gypsum or sulphate of lime. Plaster of Paris receives its name from the abundant deposits at Montmartre, near Paris. The gypsum, when burnt at a moderate temperature, yields up about three-fourths of its combined water and when reduced to a fine powder, forms a cement which, on the addition of water to make a paste, rapidly sets or solidifies. It is used for casts and plastering.

Plateau Term applied to a tableland or elevated area of more or less level surface. Some are old plains of erosion that have been uplifted by earth movements, others have as their foundation an eroded plain, submerged and covered with stratified sediments, followed by re-elevation, and termed a plateau of accumulation. In England the Pennine Chain is an example of a plateau with uprising peaks and deep river valleys.

Platinum Metallic element, having the symbol Pt, atomic weight 195.23 and melting point 1775°C. Platinum is a silvery white metal having great ductility and malleability, and is unaffected by moisture, air and ordinary acids. In the crude state platinum is found as a natural alloy with palladium, osmium, iridium and other rare metals in the form of small, flattened grains in alluvial deposits, chiefly in the Ural Mts., but also in Canada, South Africa and New South Wales. It is used for making crucibles and chemical apparatus, parts of balances, electrical appliances and jewellery. Its salts also are employed in many industrial processes.

Plato Greek philosopher. Born in Athens 427 B.C., he had political ambitions but came under the influence of Socrates (*q.v.*) and about 387 founded the Academy, an institute for the study of philosophy, remaining in Athens except for two visits to Syracuse in 367 and 361-60. Perhaps the greatest of all philosophical writers, his works have come down to us in the form of dramatic dialogues in which the chief speaker is Socrates, into whose mouth Plato put theories developed after the former's death. Of these dialogues, thirty-five remain, the most important being the *Gorgias*, the *Protagoras*, the *Phaedo*, the *Symposium*, the *Laws* and the *Republic*, in which last Plato antedated much of the most modern political and sociological theory.

Plato was the first philosopher to formulate satisfactorily the principles of ethics. His philosophy is definitely social, and according to him justice and the good can only be completely attained in the social sphere, in which alone the life of the individual finds its true expression. His philosophy was the source of that great body of thought which became known as Platonism, and, through the medium of the neo-platonic philosophers such as Plotinus (*q.v.*), profoundly influenced Christian thought.

Platoon Division of a company of infantry. In the British Army there are four to a company of infantry. The platoon is commanded by a 1st or 2nd lieutenant and numbers about 60 men. The name comes from the French *peloton*, small body of men.

Platypus Generic name given in 1799 to the egg-laying water-mole of Australia and Tasmania. It was changed in 1800 to *ornithorhynchus* (*q.v.*), but is popularly called "the duck-billed platypus." *See* DUCKBILL.

Plautus Titus Maccius. Roman comic poet. Born about 251 B.C., he wrote plays while employed by a baker, and is said to have been responsible for 130 comedies, of which 20 are extant. They are masterly adaptions from Greek originals, the action rapid, humour keen and shrewd, and the characters lifelike. Among later writers indebted to Plautus must be mentioned Shakespeare, Molière, Addison and Dryden. He died 184 B.C.

Playfair Sir Nigel. British actor and producer. He was born July 1, 1874, and after taking his degree at Oxford he became an actor and played with Benson, Tree and others. As lessee and manager of the Lyric Theatre, Hammersmith, he has produced a number of successful plays, notably *The Beggar's Opera*. He wrote (1925) *The Story of the Lyric Theatre*; *Riverside Nights* (with A. P. Herbert); *Hammersmith Hoy*, 1930. Knighted in 1928, he died on Aug. 19, 1934.

Pleasley Village of Derbyshire and Nottinghamshire, 3 m. from Mansfield, on the River Meden. It is served by the L.M.S. and L.N.E. Rlys. There are silk and cotton mills and coal mines in the vicinity. Pop. 2510.

Plebeian In ancient Rome a member of the *plebs* or common people. Originally the inferior citizens descended from subject peoples transplanted to Rome and including freed and fugitive slaves, resident aliens and others, the plebeians had none of the privileges of the patricians, the descendants of the original settlers and the ruling order. In 494 B.C. they secured the right to elect tribunes. When the decemvirate was set up in 451 three plebeians became decemvirs, and later plebeians gained access to the higher offices, including that of consul (*q.v.*).

Plebiscite In ancient Rome, a law passed by the plebeians assembled in *comitia, tributa* or tribes. In present-day usage a vote of the whole electorate taken on a distinct issue. The Treaty of Versailles (1919) provided that a plebiscite was to be taken in areas of mixed population to decide frontier questions, nationality, etc.

Pleiades Conspicuous group of stars in the shoulder of the constellation of Taurus, the Bull. The pleiades form an open cluster of over 2000 stars, of which six or seven are easily visible to the naked eye. They are named after the seven daughters of Atlas and Pleione who, in Greek mythology, were placed among the stars.

Pleistocene Geologists' name for the older formations of the Quaternary or Post Tertiary system of sedimentary rocks, resting on the Pliocene (*q.v.*) and succeeded by the Recent, those now under deposition. Synchronising with the Glacial or Ice Age, they contain the palaeolithic or older stone-age remains of primeval man, the neolithic being post-glacial.

Pleonaste Variety of the gemstone, spinel. It is an aluminate of magnesia, and contains iron in addition. It occurs as dark-green or black octahedral crystals of a higher specific gravity than typical spinel, and as a constituent of garnet-bearing gneisses and other metamorphic rocks. It is also called ceylonite.

Plesiosaurus Genus of extinct paddle-bearing lizards, found fossil in Mesozoic rocks, especially Upper Triassic and Liassic. Small-headed, large-mouthed, with slender-pointed teeth adapted for fish-catching, they were long-necked, with relatively short bodies and tails. Some members of the family were 45 ft. long. Their four approximately-equal paddles facilitated life in the open sea.

Pleurisy Inflammation of the pleura of serous membrane investing the lung and lining the chest. Occurring oftener in an acute than a chronic form it may be dry or fibrinous, the result of exposure or an

accompaniment of other lung-diseases. There are pains in the side, dry cough and friction-sounds like creaking leather; it usually yields to careful treatment. Sometimes there is effusion of fluid into the pleural cavity, which may necessitate withdrawal by an aspirator.

Plimsoll **Samuel.** British politician. Born at Bristol, Feb. 10, 1824, he was a clerk at Sheffield and came to London in 1853, commencing business as a coal merchant. In 1868 he became M.P. for Derby and endeavoured to end the evils caused by the use of overladen and unseaworthy ships. The Merchant Shipping Act, in 1876, made compulsory the affixing to a British-owned merchant vessel of a maximum load line, the **Plimsoll Mark,** and gave power to the authorities to detain a ship which did not comply. The mark is a circle crossed by a horizontal line. Plimsoll resigned his seat in 1880, and died June 3, 1898.

Plinth Architectural term for the projecting base of a wall, or the square base of a column. In mediaeval buildings the plinth may be simply chamfered or in others richly moulded, and in buildings of the perpendicular style in England it is panelled to give verticality. In later architecture it is usually plain.

Pliny Roman writer. His full name was Gaius Plinius Secundus, and he is known as the elder to distinguish him from his nephew (*see below*). Born *c.* A.D. 23, after serving in Germany he was made procurator in Spain (67). He was appointed commander of the fleet at Misenum by Vespasian, and succumbed, in A.D. 79, to the suffocating vapours from the eruption of Vesuvius which buried Herculaneum and Pompeii. An indefatigable student, his *Natural History* deals also with such arts as sculpture, painting, etc. He is said to have read 2000 works in compiling this treatise of 37 books.

Pliny the Younger was a Roman writer. His full name was Gaius Plinius Caecilus Secundus. Born in A.D. 62, he was nephew and adopted son of Pliny the Elder, and in A.D. 80 began to practise as a pleader in the courts. He became in turn senator, military tribune, quaestor, tribune and praetor. Trajan made him consul and later governor of Bithynia. He wrote a panegyric on the Emperor Trajan and also ten books of *Letters*, one containing his official correspondence with Trajan. He died about A.D. 113.

Pliocene Geologists' name for the uppermost formations of the Tertiary system of sedimentary rocks, resting on the Miocene, and succeeded by the Pleistocene (*q.v.*). Most developed in the Mediterranean region and adjacent land northward, they occur in Britain mainly in the Coralline, Red, Norwich, Chillesford and Weybourne Crags and the Cromer Forest-bed.

Plotinus Founder of the Neo-Platonic School of Philosophy. He was born in Egypt, probably of Roman descent, about the year A.D. 203, and studied Indian and Persian philosophy in the East. His theories are Platonic in their origin but they suggest (in contrast to those of Plato himself) rather a way of mystical escape from the concrete world, than a fulfilment of what is best in it. He died A.D. 270.

Plough Agricultural implement used for turning over the soil, thereby loosening and pulverising it, and exposing the new surface to the air in preparation for sowing seed. It is one of the oldest implements used for tillage, the earliest forms being of wood and simple in character. The modern plough consists of a beam to which is attached a coulter or iron knife blade for cutting the soil, a ploughshare with sharp point and projecting edge, a mould-board for raising and turning over the soil, and handles or stilts. The hand or animal-driven plough is supplemented now by the steam and oil-tractor ploughs for large areas.

Plover Widely-distributed family of wading birds. British species include the golden plover, 11 in. long, with its blotched pear-shaped eggs, 2 in. long, laid four in a nest. The Kentish, 6¼ in. long, and ringed, 7¼ in. long, also come to breed. The grey plover, 12 in. long, breeding in Siberia, is a common winter visitor in East Anglia. *See* LAPWING, OYSTER-CATCHER.

Plum Fruit of the cultivated plum-tree. Derived from one or more species of *Prunus*, of the rose order, the main European varieties originated from the wild plum, *P. domestica*, including the victoria, magnum bonum and greengage. A Japanese species furnished not only Japanese and Californian but also S. African varieties, which withstand transportation to London better than the European stock. N. American species have also influenced the cultivated strains, which are grown as standard trees in orchards or trained to walls. *See* DAMSON, GREENGAGE, PRUNE.

Plumbago One of the alternative names for graphite, a form of impure carbon occurring as a soft black mineral and used for making pencils, polishes, lubricants, etc.

Plumber One who works in lead, especially in connection with fittings in buildings for the gas and water supply and also sanitary and sewage work. Usually plumbing is associated with general sanitary and domestic engineering, including the laying of lead roofing and guttering, the fitting of ventilating appliances, baths and bath heating apparatus, water softening plant, etc. Instruction in the various branches is given at technical classes. The **Plumbers' Company** is one of the smaller livery companies of the city of London.

Plumer **Herbert Charles Onslow, 1st Viscount.** British field marshal. Born Mar. 13, 1857, he joined the army in 1876, saw service in the Sudan and S. Africa, and from 1902-14 held various posts, becoming Quartermaster-General and member of the Army Council. In 1916 he was given command of the 5th Army Corps, and, later, the 2nd Army. In Nov. 1917 he went to Italy in command of the British forces sent to that field, returning to the western front and the 2nd Army again after five months. From 1919-25 he was Governor of Malta, and from 1925-1928 High Commissioner for Transjordania, retiring in Aug. Knighted, 1906, he was made a field marshal and a peer in 1919, taking the title of Baron Plumer of Messines. In 1929 he was made a viscount. He died July 16, 1932.

Plumstead District of London, 10½ m. from Charing Cross (S. Rly.). It forms part of the borough of Woolwich, Kent. Pop. 25,800.

Plunkett **Sir Horace Curzon.** Irish statesman. Youngest son of 16th Baron Dunsany, he was born Oct. 24,

1864. He represented Co. Dublin S. in Parliament, 1892-1900, founded the Irish Agricultural Organisation Society and established the Agricultural Co-operative Movement. From 1899-1907 he was Vice-President of the Dept. of Agriculture for Ireland. In 1917 he was chosen President of the Irish Convention. He died Mar. 26, 1932.

Plural Voting System allowing a person to cast more than one vote in an election, *e.g.*, in virtue of different qualifications, residential and business. For parliamentary elections in Gt. Britain a person may not have more than two votes, and these must be given in two constituencies.

Plutarch Greek biographer. He was born about A.D. 48, at Chaeroned in Boetia, and after travels in Greece and Egypt opened a school at Rome. He is notable for his parallel biographies of eminent Greeks and Romans. Disposed in pairs, the characters of the subjects being compared, this collection has great historical value. His other writings are grouped under the title *Opera Moralia*. He died *c.* A.D. 122.

Pluto Greek God of the lower regions. Pluto is the Roman name, the Greek being Hades. Brother of Jupiter and Neptune, he was the ruler of the infernal regions, and had dominion over the products of the earth. He carried off Proscrpine (Persephone) and made her his queen.

The discovery of a new planet, later named **Pluto**, was announced by the Lowell Observatory, Flagstaff, Arizona, in March, 1930.

Plymouth City and seaport of Devon. On Plymouth Sound, at the mouth of the River Plym, it is 247 m. from London on the G.W. and S. Rlys. A port of departure for shipping going to America, Australia, S. Africa and the East, Plymouth is an important mail station and the waters of Cattewater, Mill Bay, Sutton Pool and the Hamoaze accommodate many vessels. Here too is an extensive fishing industry. On Plymouth Hoe, overlooking the Sound are the Citadel, a statue of Drake, and a monument to Smeaton, actually part of the old Eddystone lighthouse, which he built. Pop. (1931) 208,166.

The city, which includes the towns of Stonehouse and Devonport (*q.v.*), gives its name to an earldom. Robert Grey Windsor-Clive (d. 1923) was made earl in 1905, but the title was borne from 1680-1843 by another family, that of Hickman-Windsor. The present earl, Ivor Miles Windsor-Clive, was born in 1889. His heir bears the title Viscount Windsor.

Plymouth China is a hard paste biscuit ware, and was made by Wm. Cooksworthy (1768-74).

Plymouth Seaport and town of Massachusetts, U.S.A. It is 37 m. by rail S.E. of Boston, on a branch of Massachusetts Bay. Here the Pilgrim Fathers landed from the *Mayflower* in 1620. The landing place is marked by a granite rock over which is a granite canopy. A monument to the pilgrims is on a hill above. Pop. 13,000.

Plymouth Brethren Evangelical Christian community formed by John Nelson Darby at Plymouth in 1830. Abandoning an Anglican curacy, he associated in Dublin with certain persons calling themselves "Brethren," who met regularly for public worship. Removing to Plymouth he established there and in other places, including Switzerland, similar self-contained communities, who commemorate the Lord's Supper every Sunday, while rejecting all ecclesiastical organisation and ordained ministry. They number about 80,000 in Great Britain, besides others in Europe, Canada and U.S.A.

Plympton Market town of Devon. It is 5 m. from Plymouth, on the G.W. Rly, and stands on the River Plym. Sir Joshua Reynolds was born here.

Plynlymmon Welsh mountain. It is 10 m. W. of Llanidloes, on the borders of Montgomeryshire and Cardiganshire, and is 2465 ft. in height. Here are the sources of the Wye and Severn, and of the Llyfnant and the Rheidol.

Plywood Name given to thin boards made of layers of wood, usually three in number, and cemented or glued together under pressure, the grain of the middle layer being placed at right angles to that of the outer layers. Plywood is light and has the advantage of being less liable to warp or split than ordinary boards. It is used in aeroplane construction and box manufacture, also for furniture and as panels for walls and ceilings.

Pneumatic Appliances

Type of appliances in which the power is supplied by compressed air. They are used for various percussive purposes such as hammers and drills, also for working hoists, and in modern paint work as a spraying device. Pneumatic rock drills are used in mining operations and are provided with devices for turning the drill around as it works and for adapting the blows to the increasing depth of the hole. Painting of large surfaces, especially with cellulose paints, is effectively achieved with a pneumatic apparatus, delivering the paint in the form of an evenly distributed fine spray.

Pneumonia Inflammation of the substance of the lung. Three forms occur. Acute lobar or croupous pneumonia, commonly called congestion of the lungs, is usually caused by a specific micro-organism, *Diplococcus pneumoniae*. Congestion of the blood-vessels is followed by a solidified condition resembling liver tissue, called red and grey hepatization, simulating red and grey granite respectively. Generally the air-vesicles, by eliminating their morbid contents, quickly resume their normal action. Lobular or broncho-pneumonia, diffused through the smaller tubes and vesicles, sometimes chronic, is fatal to the young and aged. Chronic interstitial pneumonia or cirrhosis of the lung closely resembles the symptoms of tuberculosis. *See* PHTHISIS.

Po Longest river in Italy. It rises in Monte Vigo, as a mountain torrent, and flows into the Adriatic, 300 m. away. It receives all the waters flowing northwards from the Apennines and southwards from the Alps and Lake Garda.

Pocahontas Daughter of an American Indian chief, Powhattan, who was the ruler of the tribes of Virginia. Born about 1595, she is said to have interceded for the life of Capt. John Smith, when he was captured by her father. Later she was taken as a hostage and brought to Jamestown. She became a Christian and married John Rolfe, a settler. She came to England in 1616, and died at Gravesend, 1617.

Pocklington Urban district and market town of Yorkshire (E.R.). It is 13 m. from York, on the

L.N.E. Rly. The industries include the making of agricultural implements, milling and brewing. Pop. (1931) 2640.

Pod Dry seed-vessel developed from a single carpel which, when the seeds ripen, usually splits along both edges. Technically a legume, it characterises leguminous plants, *e.g.*, pea, furze. The name popularly denotes also the elongated siliqua or shortened silicle developed from two united carpels with transverse septum characterising cruciferous plants, *e.g.*, cabbage, honesty.

Poe Edgar Allan. American author and poet. He was born at Boston on Jan. 19, 1809, and was adopted at an early age by John Allan. He published *Tamerlane* (poems) in 1827. He wrote for Baltimore journals and later became editor of the *Southern Literary Messenger*, going to live in Richmond. Other volumes of poems appeared in 1829 and 1831. With *The MS. Found in a Bottle* (1833) he won a prize given by the Baltimore *Saturday Visitor*. Poe excelled in creating an atmosphere of mystery and horror, as in such tales as *The Pit and the Pendulum*, *The Masque of the Red Death*, *The Murders in the Rue Morgue*, and *The Fall of the House of Usher*. Among his best-known poems are *The Raven*, *The Bells*, and *Annabel Lee*. He died on Oct. 7, 1849.

Poet Laureate Office of crowned poet, or poet at the Court. The Greeks and Romans used to crown poets with laurel, as Petrarch was thus crowned at Rome in 1341. Though Chaucer and later Skelton styled themselves poet laureate the office really commenced with the giving of a pension of 100 marks to Ben Jonson by James I. Charles I, made the pension £100 and added a tierce of Canary. When Southey was made laureate a money payment was made in lieu of the wine. In modern times the laureateship has been held by Wordsworth, Tennyson, Robert Bridges and John Masefield (1930).

Poetry Form of literary expression, clothed in emotional, rhythmical and often symbolic language. Rhyme is not essential, for blank verse has been the vehicle of much of the grandest poetry in all languages. Poetic form varies with fashion. It may be alliteration, assonance, rhymed couplets, or the irregular type known as *vers libre*, but all true poetry should appeal both to the mind and the ear. Rules governing metre, accent and similar details come under the heading of prosody. *See* LYRIC; ODE.

Pogrom Term used in English newspaper reports in describing attacks upon the Jews in Russia instigated by the authorities (1905-06). It has since been applied to any similar organised attacks on Jewish communities. It is derived from a Russian word meaning "devastation."

Poilu Name given to a French private soldier. The word means "hairy" and, originally applied to a recruit, was used commonly during the Great War for soldiers in the trenches, when many were obliged to let their beards grow. The term thus came into general use to denote a common soldier in the French army.

Poincaré Raymond Nicolas Landry. French statesman. Born Aug. 20, 1860, he became a barrister. He entered the Chamber of Deputies, 1887, was Finance Minister, 1894-95 and 1906, and became Premier and Minister of Foreign Affairs in 1912, resigning on his election as President of the Republic, Jan. 17, 1913. His term of office ended in 1920. In Jan., 1922, he became Premier in succession to Briand, holding this post and also that of Foreign Minister until the election of May, 1924, when he was defeated and resigned. He formed a ministry again in 1926, and was also Finance Minister at the time. He brought about the stabilisation of the franc (June, 1928). Poincaré resigned the premiership, July, 1929. He died in 1934.

Point In mediaeval music, a dot affecting note-duration. Known as points of augmentation, division, perfection and alteration; points fulfilled the functions of modern dots and barlines. Point also denoted a mediaeval note, and also a place of dramatic, or contrapuntal interest in a composition.

An **organ-point** is a succession of harmonies progressing over a pedal bass-note; also the chord introducing a concerto's *cadenza*.

Pointer Breed of sporting dog. Introduced from 17th-century Spain, and improved by foxhound and greyhound crossing; the English pointer is close-haired, 24 in. high, and usually parti-coloured such as liver-and-white, but sometimes all liver-coloured or black. It hunts by body-scent, and when it scents game stands stiffly with muzzle and tail outstretched, usually with one foot raised.

Point-to-Point Type of steeplechase for hunters, usually over a course of three or four miles. Originally these races were run over a straight course, *i.e.*, from one point to another across country.

Poison Substance which tends to destroy life or impair life when introduced into the body either through the mouth and stomach or by being absorbed into the blood. Poisons may be classified as corrosive, irritant and neurotic, the first-named being the mineral acids, alkalies, and salts such as corrosive sublimate. The irritant poisons cause inflammation of the parts and include metallic substances such as arsenic, also various animal and vegetable poisons. Neurotic poisons affect the nervous system and include the narcotics such as morphia, also strychnine, belladonna, alcohol, etc. Many of these poisons are scheduled under the Poisons Acts and their sale regulated in various ways.

TREATMENT FOR POISONING. In all cases of poisoning immediate action is absolutely necessary, and is in many cases the only hope of saving life. A doctor must be called at once; but until he comes the amateur can follow certain broad lines of conduct. If the poisoning is from food, or from poisonous plants, or from prussic acid, encourage the patient to be sick. A tablespoonful of mustard or 2 tablespoonfuls of salt in a glass of warm water is a good emetic. In the case of prussic acid, give a very strong mustard emetic at once. After vomiting, give strong tea or black coffee.

If the lips and mouth of the patient are stained or burned (denoting a corrosive poison) it is harmful to give an emetic. Strong tea is the safest antidote.

If sleepy always keep the patient awake, if necessary, by walking him about or slapping his face and chest. If he has collapsed he must be kept warm, and give him a teaspoonful of sal volatile in a little water if he can swallow. If breathing ceases, artificial respiration must be adopted (see under DROWNING).

If the throat is swollen so that the patient cannot breathe, apply hot cloths, and as soon as he can swallow give drinks of *cold* tea or coffee.

If the poison is known to be an acid such as nitric, oxalic, or sulphuric, salts of lemon, carbolic, etc., rinse the mouth out with an alkali and give drinks of it. Lime-water or magnesia is good, or, failing these, chalk and water, whiting and water, or even plaster from the ceiling.

If the poison is an alkali such as ammonia or caustic soda, use an acid preparation (vinegar or lemon juice and water, equal parts).

Poitiers Town of W. France. Founded in pre-Roman times, it fell to the Franks in 507, when Clovis defeated the Visigoths under Alaric II. Near here Charles Martel defeated the Mohammedans in 732. After the Battle of Poitiers in 1356 (*see below*) the town became an English possession till retaken in 1373. The town has some Roman remains, a fine cathedral, containing some stained glass of the 12th and 13th centuries, the church of S. Jean, the oldest Christian monument in the country, and other very ancient churches. It has a university. Its trade, apart from wine, is mainly agricultural, and its industries include printing and the manufacture of brushes, hosiery, etc.

Poitiers Battle of. Fought Sept. 19, 1356, between Edward the Black Prince and the French under King John II. The English forces numbered about 8000 and the French 15,000. The battle resulted in a decisive victory for the Black Prince, the French King being taken prisoner and brought captive to England.

Poker Card game played for money stakes. Introduced into America from France via New Orleans about 1830, it became the now prevalent draw-poker, using 52 cards, about 1860. Each player, 2 to 7, received five cards; the game goes to the best hand.

Poker-Work Form of decorative art, effected by burning a design on wood, leather, velvet and other materials with a heated metallic point. First accomplished with a red-hot "poker," *e.g.*, the pyrographic drawings on lime-tree and other woods by John Cranch (1751-1823), it is now done with needles heated in spirit lamps.

Pola Town and seaport of Italy. It is on the peninsula of Istria, 56 m. S. of Trieste. There are two harbours, naval and commercial. Prior to the fall of the empire, Pola was the chief naval station of Austria-Hungary, and an Austrian fleet was blockaded here by the Italians, who occupied the town late in 1918. Together with Istria, it became a port of Italy by the Treaty of Versailles (1919). There is a cathedral (15th century), a castle (Venetian), and the Roman Amphitheatre and Temple of Augustus. Pop. (1931) 55,559.

Poland Republic of Eastern Europe, created under the Treaty of Versailles, 1919. It has an area of about 149,960 sq. m. and a pop. of 31,927,775 (1931). Bounded by the Baltic, East Prussia, Lithuania and Latvia on the N., White Russia and Ukraine on the E., it joins Rumania and Czechoslovakia on the S. and Germany on the W. It has a port at Gdynia and also uses Memel and Danzig. The capital is Warsaw. There are extensive forests, and important mineral deposits, including coal, petroleum, iron and zinc. There are large salt mines, and potash is also found.

HISTORY. Until 1772 Poland was an independent state, dated back to the 6th century by tradition, and with a recorded history commencing with Mieczylaus I. (964). The State had a turbulent history, being joined at different times with Hungary and Lithuania. Invasions by Wallachians, Turks and Russians occurred, and Charles Augustus of Sweden seized Poland in 1655. Sobieski (elected king 1674) is famous for his relief of Vienna, besieged by the Turks (1683). In the 18th century the State decayed. A confederation of patriots made a stand against Russia's encroachments in 1768. Four years later came the first partition, territory being annexed by Austria, Russia and Prussia, and later divisions (1793-95) took the remaining parts of Poland, Stanislaus, the last king, abdicating at Grodno in 1795. Napoleon set up a short-lived duchy of Warsaw, and there was another division of territory in 1814.

During the Great War, Poland was seized by Austria-German forces and independence proclaimed in 1916. Pilsudski, who had earlier invaded Russia with a Polish legion, was a member of the Council of State. A Republic was proclaimed at Warsaw in 1918, and its independence confirmed by the Peace Treaty of 1919. Pilsudski became first president (resigning 1922) and Paderewski premier. Threatened by Russian invasion in 1921, the Soviet armies were repulsed and a favourable peace secured. Pilsudski died in May, 1935. Earlier in the year Poland's very democratic constitution was replaced by another, giving rather more power to the president.

Polarisation of Light. Condition of radiant energy, most noticeable in light, in which some of its properties are different in different directions. Light may be polarised by reflection, at an angle which differs for different substances, or transmission, as through most crystals. Light thus treated will be reflected or transmitted most easily a second time for certain positions of the reflector or crystal, and not at all for positions at right angles to these. The plane of polarisation is rotated by passage of the polarised light through quartz, and by a magnetic field, this effect being also used to distinguish between certain sugars in solution.

Polarisation in a voltaic cell denotes the collection of gas on the surface of the negative electrode, diminishing the supply of current.

Polariscope Optical instrument used for showing the effect of various substances upon polarised light, and generally used as an attachment to the microscope for the study of the characters of thin sections of rocks and minerals. Its essential parts are the analyser and polariser, each consisting of a prism of Iceland spar bisected longitudinally in a plane through its obtuse angles and recemented together to form a "Nicol prism." The analyser is inserted above the object glass and the polariser beneath the microscope stage.

Polar Regions Term applied to those regions which surround the geographical poles and lie within the Arctic and Antarctic circles, 23½° from the poles. In these areas sunlight or darkness extend over 24 hours at a time. They are characterised by extreme cold and the prevalence of ice over both sea and land. The northern ice cap forms a plain at sea level over the Arctic Ocean except over the land surface. The southern ice cap covers an elevated land area. *See* ANTARCTIC; ARCTIC.

Pole In geography a term applied to the ends of the earth's axis,

the surface around the North Pole appearing to an imaginary observer above it to rotate anti-clockwise, while at the South Pole the direction is clockwise. The magnetic poles are the ends of the earth's axis regarded as a great magnet, and lie near the poles of rotation.

Pole In engineering a term applied to the ends of a magnet, these ends having the property of polarity or two-ended-ness. One of these, the North Pole, is north-seeking, while the other, the South Pole, is south-seeking, and the law of magnetic attraction is that unlike poles attract, like poles repel. *See* MAGNETIC POLES.

Pole **Reginald.** English Cardinal and Archbishop of Canterbury. Born in 1500 at Stourton Castle, Staffs., he went to Oxford, and after entering the Church, spent some years in Italy. In England again, he opposed Henry VIII.'s divorce from Catherine of Aragon, and in 1532 left the country, going to Padua. On the accession of Mary he was appointed papal legate, coming to England in 1554. Pole was made Archbishop of Canterbury in 1556. In 1557 he was recalled and charged with heresy, but died Nov. 17, 1558.

Polecat Carnivorous mammal of the weasel family (*Putorius putorius* or *P. foetidus*), native of Europe and found in Great Britain. A pouch under the tail contains a fetid-smelling yellowish substance. It is 18 in. long, with 5-in. bushy tail, sharp-nosed, with small, rounded ears and dark-brown pelage, white-marked round the head. It usually breeds in rabbit-burrows. Furriers call the fur fitch or fitchet.

Pole Star Nearest conspicuous star to the N. pole in the sky. It is the 2nd magnitude star *alpha* in the "Little Bear" constellation. The hindmost wheels of Charles's Wain, the *alpha* and *beta* of the "Great Bear," are the pointers; a line through them prolonged 4½ times northwards indicates its whereabouts, 1½° from the true pole.

Polesworth Village of Warwickshire, on the L.M.S. Rly. It is 4 m. from Tamworth, on the River Anker. It is the centre of a colliery district, and there are also quarries. Pop. 6280.

Police Non-military force appointed to maintain law and order. In England, before the passing of Peel's Police Act of 1829, there was no organised body. Watchmen in the larger towns, and parish constables in rural districts, were the sole persons charged with the duty of preventing crime and keeping order. Peel's measure applied only to the metropolitan area, but eventually similar bodies were formed in the towns and counties, and an Act of 1872 restricted the appointment of parish constables by the justices.

The **Metropolitan Police** are controlled by the Home Secretary, and he has also certain powers over the borough and county police, which are otherwise under the control of their respective councils. His department inspects them and exchequer grants are made towards the cost. In 1932 it was decided to take steps to amalgamate some of the smaller police forces with the larger ones. The **City of London Police** is governed by the Court of Common Council.

Police Court Court of summary jurisdiction. In London they are presided over by a stipendiary (paid) magistrate, as in certain other towns. Generally however, it is Justices of the Peace (unpaid) who act as judges. Justices are appointed by the crown on the advice of the Lord Chancellor, stipendiaries on the petition of a municipal borough council to the Home Secretary. *See* MAGISTRATE.

Political Economy Science of the production and distribution of wealth. *See* ECONOMICS.

Polka Round dance of Bohemian origin. Introduced about 1840 it had a great vogue for some fifty or sixty years. The music is in two-four time.

Poll Term denoting the voting or taking of votes at an election. It is applied also to the register of those entitled to vote. The place where the votes are recorded is called a polling booth. At company meetings (*e.g.*, for the election of directors) a poll is taken, the shareholders having votes proportional to the number of shares held. The word is old English for head. *See* POLL TAX.

Pollack Soft-finned marine food-fish of the cod genus (*Gadus pollachius*). Akin to the coal-fish but without barbel, greenish with yellow markings, it is taken in the Channel and on Scottish and Irish coasts up to 25 lb. It is found throughout the N. Atlantic.

Pollen Fine dust, generally yellowish, produced in the anthers of flowering plants. When mature it comprises separate grains of definite size and shape, usually single-celled, and often ornamented. Each grain contains a male element whose union with the female element in an ovule originates the embryo constituting the seed.

Pollination Process of conveying pollen-grains to the stigma of a flower, where by penetrating to the ovules in the ovary they effect their fertilisation. Self-fertilisation occurs when a flower's pollen reaches its own stigma. Cross-fertilisation, essential for one-sexed flowers, occurs when pollen reaches the stigma of another flower of the same plant or the flower of another plant of the same species. The transporting agency is usually wind or an insect; humming-birds and snails also serve.

Pollokshaws District of Glasgow, with which it was incorporated in 1912. It is an industrial district with iron foundries, cotton mills, etc.

Poll Tax Capitation tax levied on every head. In ancient Athens a poll tax was paid by resident aliens and others. The English Parliament of 1380, held at Northampton, imposed a poll tax, levied on all persons above the age of 15. It was the collection of this which led to Wat Tyler's rebellion of 1381. Charles II. imposed a capitation tax, all subjects being assessed by rank.

Pollux In Greek mythology the twin brother of Castor, and a son of Zeus. He was skilled in boxing. The name is given to a star in the constellation of the Heavenly Twins.

Polo Ball game played on horseback, long-handled mallets being used. Of Persian origin the game has long been played in Eastern countries. In India it became popular among English officers and residents, and was brought to England by the former, a club being formed in London, 1872. The game is played on turf, the ground being 300 yd. by 160 yd. The goals are 250 yd. apart, the posts (24 ft. apart) at least 10 ft. high. The ball

must not exceed 3½ in. in diameter and 5½ oz. in weight. Trained ponies are used. The governing body is the **Hurlingham Club.**

Polo **Marco.** Italian traveller. He was born at Venice, about 1254. His father was a merchant, and in 1271 Marco accompanied him on a journey to the court of Kublai, and reached Shang-tu in 1275. Marco was given a governorship by the Khan and sent on missions to India and China. In 1298 Marco was taken prisoner by the Genoese. During a captivity lasting until 1299 he compiled an account of his travels. He became a member of the Grand Council of Venice and died Jan. 9, 1324.

Polonaise (1) Stately ceremonial dance, usually in ¾ time, dating from Henry of Anjou's election to the Polish throne in 1573. Its rhythm was employed by Chopin and others. (2) Light-skirted bodice looped up at the sides, based upon Polish national costume, and worn at various periods after 1770.

Polperro Village of Cornwall, on the S. coast, 13 m. from Bodmin. It is a centre of the pilchard fishery.

Poltergeist German word, "racketing spirit," denoting the supposed agent of inexplicable noises in or about a house, *e.g.*, movement of furniture and breakages of crockery. Widely distributed in time and space, often attributed to spiritistic agency, such phenomena are sometimes due to obvious trickery, sometimes elude all intelligible explanation. The lack of adequate motive, and the frequent association with the occurrences of a person of abnormal mental powers, puzzle inquirers. *See* COCK-LANE.

Polyandry Plurality of husbands. Observable in mountainous, insular or desert regions, this social institution may occur in a fraternal form, a woman marrying two or more brothers, as among the Indian Todas and the agricultural population of Tibet.

Polyanthus Hardy perennial herb of the primrose order. Bearing an umbel of numerous flowers on a leafless stem, it is thought to have arisen from the crossing of the common primrose and the cowslip. Gardeners produce innumerable strains with handsome tints, red, orange, bronze, blue and white; some are gold-laced. *See* NARCISSUS.

Polygamy Term properly denoting plurality of consorts, in contrast with monogamy. It is commonly synonymous with polygyny, "many women," whose antithesis is polyandry, "many husbands." In Christian communities if one party contracts more than one marriage the first only is valid. Polygamy is a recognised social institution in negro Africa, Australia and Melanesia. It was regulated among the early Semites, passed into Aryan India and was retained by Mohammedanism. Mormon polygamy ceased in 1890.

Polygon Term used in plane geometry for a plane figure having more than four sides. A polygon is termed regular when it is both equiangular and equilateral. Regular polygons are named according to the number of sides from five to twelve, as follows: pentagon, hexagon, heptagon, octagon, nonagon, decagon, undecagon and duodecagon.

Polyhedron Term used in solid geometry applied to a solid body which is bounded by a number of planes or faces. Those polyhedra in which the planes are regular, equal and similar are known as the five regular or Platonic solids, and comprise the tetrahedron, cube, octahedron, dodecahedron and icosahedron.

Polynesia Division of Oceania. It extends from lat. 30° N. and S. of the equator, and is bounded E. and W. by long. 135°. It includes the more easterly islands, *viz.*, Fiji, Samoa, Hawaiian and Marquesas Islands, and those of the Society, Tubuai, Phoenix, Tokelau, Hervey and Manahiki groups. The three first-named are the most important.

The so-called Polynesians comprise the aborigines of this region. They are brown-skinned and well developed with an average height of 5 ft. 8 in.

Polyphemus In Greek legend one of the Cyclops, a son of Neptune. He is represented as a giant with a single eye. Odysseus and his comrades sought shelter in his cave, and some were eaten by the monster. Odysseus, however, gave him strong wine to drink, and when he fell into a deep sleep thereafter, put out his eye and fled.

Polyphony Musical combination of various strands of melody, each individually interesting. The polyphonic school of music reached its climax in the 16th century music of Palestrina and his contemporaries, of whom William Byrd was the chief exponent in England.

Polyporus Large widely-distributed genus of fungi. Some of them form on living trees or timber hard and woody brackets, more or less semi-circular; some furnish native dresses, bread and tinder. The purging agaric, *P. officinalis*, formerly used in English pharmacy, is still used among N. American Indians as a purgative and styptic.

Polypus Stalked tumour attached to the surface of a mucous membrane. Usually pear-shaped, it may be gelatinous, fibrous, vesicular or malignant, occurring in the nostrils, outer ears, larynx, rectum, bladder or uterus. If accessible from without it is readily removable by being twisted off.

Polytechnic School for affording practical training in arts and sciences. The first London institution of this kind, the **Royal Polytechnic Institute,** was opened in 1839, and continued, with a break of one year, 1859-60, until 1882. Its successor, the **Regent St. Polytechnic,** was opened in 1882 by Quintin Hogg (died 1903). There are other London Polytechnics at Clerkenwell, Chelsea, Woolwich, Battersea and Lewisham.

Polytheism Doctrine of a plurality of divine beings superior to man taking part in the government of the world. Conceived as possessing animal, human or superhuman forms and attributes, they represent a system of worship observable in ancient civilisations and in modern India. *See* MONOTHEISM.

Pomegranate Tree of the loosestrife order (*Punica granatum*). It has long been naturalised in the Mediterranean and other sub-tropical regions. The flowers, usually scarlet, form an apple-like fruit containing many pulp-covered seeds, with a golden-red rind containing an astringent principle used in pharmacy, dyeing and tanning.

Pomerania Province of Prussia, formerly a duchy. It has an area of 11,986 sq. m. and is bounded by the

shores of the Baltic, and landward by the territories of Poland and Mecklenburg-Schwerin. The islands of Rügen, Usedom and Wollin, off the coast, belong to Pomerania. The district is divided into the governments of Stettin, Stralsund and Koslin. The principal river is the Oder, with its tributaries, and there are many small lakes. Pop. 1,878,781.

Pomeranian Dog Breed of dog. Called in Germany the Spitz, akin to the Eskimo and other Arctic breeds, it is strongly-built, scaling 20 lb. and more, long-haired, with sharply-pointed muzzle, upright and pointed ears and thick, bushy, back-curled tail. In Britain it usually occurs in a dwarfed form as the "pom," weighing approximately 5 lb.

Pomona (or Mainland). Island of the Orkneys, Scotland, the largest of the group. It has an area of 150 sq. m. The two inlets of Scapa Flow and Kirkwall Bay divide the island into a larger (W.) and a smaller (E.) portion, the latter much indented. The W. part is chiefly moorland. There are two towns, Stromness and Kirkwall. Pop. 14,000.

Pompadour Jeanne Antoinette Poisson, Marquise de. Favourite of Louis XV. of France. Born in Paris on Dec. 29, 1721, Louis met her in 1745, and made her his mistress, installing her at Versailles. She had great influence over the king, and brought about the Alliance with Austria in the Seven Years' War because of her dislike for Frederick the Great. She had considerable talents, and was the centre of a circle including such writers and artists as Voltaire and Greuze. She died on April 15, 1764.

Pompeii Ancient ruined city of Italy. It is at the foot of Mt. Vesuvius, 13 m. S.E. of Naples. In A.D. 63 a great part of the city was destroyed by an earthquake, and in A.D. 79 Pompeii was buried by a great eruption of the volcano. During the intervening centuries the covering of ashes preserved the city, with its temples, streets, market places, baths and private houses. The excavations of the ruins, which were begun in 1748, have greatly enriched our knowledge of ancient Roman life.

Pompey Gnaeus. Roman triumvir. He was born in 106 B.C., distinguished himself as a general before his 25th birthday and was consul in 70. In 67 he swept the pirates from the Mediterranean within 40 days, and his subsequent eastern campaign (66-63) resulted in a great extension of Roman sovereignty, but at its close the opposition of the Senate caused him to join the first Triumvirate with Caesar and Crassus. As Caesar's influence increased, Pompey's declined, and when the inevitable civil war broke out, Pompey was decisively defeated at Pharsalus (48) and afterwards murdered in Egypt.

Pondicherry City and seaport on the Coromandel coast, India, belonging to France. It is 100 m. S. of Madras, and is the capital of French East India. First colonised in 1674, the city was captured by Dutch and English, returning to France again in 1815. The area of the district is 115 sq. m. Pop. (1931) 43,499.

Pondweed Genus of waterweeds of the grasswrack order. (*Potamogeton*). They are aquatic herbs with leaves submerged and translucent or floating and opaque. Of the numerous British species some have leaves 10 in. across, others are threadlike. The allied sweet-scented Cape pondweed, *Cymogeton*, flowers freely during the winter in Great Britain.

Pontefract Borough and market town of Yorkshire (W.R.). It is 13 m. S.E. of Leeds and stands near the junction of the Aire and Calder, on the L.N.E. and L.M.S. Rlys. There is a ruined castle, in which Richard II. was murdered.

Pomfret cakes (liquorice) are made here. Brewing, iron founding, and tanning are the staple industries, and corn milling is carried on. Pop. (1931) 19,053.

Pontypool Urban district and market town of Monmouthshire, on the G.W. Rly. It is 8 m. from Newport, with which town it is connected by a canal. Coal mining is an extensive industry, the town being on the S. Wales coal measures. Iron and tinplate are manufactured. Pop. (1931) 6788.

Pontypridd Urban district and market town of Glamorganshire. It is on the River Taff, 12 m. from Cardiff, on the G.W. Rly. There are coal and iron mines, and brass and iron foundries. Tin plate is also manufactured. Pop. (1931) 42,737.

Pony Small horse. Technically those ranging from 13 hands high downwards are called ponies, those from 13 to 13·3 hands high galloways, and those above them horses. In popular usage the dividing line between ponies and horses is 14 hands; on the N. American prairies hardy mustangs, broken in by Indians, are called ponies. The rough-coated ponies bred in N.W. Europe, with luxuriant mane and forelock, are of the domesticated Celtic stock which drew the war chariots of ancient Britain, and have survived in Iceland, Shetland, Wales, and the New Forest.

Poodle Breed of dog. In France and Germany it is a sporting dog. Learning tricks readily, it has become a circus dog. Its coat, corded or curly, is clipped peculiarly on the hindquarters. Toy poodles, scaling 4-5 lb., are in demand.

Poole Borough, seaport and market town of Dorset. It is on a peninsula in Poole Harbour, 18 m. E. of Dorchester and 5 m. from Bournemouth, on the S. Rly. Pottery is made from clay quarried locally, and other industries include fishing and the manufacture of farm implements. There are oyster beds. In the harbour, which is 7 m. long, is Branksea Island. Pop. (1931) 57,258.

Poona Town of Bombay, India. The town is at the junction of the rivers Mula and Mutta, 120 m. from Bombay. Pop. (1931) 250,187.

Poor Laws Local provision in Gt. Britain for the indigent dates from an enactment of Elizabeth, 1601, which authorised the building of poor-houses, appointment of overseers, and the raising of a rate by a tax on householders. An important Act of 1834 reformed abuses and instituted poor-law commissioners. A Poor-Law Board was appointed in 1849. The duties were taken over in 1871 by local government boards, and in 1919 the Ministry of Health came into existence, and took over the administration of the poor laws. Another change came about in 1930, when boards of guardians were abolished and their functions taken over by the county and county borough councils.

Pope The Head of the Roman Catholic Church. The title is derived from word meaning father, and was used generally for bishops until 1073, when it became restricted to bishops of Rome. A new pope is elected on the death of the reigning pontiff, by the College of Cardinals. He has supreme authority in matters of faith, and his infallibility when speaking, *ex cathedra*, on matters of faith and morals was declared by a Vatican council in 1870. The same year witnessed the loss of the temporal power, the papal territories being absorbed in the Kingdom of Italy. In 1929 temporal power over a small territory (the Vatican State) was regained when Italy recognised the pontiff's sovereignty. *See* PAPACY, PIUS XI., VATICAN.

Pope Alexander. Poet and satirist. Born in London, May 21, 1688, he early showed poetic talent. His *Essay on Criticism*, 1711, a didactic poem, and *The Rape of the Lock*, satirising contemporary society, published a year later, brought him fame at the early age of 24, and brought the poet into contact with other literary men of the time, including Addison and Swift. Pope translated Homer, which was completed in 1725. The *Essay on Man*, 1733, which has been called Pope's finest work, deals with the philosophy of Bolingbroke (1678-1751). Pope died at Twickenham, May 30, 1744.

Poperinghe Town of Belgium. In W. Flanders in the midst of a hop-growing district, it stands on a tributary of the Yser, 6 m. W. of Ypres. It was taken by the Germans soon after the outbreak of the Great War, and occupied by the Allies in Oct. 1914. Bombarded at various times, it suffered during the German advance in April, 1918. The Church Institute, known as "Toc H" (Talbot House), was established here in 1915.

Poplar Genus of trees of the willow order (*Populus*). Their alternate deciduous long-stalked broadish leaves are usually preceded by the male and female flowers in separate catkins. The rapid-growing soft wood timber is unimportant. Black, white, grey Lombardy and aspen, besides American balsam, poplar and cottonwood, are in cultivation. *See* LOMBARDY POPLAR.

Poplar Metropolitan borough of London, on the north side of the Thames, served by the L.N.E. Rly. It is composed of the parishes of Poplar, Bromley and Bow, and contains the Isle of Dogs, together with the E. and W. India and Millwall docks. From the Island Gardens (3 acres) the tunnel to Greenwich starts. It sends two members to Parliament. Pop. (1931) 155,083.

Poplin Rep-like fabric with silk warp and worsted weft, brought to England by 17th-century French refugees, and long specially associated with Ireland.

Popocatepetl Active volcano of Mexico (17,520 ft.). It is about 45 m. S.E. of Mexico City, between the Valleys of Mexico and Puebla. The name is Aztec, and means "smoking mountain." There was a small eruption in 1802.

Poppy Large genus of herbs typical of the poppy order (*Papaver*). Their milky sap, with narcotic properties, is absent from the seeds, which yield an edible oil. The most important economically is the annual opium poppy, naturalised in S.E. England. The corn-poppy has yielded under cultivation double-flowered forms such as the carnation, picotee and ranunculus poppy, besides the single-flowered white-centred Shirley strain. Perennials include the handsome Oriental, the Arctic and the Iceland poppy.

Population Term applied to the number of living human inhabitants of the world. Since this number varies from time to time, it is almost impossible to arrive at an accurate estimate of the world's population, but the adoption of a periodic census in most of the civilised countries enables statisticians to compute populations with far more accuracy than before.

The census, however, is still hampered in countries like Africa and South America by the difficulty of collecting data concerning the inhabitants of the more remote regions. Furthermore, the causes which contribute to decline of population are often incalculable, such as wars, epidemics, sterility for various biological reasons, and to-day the increasing popularity of contraception.

The population of the whole world has been estimated at over 1,900,000,000, giving a density of over 33 per sq. m. Among independent political units, Barbados, in the West Indies, with about 952 inhabitants per sq. m., is the most densely populated. Of the continents, Europe has the greatest density, with Asia second, The other continents are comparatively sparsely populated.

Two types of region favour density of population. One is the moist, warm climate, where rice, the cheapest form of food, can be produced in large quantities, as in China and Japan. The other is in temperate climates, on the great coal and mineral fields, where industry attracts population away from the rural districts, as in Western Europe and U.S.A.

Numerically, the largest populations are found in China, India and Africa. The population of China has been put at over 460,000,000. but here, as in India and, especially, Africa, the difficulty of census-taking renders the figures somewhat doubtful.

As regards the sexes in Europe, females normally outnumber males, possibly because a man's life subjects him to greater strain and liability to accident. After a war this difference is very much accentuated. In U.S.A., on the other hand, males outnumber females, owing to the fact that males migrate to a new country in larger numbers than females. India, Egypt and Japan also show preponderance of males over females, due to the very high female death-rate.

Porcelain Fine pottery with a vitreous, translucent body and a transparent glaze. Of Chinese invention, and often called China, it reached high perfection during the Ming Dynasty, and was imported into Europe, where its composition was discovered and imitated at Meissen, near Dresden, 1713. European porcelain comprises soft-paste, hard-paste and bone-porcelain. *See* CHINAWARE.

Porchester (Portchester). Village of Hampshire, served by the S. Rly., on Portsmouth Harbour. It was the site of a Roman station. For a long time Porchester was a naval station, but the sea receded and rendered the port useless. Here are remains of a Norman castle. Pop. 993.

Porcupine Widespread family of rodents. The common porcupine of S. Europe and N. Africa, *Hystrix cristata*, 27 in. long, has long, black-and-white

quills or spines along the back for defensive purposes. The short quills of some American species are used by N. American Indians for decorating buckskin garments and moccasins.

Porcupine Grass (1) Spinifex, a coarse grass of various species of *Triodia*, growing in inner Australia. The stiff, spiny leaves, 3-4 ft. high, cause much suffering to man and beast. (2) *Stipa spartea*, a grass abounding in some American prairies. The awns become fixed in sheeps' wool, gradually penetrating the skin and causing death.

Pork Uncured flesh of swine as food. The flesh of the pig is forbidden to Jews and Mohammedans, and is regarded by them as unclean. Pork compares favourably with mutton and beef in its nutritive properties, though more difficult of digestion. Comparing a medium fat animal of all three kinds, the percentage composition in pork is—water, 55; dry matter, 45; in mutton—water, 57%; dry matter, 43; in beef—water, 54; dry matter, 46. The mineral content of pork—2.5%—compares with mutton 4.5 and beef, 5.5. The amount of fat in the three varieties of meat is 28%, 23.5%, and 22.5% respectively. In a fat pig the fat may be practically 50%, and the total dry matter, 61.5%. Pork takes about 1½ times as long as beef for digestion. *See* Pig.

Porlock Village of Somerset, 6 m. from Minehead. It was once an important seaport, though the sea has since receded and the coast is now a mile or so away. **Porlock Hill**, nearby, is a noted test hill for motorists. Pop. 970.

Porphyrites Igneous rocks comprising large crystals, sometimes more or less broken, embedded in a ground-mass of finer crystals. This is principally plagioclase, with augite, hornblende, biotite, etc., and larger crystals porphyritically developed. Abundant as dikes and intrusive sheets in Lowland Scotland, Alpine Europe, N. America, and elsewhere, they are practically altered andesites.

Porphyry Term used in geology for various igneous rocks, characterised by large, conspicuous crystals in the ground mass. Many of these rocks are used as ornamental stones, such as the famous red porphyry with red or white crystals in a red ground mass, found in Egypt.

Porpoise Genus of cetacean mammals inhabiting northern seas (*Phocaena*). The common porpoise, *P. communis*, 5 ft. long, abounds on British coasts. It is killed mainly for its oils. So-called **porpoise-hide** and **porpoise laces** come from the white whale.

Porson **Richard.** English scholar. Born Dec. 25, 1759, at Cambridge, and educated at Eton and Cambridge, he was elected Professor of Greek in 1793, and became one of the leading Greek scholars of his day. In 1806 he was appointed Librarian at the London Institution. He published an edition of Aeschylus, and the *Hecuba, Orestes, Phoenissa* and *Medea* of Euripides. He died on Sept. 19, 1808. Instituted in his honour, the Porson Prize is an annual award to graduates of Cambridge for a translation of English poetry into Greek verse.

Port Adelaide Seaport of Adelaide, S. Australia. It is 8 m. from Adelaide. On the Gulf of St. Vincent, it has extensive docks and a good harbour. Industries include the smelting of copper, silver, etc.

Portadown Town and urban district Co. Armagh, Northern Ireland. On the River Bann, 25 m. from Belfast, on the G.N. Rly., it is a centre for linen manufacture, and has an extensive trade in agricultural produce. Pop. (1926) 11,780.

Portage la Prairie City of Manitoba, Canada. It is 56 m. W. of Winnipeg, C.P. Rly., and is a centre for the export of grain. Pop. (1931) 6597.

Portarlington Town of the Irish Free State. It is on the River Barrow, 42 m. from Dublin, on the G.S. Rlys. The town gives its name to an earldom, created in 1785. Since 1900 it has been held by Lionel A. H. S. Dawson-Damer (b. 1883). The title of the eldest son is Viscount Carlow.

Port Arthur City and port of Ontario, Canada. It is at the head of Lake Superior, on Thunder Bay, 990 m. from Montreal. It has extensive docks and a good harbour, and handles large quantities of grain. Other industries include lumbering, shipbuilding and smelting. Pop. 19,818.

Port Arthur (or **Lushun-Kou**). Fortified seaport at the S.W. end of the Liao-Tung Peninsula, Manchuria. It is a terminus of the Siberian Rly. and has a harbour that may be used throughout the year. It was a Chinese naval station, and was captured in 1894 by the Japanese. Later it was leased to Russia, by whom it was fortified. On the outbreak of the Russo-Japanese War, Feb. 6, 1904, Port Arthur was blockaded by the Japanese and fell many months later, Stoessel, the Russian commander, surrendering on Jan. 2, 1905. The port was ceded to Japan by the Treaty of Portsmouth, 1905, and ten years later the Chinese leased it to Japan for a further term of 99 years. Pop. 23,700.

Port-au-Prince (or **Port Republican**). Seaport and town of Haiti, W. Indies. It is the capital of the Republic, on the Gulf of La Gonaive. Here is a good harbour. The principal exports are coffee, cacao, hides and logwood. Pop. 79,800.

Portcullis Stout grating made of heavy crossed timbers with the lower projecting points tipped with iron. A portcullis was suspended over the gateway of a castle as a means of defence and made to slide up and down in grooves at the side of the entrance.

Port Elizabeth Seaport of Cape Province, South Africa. On Algoa Bay, it is 664 m. from Cape Town and 712 m. from Johannesburg by Rly., and is traversed by the Baakens River. The harbour is open, though sheltered, and jetties are used for landing goods. Manufactures include footwear and there are exports of wool, ostrich feathers, etc. Pop. (Eur., 1931) 43,835.

Port Erin Village of the Isle of Man. It is on the land-locked Port Erin Bay, 15 m. by railway from Douglas. There are fisheries, and a marine biological station. Pop. 3200.

Port Glasgow Seaport and burgh of Renfrewshire, on the Clyde, 20 m. below Glasgow, on the L.M.S. Rly. It is a centre of the shipbuilding industry and possesses iron foundries and manufactures, including rope and sailcloth. Timber is imported. Pop. (1931) 19,580.

Port Harcourt Seaport of Nigeria. It is at Iguacha, on a creek which enters the New Calabar and Bonny rivers, about 30 m. from their mouth. It is the terminus of the railway north which is to connect with the Iddo-Kano Rly.

Porthcawl Seaport and urban district of Glamorganshire, Wales. It is 6 m. W.S.W. from Bridgend and 30 m. from Cardiff, on the G.W. Rly. Pop. 6642.

Port Hope Port and town of Ontario, Canada. It is the principal town of Durham Co., on the north shore of Lake Ontario, 63 m. from Toronto. There is a good harbour, and the town is served by three railways, besides its connection with the principal lake ports by steamer services. In addition to manufacturing industries the town has an extensive distributing trade in local produce. Pop. 6250.

Portishead Urban district and town of Somerset, on the Severn estuary, 9 m. W.N.W. of Bristol, on the G.W.R. There is a large dock. Pop. 3908.

Port Jackson Harbour of Sydney, N.S.W. It is on the coast of Cumberland Co., and is 18 m. long. An arm of the harbour is formed by the Paramatta River. On the shore is Sydney.

Portland Name of three towns in Australia. One is in Victoria, Normandy Co., on the W. side of Portland Bay, 200 m. W.S.W. of Melbourne. Another Portland is in S. Australia, Adelaide Co. The third is in New South Wales, Roxburgh Co., 12 m. N.W. of Lithgow.

Portland Name of two cities of the U.S.A. Portland, Maine, is on Casco Bay, 106 m. N.N.E. of Boston, in Cumberland Co. It is the birthplace of the poet Longfellow. There is a good harbour. Pop. (1930) 70,810. Portland, Oregon, is on the Williamette River, near its junction with the Columbia, 53 m. from Salem. It has large exports of flour, grain and lumber. Pop. 301,815.

Portland Peninsula of Dorset called the Isle of Portland. An urban district, it is about 5 m. long and about 1 wide. It is divided from the mainland by the Chesil Bank and can be reached by steamer from Weymouth, or by the G.W. and S. Joint Rly. that runs along the peninsula from Malcombe Regis. Portland, Easton, Rodwell, Chiswell and Castletown are on the island and at its southern extremity is Portland Bill with a lighthouse. The chief buildings are the convict prison, a castle built in the 16th century and a more recent one called Pennsylvania Castle. The chief industry is the quarrying of stone. Thomas Hardy called the peninsula the Isle of Slingers. Pop. (1931) 12,018.

Portland Roads is an artificial harbour protected by an enormous breakwater. It is used by the British Fleet which has stores and other establishments here.

Portland Duke of. English title created in 1716. An earldom of Portland, held by the Weston family, 1633-88, became extinct, and was revived by William III. for Hans William Bentinck in 1689. His son, Henry, became 1st duke. **William Henry Cavendish Bentinck** (1738-1809) assumed the additional surname Cavendish in 1801, having married, in 1766, the daughter of the Duke of Devonshire. Lord Lieutenant of Ireland, 1782, and Prime Minister, 1783, he was Home Secretary in Pitt's Government, 1794-1801, and again Prime Minister, 1807-09. William John, 5th Duke (1800-79) was an eccentric who led the life of a recluse. His nephew, William John Arthur (b. 1857), the 6th duke, was Master of the Horse, 1886-92 and again in 1895-1905. He is Lord-Lieutenant of Nottinghamshire. The eldest son is entitled Marquess of Titchfield. The chief family seat is Welbeck Abbey, Notts.

Portland Cement Cement made by calcining in a kiln a mixture of chalk and finely-divided clay or the river mud of the Thames and Medway. Liassic and carboniferous limestones and shales also are used along with local clays. Portland cement is employed extensively for making concrete and for external plastering.

Port Louis (or **Isle of France**). Seaport and capital of the Island of Mauritius. It is on the N.W. coast, at the head of a bay. The principal exports are sugar and aloe fibre. Pop. 54,460.

Portmadoc Urban district, seaport and market town of Caernarvonshire, on Tremadoc Bay, 16 m. from Caernarvon, on the G.W. Rly. It is the port for the slate quarries of Blaenan Festiniog. Pop. (1931) 3986.

Port Moresby Seaport and capital of Papua (British New Guinea). It is on Fairfax Harbour. Pop. 3000.

Portobello Watering place of Midlothian, on the S. shore of the Firth of Forth, 3 m. from Edinburgh, of which city it forms part. *See* EDINBURGH.

Port of Spain (or **Spanish Town**). Seaport on the E. coast of Trinidad, British West Indies, capital of the island. Pop. (1930) 70,641.

Porto Rico Island of the Greater Antilles, W. Indies, ceded to U.S.A. by Spain in 1898. It is the most easterly of the group, 25 m. E. of Haiti, with an area of 3435 sq. m. Tobacco, bananas, cocoa and coffee are grown here, and sugar and cotton produced. The capital of the island is San Juan. Here large numbers of cattle are reared. The inhabitants are descended from the Spanish and the aborigines. The name was changed to Puerto Rico in 1932. Pop. 1,544,000.

Portpatrick Watering place and seaport of Wigtownshire. It is 7 m. from Stranraer by the L.M.S. Rly. It has a harbour and at one time packet boats went from here to Donaghadee in Ireland, which is only 21 m. away.

Port Pirie Seaport of S. Australia. It is on the E. of Spencer Gulf, 154 m. N. from Adelaide. Here are the smelting works and refineries for the Broken Hill silver mines. Pop. 9500.

Portree Town of Skye, Scotland, the capital of the island. It is situated on the bay of same name, 120 m. by sea from Oban, with which there is a steamer service. Pop. 2120.

Portrush Urban district and seaport of N. Ireland. In Co. Antrim, it stands on Ramore Head, 67 m. from Belfast. The Giant's Causeway is 7 m. distant on an electric line. The ruins of Dunluce Castle are in the vicinity. Pop. 2100.

Port Said Seaport of Egypt at the N. end of the Suez Canal. It is an important coaling station, and has an extensive import and export trade. It was founded in 1859. Pop. 101,000.

Portsea Peninsula of Hampshire, England, between Portsmouth and Langston harbours. Known as "Portsea Island," it is about 6 m. long. The district of Portsea forms part of the borough of Portsmouth, and that city itself stands on the peninsula. See PORTSMOUTH.

Portslade Urban district of Sussex. It is on Shoreham Harbour, 4 m. W. from Brighton, on the S. Rly. Pop. (1931) 9527.

Portsmouth Borough, city, seaport and naval station of Hampshire, on the peninsula of Portsea Island. It is 74 m. from London by the S. Rly. Portsmouth, which was made a city in 1926, includes Landport, Portsea (where are the naval dockyards), Southsea and Cosham. A floating bridge and a ferry connect Southsea with Gosport, across the harbour. Steamers go to Ryde and Southampton. In 1924 it was made the seat of a new diocese of Portsmouth and the Isle of Wight, the old church of S. Thomas becoming pro-cathedral. There is a modern Roman Catholic cathedral. The 16th century Southsea Castle is now a fort.

The Portsmouth dockyards extend over 500 acres, and there is a gunnery school on Whale Island. Pop. (with Southsea, 1931) 249,288.

Portsmouth City and seaport of Virginia, U.S.A., at the mouth of the Elizabeth River, on Norfolk Harbour. Here is a U.S. navy yard, and shipbuilding and railway works. Pop. 45,704.

Portsmouth City of New Hampshire, U.S.A. On the Piscataqua River, 58 m. by railway from Boston, it is the Co. seat of Rockingham Co. The port for the state, it has a large harbour, and a U.S. navy yard is located on one of the many Islands. The peace treaty between Russia and Japan was signed here in 1905. Pop. (1930) 14,495.

Port Stanley Seaport of the Falkland Islands. It is on the coast of E. Falkland and is the only important settlement there. Exports comprise whale oil, guano, wool, hides and sheepskins. Pop. (1931) 1213.

Port Sudan Seaport of Sudan. On the Red Sea, 40 m. N. of Suakin, it has a large harbour (opened 1909), and railway connections with Atbara, Suakin, and Kassala. With Suakin it handles most of the trade of the Sudan. Exports include cotton, ivory, gum and durra. Pop. 7000.

Port Sunlight Town of Cheshire, 3 m. from Birkenhead on the L.M.S. Rly. It was founded in 1888 by Lord Leverhulme, and houses the workers in the soap factories of Messrs. Lever Bros., Ltd. Here are recreation grounds, clubs, a fine art gallery, free library, etc. The town is connected with the River Mersey by Bromborough Pool.

Port Talbot Seaport of Glamorganshire, on Swansea Bay. It is 11 m. from Swansea, on the G.W. Rly. In 1921 it became a borough, taking in the borough of Aberavon. Port Talbot has extensive docks. Copper is smelted here. At Aberavon there are engineering and tinplate works. Pop. (1931) 40,672.

Portugal Republic of Europe. On the Iberian Peninsula, S.W. Europe, it is bounded S. and W. by the Atlantic, and on the N. and E. by the frontiers of Spain, the River Minho dividing it from the Spanish province of Galicia. In ancient times Portugal was known as Lusitania. Its area is 35,490 sq. m., including Madeira and the Azores. Its pop. in 1930 was 6,698,345. The capital is Lisbon, near the mouth of the Tagus, and another important city is Oporto, on the Douro, whence port wine is shipped.

Besides the Minho, the chief rivers are the Guadiana, Douro and Tagus. Between the two last-named rivers is the mountain range, Serra da Estrella (6540 ft.). S. of the Tagus, the Serra de Guadelupe reaches the coast. N. of the Douro the Cantabrian Mts. run to the coast near Oporto. The Serra de Monchique, a boundary of the province of Algarve, reaches the Atlantic at Cape St. Vincent. The climate is mostly healthy and the soil fertile. Agricultural products include rye, maize, wheat, onions, tomatoes, nuts. Wine-growing is an important industry which swells the export total. Olives, figs and oranges are grown.

Manufactures include textiles, tiles made of porcelain, and cork in various forms. Among minerals copper, lead, tin, silver, coal and iron are found. The chief colonies of Portugal are Mozambique, Diu, Timor, Goa, Macao, Guinea, Cape Verde Islands, Angola, Principe and St. Thomas Islands, with an area of about 808,301 sq. m., and a pop. of 10,000,000.

Until Oct. 5, 1910, Portugal was a monarchy, but a revolution in Lisbon thence brought about the establishment of a republic. There are two legislative chambers: the lower elected by direct suffrage, and the upper by local councils. The president is chosen by both chambers, and holds office for four years. After the Great War, Portugal received territory which had formed part of German E. Africa.

Port Wine Rich red wine from grapes grown in the Douro Valley, Portugal, and shipped from Oporto. Anglo-Portuguese treaties forbid other wines to be called port. Mostly fortified with brandy on fermentation, the characteristic tint coming from a spirituous mixture containing elder berries, its alcoholic content is 17-25 p.c. Vintage port is usually shipped two years after its specified year, and promptly bottled by the importers. Tawny port usually comprises blends of different years, kept in cask in Oporto until shipped.

Poseidon (or **Neptune**). Greek god of the sea. He was the son of Chronos (Saturn) and Rhea. His wife was Amphitrite. As a punishment for conspiring against his brother, Zeus (Jupiter), he was obliged to build the walls of Troy. Being cheated of his promised reward for this task by Laomedon, King of Troy, he sided with the Greeks against the Trojans and caused a sea monster to devastate the land.

Posen (or **Poznan**). City of Poland. On the River Wurtha, 90 m. N. of Breslau, it is an ancient town and the capital of the province. Its manufactures include sugar, locomotives, agricultural machinery, etc. and it handles a considerable river trade. It has two broadcasting stations (335 M., 1.9 kW. and 31.35 M., 1 kW.). Pop. (1931) 246,574.

Post Mortem Medical examination of a corpse to ascertain the cause of death. It may be ordered by a coroner to help the jury in their verdict, or may be undertaken for private reasons. In the former case the relatives cannot forbid examination. Despite its value to medical science, it is not popular in U.S.A., nor among Catholics and Jews. *See* AUTOPSY.

Post Office State service for the conveyance of letters, etc. The British Postal Service may be said to have started in 1635, when a system of packet posts was begun, and farmed at an annual rent. In 1657 it became a Government office under a postmaster-general. In 1710 a general office for the three kingdoms was set up. Mails were first conveyed by postboys, then by coaches. The railway was first used in 1830 and with its general adoption for mails the volume of business increased enormously.

In 1840 Rowland Hill's penny post (inland) was introduced, and in 1898 imperial penny postage. The rates were modified during and after the War. The parcel post was introduced in 1883, and from time to time other services were incorporated, *e.g.*, telegraph and telephone, registrations, money orders and saving banks.

An extensive air mail now operates, facilitating expedition in the exchange of correspondence with the lands overseas.

The British service is controlled by a Postmaster-General, a minister of the Government, sometimes with cabinet rank. The headquarters of the post office is at St. Martin's-le-Grand, London, E.C.

Potash Common name for potassium carbonate and with the prefix "caustic" for potassium hydroxide. Formerly obtained from the ashes of wood, it is manufactured chiefly from the deposits of potash minerals at Stassfurt in Saxony. Potash is a white, deliquescent, alkaline solid used in the manufacture of glass and potassium salts.

Potassium Metallic element having the symbol K, atomic weight 39.1, and melting point 62°C. Potassium is a lustrous, silvery-white metal easily cut with a knife at ordinary temperatures. It floats on water which it decomposes owing to its affinity for oxygen. Potassium is an essential constituent of many minerals and rocks, is present in plant and animal tissues, also as chlorides and sulphates in sea water and mineral springs. Its compounds are of great economic importance.

Potato Tuber of a perennial herb of the nightshade order (*Solanum tuberosum*). Cultivated by the Inca peoples in pre-Columbian America, it reached 16th-century Spain from Peru, and somewhat later Ireland from Virginia, 1585-86. Its cultivation throughout Britain started from 17th-century Lancashire. Now extensively grown in all temperate and sub-tropical regions, it ranks next to cereal grains as a food-plant for man and cattle, besides furnishing farina for textile purposes, dextrine and potato spirit. Besides the destructive potato disease the tuber is also liable to wart disease, the development of varieties immune from which has restored to cultivation much infected land. *See* SWEET POTATO.

Potential In electricity, a condition of a conductor which may be compared with pressure. When two parts of a conductor are at different potentials, a flow of current takes place from that of greater to that of lesser potential until the potential is equalised. Potential difference (P.D.), therefore, is similar to electromotive force (E.M.F.), and is measured in volts. *See* ELECTRICITY.

Potentiometer Electrical instrument used for the measurement of the electromotive force of a cell or the difference of potential. It consists of a wire or coil of uniform resistance stretched over a scale and through which a constant current from a generator is passed. Sliding contacts are provided to enable tappings to be made, and the potential is compared with that of a standard cell of known electromotive force.

Pot-Hole Cavity more or less cylindrical in the bed of a rapid stream, scoured out by detrital matter gyrating in an eddying current of water, sometimes glacier-fed. When the water reaches a plane of stratification in limestone regions it may produce long shafts or swallow-holes, ultimately forming extensive caverns. *See* KETTLE HOLE.

Pot-Pourri French translation of the name of a Spanish ragout, *olla podrida*. Hence it denotes any medley, musical or literary, and specifically a mixture of dead rose petals, lavender and spices, kept in sachets or porcelain jars.

Potsdam Town of Prussia, capital of the province of Brandenburg. It is 16 m. from Berlin on an island in the lake district of Havel. Here are the former palaces of the German Emperor and others of the Hohenzollern family. The town is picturesque in its situation and planning. Here is the palace of Sans Souci built by Frederick the Great in 1760. The town manufactures chemicals, furniture, surgical and musical instruments, etc. Pop. 78,676.

Pot Still Form of distilling apparatus so-called from its pot-shape and used in the manufacture of spirits. The still is made of copper and is directly heated over a coal fire or by steam. This form of still is used chiefly in making Scotch whisky.

Potteries The. District of N. Staffordshire. It is the centre of earthenware and china manufactures, and comprises Hanley, Stoke-upon-Trent, Burslem, Longton, Tunstall and Fenton. These, with other smaller neighbouring districts, were made into the county borough of Stoke-upon-Trent in 1910. *See* STOKE-UPON-TRENT.

Potter's Bar District of Middlesex. It is 3 m. N. of Barnet, on the Great North Road, 13 m. from London, and on the L.N.E. Rly.

Pottery Art of making vessels and other objects from clays air-dried or fired. In its earlier stage a vessel was built up by hand and fired on an open hearth. Later the potter's wheel and kiln were introduced, followed by the use of glazing and enamelling. Decoration also developed from simple incised lines and colouring to the artistic designs and polychrome ware of later Egypt and Greece.

In mediaeval times the Moors brought enamelled ware into Spain, and in the 12th century a soft coarse ware was introduced from Majorca into Italy whose ceramic products later became famous. In France from the 16th century onwards the making of soft porcelain followed by hard porcelain marked a further advance, and other improvements were made in England under the influence of Josiah Wedgwood.

For fine earthenware and porcelain, kaolin, or china clay, is used, and ballclay, a very strong plastic material, for earthenware, while Cornish stone, felspar, calcined bone and flint form the basis of glazes, etc.

Poulton-le-Fylde Urban district and market town of Lancashire. On the River Wyre, it is 3 m. from Blackpool. Pop. (1931) 8368.

Poultry Name used for domestic fowls, ducks, geese and turkeys. The fowl is derived from the wild Indian jungle fowl. The many varieties are classed roughly as layers (non-setting), utility (general purpose), table and fancy breeds, whose purpose is sufficiently indicated by these names. The principal breeds in the first group are: Ancona, Andalusian, Compine, Hamburgh, Houdan, Leghorn, Minorca; in the second, Langshan, Orpingtons, Plymouth Rock, Rhode Island Red, Sussex (red, light and speckled), Wyandotte; in the third, Dorking, Game and certain French varieties; the ornamental varieties include bantams, Yokohamas and others.

Ducks are said to derive from the mallard, and one of the breeds commonly kept, the Rouen, closely resembles the wild duck in appearance. The leading varieties of duck are Aylesbury, Indian Runner, Khaki-Campbell, Orpingtons, Pekin and Rouen.

Geese are said to come from the wild species known as the grey log, a winter visitor to Britain. The Toulouse and Embden are the most popular for culture, the latter being the heavier. It is white, the Toulouse being grey.

Turkeys are derived from the wild N. American species; there are three breeds mainly favoured in Britain, the American Bronze, the Cambridge Bronze, and a smaller variety, the Norfolk black turkey.

The interests of poultry breeders and exhibitors are looked after by the **Poultry Club**, 3 Ludgate Broadway, London, E.C. 4.

Pounce Powder formerly sprinkled over newly written matter to prevent the ink spreading or blotting. Composed of sand, cuttle bone, or some resinous substance, it was shaken out from a box with a perforated lid, called a **pounce-pot**. The use of pounce died out after the introduction of blotting paper.

Pound English unit of weight. It is divided into 16 oz. avoirdupois or 7000 grains. In troy weight, used for weighing gold, silver, platinum and precious stones, and in dispensing medicines, the pound is equal to 12 oz. or 5760 grains.

Pound British monetary unit. The British pound sterling was originally 5760 grains of silver of a standard fineness. In 1816 gold currency replaced the silver pound. The gold sovereign has no relation to any pound weight, and actually weighs 123.274 grains of 22-carat gold.

Pound Public enclosure for lost or straying animals, or for receiving animals or goods taken in distraint for rent. The cost of feeding such animals is recoverable from the owner.

Poussin **Nicholas.** French painter. Born in June, 1594, he studied painting under Quentin Varin, and later secured powerful patronage. From 1640-42 he was at Paris as court painter to Louis XIII., returning thereafter to Rome, where he worked until his death, Nov. 19, 1665. His paintings (historical pictures, sacred subjects and classical landscapes) are to be found in most European capitals. In England the National Gallery and Dulwich Gallery have many fine examples of his work.

Poussin's brother-in-law, **Gaspard Dughet**, born in 1613, was also a painter. He took the name of Poussin, and became famous for his landscapes. He died on May 27, 1675.

Power of Attorney Written authority, usually signed and sealed, empowering the person named to perform acts which otherwise could only be performed by the donor. It may be general, to cover all negotiations, or special; it ceases at the principal's death, and is terminable at his discretion.

Power Transmission Engineering term. Power generated from natural sources such as coal, natural gas, water, etc., may be transmitted for useful application some distance away by mechanical means—shafting, moving ropes, etc.—or by high pressure air and water mains, or after conversion into electricity, by overhead or underground cables. The term is applied especially to the transmission of electrical power by a network of overhead cables.

Poynter **Sir Edward John.** British painter. Born in Paris on March 30, 1836, he became A.R.A. in 1869, and R.A. in 1876, and succeeded Millais as P.R.A. in 1896. He was Director of the National Gallery, 1884-1905. Knighted in 1896, he was made a baronet in 1902, and died on July 26, 1919. His work includes classical paintings, portraits, and frescoes.

Pozières Village of France, near Albert, Somme. During the Great War it was held first by the Germans, to whom its slightly elevated position made it useful for observation over the adjacent battle zone. In July, 1916, it was rushed by British and Anzac divisions. In the spring of 1918 it was recaptured by the Germans, but taken again by the British in August. There is a memorial to the Australians who died in the attack of 1916, and also a British memorial. *See* ALBERT, SOMME.

Praefect Title of certain officials of ancient Rome. There were naval and military praefects. A *praefectus castrorum*, or camp praefect, was attached to every legion. The *praefectus urbi* (earlier termed *custos urbi*) was warden of the city. During the empire the office of *praefectus praetorio*, or commander of the praetorian guard, became of great importance, and at one time the powers of such praefects were exceeded only by those of the emperor himself. *See* PRAETOR.

Praetor In ancient Rome, a magistrate next in importance to a consul. The praetor was first elected in 366 B.C., his office being to rule during the absence from Rome of the consuls on military service. In 246 a second was appointed (*praetor peregrinus*), the first being then termed *praetor urbanus*. Later more praetors were appointed, to govern new provinces, or take charge of departments of the state. A curule magistrate, the praetor presided at criminal trials, and was attended by lictors.

The **Praetorian Guard** was a body of troops whose duty was to guard the emperor. Instituted by Augustus, 2 B.C., eventually they wielded such influence as to make and break emperors. The *praetoriani* were disbanded in A.D. 312 by Constantine.

Pragmatism Doctrine of philosophy. William James or Chas. S. Peirce was apparently the first to use the term, which denotes a doctrine according to which the truth of a conception is to be tested by its practical value, or its workableness. It has been described as a revolt against the over elaborated idealism of the metaphysicians. *See* JAMES, W.

Prague City of Czechoslovakia, capital of the republic. Its German name

is Prag; Czech. Praha. In Bohemia, on both banks of the Moldau River, it has extensive suburbs. The Gothic Cathedral dates from 1344. On the left bank of the Moldau is the fortress of Hradschin. Prague is the seat of a German and Czech university. It has an extensive river traffic, and many important industries, including iron foundries, engineering works, chemical and cement works, textile factories. It has two broadcasting stations (488.6 M., 120 kW. and 58 M.). Pop. 850,000.

Prairie Dog (or **Prairie Marmot**). Genus of N. American burrowing rodent of the squirrel family (*Cynomys*). Stout, squat, 12 in. long with 4 to 5 in. tail, reddish-grey and paler beneath, prairie dogs live gregariously on the plains, sometimes forming extensive villages, and utter whistling cries. The common *C. ludovicianus* is replaced by a white-tailed form W. of the Rocky Mts.; another is Mexican.

Prawn Widely distributed family of shrimp-like ten-footed crustaceans. Mostly marine, 2-12 in. long, the last three pairs of thoracic limbs never bear pincers; the two front pairs frequently do. The British edible *Palaemon serratus*, 3-4 in. long, with toothed rostrum projecting in front of the carapace, is usually taken in hand ring-nets or osier basket-traps. Some tropical species rival lobsters in size, *e.g.*, the W. Indian prawn, *P. jamaicensis*, and the Indian prawn, *P. lar*, highly esteemed with curry.

Praxiteles Greek sculptor. He lived at Athens, where, perhaps, he was born *c.* 400 B.C. His works are known mostly by copies which exist, such as the Aphrodite of Cnidus, Eros, Satyr, Apollo, and others. During excavations among the ruins of Olympia in 1877 a group of Hermes and Dionysius by Praxiteles was found, which is probably the only original sculpture by him in existence. His work is characterised by its fine modelling, beauty of line, and expression. He died *c.* 330 B.C.

Prayer Book Order of church services. In its present form the Book of Common Prayer of the Church of England dates substantially from 1559, when, after the accession of Elizabeth, the second prayer book of Edward VI. (1552) was revised. The first prayer book of Edward VI. (1549), mainly an English version of the Missal, found little favour either with the reformers or those who adhered to the ancient rites, and Edward's second book was intended to placate the former party, who desired a closer conformity with the liturgy of the reformed churches abroad.

Repressed by the Commonwealth, and restored in 1660, the Act of Uniformity of 1662 authorised it as the only legal service book. In 1927 a revised prayer book was submitted to Parliament, after acceptance by both convocations and the Church Assembly, but was rejected. Some alterations were made, and it was presented to Parliament in 1928, but that body again rejected it.

Prebend Term formerly denoting the stipend of a secular priest or a canon regular, or the endowment from which this was provided. It was afterwards applied to the endowment for a canon residentiary of a cathedral, who was known in consequence as a prebendary. In modern times, however, this is generally an honorary office, and the prebendary is then not a member of the cathedral chapter, and receives no stipend.

Pre-Cambrian Name denoting all rocks older than the Cambrian; all, or the oldest at least, also called Archaean. Lying beneath the Cambrian beds containing *Olenellus trilobites*, they comprise igneous and sedimentary rocks, usually highly metamorphosed, exposed over one-fifth of the present land-surface, including 1,800,000 sq. m. in Canada and large areas in N.W. Scotland. *See* LAURENTIAN.

Precedence Priority of place to which titled and official persons or officers of the Services are entitled by the rank conferred on them by the crown. There is an official table of precedence in which the order is set out. The sovereign is at the head, followed by the Prince of Wales and other sons, brothers, uncles and nephews of the sovereign, and ambassadors. Next come the Archbishop of Canterbury, Lord Chancellor, Archbishop of York, Prime Minister, Lord President of the Council, Speaker of House of Commons, Lord Privy Seal, Lord Great Chamberlain, Lord High Constable, Earl Marshall, Lord Steward of the Household, and Lord Chamberlain. Then follow dukes, marquesses, earls, viscounts, bishops, secretaries of state (if barons) barons, certain officers of the household, secretaries of state not barons, Knights of Garter, Privy Councillors, Chancellor of Exchequer, Chancellor of Duchy of Lancaster, Lord Chief Justice, Master of Rolls, Appeal Justices, Lords of Appeal, other Judges, baronets, members of orders of knighthood, County Court judges, companions, members and officers of various orders, gentlemen entitled to bear arms. Sons of peers, baronets, knights, etc., rank in a manner decided by that of the father, a duke's eldest son, for example, taking precedence after a marquess, and the eldest son of a marquess after an earl.

Precentor Leader of singing in church. In most English Old-Foundation cathedrals he ranks after the dean, a vicar-choral being succentor; in others he is a minor canon, and in some important parish churches the senior curate. In Scottish churches he led the psalmody before organs were introduced.

Preceptor Literally this means a teacher. The **College of Preceptors**, established 1846, incorporated 1849, is a body devoted to education, granting various diplomas to teachers, and issuing a certificate of teaching ability. Examinations for pupils are held. The diplomas are those of Associate, A.C.P., licentiate, L.C.P., and fellow, F.C.P. The address of the college is Bloomsbury Square, London, W.C.1.

Precession Astronomical term. It is used in relation to the slow backward movement of the equinoctial points along the ecliptic and known as the precession of the equinoxes. This is due to the differential attraction of the sun and moon upon the earth's equatorial protuberance. The equinoctial points take 25,800 years to complete one circuit of the heavens.

Precipitation Term in chemistry for the process by which an insoluble substance is made to fall to the bottom of a liquid. The solutions of two substances are mixed, forming a third substance, which, being insoluble, sinks to the bottom and is termed a precipitate.

Predestination Theological term denoting the Divine predetermining of human destiny. It may

stand for belief in fate, the conception that all that is to be is eternally and changelessly decreed, or, specifically, that each individual is destined beforehand to everlasting weal or woe. Age-long controversies have attended attempts to reconcile the doctrine of human free-will with that of God's omnipotence. *See* AUGUSTINE, CALVIN.

Prefect One set in authority. In France the préfet is the civil governor of a department, and this title is given also to the head of the Paris police (Seine department). The prefects at English public schools are senior boys charged with keeping order and maintaining discipline. *See* PRAEFECT.

Premium Term meaning a prize, reward, or bonus. An apprentice or articled pupil pays a premium for his instruction in a trade or profession. Shares in a company are sometimes quoted at a premium, *i.e.*, a sum above their par value, £100 worth costing £105, etc. A **premium bond** is a bond carrying with it the chance of winning a money prize. Such a scheme is of the nature of a lottery, the prizes being given to holders of certain numbers drawn. The term is also used to denote sums payable periodically in respect of policies of insurance.

Pre-Raphaelites Group of English artists who, in 1848, broke away from the conventional art of their day. They formed the Pre-Raphaelite Brotherhood with the idea of returning to the primitive outlook of the early Italian painters. The original founders were Holman Hunt, Rossetti and Millais. The movement brought about the use of purer and truer colours, but was marred by over elaboration of minute detail.

Prerogative Right or privilege attaching to a person or body. The royal prerogative, now exercised through the cabinet or the privy council, entitles the sovereign to declare war, summon, prorogue or dissolve parliament, nominate ministers, create peers, pardon offenders, etc. Former ecclesiastical courts dealing with the probate of wills of persons dying in the provinces of Canterbury and York were called **prerogative courts.** *See* CROWN; PROBATE.

Presbyopia Defect of vision, usually due to the increasing rigidity of the eye lens in old age. The sufferer is unable to focus near objects but can still see distant ones clearly. The condition is corrected by wearing convex lenses.

Presbyter Elder of the early Christian Church; the name is also used for a priest. In the **Presbyterian denominations** a presbyter is an elder or a member of a presbytery, the latter being an official court of a district, composed of pastors and elders. The district also is termed a presbytery.

Presbyterianism Form of church government by presbyters or elders. Claiming to be a New Testament institution, in continuation of Jewish synagogue practice, it developed into the prelatic form of rule of mediaeval Christendom. At the Reformation presbyterianism emerged once more, notably under Calvin's forceful influence, side by side with the independent principle which congregationalism developed. Destined to prevail in Scotland, it acknowledges the government of each church by elders, including the preaching elder or minister. Churches are associated in local presbyteries, which are represented in provincial synods, and in a national or general assembly constituting the final court of appeal, meeting annually; each court is under a presiding moderator. World statistics of Presbyterianism reckon a present strength of about 6,500,000. *See* CALVINISTIC METHODISTS; SCOTLAND, CHURCH OF, etc.

Prescot Urban district and market town of Lancashire, on the L.M.S. Rly., it is 7 m. from Liverpool and a centre of the watchmaking industry, with potteries, electric cable works and coal mines. Knowsley, the seat of the earl of Derby, is in the neighbourhood. Pop. (1981) 9896.

Pressburg German name of the city of Czecho-Slovakia, better known as Bratislava. *See* BRATISLAVA.

Press Gang Men formerly engaged in compulsory recruiting for the army or navy. By an act of 1835 the period of compulsory service for men impressed for the navy was limited to five years.

Pressure Gauge Appliance for measuring the pressure of steam, gas, water, etc. The usual type of gauge on boilers for registering steam pressure consists of a flattened bronze tube bent in a curve and having one end open and connected to the steam pipe, the other end being sealed and linked to a pointer on a dial graduated to lbs. per sq. inch. Pressure of steam in the tube causes it to tend to straighten and this movement is registered by the pointer.

Prestatyn Market town and urban district of Flintshire. A coast town, it is 205¼ m. from London by the L.M.S. Rly. There is a ruined castle. Pop. 4511.

Presteign Urban district and market town of Radnorshire. On the River Lugge, it is 7 m. from New Radnor, on the G.W. Rly. It is the county town. Pop. (1931) 1102.

Prester John Legendary 12th century Christian ruler of a kingdom in the Far East. The name means "priest." He is referred to in many mediaeval traveller's tales, and attempts have been made to show that Prester John was the ruler of a state in Abyssinia. A kinsman who took the same name is said to have been slain by Jenghiz Khan.

Preston Seaport, county borough, river port and market town of Lancashire. It is 31 m. from Manchester, on the estuary of the Ribble, 12 m. from its mouth. It is 209 m. from London by the L.M.S. Rly. Preston is a centre of the cotton spinning industry and there are also foundries, engineering works and shipbuilding yards. The harbour and extensive docks are owned by the town. It sends two members to Parliament. Pop. (1931) 118,839. Preston was the scene of a battle fought, Aug. 17, 1648, between Parliamentarians and Royalists in which the latter suffered a heavy defeat.

The famous association football club, **Preston North End,** was one of the clubs comprising the league in 1888 and won the league championship in that year and the F.A. Cup in 1889.

Prestonpans Village of Haddingtonshire. On the Firth of Forth, 9 m. from Edinburgh, it has a station on the L.N.E. Rly. The name is derived from former salt pans here which were worked until the end of the 17th century.

The Battle of Prestonpans, Sept. 21, 1745, was fought between a Jacobite army under Prince Charles Edward and royal forces commanded by Sir John Cope. The latter had landed at Dunbar and was marching on Edinburgh, whence the Jacobites came out to meet him. Cope's army was quickly routed, only a few, including the leader, escaping to Berwick.

Prestwich Urban district of Lancashire. It is 4 m. from Manchester, on the L.M.S. Rly. Cotton is manufactured. Pop. (1931) 23,876.

Prestwick Burgh of Ayrshire. On the Firth of Clyde, 2 m. from Ayr, it is famous for its golf links. It is on the L.M.S. Rly. Pop. (1931) 8538.

Pretoria City of the Transvaal. On the Aapies river, 45 m. from Johannesburg, it was founded by and named in honour of Marthinius Preterius (1819-1901), first president of the South African Republic. It is the capital of the Transvaal and the seat of government of the Union of South Africa. The city lies at the foot of the Mogalliesburg Mts., and is a railway junction. Pop. (1931) 62,096 whites.

Priam In ancient Greek legend, the last King of Troy. Son of Laomedon, and husband of Hecuba, he was the father of Hector and Paris. When Hercules took Troy in revenge for Laomedon's broken promise to reward him for rescuing Hesione from the sea monster, Priam was spared, and Hesione redeemed him from captivity. Priam was slain by Neoptolemus when the Greeks captured Troy.

Prickly Pear *See* CACTUS.

Priestley John Boynton. British author, born at Bradford, 1894. He served in the Great War and then went to Trinity Hall, Cambridge. He had earlier done work for a Socialist weekly, and took up reviewing for the *Daily News*. He wrote lives of George Meredith and T. L. Peacock, 1926-7, and a successful novel, *The Good Companions*, 1929, which was produced as a play in 1931. Two other novels, *Angel Pavement* and *Faraway* followed in 1930 and 1932 respectively, and in 1933 *Wonder Hero*. His plays include *Dangerous Corner*, *Eden End*, *Laburnum Grove* and *Cornelius*.

Priestley Joseph. British chemist. Born on March 13, 1733, he was educated for the nonconformist ministry, and while at Warrington as minister published a *History of Electricity* (1767). Going to Leeds, where he remained some years, he began to study gases, discovering oxygen in 1774. From 1780-91 Priestley was a minister at Birmingham, where his political opinions caused him to be mobbed and his house and library burned. He went to London, and in 1794 emigrated to Pennsylvania, where he died Feb. 6, 1804. Among his discoveries were nitric oxide, hydrochloric acid, and sulphur dioxide. He was the first to use carbon dioxide in the preparation of "mineral" waters.

Primate Title of the Archbishops of Canterbury (Primate of all England) and York (Primate of England). An analogous title, primus, is held by the bishop who presides over the Synod of the Episcopal Church of Scotland. In the R.C. Church the title primate is borne by bishops of sees formerly carrying the dignity of Vicar of the Holy See.

Primates Highest mammalian order. It includes mankind, apes, monkeys and lemurs, although some authorities rank these separately. Except man (*q.v.*), who has adapted himself to all climates and developed other distinctive characters, all are essentially tropical and sub-tropical and nearly all arboreal. The fore-limbs are set apart to wait chiefly upon the head, and like the hind-limbs are adapted for grasping, the great toes being flat-nailed and usually opposable. The eyes are brought to the front of the head. *See* MONKEY.

Prime Minister Chief minister of the British sovereign and people, also known as the premier.

The prime minister must be a member of Parliament and since 1923 has been a member of the House of Commons. He is selected by the sovereign, but must enjoy the support of a majority of the members. He selects the members of the Cabinet, advises the sovereign on all matters of importance, heads the government and is the leader of his own political party.

Prime Ministers of the Past Hundred Years.

1834 —Viscount Melbourne	1886-92—Marquess of Salisbury
1834-35—Sir Robert Peel	1892-94—W. E. Gladstone.
1835-41—Viscount Melbourne	1894-95—Earl of Rosebery.
1841-46—Sir Robert Peel	1895-1902—Marquess of Salisbury.
1846-52—Lord John (Earl) Russell	1902-05—A. J (Earl of) Balfour.
1852 —Earl of Derby	1905-08—Sir H. Campbell-Bannerman.
1852-55—Earl of Aberdeen	1908-16—H. H. Asquith (Earl of Oxford).
1855-58—Viscount Palmerston	1916-22—D. Lloyd George.
1858-59—Earl of Derby	1922-23—A. Bonar Law.
1859-65—Viscount Palmerston	1923-24—Stanley Baldwin.
1865-66—Earl Russell	1924 —J. Ramsay MacDonald.
1866-68—Earl of Derby	1924-29—Stanley Baldwin.
1868 —B Disraeli (Earl of Beaconsfield)	1929-35—J. Ramsay MacDonald.
1868-74—W E. Gladstone.	1935 —Stanley Baldwin.
1874-80—Earl of Beaconsfield.	
1880-85—W. E. Gladstone.	
1885-86—Marquess of Salisbury.	
1886 —W E. Gladstone.	

Primitive Methodists Evangelical community. It arose from the introduction into English Methodist practice of open-air revival meetings. From 1807 onwards such meetings, held under Wesleyan Methodist protection, were especially fostered by Hugh Bourne and William Clowes who, excluded from membership for utilising unauthorised forms of worship, joined forces, 1810, and adopted the Primitive Methodist title, 1812. For 30 years the founders actively guided the rapidly expanding work, and 10 years after that, when both had died, a loose connection of federated districts gradually developed, becoming the Primitive Methodist Church, 1902. Organic union with other Methodist communions was authorised by Parliament for 1933. *See* METHODISM.

Primo de Rivera *See* RIVERA.

Primogeniture Right of the first-born. It was applied in England to the practice whereby real estate descended to the eldest son on intestacy. This system was done away with by an act of 1925.

Primrose Herbaceous perennial of the genus *Primula*, of which there are 290 species. The ease with which they may be cross-fertilised makes them a popular English garden flower, the best hybrids being obtained from auricula, Chinese primrose and primrose obconica.

Primrose League Conservative political organisation. Founded in 1883, its name is an allusion to a favourite flower of the Earl of

Beaconsfield. The anniversary of Beaconfield's death, April 19, known as **Primrose Day**, is honoured by the wearing of a bunch of primroses. The address of the Primrose League is 64 Victoria St., London, S.W.1.

Primula Large genus of perennial herbs of the primrose order. The British species are the common, bird's-eye and Scottish primroses, cowslip and oxlip (*q.v.*). Besides the garden polyanthus, derived from one or two of the above, innumerable varieties, double-flowered forms and hybrids have come from these and exotic species introduced since the 16th century.

Prince Albert City of Saskatchewan, Canada. It is on the North Saskatchewan River, 247 m. N. of Regina, and is a junction on the C.N. Rlys. The chief industries are lumbering and the milling of grain. The Prince Albert National Park, opened in 1928, has an area of 1400 sq. m. Pop. (1931) 9905.

Prince Edward Island Province of Canada. It is in the Gulf of St. Lawrence, separated from the mainland by Northumberland Strait. Its area is 2184 sq. m., and it is the smallest of the Canadian provinces. The capital, Charlottetown, is on Hillsborough Bay. Agriculture is the principal industry. The island was colonised by the French about 1720, became a British possession in 1763, and was united to the Dominion of Canada in 1873. Pop. (1931) 88,040.

Prince of Wales Title borne first by the son of Edward I. and since conferred on the eldest son of the sovereign. The badge is a plume of three ostrich feathers enfiled by a coronet, the motto being *Ich dien* (Ger., I serve).

Prince Rupert Port of British Columbia. It is on Kaien island in the Skeena River, 550 m. N. from Vancouver, and is a terminus of the C.N. Rlys. There is a large harbour, and various fisheries are carried on. Pop. 7500.

Princes Risborough Town of Buckinghamshire. It is 7 m. from Aylesbury, on the L.N.E. Rlys. Chequers, the official country residence of the Prime Minister, is 3½ m. away. Pop. 2438.

Princeton Town of New Jersey, United States. It is 10 m. from Trenton and is served by railway and canal. The university owes its existence to a college founded at Elizabethtown in 1746, and moved to Princeton in 1756. It was then called the College of New Jersey. There were in 1932 2554 students.

Princetown Town of Devonshire. It is on Dartmoor, 22 m. from Plymouth, on the G.W. Rly. Near is Dartmoor prison. The town, which is a tourist centre, is on the estate of the Prince of Wales, as Duke of Cornwall.

Printing Art of printing from movable types. It originated in the mid-15th century in Germany. Gutenberg, and Fust and Schoeffer at Mainz, were doing experimental work before 1450, and the 42 line Bible known as Gutenberg's appeared in 1455. Work was also done at Strassburg, and from Mainz the art spread to Nuremberg, Cologne and Augsburg. Sweynheim and Pannartz established a press first at Subiaco and then at Rome. The Frenchman, Jenson, inventor of Roman type, began printing at Venice in 1470. In France, Spain and Flanders, Holland, and Switzerland presses were soon at work, and in 1476 the English Caxton, after some preliminary work at Bruges, set up his press at Westminster.

The modern art is divided roughly into letterpess, or relief printing, and lithographic, a flat surface being used in the latter. (*See* LITHOGRAPHY.) Letterpress printing comprises the composition of type, assembling of type and blocks, etc., and the machining. The introduction of the Monotype, Linotype and Intertype (1886-9) abolished hand composition for all but special work. The first casts separate types set up into lines, and is widely used for book work; the others turn out solid slugs each a stereo of a single line, used for newspaper work, etc. Monotype set matter can be corrected and manipulated like hand-set matter.

Early printing presses were not greatly different in principle from those still used for odd purposes in printing works. The forme of type was carried on a flat bed, and the paper pressed into contact with it by a platen. Koenig (1811) introduced a cylinder press which was the prototype of those used largely to-day for book printing. Advances were the addition of another cylinder, permitting both sides of the paper to be printed in a single operation. In modern rotary presses forme cylinders carry curved stereos of the type matter and the paper is fed from one or more reels. The output from several units can be combined, folded into a newspaper and delivered automatically at a remarkable speed. *See* INTAGLIO; LITHOGRAPHY.

Prior **Matthew.** English poet and diplomat. Born July 21, 1664, he entered the diplomatic service 1691, going to The Hague, Paris, and in 1711 to Utrecht in connection with the peace treaty. He was at the Paris embassy as minister in 1713; on his return in 1715 he was impeached and imprisoned for two years. His chief poems are *Solomon, or the Vanity of the World*, and *Alma, or the Progress of the Mind*. He died Sept. 18, 1721.

Pripet River of Russia. It rises in the west of the country and joins the Dneiper, north of Kiev. Its length is about 500 m. and it is navigable to Pinsk. Canals connect it with the Vistula and other rivers. It flows through a district of marshes which became prominent during the Great War.

Prism Geometrical term for a solid whose two ends are equal similar and parallel plane figures, and its sides parallelograms. The axis joins the centres of the two ends, and a right prism has its axis perpendicular to its ends. In optics a triangular glass prism is used for refraction and dispersion of light.

Prison Place of detention. The modern system for dealing with criminals dates from the early 19th century. John Howard had published in 1777 his powerful plea for reform. In 1813 Elizabeth Fry began her work for the Newgate prisoners. Jeremy Bentham's "Panopticon" was the model for Millbank penitentiary (1816). Pentonville (1842) was part of the scheme for the separate system which had been recommended by the House of Lords in 1835. Holloway prison was built in 1854. Dartmoor, built for French war prisoners in 1806, was made into a convict prison in 1850, and the prison on Portland Bill was constructed about the same time. Transportation ceased, and a new system became

necessary. Penal servitude was introduced, and the employment of convicts on public works of some magnitude. *See* BORSTAL; PENAL SERVITUDE; REFORMATORY; TRANSPORTATION.

Privet Genus of shrub or low trees of the olive order (*Ligustrum*). They bear simple entire leaves and clustered white funnel-shaped flowers, yielding small globular berries. Of the common privet of Britain and Europe, *L. vulgare*, variegated and weeping varieties are cultivated, besides Chinese and Japanese evergreen species.

Privy Council Council to advise the sovereign on matters of state. Since the adoption of the system of cabinet government this body has lost much of its former powers, and now deals mainly with certain formal matters. Thus on the death of the king it is summoned to proclaim the new sovereign. The council is composed of distinguished persons of the country, including the royal princes, the archbishops of Canterbury and York, officers of State and of the Household, the Speaker of the House of Commons, etc. Its members are styled, "The Right Honourable" and take precedence after Knights of the Garter. The Lord President of the Council ranks next to the Prime Minister. The judicial committee of the council is the supreme appeal court for the Dominions. *See* CABINET; JUDICIAL COMMITTEE.

Privy Purse In England the allowance from the civil list for the personal use of the sovereign. It is dealt with according to the King's direction by the Privy Purse Office. The amount is £110,000 per annum.

Privy Seal One of the three legally recognised Royal Seals. It first appeared under King John, and was used to validate the Crown's private expenditure. Its use was abolished in 1884, but the title of Lord Keeper for one of the members of the Cabinet was retained.

Prize Court Court to deal with prizes of war, *i.e.*, ships and goods captured at sea. Such courts are set up by the countries concerned upon the outbreak of hostilities. The procedure differs in various countries. During the Great War the proceeds of prizes taken by British ships were paid into a common fund for the whole navy. Formerly the practice was to distribute the prize money among the company of the ship actually taking the prize.

Probate Legal proving of a will. The will, with a copy, is taken to a registry, and also an affidavit stating particulars of the testator's estate, and another proving his death, etc. Upon the will being admitted to probate a parchment copy (the probate copy) is issued, which is legal evidence of the will, the original being filed at the registry, where it can be inspected on payment of a fee. *See* WILL.

Probation Judicial system under which offenders, instead of being committed to prison upon being convicted, are placed under a bond to be of good behaviour for a specified period. The method is used with young delinquents, who are then sometimes placed under the supervision of a probation officer. If the offender breaks his bond he may be recalled and sentenced. *See* BORSTAL; REFORMATORY SCHOOL.

Process Course of legal proceedings. The writ of summons also is called a process and the officer serving it is termed a **process server.** In Scots Law the term process means a summary warrant for imprisonment issued against a person who, having borrowed a process from the court, unwarrantably refuses to return it.

Proclamation Public announcement of an executive act. It is made by authority of the king in council, and the proclamation is read aloud in the capitals by heralds. Thus the death of a sovereign and accession of his successor, are proclaimed, and a similar announcement is made of a declaration of war. The prorogation and dissolution of Parliament are also proclaimed.

Proconsul In ancient Rome a magistrate who acted in place of a consul. He was usually a consul who had his *imperium* continued beyond his year of of office. It became customary to entrust such an officer with the charge of a province or the command of an army. *See* CONSUL.

Proctor Form of the word procurator, meaning one who performs duties for another. The name is given to two officers of Oxford and Cambridge Universities among whose duties is the maintenance of discipline among undergraduates.

The legal officer known as the **king's proctor** intervenes in divorce or nullity suits if he suspects collusion or fraud. The term proctor is employed also for certain representatives in convocation (*q.v.*). *See* DIVORCE.

Procuration Procuring of a girl or woman for unlawful intercourse. An Act of 1885 (amended by the Criminal Law Amendment Act, 1912) prescribes heavy penalties for the offence.

Procurator One who acts for another. In Scotland it is used for a law-agent. The faculty of procurators fixes the fees to be charged by its members for conveyancing or litigation business. The **procurator-fiscal** is a Scots law officer appointed by the Lord Advocate. He inquires into cases of crime and conducts investigations into cases of sudden death. He also prosecutes in cases indicted before the supreme court.

Profiteering Selling of commodities at an exorbitant profit. During the Great War prices rose generally and some sought to take advantage of a national emergency. In Great Britain an Act was passed in 1919 to stop profiteering. The Board of Trade was given power to investigate complaints and take action against offenders.

Profit Sharing System by which those employed in a business receive besides the ordinary wage, a share of the profits made. It is held that the giving of this bonus, by causing the worker to take a greater interest in the business, helps to effect economies and reduce waste. Difficulties arising are that the profits are governed by other factors than production costs, and trade unions have given the system relatively little support. *See* CO-PARTNERSHIP.

Progression Mathematical term denoting a type of series. Thus a series of numbers may be in arithmetical progression, as 2, 4, 6, 8, 10, where the numbers have a constant difference; or in a geometrical progression, as 4, 16, 64, 256, 1024, where each is a regular multiple of the preceding one.

Prohibition Term especially applied to the prohibition of the manufacture, sale, and transportation of

intoxicating liquors for beverage purposes. The United States of America imposed a prohibition measure in July, 1919, but this was removed in 1933. As a war measure, control or prohibition of the liquor traffic was imposed in several other countries. Various provinces of Canada from 1915-1917 introduced prohibition until Quebec alone remained outside, and in that territory a great area had adopted prohibition under local option. In the United States an illicit liquor trade quickly developed. Smuggling became rife, and a regular industry grew up of the running of cargoes of intoxicants to points outside American territorial waters, whence the liquor was transmitted to the vessels of the so-called "boot-leggers." *See* LOCAL OPTION.

Projectile Body projected or given a free path through the air, as in the case of a ball, bullet or shell. The path described by a projectile is termed the trajectory and the study of the different factors governing it has become very important.

Proletariat Term used to denote the wage-earning class of a community collectively. By socialists it is used to distinguish this class from the capitalists and the middle classes, often termed *bourgeoisie*. The word is from a Latin one meaning those citizens who had no property, but served the state by producing offspring.

Prometheus In ancient Greek legend, one of the Titans. He climbed to the heavens and stole fire from the sun in order to give life to men. Zeus punished him by causing Vulcan to chain him to a rock on the Caucasus, and here a vulture came by day and fed on his liver which grew afresh each night. Finally, Hercules delivered Prometheus and killed his tormentor.

Promissory Note Written promise to pay on demand or at a specified future time a sum of money to a person specified, or to his order, or to bearer. The note must be signed by the drawer, and the promise must be subject to no conditions. Unlike an I.O.U. which is a mere acknowledgment of a debt, a promissory note is negotiable, and if endorsed by the payee (or person to whom the promise is made) to a third party—the endorsee—the latter can sue the drawer whether or not there was valuable consideration in the first place. *See* BILL OF EXCHANGE.

Proof Spirit Dilute alcohol. It contains 49·24 per cent. by weight or 57·06 per cent. by volume of absolute alcohol. Its use in pharmacy is now superseded generally by alcohol of a higher strength. Spirit stronger than proof spirit is said to be overproof, if weaker, underproof.

Propagation Continuing a species by processes of reproduction. Most flowering plants effect it naturally by seeds, runners rooting at the joints, offsets from bulbs or stems above ground, etc. Artificial methods used in horticulture include detaching slips, cuttings, shoots or suckers, dividing the plant into reproductive sections, layering and grafting.

Propeller Revolving mechanism for driving steam or motor vessels, aircraft or machinery. A screw propeller used on vessels takes the form of a shaft with spiral blades, and the speed of the propeller is limited largely by centrifugal effort. In aircraft the term specially refers to the air-screw which propels the machine.

Propertius Sextus. Roman poet. Born in Umbria about 49 B.C., he was a friend of Maecenas, Virgil, Ovid, Tibullus and Horace. He is celebrated for his *Elegies* in which he followed the style of the Alexandrine elegiac poets. His poems are mostly concerned with his mistress "Cynthia," a native of Tibur, whose real name was Hostia. The fourth and last book of elegies deals with Roman history. He died about 16 B.C.

Proportional Representation System of voting. It aims at securing representation of minority bodies according to their numerical proportions. When a constituency returns several representatives the voter records also a second or third choice, according to the number of representatives seeking election. A definite quota of votes is necessary to procure election, the quota being determined after the ballot, according to the number of votes polled and the number of vacancies to be filled. When, on the first count, one or more candidates secure election by polling the requisite number of votes, any surplus votes above the quota are apportioned among the other candidates according to the second choice shown on the ballot papers. The candidate with fewest votes is declared defeated, and his votes are transferred to the next preference indicated, this probably enabling a further vacancy to be filled. So the process continues, with transference of votes to next choice, until all the necessary representatives are elected.

Prorogation Discontinuance of a session of Parliament by royal authority without dissolution. Parliament is prorogued at the close of a session by proclamation by the king in person, or by His Majesty's commission. *See* DISSOLUTION.

Prose Form of literature in which ordinary direct language is employed. Prose is distinguished from verse, the other main form of literary expression, by being devoid of metre, but must have rhythm. English prose really began with Alfred the Great, who translated Bede's Chronicle. Tyndale's Bible (1525), it has been well said, fixed our standard English. *See* POETRY.

Proselyte Convert from one religion or opinion to another; originally a Gentile convert to Judaism.

Prospecting Systematic search for minerals. The prospector must be versed in geology and mineralogy. Geology will afford information about underlying strata, lodes, etc., as presaged by exposed sections such as cliff or river bank. Mineralogy will enable him to recognise the surface indications of buried minerals, and to identify them when reached. Apparatus ranges from the primitive divining rod, with which some claim to be able to locate hidden mineral deposits, and the magnetic needle, to delicate and sensitive electrical devices. *See* MINING.

Prostitution Promiscuous sexual intercourse for gain by a woman known as a prostitute. Regulated prostitution has existed since ancient times, and endures to-day in France and elsewhere. In Great Britain it is a punishable offence. *See* PROCURATION.

Protection In economics the supporting of home industries

against foreign competition by a discriminative tariff on imported goods. The opposite of "free trade," in which foreign goods are allowed to enter untaxed. Bound up with the former system is the practice of retaliating against the protective tariffs of another country by a similar measure directed against that country. Thus the tariff can be used as a weapon or a means of bargaining. Another means of fostering and protecting an industry is by granting a bounty or state subsidy on the commodity produced. *See* BOUNTY, FREE TRADE, TARIFF.

Protector Former English title of state. It was borne by one who governed during the minority or absence of the king. In 1216 the Earl of Pembroke was protector; in 1422, Humphrey, Duke of Gloucester; in 1547 the Duke of Somerset, and in 1549 Dudley, Duke of Northumberland. Cromwell (1653) and his son, Richard (1659), held the office of Lord Protector of the Commonwealth. *See* REGENT.

Protectorate Country whose foreign relations are under the control of another state. An example is the former Kenya Protectorate, including territories which belonged to the Sultan of Zanzibar, and were annexed to the British Crown in 1920. Existing British protectorates include those of Nyasaland, Swaziland, Somaliland and Uganda. *See* MANDATE; PROTECTOR.

Protein Group of highly complex organic substances containing carbon, hydrogen, oxygen, nitrogen, sulphur, and sometimes phosphorus. The animal proteins include albumen of the egg, fibrin and globulin of the blood, casein of milk, creatine in muscle, etc. Vegetable proteins include globulins, albumins, gluteins and prolamins in various seeds, also nucleo-proteins containing phosphorus in the cells of plants as well as animals.

Protestant Episcopal Church. Official title of the Episcopal Church of America in communion with the See of Canterbury, *i.e.*, the Anglican Church in America. Though, as a result of the English colonisation clergy were sent out, there were for long no bishops. In 1784 Samuel Seabury was chosen bishop and came to England for consecration, although he had been previously consecrated by a Scottish bishop. The church was organised as a separate denomination in 1789. There are 7299 churches and 1,859,100 members.

Protestantism Faith of those who protest against the Church of Rome. The name **Protestants** was given to those followers of Luther who protested against the decrees of the second diet of Spires (1529). The effect of the decrees was that certain privileges were withdrawn and the Lutheran or reformed church, henceforth, was not countenanced. The name **protestants** came soon to be applied to any religious body which had separated from the Roman Church.

The main differences between Protestantism and the older Church are (*a*) as regards the attitude to the Scriptures; and (*b*) as to the sacraments and priesthood. To Protestants the Bible is the supreme and ultimate authority. The relation of the soul to God is direct and personal, needing no intermediary, such as a priest; and sacraments, though certain ones are recognised, are not essential to salvation. *See* ROMAN CATHOLIC CHURCH; REFORMATION.

Proteus In ancient Greek legend, a deity of the ocean, the son of Poseidon. He dwelt in the Island of Pharos and tended the flocks of sea monsters belonging to his father. He was able to assume any shape, and could foretell the future.

Protocol Original draft of a deed or document. The term is applied in diplomacy to the preliminary draft of a treaty, etc. In Scots law a protocol means a record kept by a notary containing a copy of documents executed.

Protoplasm Living substance of all organisms, whether plant or animal. It contains carbon, hydrogen, oxygen, nitrogen, sulphur and phosphorus in very unstable combination, constant changes taking place while it is living. In its physical characters, protoplasm is a colourless, viscid, transparent or often granular substance consisting of a clear viscid portion (hyaloplasm) held in the meshes of a contractile network (spongioplasm), and embedded in it is the cell nucleus, the originating centre of all vital activities.

Protozoa Lowest division of the animal kingdom. Protozoa consist of unicellular organisms which in certain cases are aggregated to form colonies whose constituent cells are independent entities capable of reproducing their kind. Some protozoa are amœboid, protruding temporary portions of protoplasm for locomotion; others are flagellate, having one or a few protoplasmic threads or flagella, or ciliate, when the threads are more numerous and vibratory. Most protozoa are aquatic, but one group is terrestrial.

Proust **Marcel.** French author. Born July 10, 1871, he was educated at the Lycée Condorcet, and began early to write stories. From 1902 he was in bad health, during which time he wrote *A la Recherche du Temps Perdu*, a series of 15 vols., the first of which, *Du côté de chez Swann*, was published in 1913. He died Nov. 18, 1922, and the last three volumes were published posthumously. These were *La Prisonnière* (1924), *Albertine Disparue* (1926) and *La Temps Retrouvé* (1926).

Provence Former province of France. Since the Revolution it has been divided up into the departments of Basses-Alpes, Vaucluse, Var, and Bouches-du-Rhône. An ancient Roman province, it has many relics of that empire, particularly in the neighbourhood of Arles, its old capital. It was the cradle of the mediæval literature written in the langue d'oc, and produced some famous poets and troubadours. *See* FRANCE.

Proverbs **Book of.** Book of the Old Testament. A manual of practical life, placed after the devotional manual, the Psalms, it comprises: 1-9, a group of wise counsels; 10-22, an anthology of aphorisms in couplet form; 22-24, two collections of quatrains; 25-29, more couplets; 30-31, supplements ascribed to Agur and Lemuel, the latter embodying an acrostic describing the virtuous woman. Finally welded in the post-exilic age, the whole was attributed to Solomon in accordance with the literary usage of the time.

Province Wellesley Part of Penang colony, situated on the mainland. Great Britain annexed it in 1798. It has an area of 232 sq. m., and its principal products are rice, tobacco, sugar and spices. Prai is the capital and principal port. Population (with Penang), (1932) 367,477.

Provost In Scotland, the chief magistrate of a burgh. He is equal in rank to an English mayor. The provosts of Aberdeen, Dundee, Edinburgh, Glasgow and Perth are entitled Lord Provost. Another use of the term provost is for the head of a college.

Provost Marshal Army officer appointed when troops are in the field to be head of the military police. With his assistants he apprehends military offenders and is responsible for executing the decrees of courts-martial.

Proxy One who acts for another. The word also denotes the authority by virtue of which the power is delegated. The Companies Acts allow proxies to be used for voting at meetings of shareholders, and on such an occasion the person qualified to vote may thus appoint as his proxy another to act in his absence. A prescribed form must be used for the instrument, which must bear a 1d. stamp. Voting by proxy is allowed at bankruptcy proceedings.

Prudhoe Town of Northumberland, on the Tyne, 277 m. from London and 11 m. from Newcastle, on the L.N.E. Rly. It is in a coal-mining district. Pop. 8921.

Prune Dried fruit of several varieties of the cultivated plum-tree. The finest, grown in the Loire valley, are called French plums. Grown also in Spain and Portugal, Germany, California and elsewhere, and eaten as a dessert, they have highly nutritive, demulcent and laxative properties.

Pruritus Skin affection, sometimes without visible eruption, marked by intense itching. It may be set up by diabetes, jaundice, dyspepsia, lice, etc., and is aggravated by scratching. When, in advancing years, the skin becomes thin and inelastic, pruritus senilis often occasions great suffering and sleeplessness.

Prussia Republic of Germany, the largest and most important state of the Reich. Formerly a kingdom, it grew gradually, its chief components being the Mark of Brandenburg and the State of the Teutonic Order in Prussia. The real founder of the state was the Elector Frederick William (1620-1688), but it was Frederick the Great (*q.v.*) who laid the foundations of Prussian greatness, by making Prussia a first-class military power. The high water mark of its supremacy as a monarchy was reached under William I. and Bismarck (1840-1890), and under William II. Prussia remained supreme till the declaration of the republic in 1918. Thereafter it was still considered the key state of the Reich. In the disturbed conditions of 1932 a temporary military dictatorship was set up by the von Papen government. The Nazis seized the government in 1933, and in 1934 most of the powers of the Prussian legislature were transferred to the Reich cabinet.

With an area of 114,108 sq. m., Prussia includes part of Schleswig-Holstein, Westphalia, Hanover, districts once part of Saxony, Pomerania and part of Silesia. The chief rivers are the Rhine, Oder, Elbe and Weser.

The republic is rich in minerals, especially coal and iron, and has many large manufacturing areas. Berlin is the capital. Westphalia is the chief industrial area and there are wide agricultural districts. Most of the Baltic and North Sea ports are in Prussia. There is much forest land and some trade in timber. Pop. 38,175,989.

EAST PRUSSIA. Province of Prussia, separated from it since 1918 by Polish territory and the free city of Danzig (*q.v.*). Only half the province is cultivable, the southern part consisting of forest, moor, sand and bog. Agriculture is the chief occupation. Königsberg is the capital. Area 14,304 sq. m. Pop. 2,256,350.

Prussic Acid *See* HYDROCYANIC ACID.

Przemysl Town of Poland. A former Austrian fortress, on the San, it is 60m. from Lwow, or Lemberg. Besieged by Russian forces early in the Great War, the pressure was relaxed owing to Austrian successes, but with the defeat of Austrian forces on the San in Nov., 1914, the investment was tightened up. Tamassy broke out in Dec., but was driven back after four days' fighting. Attempts at relief failed, and the besieged were threatened with famine. An unsuccessful sortie *en masse* was made on March 18, 1915. On March 22, Kusmanek, the commander, capitulated and Selivanoff entered Przemysl. Russia's triumph was shortlived. Austro-German troops stormed the forts on May 30-31, and three days later Przemysl was recaptured to stay in Austrian hands until the end of the war.

Psalms **Book of.** Book of the Old Testament. It comprises 150 "praise-songs" set to music, primarily for Temple use. In the Hebrew Bible it constitutes five books, each terminal psalm being in doxology form. Nearly half—73—were traditionally associated with David, and the whole anthology came to be ascribed to him. Mostly of post-exilic date, some clearly reflect the Maccabean age.

Psalter Book containing the Old Testament Psalms, especially when printed separately or paraphrased. The Anglican prayer-book psalter contains the Great Bible version of 1539; the Bible psalter, A.V. or R.V., is in extensive Free Church use. The metrical psalms, employed in Anglican worship for nearly two centuries, still persist in Scotland.

Psittacosis Disease of parrots, communicable by infected birds to man. Outbreaks occurred in England in 1930, which were accompanied by fatal results that year and subsequently.

Psittacus African genus of parrots. The best-known is the grey parrot, *P. erythacus*, with ashy-grey plumage and short red tail, ranging from the Guinea coast to Lake Nyasa. Assembling in large flocks by day and feeding on palm-nuts and other fruits, it makes no nest, 2-4 eggs being laid in the bottom of a hole; both parents sit alternately. A familiar cage-bird in Europe for centuries, often long-lived, its remarkable power of repeating words is shared by both sexes.

Psoriasis Skin affection marked by flat dry patches covered with silvery-white scales. Its cause is unknown. It may appear in childhood and persist for years or disappear spontaneously, recurrence being common. The elbows and knees are first affected, and it may spread to the scalp and other regions.

Psyche In classical mythology a beautiful maiden, the favourite of Cupid. Cupid was sent to cause her to fall in love with the meanest of mortals, since Aphrodite was envious of her beauty. Cupid, however, became enamoured himself. Parted by the jealous wiles of her sisters, Psyche set out in search of her lover, finally, after long

travels, finding him again. She was made immortal and the lovers were reunited. *See* CUPID.

Psychical Research Systematic investigation into phenomena, regarded as appertaining to the spiritual sphere. In 1882 was founded the Society for Psychical Research, whose object is the investigation of apparitions, hauntings, clairvoyance, spiritualistic manifestations, etc. The society's address is 31 Tavistock Square, Bloomsbury, London, W.C.1.

Psycho-analysis Method devised by Sigmund Freud for exploring mental processes and investigating basic motives. It utilises dreams as a means of investigation, Freud's theory stating that these are a manifestation of wishes and desires buried in the unconscious, and generally have to do with repressed images, thoughts, etc., which assert themselves—often in an altered form—during sleep. Freud says that if such buried complexes can be brought to consciousness the mental conflicts between conscious and unconscious which produce neurosis and other troubles, can be resolved and the patient cured. According to the Freudians, the majority of buried complexes are related to suppressed sexual urges. *See* DREAM; FREUD; JUNG.

Psychology Science of mental phenomena. It investigates psychical processes or states and the conditions under which they arise. Its main methods of approach are introspection and inference. The first is "looking within," the second infers from the actions of others the mental processes giving occasion to them. Another line of study is the examination of the mental life of others, *e.g.*, the child from infancy to adult life.

Social psychology deals with the mental phenomena of communities; industrial psychology with the special problems of factory life, etc.; comparative psychology deals with the behaviour of animals as compared with humans.

Behaviourism, a development of the latter, sought originally to explain behaviour as a product of reflexes—responses to stimuli—independent of consciousness.

Psychotherapy Treatment of disease by psychological means. Mainly employed for so-called functional nervous disorders now regarded as mental in origin, its technique includes suggestion, with or without hypnotic sleep, autosuggestion as advocated by Coué, persuasion as practised by Dubois, and psychological analysis, including the special form, psychoanalysis, elaborated by Freud (*q.v.*).

Ptarmigan Game-bird of the grouse family (*Lagopus mutus*). About 15 in. long, it differs from the red grouse (*q.v.*) in having feathered feet and assuming nearly white winter plumage, with black outer tail-feathers. It ranges over Scottish moors above 2500 ft., laying 8-10 buff eggs in rough ground-nests; it becomes tame during the nesting season.

Pterodactyl Any member of the extinct order of flying lizards found fossil in mesozoic rocks from the Lower Liassic to the Upper Cretaceous in England, Europe and N. America. Long-tailed or tailess, large-headed, wide-mouthed, toothed or toothless, with flexible necks, they had smooth bat-like membranes extended by the enormously elongated "little finger" of the fore-limbs, the other fingers being short claws. They were more or less bird-like, with hollow bones, varying from the size of a sparrow to a 25-ft. wing-spread.

Ptolemy Name of a dynasty of Egyptian kings (305 B.C.-A.D. 40). The first, named Soter, a general under Alexander, became satrap of Egypt on Alexander's death in 323. In 305 he took the royal title. Notable for his building of the library and museum at Alexandria, he was a patron of literature and science. He abdicated in 285. His son and successor, Philadelphus (308-246 B.C.), also fostered the arts. Ptolemy III. (Euergetes), son of the last named, became king in 246. He made great conquests from Selencus. The legitimate line ended in 80 B.C., when Ptolemy X. was assassinated, the crown going to a natural son of Soter II. (Ptolemy VIII.). He was named Auletes, or the flute player. Auletes' son, Philopator, succeeded in 51 B.C., reigning jointly with his sister, Cleopatra, as Ptolemy XII. On his death by drowning in 47 B.C., his younger brother became Ptolemy XIII. and reigned also with Cleopatra. The last two kings of the dynasty were son and grandson of Cleopatra, Ptolemy XV. dying in A.D. 40. *See* CLEOPATRA.

Ptolemy Egyptian astronomer and geographer, Claudius Ptolemaeus. He was at Alexandria, A.D. 127-51, and embodied his learning in a work of 13 volumes which became known by the Arabic name of Almogest. His system, the Ptolemaic, represented the earth as the fixed centre of the universe, the sun, moon, other planets and stars revolving about it from E. to W. in separate zones.

Ptomaine Basic substance formed in a nitrogenous organic tissue during putrefaction. Ptomaines of animal origin, formerly classed with vegetable poisonous alkaloids, pertain to various classes of chemical compounds, not necessarily noxious. In popular usage cases of poisoning by meat, etc., are loosely attributed to ptomaines, although some at least arise from disease-producing bacteria.

Public Health Term used for the health of the community as a whole. The various councils employ medical men, sanitary inspectors and others, and the Ministry of Health has a large staff. Their duties are concerned with infectious diseases, sanitation, supplies of food and drink, infant mortality and kindred matters. There is in London an Institute of Public Health at 37 Russell Square, W.C.1., which carries on educational work including research.

Public Prosecutor Legal official, in full the Director of Public Prosecutions. He takes action on the instructions of the Attorney-General, *e.g.*, in 1929 the prosecution of C. G. Hatry and his associates. Sometimes facts come to light in legal proceedings which make it desirable for the judge to send the papers to the Public Prosecutor, who has an office at 1 Richmond Terrace, Whitehall, London, S.W.

Public Trustee Public official appointed in 1900 to act as executor and trustee. Any one can name him as the executor and trustee of a will, thus obtaining the security of the State against fraud. He charges a regular scale of fees. The offices are in Kingsway, London, W.C.2, and there is a branch office in Parsonage Gardens, Manchester.

Publishing Business of preparing books for the public. The early publishers were also booksellers and in the 18th century books were published by a number of booksellers jointly, each taking a certain number. In the 19th century the two businesses became separate. Edinburgh became a great publishing centre, but after a time the pre-eminence, as far as Great Britain was concerned, passed to London. Leipzig is another city famous as a publishing centre and books are published in most of the university towns.

Some publishers confine themselves to a particular branch of literature, *e.g.*, medical books, while others are general publishers. With the aid of readers their business is to decide which of the manuscripts submitted shall be published by them. They must then arrange for the printing of the books chosen, for their distribution to the trade and for the necessary publicity.

PUBLISHING AS A CAREER.—The staff whose duty it is to select and prepare manuscripts for the press is usually recruited from the universities; the production departments are usually reached after a period of apprenticeship.

The necessary qualifications are a wide general knowledge and some literary and artistic taste with potentialities for developing quickly a full knowledge of the technicalities of the trade and a sound judgment on the commercial value of contemporary literature. On the whole, the sales side offers the most promising monetary rewards.

Puccini Giacomo. Italian composer. Born Dec. 3, 1858, at Lucca, he studied at Milan and achieved his first success with the opera *Manon Lescaut* (1893) and *La Bohème* (1896) brought him fame. Of his other operas the two best known are *La Tosca* (1900) and *Madame Butterfly* (1904). In 1911 he came to London to superintend the production of his *Girl of the Golden West*. His last opera, *Turandot*, was produced in 1926 at Milan. He died Nov. 29, 1924.

Pudsey Borough of Yorkshire (W.R.), 6 m. from Leeds, and 189 m. from London, by the L.N.E. Rly. Here are metal and textile works. Pop. (1931) 14,762.

Puerperal Fever Notifiable disease of childbirth caused by septic infection of the womb, etc. Formerly responsible for many deaths, it has been largely prevented by modern aseptic methods, and by the employment of trained midwives and maternity nurses. It is still a very serious problem, however, as there has been little decrease in its incidence in recent years. Fever is the warning sign, usually appearing about 3 days after childbirth, though it may occur much earlier.

Puff Adder Repulsive venomous viper (*Clotho arietans*), distributed over nearly all Africa. The large flattened head and thick body, 4-5 ft. long, are covered with longitudinal rows of scales, mottled-brown above and greyish-white beneath. When irritated its indrawn breath, visibly swelling the body, gradually escapes. Bushmen smear the venom on their arrow-tips.

Puffin Genus of sea-birds of the auk family (*Fraterculæ*). The common puffin, *F. arctica*, 12 in. long, has black-and-white plumage, reddish feet, and brilliantly-coloured bill, red, orange and bluish-grey, with horny sheath-like plates which moult after the breeding season. Common on the rocky Atlantic coasts of Europe and the W. coasts of the British Islands and laying one mottled whitish egg, it winters in the Mediterranean region. Horned puffins and tufted puffins inhabit the N. Pacific.

Pug Dog Breed of toy dog. Of the mastiff group, suggesting a miniature bulldog, it was introduced from Holland and much esteemed throughout the 18th century. Victorian England produced the modern strains.

Pugin Augustus Welby Northmore. English architect. Born March 1, 1812, he became an architect, helped to prepare a large series of drawings of European Gothic buildings, and was enthusiastic for the revival of the Gothic style in England. He helped to design the new Houses of Parliament at Westminster, in 1837-43, and designed for the Roman Catholic Church the cathedral of S. George in Southwark, those at Nottingham, Killarney and elsewhere, as well as Farm Street Church, Berkeley Square, London. He died Sept. 14, 1852.

Pulborough Parish and market town of Sussex. It is on the Arundel road, 46 m. from London, near the confluence of the rivers Arun and Western Rother. Originally a Roman fortress on the road from Regnum to Londinium, it still bears traces of Roman occupation.

Pulham Market Village of Norfolk. It is 17 m. from Becoles and has an aerodrome with a mooring mast for airships. Near is Pulham St. Mary. Both villages are served by the L.N.E. Rly.

Pulley Mechanical device for lifting heavy objects. It consists of a grooved or flat rimmed wheel (sheave) free to rotate upon an axle or pin fixed in a block or frame and over which a cord passes to a weight. By securing one end of the cord to a beam and passing it around a system of pulleys a mechanical advantage is obtained in the decrease of the power required.

Pullman George Mortimer. American inventor. He was born in 1831 and entered the building trade. The first Pullman sleeping car was built in 1863, after which he designed the corridor train and the modern restaurant car. He died Oct. 19, 1897. In 1880 he founded a model town on the outskirts of Chicago for his employees, and called it Pullman. This was eventually made part of Chicago.

Pulpit (*L. pulpitum*, a stage). In ancient Rome a section of the stage reserved for the actors. From this followed the raised and enclosed structure used in the Christian church for the delivery of sermons. Pulpits are constructed of wood, usually carved and decorated, or stone or marble. Notable examples of marble are in the cathedral of Siena and the baptistry at Pisa. Of out-door pulpits an example is in the quadrangle of Magdalen College, Oxford.

Pulse Intermittent distention of the walls of an artery. It is caused by changes in blood pressure due to the heart's action. The sudden distention of the aorta when blood is expelled from the heart is conveyed in lessening degree to the arteries, and where an artery is near the surface, for example, the radial artery, the pulse can be easily felt, although its frequency varies with age, sex and other factors.

Puma (*Felis concolor*). Large American cat ranging from British Columbia to Patagonia. Called the American lion, panther or painter, catamount and cougar (*q.v.*), it measures 3½ ft. with 2 ft. tail. The head is relatively small and maneless, with flesh-coloured nostrils, the tail dark-tipped and untufted, and the uniformly tawny fur darker along the back and paler beneath.

Pumice Light spongy form of volcanic glass. It is usually a greyish, froth-like scum formed on molten lava by the abundant escape of vapours and rapidly solidified. Mostly imported from the Lipari Islands, it is a useful polishing and smoothing stone; powdered and mixed with soap it makes a metal-polish.

Pump Machine used for raising water or other liquids to a higher level or for drawing out or forcing in air. The simple suction pump utilises air pressure and consists of a cylinder or barrel in which a piston freely moves by the action of a lever or handle, and is provided with a valve opening upwards in the piston head and another lower down in the barrel to ensure the pump being air tight. This type is used for wells and similar purposes. To overcome various mechanical difficulties a double-acting plunger pump or one having two buckets or piston heads is often employed. Rotary pumps worked by revolving wheels, discs or fans are used extensively, one type being the centrifugal pump, the principle involved being that of a reversed turbine action. In another type the liquid is acted upon by gas, steam or compressed air.

Pumpkin (*Cucurbita pepo*). Trailing annual herb of the gourd order, presumably indigenous to W. Asia. Each plant bears male and female flowers separately, the latter developing into the fruit, sometimes weighing 80 lb. and more. Cultivated in antiquity, and introduced into Tudor England, its varied forms, including vegetable marrows, are widely grown in continental Europe, N. America and elsewhere.

Punch Alcoholic beverage. In theory it should contain five ingredients, the origin of the name being the Hindu word meaning five. The particular brand of punch is decided by the spirit which is the main ingredient. It may be rum, whisky or brandy. To this are added spices, fruit juice, sugar and hot water.

Punch British journal. It was first published on June 17, 1841, and was announced as an illustrated weekly. The editor's chair was occupied by Mark Lemon for many years, and his successors have included Shirley Brooks, Sir Francis Burnand and Sir Owen Seaman. On the artistic side the staff has numbered such well-known names as Tenniel, Leech, Phil May, Claude Shepperson, Sir Bernard Partridge and many others. Its scope is social and political satire, literary and dramatic criticism and general humour. It has been invaluable to historians of the period during which it has been published.

Punchinello Traditional figure of the Commedia dell' Arte. He has something in common with Harlequin. He wears a black mask and a large nose, is a braggart and a rogue, with a rough, country wit. Punch of the Punch and Judy show derives his name from the same source, which probably means short and fat.

Punic Wars *See* CARTHAGE.

Punjab Province of India. It occupies the N.W. angle of the Northern plain. The name is derived from two Hindustani words meaning five rivers, the rivers in question being the Sutlej, Chenab, Ravi, Beas and Jhelum. It has an area of 99,222 sq. m. and a population of 23,580,951. The province is divided into five divisions: Ambalia, Jullundur, Lahore, Rawalpindi and Multan. Agriculture is the main industry and the principal crops are wheat and barley.

Pupa Zoological term for the resting stage in the metamorphosis of many insects. At the end of the larval period the insect undergoes changes in external form, followed by moulting, the pupa taking on characters approaching those of the perfect insect. Most pupae are quiescent, but locomotion occurs in some aquatic types such as the gnat.

Pupil Circular opening in the middle of the eye immediately in front of the crystalline lens. It regulates the amount of light entering the eye, contracting in a strong light and enlarging in darkness or in focusing distant objects. These changes are also brought about by the action of drugs such as opium or belladonna, the former contracting and the latter dilating the pupil.

Purbeck Peninsula of Dorset. 12 m. long, it lies between Poole Harbour and the English Channel with the River Frome on the W. Swanage and Corfe Castle are on the peninsula, which is famous for its marble, really a limestone used for paving. It was once a royal forest. China clay is mined.

Purcell Henry. English composer. Born in London about 1658, he was a chorister at Westminster Abbey, and his early writings included overtures, anthems and masques. In 1680 he became organist at the Abbey and devoted himself to the composition of sacred music. His *Te Deum* and *Jubilate*, written in 1694, are outstanding. Other notable works are the masque of *Timon of Athens*, and the opera, *Dido and Aeneas*. Purcell died in London, Nov. 21, 1695, and was buried beneath the organ in Westminster Abbey.

Purchas Samuel. English writer. Born about 1575 at Thaxted, Essex, he was ordained in the Church of England, and from 1614-25 was rector at St. Martin's, Ludgate Hill, London. He died in 1626. While in London Purchas obtained some of Hakluyt's manuscripts and from these and other sources compiled *Purchas his Pilgrimes*, or *Hakluytus Posthumus*, described as *A History of the World in Sea Voyages and Land Travels by Englishmen and others*. It was first published in 1626.

Purfleet Seaport of Essex. It stands on the Thames, 16 m. from London, on the L.M.S. Rly. It has a small harbour and facilities for storing oil.

Purgatory Place or state, according to Roman Catholic belief, in which souls after death are purified from venial sins and otherwise rendered fit for heaven. The Roman Catholic doctrine, formulated by Gregory the Great, and confirmed by the Council of Trent, recognises a purging by fire, which may be mitigated by the prayers and alms of the faithful. The Orthodox Eastern Church more vaguely recognises an intermediate state of tribulation. Protestant Reformers as a body rejected the doctrine.

Purification Religious term. It is used to denote the ritual, cleansing enjoined by Judaism as well as other religions to secure the moral purification of the worshipper. In Judaism the four main types of ritual uncleanness demanding purification were connected with food, leprosy, childbirth and death. The Purification of the Virgin Mary (Luke ii, 22) is commemorated by the Church on Feb. 2.

Purim Jewish festival. Secular rather than religious, it commemorates the national deliverance from the plot of Haman (*q.v.*). It occurs about a month before the Passover, on 14th and 15th Adar, preceded by the Esther fast. Present-giving, formerly the burning of effigies of Haman, and other carnival incidents, contribute to the festivities.

Puritans Name given in Elizabethan England to advanced Protestant clergy who advocated stricter manners and simpler worship than generally obtained after the severance from Rome. It came to embrace both tolerationists and men who sought to enforce their opinions and ways of life upon others, even to regulating their pleasures. The Puritan spirit long prevailed in New England.

Purley District of Surrey. It is 13 m. from London and has two stations, Purley and Purley Oaks, on the S. Rly. It forms part of the urban district of Coulsdon and Purley. *See* COULSDON.

Pus Thick yellowish-white fluid, abounding in dead white blood-corpuscles and disease germs. Produced by inflammation, it is discharged by abscesses, ulcers, granulated surfaces and open wounds.

Pusey **Edward Bouverie.** English divine. Born at Pusey, in Berkshire, Aug. 22, 1800, the son of a landowner, he was ordained in the Church of England and later became Professor of Hebrew and canon of Christ Church, Oxford. He died Sept. 16, 1882. Pusey is regarded as the founder, or restorer, of the High Church movement in the Church of England. Its principles are contained in his sermons and writings including *The Doctrine of the Real Presence* and one of the *Tracts for the Times*.

Pusey House in St. Giles, Oxford, is a centre for students of theology.

Push Ball American game. Invented in 1894, it was originally played by two sides on a field about 150 yds. long by 50 yds. wide, with a large rubber ball 6 ft. in diameter. The object was to push this ball into a goal 18 ft. high by 20 ft. wide.

Pushkin **Alexander Sergeyevitch.** Russian poet. Born May 26, 1799, of aristocratic family, he was educated at Tsarskoye, Selo. He published poems, but his first notable success came in 1820 with *Ruslan and Lyudmila*. *Boris Godunov* was published in 1825, *Poltava* in 1828, and in 1832 came his autobiographical poem, *Eugène Onegin*. More than once his opinions caused clashes with the authorities. He died Jan. 29, 1837, from a wound received in a duel.

Putney District of London, in the borough of Wandsworth. It is situated on the Thames, and is largely residential, being served by the District Rly. and a suburban branch of the S. Rly. **Putney Heath** is a fine open space adjoining Wimbledon Common. Close to Putney Bridge station is the Hurlingham Club. Pop. 28,249.

Putty Plastic mixture of linseed oil and whiting used for glazing windows and filling holes in woodwork. Plasterers' putty is a fine cement of lime and water.

Putumayo River and territory of Colombia, S. America. The river, navigable for 700 m., is a tributary of the Amazon, which it joins near Sao Antonio. The territory belongs partly to Ecuador and partly to Peru. Mocoa is the capital.

Here, in 1909, official enquiries into the treatment of native labourers in the rubber plantations of a British company led to punishment of the offenders by the Peruvian government.

Pwllheli Borough, seaside resort and market town of Caernarvonshire. It is 21 m. from Caernarvon, 266 m. from London by the G.W. Rly., and is situated on Cardigan Bay. It has a good beach. There is fishing and a little shipping. Pop. (1931) 3599.

Pyaemia Form of septic poisoning. It is caused by the absorption of organisms into the blood stream from an open wound or infected organ. This is followed by the formation of numerous abcesses, accompanied by rigors, high temperature, profuse perspiration and a condition of extreme exhaustion.

Pygmalion In Greek mythology a king of Cyprus who fell in love with an ivory statue he had made. He prayed to Aphrodite to grant life to the statue. His prayer being granted he married the maiden. Another **Pygmalion** was brother of Dido, and slew her husband.

Pygmy Name for a human being naturally diminutive. It was first used by Homer for an Ethiopian folk apparently known through travellers' tales. The pygmy races nowadays comprise specifically Asiatic Negritos and African Negrillos, measuring 4 ft. 11 in. down to 3 ft. 6 in. and even lower. *See* DWARF, NEGRITO.

Pylon Massive towers flanking the entrance to temples and other buildings in ancient Egypt. These towers, of greater height than the gateway, sloped upwards and their surfaces were covered with carved hieroglyphic inscriptions. They usually had a narrow staircase leading to the top.

To-day the name is given to supports of bracing wires in aeroplanes and to the structures carrying electric cables across country.

Pylorus Greek word, "gate-keeper," denoting the lower opening of the stomach. The stomach's muscular coats at the pyloric end are strengthened by thick muscular fibrous bands which contract while a meal is being digested, and at varying intervals relax, passing the semi-fluid chyme into the small intestine for further digestion. *See* DIGESTION.

Pym **John.** English statesman and patriot. Born at Brymore, Somerset, in 1584, he entered Parliament in 1614, assisted in Buckingham's impeachment in 1626, supported the Petition of Right in 1628, led the Short Parliament of 1640 and the impeachment of Strafford in that year, and shared in the Grand Remonstrance in 1641. He was one of the five members who escaped arrest by Charles I., was interested in colonisation and for many years schemed for the settlement of Connecticut. He died Dec. 8, 1643.

Pyorrhea Discharge of pus, specifically from the gums surrounding the necks of the teeth. It is associated

with inflammation of the gums, softening of the bony socket and loosening of the teeth. The diseased condition is fostered by stagnation of the mouth's natural self-cleansing processes and the deposition of tartar. It may be avoided by systematic care of the teeth, including rubbing, brushing and scaling, the use of a mouth-wash, the due consumption of vegetables and fruit, etc.

Pyramids The. Ancient Egyptian monumental structures. They are built of stone with polygonal or square base and sloping sides meeting at the apex. Built as royal tombs, with a hollow chamber inside for the sarcophagus, about 70 have been discovered, and 16 identified. They stand in the desert a few miles east of Cairo. Among the most famous are the three great pyramids of Gizeh. A fourth pyramid was discovered here in 1932. The largest of all the pyramids is the pyramid of Cheops, dating from the 4th Dynasty. It measures 755 ft. on each side, is 451 ft. high and covers 13 acres. It is estimated that in its construction 6,000,000 tons of stone were used, and 100,000 men employed for 20 years, with mechanical aids which still remain a mystery.

Pyramids Game similar to billiards. It is played with 15 red balls placed at the top of the table in a triangle. The two players use the same white cue-ball alternately, the winner being the one who pockets the greater number of red balls.

Pyrenees Mountain range dividing France from Spain. It is 270 m. long and the highest point is Pichethon or Maladetta, 11,168 ft. Various minerals are found—silver, lead, copper, lignite, iron, etc.—and have been worked since classical times. The Garonne rises on the N. side, and the Aragon, Noguera, etc., on the S. Popular resorts in the Pyrenees include Pau, Lourdes and St. Jean de Luz, and other places of interest are the famous cirques, or great basins hollowed out by water.

Pyrethrum Gardeners' name for several composite perennial herbs of the chrysanthemum genus when ranked as a sub-genus. The common golden feather of gardens is a yellow-leaved variety of feverfew. An ornamental large-flowered garden species from Asia Minor, sometimes double, is akin to forms grown commercially in Dalmatia and Japan for the insect-killing pyrethrum powder.

Pyrheliometer Instrument for measuring the intensity of solar heat. In Angström's pyrheliometer the solar radiations are received on a blackened platinum strip connected with another similar strip heated by electricity. These are joined to a thermo-couple and the amount of current required to give equality of temperature is proportionate to the solar intensity.

Pyridine Colourless liquid obtained by fractional distillation of coal tar and bone tar. Its strong basic properties form a series of salts with acids and substitution products with halogens. It boils at 115 deg. C., and is unattacked by boiling nitric and chromic acids. It is used in the denaturing of alcohol.

Pyrites Minerals containing sulphide of iron (iron pyrites) or sulphides of copper and other metals. Iron pyrites is a brass-yellow hard mineral crystallising in cubic forms and important as a source of sulphuric acid and iron sulphate. Marcasite is a rhombic form of iron pyrites, paler in colour. Pyrrhotine contains nickel, while mispickel contains arsenic. Copper pyrites, an imported copper ore, occurs in yellow tetragonal crystals or in massive form.

Pyrography Art of producing designs on wood by charring the surface with heated metallic points. In its simplest form it is called "poker-work" (*q.v.*).

Pyrometer Instrument for measuring high temperatures above those registered by ordinary thermometers especially with regard to the fusion of metals, the firing of bricks and pottery ware. One form, Seger's cones, consists of specially blended clay cones which soften at certain temperatures. Rods of porcelain, iron or platinum also are used for rough estimation of temperature, but electrical devices such as thermo-electric couples of platinium and iridium or palladium cased in porcelain give better results.

Pyrrol Liquid constituent of coal tar and bone oil. It has the odour of chloroform, and is obtained by fractional distillation. It has secondary basic properties and from one of its derivatives, potassium-pyrrol, by the action of iodine and an alkali, an antiseptic used in medicine known as odol is obtained.

Pytchley English hunt. It was founded about 1750 in Northamptonshire and the succeeding Earls Spencer have been closely associated with it. The country stretches from Market Harborough to Northampton, and the kennels are at Brigstock. In 1874 the **Woodland Pytchley** was established to hunt part of the Pytchley country.

Pythagoras Greek philosopher. Born at Samos about 582 B.C. he lived there for a time, but afterwards moved to Crotona. There about 539 he started a school and gathered round him an enthusiastic band of followers. The central idea of his philosophy was that number was the first principle of the universe, and on it depended the harmonies which keep the universe in ordered motion and create music and art. Pythagoras was also a mathematician, and is believed to have first discovered the principle laid down in Euclid's famous 47th proposition.

Pythias *See* DAMON.

Python In Greek mythology a serpent generated from the mud left by the deluge of Deucalion. It inhabited Mount Parnassus, where it was killed by Apollo. The Pythian games of Greece are supposed to have celebrated this victory.

Python Genus of non-venomous snakes of the boa family, inhabiting tropical Asia, Africa and Australia. Both jaws are fully toothed; the prey, up to small goats in size, is crushed by the snake's powerful coils and swallowed from the head downwards. Dwelling in trees near water, pythons include the largest of all snakes except anacondas. Averaging 10 to 20 ft., the netted python of Indo-China and the rock-snake of India and Ceylon sometimes attain 30 ft. The female incubates her eggs.

Pyx In Roman Catholic usage, a vessel employed, since the 9th century, for holding the consecrated bread of the Eucharist, when reserved for administration to the sick or for adoration. The name is also given to a chest holding representative gold and silver coins struck at the Royal Mint, awaiting the annual "trial of the pyx."

Q-BOAT Term used during the Great War for a ship designed to deceive and destroy hostile submarines. Disguised as merchant or fishing vessels, they were armed with hidden guns, and carried a fighting crew.

Quadragesima Latin word meaning "fortieth." It denotes the 40 days' Lenten fast before Easter. The first Sunday in Lent is called Quadragesima Sunday.

Quadrangle In plane geometry a closed figure contained by any four straight lines such as a rectangle, rhombus, etc., and particularly to one in which the sides and angles are equal. The term is also applied to a rectangular courtyard surrounded by buildings.

Quadrant Nautical instrument formerly used in navigation for determining altitudes by taking angles. It has been superseded by the sextant. It consisted of a graduated brass limit in the form of a quarter of a circle with usually a plumb-line to mark the zero during an observation.

Quadrature In mathematics, the process by which a square is found, exactly or approximately, having its area equal to that of a given figure. A famous example is that of "squaring the circle." In astronomy the term is applied to the position of a heavenly body in relation to another 90 degrees distant.

Quadrilateral Term in military science for a group of fortresses arranged more or less at the corners of a square for strategic purposes. A well-known example was the quadrilateral formed by the fortresses of Mantua and Peschiera on the Mincio, and Verona and Legnano on the Adige in N. Italy.

Quadrille Dance for four couples. The dancers stand in a square: hence the name, which comes from the Italian *squadra*, a square. The dance was introduced into the French ballets of the 18th century.

Quadroon Word of Spanish origin meaning "quarter-blooded," denoting the offspring of a mulatto and a white. In early Spanish America, before negro immigration began, it denoted the offspring of an American-Indian half-breed and a white: it is sometimes applied to other similar racial crossings; also in plants and animals.

Quaestor Official in ancient Rome. His early duties were to investigate cases of murder and to carry out sentences on the criminals. In republican times the duties of the office were chiefly financial, the quaestors being the keepers of the public treasury.

Quagga Racial variety of the zebra (*q.v.*). The light-red upper parts bore irregular chocolate-brown stripes, gradually fading to the hind-quarters, with white underparts. Roaming over S. African plains S. of the Vaal river in immense herds a century ago, it was indiscriminately slaughtered by the Boers for its hide, and for half a century has been extinct.

Quail Genus of small Old World game-birds of the pheasant family (*Coturnix*). The migratory quail (*C. communis*), 7½ in. long, more or less regularly visiting Britain in spring, lays 7-12 blotched, creamy-white eggs in ground-hollows, sometimes remaining through the winter. Vast numbers, crossing the Mediterranean in spring and autumn, are netted for food in S. Europe.

Quake Grass or **Dodder Grass**). Genus of perennial or annual grasses (*Briza*), natives of temperate Europe, Asia and Africa. Slender-stalked, many flowered pyramidal clusters bear large compressed tremulous spikelets. The common quake grass, *B. media*, and a smaller one with tufted stems, grow wild in Britain. The tall *B. maxima* is much cultivated in gardens for decorative uses.

Quaker Colloquial name for a member of the Society of Friends. It was given to them in derision soon after the founding of the sect in the 17th century. *See* SOCIETY OF FRIENDS.

The **quaker bird** is another name for the sooty albatross.

Quamash Genus of perennial herbs of the lily order (*Camassia*), natives of N.W. America. The best known, *C. esculenta*, 1-3 ft. high, produces stout-stemmed spikes of 10-20 blue 2-in. flowers. Pure white and other forms are grown in gardens for house decoration; the buds open after the stems are cut. American-Indians use the bulbs for food.

Quantity Surveyor Surveyor who estimates for a builder quantities, measurements and costs from a plan prepared by an architect. He must have sufficient knowledge of architecture and the building trade to interpret plans and estimate the labour required.

Quantocks Range of hills in N. Somerset, extending for about 8 m. to the coast of the British Channel near Watchet. The highest point is 1260 ft. high.

Quantum Theory Theory in physics. Certain experimental results in the study of radiation could not be explained theoretically according to Newton's dynamical laws. Planck suggested that from such radiating bodies energy was transferred in separate quantities of definite magnitude, which he called "quanta." The development of this theory has led to the modern conception of atomic structure.

Quarantine Preventive detention, originally for 40 days, of ships, persons and goods, arriving from a country where certain infectious diseases prevailed. Of Venetian origin, directed specifically against plague during the Black Death, and later against cholera and yellow fever, the period and regulations varied. It is now mostly superseded by concerted international action, and in England by the British Public Health Act, 1964. Isolating imported dogs for a defined period, usually 6 months, is popularly called quarantine.

Quarry Bank Urban district of Staffordshire. A colliery centre, it is a mile from Dudley, and has iron-works. Pop. (1931) 8100.

Quarrying Excavation of stone from an open pit. The methods adopted vary chiefly according to the position and nature of the stone, but usually the excavation is made on the side of a hill. Where possible the planes of bedding or joint planes are used for removing the blocks but in some rocks where these do not exist, the use of wedges and blasting is employed to loosen the material.

Quart English measure of capacity. It is two pints and is the quarter of a gallon. In music the interval of a fourth is called a quart.

Quarter Measure of weight and capacity. It means a fourth part, and is used for the fourth part of a hundredweight (28 lb.). Quarter is also used as a measure of wheat, a quarter of English wheat being 504 lb. As a measure of capacity it is equal to eight bushels. The fourth part of a year is also a quarter; and the periods of the moon are known as quarters.

Quarter Day Four days in the year on which rent and other liabilities are due. In England and Ireland they are March 25 (Lady Day), June 24, Sept. 29 and Dec. 25. In Scotland the quarter days are Feb. 2, May 15, Aug. 1 and Nov. 11.

Quartering In heraldry, the bearing of two or more coats-of-arms on a shield. It usually denotes a marriage. The arms are divided by horizontal and perpendicular lines. At one time in Austria and elsewhere, persons were not elegible for certain distinctions unless they could show 16 quarterings.

Quartermaster In the British Army, a quartermaster is an efficient warrant officer or C.O. under whose care are the stores, rations and equipment.

Naval quartermasters are petty officers who, in harbour, act as night-watchmen, and during the day see that the orders of the ship's company are carried out. At sea the quartermaster either takes the wheel himself, or supervises the seaman who is doing so.

Quarter Sessions In England a court of law held four times a year. Each county has one or more quarter sessions. The judges are the magistrates for the county, and the cases are those that are sent on to them from the courts of petty sessions. Certain cities and towns also have a court of quarter sessions which is presided over by the recorder.

Quarterstaff Weapon for hand-to-hand encounters popular in England down to Commonwealth times. A stout pole, 6½-8½ ft. long, sometimes iron-shod, was grasped by the left hand about the middle, and by the right a quarter from the lower end.

Quarto Page of a certain size; also a book of pages of that size. In it the sheets are folded into four, and its sign is 4to. To-day book publishers recognise as quarto: foolscap, 8½ in. × 6¾ in.; crown, 10 in. × 7½ in.; demy, 11¼ × 8¾ in.; royal, 12½ in. × 10 in.; and imperial, 15 in. × 11 in.

Quartz Widely distributed mineral consisting of silica and forming a constituent of sands and many rocks. It occurs in masses or as crystals forming hexagonal prisms and pyramids having a vitreous lustre and great hardness. Quartz is colourless (rock crystal) or white, yellow, brown or violet. Many varieties are cut as ornamental stones. Rock crystal is used for spectacle lenses; fused quartz for chemical and physical apparatus.

Quassia Bitter wood employed chiefly in medicine. Originally from a Surinam tree of the simaruba order, *Q. amara*. Surinam quassia being still used in France and Germany, the allied W. Indian bitterwood, *Picraena excelsa*, superseded it after 1809, and is known as Jamaica quassia. The infused chips provide a tonic, vermifuge and hop-substitute.

Quaternary In geology the group of strata of most recent age. It is sometimes referred to as Post Tertiary. The deposits vary much in character, and for the most part are unconsolidated. They include alluvium of present rivers and lakes; marine deposits; also cave deposits and glacial or drift formations.

Quaternions In mathematics a calculus used in solving various geometrical and dynamical problems in physics and engineering. From the point of view of geometry it concerns operations with vectors or quantities possessing magnitude and direction, and the changes of one vector into another. It was invented by Sir W. R. Hamilton about 1853.

Quatrain In poetry a stanza of four lines. The lines usually rhyme alternately as in the hymn by Isaac Watts, "O God, our help in ages past." The stanzas of Tennyson's "In Memoriam," are also called quatrains, although in these the first and the last lines rhyme, as do the two middle ones.

Quatre Bras Village of Belgium, 19 m. from Brussels. Here, on June 16, 1815, two days before the Battle of Waterloo, the Dutch and Belgian troops, part of Wellington's army, were attacked by the French under Ney. British troops advanced to assist their allies, and after a hard fight succeeded in beating back the French.

Quatrefoil Architectural term for a window or panel formed of four lobes; or segments of a circle projecting at a tangent from the inside of a circle and meeting at points or cusps.

Quaver Musical note equal to half a crotchet or one-eighth of a semibreve. As a pulse-note it is symbolised by 8 in the lower half of a time-signature.

Quay Landing-place on the side of a river, harbour or docks, for receiving and discharging cargoes from ships. Usually a quay is provided with cranes and other appliances for handling goods and berthing vessels. Quays are constructed of stone or concrete with generally a facing of wooden piles.

Quebec City and seaport of the province of Quebec, Canada; the capital of the province. It stands on the north shore of the River St. Lawrence, 180 m. from Montreal, on a tableland rising to 333 ft. above the river. Founded by Champlain in 1608 on the site of an Indian settlement, Quebec was taken by the English in 1629, restored to the French in 1632, and held by them till its capture by Wolfe (*q.v.*) in 1759.

The lower town, with steep, winding streets, is the old town and the business quarter of the city. The upper, with wide streets, open spaces and modern buildings, contains dwelling houses, public buildings, parks, etc. Beyond the

citadel are the Plains of Abraham (*q.v.*) where Wolfe defeated Montcalm (*q.v.*). Notable buildings are the Château Frontenac Hotel, the citadel, the Roman Catholic Cathedral (1647), Laval University, the provincial Parliament House and the Hôtel Dieu, founded in 1639.

The city has a fine harbour, deep enough for the largest ships, with a government grain elevator. New wharves have been constructed at Wolfe's cove. It is served by both C.P. and C.N. Rlys., the former crossing the St. Lawrence by the great Quebec Bridge, completed in 1917. Pulp and paper manufacture is the chief industry, but machinery, cutlery, ropes, steel, etc., are also made. The city is well supplied with hydro-electric power. It sends four members to the federal House of Commons. Pop. (1931) 129,103.

Quebec Province of Canada. It covers 594,434 sq. m., on both sides of the River St. Lawrence. Part of it is fertile, but much is a vast and almost uninhabited tract of land between Hudson Bay and Labrador. Quebec is the capital, but Montreal is the largest city. The inhabitants are largely Roman Catholics of French descent.

Quebec, or Lower Canada, is the oldest settled part of the country. From 1791 to 1841, it was a province under British rule. In 1841 it was united with Upper Canada, and in 1867 it became a province of the Dominion. It is governed by a legislature of two houses with a ministry responsible to it. It sends 65 members to the House of Commons at Ottawa. In 1912 a great district in the N. called Ungava was added to the province, which also includes the island of Anticosti. It produces wheat, barley, milk and butter, as well as fish. The forests supply vast quantities of pulp for paper and its mines furnish the world with asbestos. Pop. (1931) 2,874,255.

Queen Official title of the wife of a reigning monarch. A queen has unique privileges, and has a household of her own. Her personal expenses are paid from the king's privy purse, and she is crowned with solemnities similar to those used for a king. The **queen dowager** is the widow of the deceased king, and retains most of her privileges. The **queen mother** is the mother of the reigning king, and a **queen regnant** is a sovereign princess, reigning in her own right, with all the powers of a king, whose husband is her subject. The only queen regnant at present in Europe is Queen Wilhelmina of Holland, who succeeded to the throne in 1890.

Queen Anne Style English architectural and artistic convention. In the decorative arts, restraint and simplicity are the dominant notes of the "Queen Anne Style," superseding the baroque extravagance which preceded it. Ornament was now deliberately subordinated to design. In furniture this tendency is specially marked, curvilinear principles being sedulously exploited with an unrivalled sense of symmetrical balance. Contemporary silver shows a fine recognition of the value of plain surfaces. Architecture remained predominantly Palladian (*See* PALLADIO ANDREA), the Italian villa was the model for the English country house. But a vernacular style of building based on Jacobean tradition is no less characteristic of the period.

Queen Anne's Bounty Property belonging to the Church of England. At one time every person, on being appointed to a living, paid a tenth of his first year's income to the pope. After the Reformation these sums were paid to the Crown. In 1704 Queen Anne handed over this income to the Church of England, and since then it has been known as Queen Anne's bounty and used to increase the value of poor livings. In time the income became smaller as first fruits ceased to be paid in many cases, and now the payments have almost ceased, a process helped by legislation passed in 1926. The fund, however, still possesses considerable capital, and has an office at 3 Dean's Yard, Westminster, London, S.W.

Queenborough Borough and seaport of Kent, on the Isle of Sheppey, where the River Swale falls into the Medway, 2 m. from Sheerness, on the S. Rly. There are chemical and cement industries and oyster fisheries. Pop. (1931) 2941.

Queen Charlotte Is. Group of islands off the coast of British Columbia, belonging to Canada, 130 m. from Vancouver. Graham Island is the largest. Coal and other minerals are mined and there is some fishing.

Queen Charlotte Sound separates the mainland of British Columbia from Vancouver Island.

Queen Mary Land District of Antarctica. It lies to the E. of Kaiser Wilhelm Land, and on it are the Denman and Northcliffe glaciers. It was explored and named by Sir Douglas Mawson in 1911-14.

Queensberry **Marquess of.** Scottish title held by the family of Douglas. In 1633 William Douglas, Lord Drumlanrig, was made Earl of Queensberry; and in 1682 his grandson, William, was made a marquess. In 1683 he was made a duke. In 1810, when the 4th Duke of Queensberry died, the dukedom and the estates passed to the Duke of Buccleuch, and the marquessate to Sir Charles Douglas, who became the 5th marquess. The 8th marquess, a noted sportsman, was responsible for the **Queensberry Rules** which govern boxing contests. The eldest son of the marquess is called Viscount Drumlanrig.

Queensbury Urban district of Yorkshire (W.R.), about 4½ m. E. of Bradford and 196 from London, on the L.N.E. Rly. Here are textile mills, collieries and stone quarries. Pop. (1931) 5763.

Queen's County Old name of the county in the Irish Free State now known as Leix (*q.v.*).

Queensferry Burgh and port of W. Lothian, on the S. shore of the Firth of Forth, 9 m. from Edinburgh, on the L.N.E. Rly. Here is one end of the Forth Bridge, and near are Dalmeny House and Hopetoun House. Queensferry is so-called because the ferry here was used by Queen Margaret. Pop. (1931) 1798.

North Queensferry is a small watering place and fishing port on the N. or Fifeshire side of the Firth of Forth.

Queensland State of N.E. Australia. Originally part of New South Wales, it became a separate colony in 1859. It has a legislative assembly of 62 members, under a governor, lieutenant-governor and executive council of ministers. Tropical in the N., it is cooler in the S., where considerable agricultural development has taken place.

The chief industry is stock raising, and the principal exports are wool, sugar, dairy products and meat. Much of its prosperity is due to the boring of artesian wells. Mining and forest produce are important.

Brisbane, the capital, is connected by rail with the chief centres and with New South Wales. Area, 670,500 sq. m. Pop. 963,711.

Queenstown Urban district, seaport and market town of Co. Cork, Irish Free State. Under the Free State the name has been changed to Cobh, a variant of the older name Cove of Cork. It is on an island in Cork Harbour, 13 m. from Cork, and is served by the G.S. Rlys. Queenstown is a yachting centre, and was a naval station. It is best-known as a calling place for the Atlantic liners, but has been less used in this capacity since the Great War. Pop. 7077.

Queenstown Town of Cape Province, S. Africa, 154 m. from E. London. The town is laid out in the shape of a hexagon with the market place in the centre. Wheat and wool are produced in the neighbourhood. Pop. 12,800.

Queenstown Town of Tasmania, about 110 m. N.W. of Hobart. Situated on Queen River, its industries are connected with copper-mining and timber-felling. Pop. (1931) 2590.

Quern Simple handmill for grinding grain. The earliest neolithic pattern, an oval grinder rubbed upon a saddle-shaped stone, developed into a pair of flat discs, the lower stone being rimmed, with a central pin passing through a funnel-shaped hole in the peg-rotated upper stone, through which the grain was poured. The water-mill superseded it.

Questionnaire Set of written questions sent out usually to obtain information about the cost of living, housing conditions and other social matters. The census paper may be described as a questionnaire and the method has been used by the B.B.C.

Quetta Capital of British Baluchistan. It came into prominence when Sir Robert Sandeman founded his Presidency here (1876), and grew in 25 years from a dilapidated group of mud buildings into a strong fortress and military centre. The Indian Staff College was opened here in 1907. In 1935 a great earthquake devastated the Baluchistan valley and completely destroyed the city of Quetta. The death-roll numbered more than 40,000.

Quetzal Mexican name, "green-feather" for the resplendent trogon, *Pharomacrus mocinno*, a tropical picarian bird ranging from Guatemala to Panama. About magpie size, the crested male is handsomely plumaged in brilliant metallic green, with deep blood-red underparts; the middle two tail-coverts, prolonged 3 ft. beyond the tail, were formerly ruthlessly collected for European millinery. Frequently represented in ancient Maya art, the bird appears in the arms of the Guatemala republic, and gives its name to the local dollar.

Quiberon French town on the S. coast of Brittany, 22 m. E. of L'Orient. Two famous battles were fought near here. On Nov. 20, 1759, when the French were preparing an invasion of England, Hawke attacked and defeated the fleet under Conflans. In 1795 French emigrant Royalists who had been landed here by a British fleet, were defeated here by the republican leader, Hoche.

Quicklime Commercial name for calcium oxide obtained by calcining chalk or limestone, the carbon dioxide being driven off in the process. It is very infusible, but when moistened crumbles to a white powder (slaked lime), giving off considerable heat. It is a valuable dressing for clay soils and is used in making mortar and cements. Slaked or hydrated lime is employed in making lime-water and in tanning and sugar industries. Lime is used also for purifying coal gas and sewage.

Quicksand Bed of loose fine sand particles often mixed with clay or calcium carbonate, and saturated with water. Quicksands occur usually at river mouths or along the seashore, and in some glacial deposits.

Quicksilver Common English name for metallic mercury on account of its extreme mobility and resemblance to the colour of silver. *See* MERCURY.

Quietism Religious movement of a mystical character. It swept over France, Italy and Spain during the 17th century. Its most famous devotees were Fénelon and Madame Guyon. Quietism stressed the importance in religious experience of a purely passive state of contemplation, which had no place for the positive exercise of thought and will.

Quiller-Couch **Sir Arthur Thomas.** English writer. He was born in Cornwall, Nov. 21, 1863, and educated at Clifton and Trinity College, Oxford, where he became a lecturer in classics. He wrote *Dead Man's Rock* while there. After doing journalistic work in London he settled in Fowey, and wrote a number of *Cornish Tales* and several volumes of critical articles, including *Studies in Literature* in three series. He published several volumes of poetry, and is famous for his anthologies of English verse, among them *The Golden Pomp* and *The Oxford Book of English Verse*; and for his lectures as Professor of English Literature at Cambridge, a post to which he was appointed in 1912. He was knighted in 1910, and is familiar as "Q."

Quillwort Genus of stemless rush-like vascular cryptogams, *Isoetes*, chiefly found in N. temperate and warm regions. Merlin's grass, *I. lacustris*, inhabiting subalpine lake bottoms in Britain and elsewhere, has a filbert-sized corm producing a tuft of 10-20 rigid awl-shaped tubular leaves whose bases partially sheathe the spore-capsules. A subaquatic species common in S. Europe inhabits Guernsey marshlands.

Quince Genus of shrubs and small trees of the rose order, *Cydonia*, akin to the pear, indigenous to Asia. The common quince, *C. vulgaris*, of Persian origin, anciently cultivated in the Levant, and introduced into Tudor England, bears yellow astringent pear shaped or apple shaped fruits, used for flavouring other cooked fruits or for table jellies. *See* JAPONICA.

Quincunx Arrangement of five objects so placed as to occupy each corner of a square or oblong, with one in the middle. It is used commonly for the spacing of trees in an orchard so that the trees in one row are opposite the spaces between those in the next row.

Quinine Chief alkaloid contained in cinchona bark. White, inodorous and bitter tasting crystalline salts, more or less water soluble, especially sulphate, hydrochloride and hydrobromide, are used medicinally as a tonic, sometimes combined with others, for allaying neuralgia, and preeminently for treating malaria. The ammoniated tincture is a favourite household remedy for mild feverish attacks. *See* PERUVIAN BARK.

Quinoa Annual herb of the goosefoot order, *Chenopodium quinoa*, indigenous to the Pacific slopes of the Andes. Its clusters of minute green flowers produce small, rounded, flattened fruits whose nutritious meal is made locally into porridge and cakes. It is sometimes cultivated in Great Britain for its leaves, a good spinach substitute.

Quinquagesima Latin word meaning "fiftieth." It denotes the Sunday next before Ash Wednesday, once called Shrove Sunday. It occurs 50 days before Low Sunday.

Quinsy Acute tonsillitis or inflammation of the throat with suppuration of the tonsils. Treatment includes gargling with hot antiseptic fluids and applications of hot fomentations. Incision is frequently necessary.

Quintain Upright post surmounted by a crossbeam, used for knightly and popular exercise throughout medieval Europe. It was either a fixed target against which horsemen and footmen broke a lance or pole, or rotated on a pivot, one end provided with a sandbag or other device for striking the unskilful tilter behind.

Quintal Measure of weight, originally denoting 100 libras, as in prerevolutionary France, and still surviving in Spain. It also denotes various standards in Portugal, Greece, Egypt and some parts of Spanish America. The metric quintal, weighing 100 kilograms or 220 lb., is the common unit of measurement for grain, etc., in metric using countries.

Quirinal One of the seven hills of Rome. It lies to the N.E. and the name is taken from Cures, once a town of the Sabines. The King of Italy has a palace here, and the Quirinal is used as a synonym for his court.

Quito Capital city of Ecuador. Situated about 114 m. from the Pacific coast, it occupies a basin in the Andes about 9350 ft. above sea-level. The buildings, mainly of sundried brick, are of a Spanish type, and include the Jesuits' church with a finely carved façade, the cathedral and the government palace. The city has a university and eleven monastic institutions, the convent of San Francisco being among the largest in the world. Exports include hides and forest products. Wood and ivory carving and gold and silver work reach a high standard. The city has two broadcasting stations (2.5 and 17 M.). Pop. (1952) 101,000.

Quit Rent Yearly payment formerly made by certain classes of tenants on English manors. It was so-called because it freed the tenant from all other dues. A perpetual rent charge is called a quit rent in the United States.

Quixote Don. Hero of Cervantes' mock-heroic romance, *History of the Renowned Don Quixote de la Mancha* (1605-15). He figures in the story as a misguided devotee of chivalry, who imagines himself to be a knight-errant and goes forth on his adventures, clad in a suit of home-made armour, riding his battered steed, Rosinante, and attended by his squire, Sancho Panza. He has become a universal figure, representing the type whose lofty idealism fails to achieve success in a world which does not share those ideals.

Quoin Corner stone at the angle of the wall of a building, especially in later Saxon work, where flat slabs or quoins alternate with long vertical blocks. The term is applied also in printing to a blunt wedge used to secure the type in a forme.

Quoits Pastime consisting in throwing flattened iron rings at a distant mark. Patronised by curling clubs in Scotland, Canada and the U.S.A., and by Midland and Lancashire working-men's quoiting clubs it is played on two "ends" 18 yards apart each having a metal pin or hob driven in. Each player throws two 9-lb. quoits from end to end, seeking to ring the hob or to pitch nearest; play is then reversed, as in bowls. Deck-quoits are played with rope-rings.

Quorn English hunt. The name is taken from the village of Quorndon in Leicestershire. The hunt was established in the 18th century, and some of the most famous hunting men, among them Hugo Meynell and the Earl of Lonsdale, have been among its masters. It is regarded as the oldest in England. The kennels are at Barrow-on-Soar and Melton Mowbray is the chief centre.

Quorndon Urban district of Leicester. It is 2 m. from Loughborough, and is a hunting centre. Pop. (1931) 2603.

Quorum Minimum number of persons necessary to constitute a meeting. In public companies and societies the articles of association or the rules, state the number necessary for a quorum. In the House of Lords it is 30, and in the House of Commons 40. In some legislatures, notably the Congress of the United States, a quorum is a majority of the members. The word is Latin for "of whom."

Quota Commercial term. In Great Britain it refers to a proportion, at present 15 per cent., of home grown wheat to be used by millers under the terms of the Wheat Act in making flour. The farmer subsequently receives the difference between the current price for wheat and a standard, at present 45 - per qr., fixed for a year.

In post-war commercial treaties it signifies also quantities of essential commodities for which export and import licenses are issued respectively by the countries concerned. Immigration quotas, based on the acceptability of the nationals of certain races as immigrants, have been established in the U.S.A. and elsewhere. Great Britain has a film quota, establishing the proportion of British films which must be shown.

Ra Name of the sun god of the Egyptians. He was represented with the head of a hawk, and as crossing the sky in a ship. Splendid temples were erected in his honour. The chief seat of his worship was Heliopolis (On) in the Delta. From the fifth dynasty the name Ra was included in the title of each Egyptian king.

Rabbi Honorary title for the Jewish scribes after Herod's day. Applied to learned persons pronouncing on questions of law and ritual, the New Testament mentions Christ as so addressed by his disciples and the common people. It designates modern Jewish clergy, and sometimes by courtesy eminent Jewish scholars. The word is Hebrew for "my master."

Rabbit (*Oryctolagus cuniculus*). Burrowing rodent of the hare family. The wild form is smaller, greyer and less speedy than the hare, and breeds abundantly in collective warrens. Naturalised in England and elsewhere, notably in Australia, it is esteemed for food, its fur being felted for hats and, disguised as coney, used by furriers for inexpensive clothing. Domestication has wrought remarkable changes in weight, form and colour, *e.g.*, the Angora and lop-eared breeds. Game-laws regulate rabbit-shooting, but impose no close time.

Rabelais François. French author. He was born at Chinon about 1483, and was successively a Franciscan, a Benedictine monk, a teacher at Montpellier, a professor of anatomy, and a priest at Meudon. His friendship with the Cardinal, Jean du Bellay, had a great influence on his life, and he went to Rome at different times to visit his friend. He is the author of *Gargantua*, and of *Pantagruel*, books of monumental interest written between 1532-64. They are original and powerful in style, and underneath the crudities and obscenities there is a great love of humanity, and a passion for justice and true culture. He died on April 9, 1553.

Rabies Infectious disease due to a micro-organism, causing rabid madness in numerous mammals, including dogs, cats, wolves, horses, etc., and communicable in the saliva by a bite. *See* HYDROPHOBIA.

Raby Castle Residence of Lord Barnard. It is in Durham, 5 m. from Barnard Castle, and dates in the main from the 16th century. A splendid pile, it was the seat of the Duke of Cleveland until that title became extinct in 1891.

Raccoon (*Procyon*). Genus of American carnivorous mammals related to bears. The common greyish N. American tree-dwelling "coon," *P. lotor*, 24 in. long with 10-in. ringed tail, feeds by night, habitually dipping its prey into water before eating. Its flesh is edible, and its fur much used for coonskin caps. A larger crab-eating species inhabits S. America.

Race Group of persons, animals or plants of common ancestry. The word may denote all mankind, a primary division, *e.g.*, the yellow race, or a smaller ethnic group, *e.g.*, Jewish. The word also denotes breeds or strains greater or less than a species, *e.g.*, canine, black-faced.

Raceme Botanical name for the form of flowering in which the blossoms are borne in a cluster with each flower on a short and equal lateral pedical attached to a central stem, as in the currant.

Rachel Biblical character. A daughter of Laban, she became the wife of Jacob after he had served Laban for her for two periods of seven years, and had married her elder sister, Leah. She had two sons, Joseph and Benjamin, and she died when the latter was born.

Rachmaninoff Sergei Vassilievitch. Russian composer and pianist. He was born at Nijni-Novgorod on April 2, 1873. He received his musical education at the St. Petersburg and Moscow Conservatoires, and won a gold medal with his opera *Aleko* in 1892. He made several concert tours, and in 1903 was conductor of the Imperial Opera. He conducted the Moscow Philharmonic Symphony Orchestra, 1912-13.

After the Russian revolution he escaped to Sweden, and eventually settled in America. He has written operas, symphonies, piano concertos, and many smaller piano works, of which the *Prelude in C sharp minor* is most famous. His reminiscences were published in 1934.

Racine Jean. French dramatist. He was born at La Ferté-Milon (Aisne), in Dec., 1639, and went to the Solitaires' School at Port Royal. He began to write tragic plays in 1664, with *La Thébaïde* and *Alexandre* in 1665, followed by *Andromaque* in 1667. His best-known play is *Phèdre*, which, owing to his enemies, was a commercial failure, and he returned to the influence of Port Royal. In 1689, when Madame de Maintenon asked him to write a play for her girls' school at St. Cyr, he wrote *Esther*, and in 1691, *Athalie*. He died on April 21, 1699.

Racketeering American expression arising out of the development of "gangs," and applied to the practice of gangsters, who, by means of threats of violence which they are able, and quite prepared, to carry out, extort money from those trading legitimately. In return, the traders are allowed to carry on business more or less peacefully, even receiving a measure of protection.

Rackets Ball game played on walled-in courts, very similar to fives courts. The game, played by two or four persons, consists in hitting the ball against the end wall, above a certain line, with the racket, which differs from the tennis racket in being much lighter and having a round head about 8 in. in diameter. The scoring is similar to that in fives, but the game is very much faster.

Rackham Arthur. English artist. He was born Sept. 19, 1867, and educated at the City of London School and Lambeth School of Art. He is best known as an illustrator, in which department his delicately fantastic work is familiar to all book-lovers.

Radcliffe Market town and urban district of Lancashire. It is

8 m. N.W. of Manchester, and is 194 from London by the L.M.S. Rly. In a coal mining district, the town stands on the Irwell, and has cotton and associated industries and chemical works. Pop. (1931), 24,674.

Radcliffe John. English physician, Fellow of Lincoln College, Oxford, and M.P. Born at Wakefield, in 1650, he studied medicine at Oxford. He then began to practise, and having settled in London, was physician to William III., and the two queens, Mary and Anne. He died at Carshalton, Nov. 1, 1714.

Radcliffe left his money to Oxford University where his name is perpetuated in several ways. The university has its **Radcliffe Library**, and the city the **Radcliffe Infirmary**. There are Radcliffe travelling fellowships for students of medicine. The university observatory is called the **Radcliffe Observatory**, because it was built from money left by Radcliffe. It was erected between 1772 and 1795.

Radiation Term applied to the different forms of energy given off from substances and transmitted through space. These radiations include light, heat, X-rays and the various emanations emitted spontaneously from radio-active substances.

According to Planck's Quantum Theory, radiation is not a continuous wave process, but a discontinuous one in which separate minute units of energy are emitted in pulsations, the amount of energy in each unit or quantum being dependent upon the frequency of the radiation.

Radical Term in chemistry applied to a group of atoms of several elements that enter into the formation of compounds, and pass from one compound to another without disintegration, but do not exist as a separate entity. Examples of radicals are the hydrocarbon radicals, methyl, acetyl and ethyl, also ammonium and cyanogen.

Radical Name of a political party. It came into use late in the 18th or early in the 19th century, and was applied to those who believed in *radical* reforms. The radicals became a wing of the Liberal Party, and as such they remained until the Great War, when their place was taken by the Socialists. A radical may be described as more advanced than a liberal, but less so than a socialist. In some matters, however, individual liberty for instance, the radical and the socialistic ideas are opposed.

Radio-activity Quality of emitting spontaneously radiations having great penetrating power. Substances such as radium, uranium, thorium, actinium and their compounds, emit radiations having the power of penetrating opaque objects, and of acting upon a photographic plate in the dark; also of ionising gases and producing luminosity in certain substances.

Becquerel, in 1896, observed the effect of uranium salts upon a photographic plate, and these investigations were followed by the discovery of radium, actinium and the radio-active properties of thorium. Three types of radiations are emitted, known as alpha rays or positively charged helium atoms, beta rays or negatively charged particles, and gamma rays or electro-magnetic impulses.

Radiograph Term given to an image of an object obtained by means of the X-rays, which have the power of penetrating certain substances opaque to light, but are stopped by other dense substances such as the heavy metals. A radiograph of the hand will show the bones and an embedded metal as distinct shadows.

Radiology Study and use of X-rays in medicine. In 1895 Röntgen discovered that X-rays passing through human tissues could be used photographically to differentiate between easily penetrable tissues and bone. This has proved of exceptional benefit in many branches of medical science, while the action of the rays on certain tissues has formed the basis of **radio-therapy.**

Radiometer Instrument invented by Sir William Crookes for measuring the radiant energy of light and heat. It consists essentially of four thin glass arms, or discs of glass or mica on aluminium arms, placed horizontally and pivoted so as to rotate freely in a partially exhausted glass vessel. The rate of movement indicates the strength of the radiation.

Radish (*Raphanus*). Genus of annual or biennial cruciferous herbs, natives of Europe and temperate Asia. Cultivated anciently in the Mediterranean region, and introduced into Tudor England, the garden radish, *R. sativus*, has an agreeably pungent fleshy root, long and tapering, olive-shaped or turnip-shaped, usually whitish or reddish, and is eaten uncooked as salad.

Radium Radio-active element having the symbol Ra and atomic weight 225.95. It was discovered in 1898 by Madame Curie. It is silver-white in colour, but rapidly decomposes in the air into the hydroxide, and is present in pitchblende, carnotite and other ores associated with uranium from which it is derived by atomic disintegration. Radium compounds are used extensively in surgery in the treatment of certain diseases and commercially in luminous paints for watch dials, etc.

RADIUM THERAPY. Methods of healing in which radio-active substances are employed. Two main methods are in use: (1) the introduction of such bodies into the blood, and (2) local application of radiation. The curative action of radium emanations may be derived from radium or its product radon. The latter is applied as an inhalation or taken in solution. With the former, a minute quantity of a radium salt enclosed in a platinum tube or needle is used. It is successful with many malignant growths but not all forms of cancer.

Radius Term in geometry for a straight line drawn from the centre of a circle to the circumference and equal to half the diameter. A radius vector is a straight line drawn from any point in the curve of an ellipse to a focus.

In anatomy the radius is the smaller of the two bones in the forearm. Its slightly curved shaft is articulated to the wrist by its larger head, and to the elbow by a button-shaped head having a rotatory movement.

Radlett Town of Hertfordshire. It is 15 m. from London, on the L.M.S. Rly. It is a residential district for Londoners. Some industries have been established here.

Radley Village of Berkshire. It is on the Thames, 4 m. from Oxford, on the G.W. Rly. The college, founded in 1847, is a public school with accommodation for about 200 boys; it has a fine chapel and a memorial gateway. Pop. 1074.

Radnor Village of Radnorshire. It is 7 m. from Presteigne, on the little River Somergill. There are ruins of a castle and a guildhall, as the place was a chartered town from 1561 to 1883. It is called New Radnor to distinguish it from **Old Radnor**, a village about 3 m. away.

The title of **Earl of Radnor** was borne by the family of Robartes from 1679 to 1757. In 1765 William Bouverie, 2nd Viscount Folkestone, a wealthy Huguenot, was created Earl of Radnor. His son, Jacob, took the name of Pleydell-Bouverie and the title is still held by his descendant. The estates are now the property of Viscount Clifden, a kinsman. The seat of the present earl is Longford Castle, near Salisbury, and his eldest son is called Viscount Folkestone.

Radnorshire County of Wales. The smallest in the land, it covers 471 sq. m. Presteigne is the county town; other places are Rhayader, Llandrindod Wells and Knighton. The rivers are the Wye and its tributaries, including the Elan, the Arrow and the Ithon. In the centre is the district called Radnor Forest. The chief occupation is farming, and sheep-rearing is an important industry. Pop. (1931) 21,324.

Radstock Urban district and market town of Somerset. It is 16 m. from Bristol on the G.W. Rly. It is the centre of the Somerset coalfield, and the chief industry is coal mining. Pop. (1931) 3622.

Raeburn **Sir Henry.** Scottish portrait painter. He was born at Stockbridge, Edinburgh, on March 4, 1756. He was first apprenticed to a goldsmith, but taught himself to paint, and was helped by David Martin, a leading Edinburgh portrait painter. He painted the Countess Leslie, and married her; and together they visited Rome, where he studied for two years. Raeburn was the chief of a virile school of painting then growing up in Scotland, and was made R.A. in 1815, and knighted in 1822. His best-known portraits are those of Lord Newton, Dr. Alexander Adam, his wife and Mrs. Robert Bell. He died on July 8, 1823.

Raemakers **Louis.** Dutch cartoonist. He was born at Roermond, Holland, on April 6, 1869, educated in Amsterdam and Brussels, and at the outset of his career, painted portraits, posters and landscapes. He drew his first political cartoon in 1908, but his fame was made by his anti-German cartoons, during and after the Great War.

Raffia Work Handicraft comprising useful and ornamental articles made with the split leaves of raphia palms and similar bast-like substances. Used for manual training, recreation and profit-making in blind institutions, kindergarten schools, military hospitals, etc., the material, generally dyed, is fashioned like straw-plait into bags and hats, or worked on frames into baskets, boxes, etc.

Raffles **Sir Stamford.** English administrator. He was born at sea off Jamaica, July 5, 1781. From a clerkship in the East India Company he rose to the appointment of lieutenant-governor of Java on the conquest of that island by Lord Minto in 1811. He held that post till 1816 and was lieutenant-governor of Sumatra from 1818-23, being responsible for the purchase of Singapore (1819). He died July 5, 1826.

Rafter Term in architecture for an inclined beam forming part of the support of the roof of a building. In the Middle Ages rafters were of oak, but in the 17th century foreign deal came into common use. Open timber roofs with various methods of arranging the rafters were characteristic of mediaeval English architecture.

Ragged Robin Perennial crimson-flowered wild plant (*Lychnis flos-cuculi*) of the pink family. It is a slender herb growing about 1½ ft. high and common in Gt. Britain.

Ragged Schools Name given to schools formerly existing in Great Britain, as voluntary agencies for the education of destitute children. Their originator was John Pounds, a Portsmouth shoemaker, who for 20 years prior to his death in 1839, taught a number of needy children as he sat at his work. The work of the Ragged School Union is now carried on by the Shaftesbury Society.

Raglan Village of Monmouthshire. It is 7 m. from Monmouth, on the G.W. Rly. It is famous for its castle, now in ruins. During the Civil War it was defended by the Marquess of Worcester on behalf of Charles I.

Raglan **Fitzroy James Henry Somerset, Lord.** British soldier. He was born on Sept. 30, 1788. In 1807 he served on Wellington's staff in the Copenhagen expedition and in 1812 he was his military secretary in the Peninsular War. He lost his right arm at Waterloo. In 1816 he was Secretary to the Embassy at Paris, and sat for Truro in Parliament in 1818 and 1826, being created a baron in 1827. He was Commander-in-Chief in the Crimean War, and was blamed unjustly for the soldiers' privations in 1854-55. He died June 28, 1855.

Ragoût French dish. It consists of meat stewed with herbs and vegetables, and seasoned to taste. The word comes from the Fr. *ragoûter*, to restore the appetite.

Ragwort Perennial composite herb (*Senecio jacobaea*). The stems, 1-4 ft. high, with much-divided leaves, bear dense clusters of bright-yellow rayed flowerheads.

Raikes **Robert.** Founder of Sunday schools. He was born at Gloucester, Sept. 14, 1735, the son of the printer and proprietor of the *Gloucester Journal*, and carried on his father's business. In 1780 he started a Sunday school, which taught the poor children of the town to read and to learn the catechism. The Sunday School movement attracted great attention, and spread over England in Raikes' lifetime. He died April 5, 1811.

Rail Name originally denoting two related shore-birds, land-rail and water-rail, now extended to all members of the numerous and cosmopolitan rail family. The common European water-rail (*rallus aquaticus*), 11½ in. long, short-tailed and long-legged, is distinguishable from the land-rail by its long, red bill. It haunts British marshlands, sometimes migrating southwards for the winter, and lays 7-10 spotted creamy-white eggs in reed-built nests.

Railway Permanent road, or way, on which locomotives and the rolling stock drawn by them can travel. A railway or railroad has a line or lines of rails fixed to ties or sleepers, and laid to gauge,

usually on a levelled or graded roadbed. The power employed is either steam, or electricity.

The first railways were rough constructions designed only for carrying coal wagons drawn by horses or ponies. The invention of steam made it possible for the steam locomotive to replace the horse, and, this having been introduced in 1804, the next step was to lay lines that could be used for purposes other than the cartage of coal.

The first railway line was opened between Stockton and Darlington in 1825, and during the next 50 years many thousands of miles were laid all over the world. Steadily the lines were improved and greater speeds were attained. The locomotives increased in size and power and the accommodation for the passengers passed from rude open wagons to comfortable carriages, with dining and other accessories, that are reminiscent of a good hotel. Increased engineering skill made it possible to drive tracks through mountains and over marshes until Europe was covered with a network of railways, the great Continents of Asia and America were crossed by them, lines crossed the Andes, and in Africa reached, with but a single gap, from Cairo to the Cape. To meet the traffic problem of the great cities overhead and underground railways were made, and lines serving the London suburbs and other districts, where short distance traffic was necessary, were electrified.

In Great Britain the large number of railway companies that arose in the 19th century were gradually reduced until there was only a small number, most of them large organisations with headquarters in London, such as the Midland, Great Western, Great Northern, London and North Western and Great Eastern. Scotland had the Caledonian, Glasgow and South Western, North British and other lines. The opening of the Great Central Line was the last important addition to the country's railway mileage.

POST-WAR DEVELOPMENTS. During the Great War the Government took control of the railways, and this was retained until 1923. To effect economies in working expenses it was decided that the lines should be formed into four great groups, and these were duly constituted. The groups are the Southern, Great Western, London, Midland and Scottish and the London and North Eastern. The Southern includes the London and South Western and other lines in the south of England. The Great Western is composed of that line and of the Cambrian and others in Wales. The L.M.S. consists of the Midland, London and North Western, Lancashire and Yorkshire, and all the important Scottish lines except the North British. The L.N.E. includes the Great Eastern, North Eastern, Great Central, Great Northern and North British.

The British railway companies are still controlled to some extent by the state and special legislation has been passed for them. The control is exercised by the Ministry of Transport. There is a Railway Rates Tribunal to fix the rates which they may charge for the carriage of goods, and there is a national wage board for the fixing of wages.

The mileage of the British railways in 1933 was 19,822 and the receipts were over £169,000,000. The United States has 258,465 miles. Some countries, *e.g.*, France, Germany and Canada, have state-owned railways, and proposals for nationalising the British lines have been made. The Irish railways, excluding those serving Ulster, have been amalgamated into one organisation, the Gt. Southern Rlys.

Road competition has seriously affected the receipts of the railways, which have fallen very considerably since 1923, leading to reduced dividends and serious declines in the value of railway stocks. A scheme for electrification of the main lines, at a cost of £261,000,000, was put forward in the report of a committee which met in 1929-30.

The chief unions of railway employees are the National Union of Railwaymen, the Associated Society of Locomotive Engineers and Firemen and the Railway Clerks Association. There is in London a railway clearing house for adjusting business between the various companies.

The standard gauge for British railways is 4 ft. 8½ ins., and this has been accepted over a good part of Europe and in the United States. Australia, however, has different gauges, as have India, Ireland, Russia and other countries. The world's fastest long-distance steam train runs from Newcastle to London, on the L. & N.E. line. This first all stream-lined train, completed in 1935, is called the Silver Jubilee and travels the 268.2 miles each day at an average speed of 67 m.p.h.

Engineering has made it possible for railways to reach greater heights and there are funicular and rack railways up a number of mountains, these being specially constructed and carrying passengers only. The greatest heights reached are across the Andes in Peru, where there are at least four lines that reach 15,000 ft.

Rain Name given to the fall of condensed atmospheric vapour in drops of water owing to the lowering of the temperature below dewpoint. Condensation first results in the formation of minute drops which float in masses forming clouds and as the process continues these drops coalesce, forming larger drops, whose weight causes them to fall as rain.

Rainbow Name given to the coloured arch seen in the sky away from the sun when rain is falling during sunshine. It is due to the reflection and refraction of light in the raindrops, causing the breaking-up of the white light into the seven colours of the spectrum in varying degrees of intensity, according to the size of the drops. Sometimes a second or even third bow in fainter colours may be seen in brilliant sunshine.

Rainfall Term applied to the general precipitation of rain over an area, including also the fall of snow and hail. The study of rainfall forms an important branch of meteorology, observations being carried out as to the amount of precipitation and its seasonal and local variations as well as to the causes determining the rainfall in particular districts. A continual circulation of vapour occurs between the terrestial waters and the atmosphere, and moisture-laden winds from the sea blow over the land, the vapour being carried up into the colder upper air, where it condenses in clouds and finally in rain.

Rainford Urban district of Lancashire. It is 4 m. from St. Helens and is a junction on the L.M.S. Rly. Around are coal mines and stone quarries and the town has some manufactures. Pop. (1931) 3494.

Rain Gauge Meteorological instrument for measuring the rainfall. A rain gauge usually consists of a cylindrical copper vessel, containing a funnel for catching the rain and a bottle or other form

of receiver. The contents are emptied at regular intervals into a measuring glass, graduated in inches of rain.

Rain-making Causing rain to fall. It forms the object of various rites and ceremonies among primitive peoples, when the rainmaker is often an important individual. Attempts have been made to cause precipitation of vapour as rain by the use of gunfire, or by scattering chemicals and other substances from aeroplanes, but with no appreciable success.

Raisin Dried ripe fruit of certain white varieties of grape, used for dessert, cooking or wine-making. Sun-dried on the vine, spread on the ground or dried by artificial heat, raisins come from S.E. Spain, and are collectively called Malaga raisins, including muscatels and pudding-raisins; from Smyrna, including elemés and seedless sultanas; from Provence, Calabria, Australia and California. *See* CURRANT.

Rajah Hindu name for a prince or king. It is still used for a ruler in India, *e.g.*. the Rajah of Tripura, but a number of the more important ones are called maharajah, or great prince. It is also used in Malaya and Borneo. The word *raj* means rule.

Rajput Hindu word meaning "the son of a king." It is applied to the ruling race of the State of Rajputana, to which it gives its name.

Rajputana District of India. It is bounded on the west by Sind, on the north by the Punjab, on the east by the United Provinces. The Arvalli Mountains running across the country separate the fertile land to the S.E. from the sandy and ill-watered region to the N.W. Politically, the district is a collection of 21 Indian states, under an agent to the Governor-General. The population in 1931 was 11,225,712, of whom only 620,000 actually belong to the Rajput race. The chief language is Rajasthani.

Raleigh **Sir Walter.** Elizabethan explorer and writer. He was born near Sidmouth about 1552. After fighting in Ireland he became first favourite of Queen Elizabeth. In 1584 a fleet sent out by him to America founded the new colony of Virginia, which he failed to establish.

Raleigh was supplanted in the Queen's favour by the Earl of Essex in 1587 and went to Ireland, but was restored to favour until Elizabeth discovered his intrigue with Elizabeth Throgmorton, when he was imprisoned. In 1596 his advice gained England the triumph of Cadiz. Raleigh was condemned to death for treason, but was instead imprisoned in the Tower, where he wrote his *History of the World* and *A Discourse of War*. In 1616 he made a disastrous expedition to the Orinoco in search of gold, and on his return was condemned to death, apparently for failure, and beheaded on Oct. 29, 1618.

Ramadan Ninth month of the Mohammedan year, invested with special sanctity by the Koran and observed by faithful Moslems as a period of fasting. During this period strict abstinence is enjoined during the hours of daylight from food, drink and perfume.

Ramadi Town of Iraq. It stands on the Euphrates, 60 m. from Bagdad. Here, on Sept. 28-29, 1917, a battle was fought between the British and the Turks. The British, advancing from Bagdad, attacked the Turkish position on the 28th and on the 29th, after some hard fighting, captured the remains of the army and entered the town. In the engagement some Indian regiments did splendid service.

Rambouillet Town of France. It is 30 m. from Paris and is famous for its château, the country residence of the President of the Republic, formerly used as a residence by Napoleon. It stands in a large park and has beautiful gardens.

Rameses Name of three Egyptian kings. Rameses I. made a treaty with the Hittites, and expanded Egypt as far as the Wady Halfa.

Rameses II., called "the Great," defeated the Hittites, and married their princess. He conquered Ethiopia, and established a fleet on the Mediterranean. He lived about 1322 B.C.

Rameses III., made war on the Philistines, and the tribes of the coast of Greece and Asia Minor, and again conquered Ethiopia.

Ramie Name of Malay origin for the bast fibre of a stingless nettle, (*Boehneria tenacissima*,) called in Assam rhea. This is a variety of *B. nivea*, the source of China-grass. One or other now grows in the S. parts of Africa, France, England and U.S.A. The fibre serves for incandescent gas-mantles, nets, etc.

Ramillies Village of Belgium. It is 13 m. from Namur and is famous for the battle fought here, May 23, 1706. An English and Dutch army under Marlborough met a French one under Villeroi. The first English attack was indecisive, but the battle was won through the genius of Marlborough, and the French compelled to give up the whole of the Spanish Netherlands.

Rampant Heraldic term denoting an attitude of beasts of prey in armorial charges, standing on the left hind-leg, the others being upraised, the right fore-leg above the left, the head sideways, and the tail upwards. Should both hind-legs be aground, it is salient. Full-faced is rampant guardant, looking backwards is rampant reguardant. *See* LION.

Rampion Name of several perennial herbs of the bellflower order, natives of Europe and W. Asia. (1) The genus *phyteuma*, with many garden forms, especially rock-plants, includes the British *P. spicatum*, formerly cultivated for its edible tuberous rootstock. (2) *campanula rapunculus*, also British, has a spindle-shaped, fleshy root, and is grown for the table, especially in France.

Ramsay **Allan.** Scottish poet. He was born, Oct. 15, 1686, and first came into prominence by writing some additional cantos to an old Scotch poem, *Christ's Kirk on the Green*. He was at that time a wigmaker in the Edinburgh High St., and later became a bookseller. His most famous work, *The Gentle Shepherd*, was published in 1725. It is a dramatic pastoral poem, on a typically Scotch theme, and was performed at the Edinburgh Theatre. He died Jan. 7, 1758.

Ramsay **Sir William.** British chemist. He was born, Oct 2, 1852, was Professor at University College, London, from 1887 to 1912, and was for many years the leading exponent of physical chemistry in Britain. He was associated (1894) with Lord Rayleigh in the discovery of argon, and in the next year he obtained helium for the first time. He died July 23, 1916.

Ramsay **Sir William Mitchell.** Scottish archaeologist. He was born at Glasgow, Mar. 15, 1851, and was Professor of Humanity at Aberdeen from 1886-1911. For more than 45 years the history and geography of Asia Minor have been his special study. His works include *The Church in the Roman Empire* (1893); *St. Paul, the Traveller and the Roman Citizen* (1895); *The Letters to the Seven Churches of Asia* (1905). He was knighted in 1906.

Ramsbottom Urban district of Lancashire. It is situated on the Irwell, 4 m. from Bury, by the L.M.S. Rly. The chief industry is the making of cotton goods with the attendant occupations of bleaching and dyeing. Pop. (1931) 14,926.

Ramsbury Village of Wiltshire. It is 5 m. from Hungerford, on the G.W. Rly. In Anglo-Saxon times it was the seat of a bishopric.

Ramsey Island of Pembrokeshire. Situated off St. David's Head, it is about 2 m. long and covers 600 acres. There is a harbour on the east coast, and on the island are wild duck, snipe and woodcock.

Ramsey Urban district and market town of Huntingdonshire. It is 10 m. from Huntingdon, on the L.N.E. Rly. The chief building is the magnificent parish church. There was once a Benedictine abbey of which only a gatehouse remains. The modern abbey is the seat of **Lord de Ramsey.** Near was the lake called Ramsey Mere, but this has now been drained. Pop. (1931) 5180.

Ramsey Market town and seaport of the Isle of Man. It is in Ramsey Bay, on the north-west side of the island, 14 m. from Douglas. Near is Snaefell, which can be ascended by railway. Steamers go regularly to and from Liverpool and other parts. Pop. 5000.

Ramsgate Borough, pleasure resort and seaport of Kent. It is on the Isle of Thanet, 78 m. from London and 16 from Canterbury, on the S. Rly. There is an inner and an outer harbour, and fishing is an important industry. There are fine promenades, large parks and excellent sand. During the summer steamers go regularly to and from London, and also to Calais and Boulogne. Pop. (1931) 33,597.

Rand Short name for the district in the Transvaal known as the Witwatersrand. It is the richest gold-bearing region in the world. *See* WITWATERSRAND.

Ranelagh Place of amusement in London. It was in Chelsea, where are now the grounds of Chelsea Hospital. There, Richard Jones, Earl of Ranelagh, built a house and laid out gardens which, in the 18th century, were a popular pleasure resort for the fashionable folk of London. In the grounds was an immense rotunda, where entertainments of all kinds were held.

The modern **Ranelagh Club** is at Barn Elms Park, London, S.W. 13. It was opened in 1894 and is a centre for polo. It has also facilities for golf, croquet and other games.

Range Finder Instrument devised for calculating the distance of an object from the observer, and used in ascertaining the distance of a target; also in surveying. The usual form of range finder or telemeter is based upon the measurement of the angles of a triangle whose apex is the distant object and the base the instrument, one of the basal angles being made a right angle. The instrument is a modification of the principle of the sextant.

Rangoon Capital and principal seaport of Burma. It is situated on the left bank of the Hlaing or Rangoon River, about 20 m. from its entrance into the Gulf of Martaban. A town has existed on this site since the 6th century. The principal building is the Shew Dagon Pagoda, the central shrine of Burmese religion. It is 368 ft. high and is covered with gold leaf. During the last 50 years Rangoon has developed from comparative insignificance into the third port of the British Empire. It has a university and many fine public buildings and amenities. Its present importance is largely due to the quantities of rice which are exported from its harbour. Pop. (1931) 400,415.

Ranjitsinhji **Kumar Shri.** Indian prince and cricketer. He was born Sept. 10, 1872, and finished his education at Trinity College, Cambridge. There he played cricket for the university, and in 1895 he settled in Sussex and began to play regularly for that county. His wonderful batsmanship made an extraordinary impression and he became perhaps the most popular batsman, as he was certainly the most graceful in the land. He played for England against Australia and in other representative matches. In 1906 Ranji, as he was popularly called, became a ruling Indian prince when he succeeded as Maharajah of Nawanagar, and as such he served in France in 1914-15 and took part in Indian politics. In 1897 he published *The Jubilee Book of Cricket.* He died in 1933.

Ranke **Leopold von.** German historian. He was born Dec. 21, 1795, studied at Halle and Berlin, and in 1825 became Professor of History in Berlin. Perhaps the greatest of modern historians, Ranke wrote no less than 47 volumes, including the monumental *History of the Popes* of the 16th and 17th centuries. He also wrote about certain periods in the histories of England, France, Germany, Austria and Venice. When he died, May 23, 1886, he was engaged on a *History of the World.*

Rannoch Loch or lake of Perthshire. In the north-west of the county, it is 9 m. long. Its waters are carried by the Tummel into the Tay. The moorland area around the lake is known as Rannoch. There is also Loch Lydock, 5¼ m. by half a mile.

Ranters (1) Antinomian and pantheistic sect in Commonwealth England. Rejecting ecclesiastical and scriptural authority they included fanatical elements whose influence was gradually counteracted by the Quaker message. (2) Name applied, about 1823, to street-singers in Belper when returning home from early Primitive Methodist camp-meetings, afterwards extensively used as a nickname for the religious community.

Rapallo Watering place of Italy. It is on the Gulf of Rapallo, 16 m. from Genoa, and is one of the most popular resorts on the Italian Riviera. The industries are fishing and lace making. Pop. 7180.

At Rapallo on Nov. 12, 1920, Italy and Yugoslavia signed a treaty fixing the boundaries between the two nations. By it Fiume was recognised as an independent state.

Rape Name applied to cultivated varieties of several cruciferous herbs of the cabbage genus, notably *Brassica napus* and *B. campestris.* Introduced into Tudor England,

they are grown extensively in Europe and India for green forage; the seeds, used for feeding poultry, yield an edible, burning and lubricating oil, known commercially as colza.

Rape In law, the crime of having carnal knowledge of a woman by force, against her will. At one time it was a capital offence, but since 1861 has been punishable in England by penal servitude for life. The offence is not mitigated by unlawful extortion of consent by threats, etc.

Raphael One of the archangels. He is represented in the Book of Tobit as appearing in human form to act as the guide and guardian of Tobias.

Raphael Sanzio Italian painter. He was born at Urbino, April 6, 1483, and received his early training from his father, though the latter died when his boy was but eleven years old. Raphael's work falls into three periods: (1) Perugian (1500-04) during which he first studied under and then worked in co-operation with Perugino; (2) Florentine (1504-08) when he came under the influence of Leonardo da Vinci and Michelangelo; (3) Roman (1508-20) during which he decorated the state apartments in the Vatican at the request of Pope Julius II.

One of the greatest and most versatile of painters, he not only excelled in every branch of the art, but was loved by all who knew him. His last work, "The Transfiguration," was almost completed when he died, April 6, 1520.

Raphia Palm Genus of palm-trees indigenous to tropical Africa and America. Their long-stalked, feathery leaves, sometimes exceeding 50 ft., split lengthwise into strips, serve for native mats, clothing, etc. Important species are the Amazon jupati palm and the W. African bamboo, or wine-palm, yielding a fermentable sap and a bass; one grown in Madagascar and elsewhere supplies raffia. *See* RAFFIA WORK.

Rapier Slender, highly-tempered, sharp-pointed, edgeless weapon about 3 ft. long, used solely for thrusting. Superseding the two-edged pointed sword used in 16th-17th century duelling, which on occasion served also for cutting, it was long indispensable for gentlemen's wear. It survives ceremonially in court dress, and with the foil is the main modern fencing weapon.

Raspberry Shrub of the rose order (*Rubus Idaeus*). Its perennial stool produces shoots which bear, in the second year, many scarlet or yellow fruits. Cultivated varieties yield finer and larger fruit, used for dessert, jam, sweetmeat-flavouring, wine, etc. The sweetened juice mixed with vinegar is called raspberry vinegar. *R. odoratus*, an ornamental shrub, sometimes white-flowered, in British gardens, comes from Canada and the northern U.S.A. *See* LOGANBERRY.

Rasputin Gregory Efimovitch. Russian monk. He was born in 1871 in the province of Tobolsk, Siberia, had no education, and lived until 1904 in his native village. Then he left his family, and practised religious exercises, adopting the attitude that it was necessary to sin in order to obtain forgiveness. He had tremendous strength and personality and, despite his orgies, surrounded himself with an air of mysticism. Soon he appeared at court, and exercised a malign influence on Church and State, until he was invited to supper at the Yussupoff Palace by the Grand Duke Dmitri Pavlovitch and others, and shot dead, Dec. 15, 1916.

Rat Name applied to various rodents, specifically to the larger species of the mouse genus. The long-tailed black rat (*mus rattus*), 7 in. long with 8-9 in. tail, of Asiatic origin, which reached 13th century Europe, and became established in Britain, is the progenitor of white and pied domesticated forms. Following its westward migration came the brown or Norway rat, 8-9 in. long with shorter tail, which swam the Volga, 1727, reached Britain in East-Indiamen, *c.* 1730, and ousted its smaller congener from most parts of England and many continental areas. Its parasitic flea, when infected, conveys bubonic plague. *See* MUSQUASH.

Ratafia Flavouring essence. It is made with essential oil of almonds.

Ratcliff Highway Old name for a street in Stepney. It is now called St. George's Street. In the 19th century it had a very evil reputation due, in part, to a series of murders which took place there in 1811.

Ratel Genus of burrowing carnivores of the weasel family (*mellivora*), inhabiting India and Africa; also called honey-badger. Short-limbed and short-tailed, the underparts are black, the upper iron-grey.

Rates Word used for the money raised by local authorities for their expenses. Rates are thus the local counterpart of taxes, or money raised for national purposes. At one time there were several rates, a sanitary rate, an education rate, a police rate and others, but these have now been amalgamated and most areas raise a consolidated rate. The only exception is the water rate which is quite distinct from the others.

The amount of the rate is fixed by the council at so much in the £ for the year on the rateable value of property in its area. This is then collected from the various owners and occupiers, each paying according to the rateable value of his premises. In the case of small houses the rates are usually paid by the landlord. There is no limit to the amount of the rate which a council can levy; in some areas the rates exceed 25/- in the £. In order to allow for an increase or decrease in the value of property, it is valued periodically, usually every five years.

In 1896 the rates on agricultural land were reduced by one-half, and in 1928 there was important legislation in the same direction. By a scheme of derating, land used wholly for agricultural purposes was entirely relieved of rates. Land and buildings used for industrial and transport purposes were relieved of three-quarters of their rates. In order to make up the loss to the local authorities, grants were made by the government. In 1934-5 the amount of money raised by the rates in England and Scotland was £171,874,000.

Rath Irish name for a prehistoric hill fort. It was protected by an embankment and sometimes by stakes. There are remains of about 30,000 in the country and the word forms part of many place names.

Rathfarnham District of Dublin, Irish Free State. It is on the River Dodder, 4 m. to the south of the city proper. Here is a castle, at one time a seat of the Loftus family.

Rathlin Island of Ireland. It is off the coast of Antrim, 6 m. north

of Ballycastle. It is 6 m. long and on it are the ruins of a castle.

Rating In the British Navy the class to which any member of the crew belongs. It is also used for the tonnage class of a racing yacht.

Rationalisation Industrial term that came into use after the Great War. It describes the process of making productive industries more efficient by eliminating waste, and still more by organising them into larger units for the purpose of meeting competition. A good deal was done in this direction, notably in the iron and steel and associated industries, among shipbuilders.

Rationing Apportioning of a share of supplies, usually of food, to each member of an army, navy or population. In the army and navy this is done through quartermasters and petty officers, and each man has a standard daily ration of food, a part of which may be commuted for a cash allowance to be spent on other food.

During the War, the entire population of Great Britain was rationed, from June, 1917, particularly with regard to fats, sugar and meat. Each person had a registration card, checked by the retailer with whom he was registered, who received enough food to supply all his registered customers.

Rattlesnake Genus of American venomous snakes of the pit viper sub-family (*crotalus*). Measuring 4-8 ft., there are several N. American species; one extends S. of Panama. They produce living young; and peccaries habitually feed on them. The rattle comprises several loose-jointed horny pieces attached to the tail's end bone, one being added every time the skin is sloughed; 23 have been counted. The tail's agitation produces a warning noise perceptible at 10-20 yds. distance. Sluggish and inoffensive, they strike only under provocation.

Raunds Urban district of Northamptonshire. It is 8 m. from Wellingborough on the L.M.S. Rly., and is a centre for the manufacture of boots and shoes. Pop. (1931) 3683.

Ravel **Maurice.** French composer. Born March 7, 1875, at Ciboure (Pyrenées), he was educated in Paris and studied music at the Conservatoire there under Bériot, Gédalge and Gabriel Fauré. In 1901 he won the 2nd Prix de Rome with his cantata, *Myrrha*. At first he attracted little notice, but his *Schéhérazade*, in 1904, was hailed as a "miracle of musical impressionism." His masterpiece is perhaps the ballet, *Daphnis et Chloé* (1921), and he composed the very popular *Bolero* (1928), a dance of Moorish type. He has written much for the voice, the piano and the orchestra, including opera. In 1928 he received the honorary degree of D.Mus., Oxon.

Raven Largest bird of the crow family (*Corvus corax*). Normally 25 ins. long, strong-billed, strong-flying, harsh-voiced, with ebony-black bill, legs and plumage, the breast and upper parts acquire a glossy steel-blue sheen. It breeds in N.W. Scotland and other isolated parts of Britain, 3-5 brown-spotted bluish-green eggs being laid in bulky cliff-built or tree-built nests. Easily tamed, it makes an intelligent but thievish pet, and can produce parrot-like imitations.

Ravenna City of Italy. It is famous for its splendid examples of ecclesiastical architecture, belonging to the period from 5th to 8th centuries. It is one of the most ancient of Italian towns, and was used by Augustus as the headquarters of his Adriatic fleet. Four hundred years later the Emperor Honorius took refuge there with his court from the advancing Alaric. Afterwards the city remained the capital of Italy for 350 years. Dante is buried there. Pop. (1931) 78,143.

Ravensbury District of Surrey on the River Wandle, in the urban district of Mitcham. The manor house was long the residence of the Bidder family, and on the estate are the nests of rare birds, as well as a heronry. The old manor house was once the home of the Throckmorton family. There is a Saxon cemetery in the district.

Ravenscar Watering place of Yorkshire (W.R.). It is 10 m. to the north of Scarborough and is served by the L.N.E. Rly.

Ravenscourt Park District of London. It is in the borough of Hammersmith. The park from which it takes its name is now public property, and in it is an 18th century house and an old English garden. In 1932 the freemasons erected a hospital in the district.

Ravenswood Town of Queensland. It is 78 m. from Townsville. Gold is mined in the neighbourhood. Pop. 2000.

Ravensworth Village of Durham. It is 3 m. from Newcastle and contains a castle, the seat of Lord Ravensworth. This was erected in the 19th century on the site of an earlier one. The title of **Baron Ravensworth** dates from 1821 and is held by the family of Liddell. From 1874 to 1904 there was an Earl of Ravensworth.

Rawal Pindi Indian town. It is situated in the Punjab, about 110 m. S.E. of Peshawar, and was the scene of the surrender of the Sikhs in 1849. Its present importance is due to its premier place among Indian military stations, owing to its size and its key position in the North-West Frontier system of defence. Rawal Pindi gives its name to a district and division of the Punjab.

Rawdon Urban district of Yorkshire (W.R.). It is 5 m. from Bradford on the L.M.S. Rly. The chief occupation is the woollen industry. Pop. (1931) 4574.

Rawlinson **Lord.** British soldier. Born Feb. 20, 1864, Henry Seymour Rawlinson served with Sir F. Roberts in India and in Burma (1886-87), on the Nile (1898), and in the South African War. During the Great War General Rawlinson commanded troops at Antwerp, Ypres, and the Battle of the Somme (1916) with conspicuous success. His victory with the French at Amiens in 1918 heralded the general advance of the Allies. He was rewarded for his services in the Great War by being made Baron Rawlinson of Trent. In 1919 he conducted the withdrawal of the Allied troops from Archangel in Northern Russia, and in 1920 went to India as commander-in-chief of the army there. He died on March 28, 1925. His biography has been written by Sir F. Maurice.

Rawlinson **Sir Henry Creswicke.** English soldier and orientalist. Born on April 11, 1810, he went to India in 1817 as a cadet in the East India Company, and later helped to reorganise the Shah of Persia's troops. He became interested in the hitherto undeciphered cuneiform characters, and completely transcribed the inscription

at Behistun. In 1851 he continued the French excavations on Assyria. In 1859 he was minister plenipotentiary to Persia, and returned to England in 1860. He served on the Council of India from 1868, and advocated a forward policy in Afghanistan. He died on March 5th, 1895.

Rawmarsh Urban district of Yorkshire (W.R.). It is on the Don, 2 m. from Rotherham and is reached by the L.M.S. Rly. The main industry is the manufacture of iron and steel goods. Pop. (1931) 18,570.

Rawtenstall Borough of Lancashire. It is 19 m. from Manchester, on the L.M.S. Rly., and manufactures cotton goods. Coal mines are in the district. Pop. (1931) 28,575.

Ray Line at right angles to the wave point of the luminous source, in which light is propagated. In this strict sense it is a mathematical conception. Popularly a narrow pencil of light is termed a ray. Besides the visible rays of the solar spectrum-light there are others at each end which are not perceived by the eye, *e.g.*, the actinic or ultra-violet rays, and, at the opposite extreme, the infra-red or heating rays. *See* HEAT, LIGHT, SPECTRUM, X-RAYS.

Ray Flattened cartilaginous fish with broad and fleshy pectoral fins. Of true rays (*Raia*) British forms include the short-snouted thornback, the spotted, starry and sandy rays, the last being the most frequently eaten, and several long-snouted species, usually called skates. Allied families include the electric ray or torpedo, sting-ray, eagle-ray and ox-ray or devil-fish.

Rayleigh Village of Essex. It is 8 m. from Southend and 35 from London, being served by the L.N.E. Rly. The family of Strutt takes the title of baron from here. Pop. (1931) 6256.

Rayleigh **Baron.** English physicist. Born Nov. 12, 1842, John William Strutt Rayleigh succeeded to his father's title as 3rd baron in 1873. After a brilliant career in Cambridge he became Cavendish Professor of Experimental Physics there, and Professor of Natural Philosophy at the Royal Institution. In conjunction with Sir William Ramsay he discovered argon (*q.v.*). He died June 30, 1919, and was succeeded as 4th baron by his son, Robert John, already eminent in the world of science.

Robert John Strutt Rayleigh was born Aug. 28, 1875, and educated at Eton and Trinity College, Cambridge (Fellow, 1900). He is Foreign Secretary of the Royal Society, and Emeritus Professor of Physics at the Imperial College of Science, South Kensington. He has done much work in connection with radium, and has written a number of scientific papers.

Razorbill Sea-bird of the auk family, (*Alca torda*) inhabiting arctic and northern regions. Resident in Britain, 17 in. long, it has a glossy blackish plumage which is white underneath. The massive deeply-furrowed bill, flattened laterally, has a hooked tip. The brown-blotched whitish egg, laid on a rocky cliff on both Atlantic coasts, including that of Great Britain, is a delicacy.

Razor Shell (or **Razor Fish**). Family of sand-burrowing bivalve molluscs having long narrow parallel-sided shells with truncated ends. The common British *Solen siliqua* is used for food and for fishing-bait.

Reade **Charles.** English novelist and dramatist. Born at Ipsden House on June 8, 1814, and educated at Magdalen College, Oxford, he was called to the bar in 1843. He first began writing in 1850, beginning with plays including *Masks and Faces* (1852). It was as a novelist that he achieved fame. Among his more important works are *Peg Woffington* (1852), *It is Never too Late to Mend* (1856), and his masterpiece, *The Cloister and the Hearth* (1861). He died on April 11, 1884.

Reading Borough and market town of Berkshire, also the county town. It is 36 m. from London, standing where the Kennet falls into the Thames. The town proper is on the south side of the river, and is an important railway centre, being served by the G.W., S., and L.N.E. Rlys. It has also canal connections.

Some ruins of the Benedictine monastery in which Henry I. was buried may be seen. The chapel of the Grey Friars is another object of interest. The museum contains Roman remains from Silchester. Since 1926 there has been a university. Reading is famous for its biscuits and its seeds; it is also an agricultural centre and has engineering works. Pop. (1931) 97,153.

Reading **Marquess of.** English statesman. Rufus Daniel Isaacs was born in London, Oct. 10, 1860, and educated at University College School and abroad, studied law, and became a Bencher of the Middle Temple. Entering Parliament, he represented Reading as a Liberal from 1904 to 1913, was Solicitor-General in 1910, Attorney-General, 1910-13, and Lord Chief Justice of England, 1913-21. He was Special Envoy to the United States in 1917, High Commissioner and Special Ambassador to the United States in 1918, and from 1921 to 1926 was Viceroy of India. He was knighted in 1910, created a baron in 1914, viscount in 1916, earl in 1917, and marquess in 1926. A biography by Mr. Derek Walker Smith appeared in 1933. He died in Dec., 1935.

Realism Doctrine in philosophy that things have a real existence apart from their presentation to our consciousness. Something of the kind was taught by Socrates. It is thus the opposite of idealism. In literature and art, realism is also opposed to idealism or romanticism. It claims to present life as it really is, not as it ought to be or is desired to be. It does not, therefore, ignore the unpleasant or sordid aspects of life. In this sense Thomas Hardy and some of the great French and Russian writers are realists.

Real Presence Eucharistic doctrine. It is the belief, held by the Roman and Greek Churches and by High Church Anglicans, that the bread and wine of the Eucharist contain, after their consecration, the body and blood of Jesus Christ. This belief rests upon a literal interpretation of the words of institution, "This is my body" and "This is my blood," and of the sixth chapter of S. John's Gospel. Roman Catholics believe that the sacred elements may be worshipped, but the Greek Orthodox Church does not so believe. *See* RESERVATION.

Real Property Term used in English law for land and houses. It is distinguished from personal property, which covers all other forms of property, including leaseholds. Before 1925 real property and personal property, in the case of a person dying intestate, descended in different ways,

but this is no longer so. The two kinds of property are, however, valued separately on the occasion of death, and certain legal differences between them persist.

Rebec Medieval stringed instrument played with a bow, of Asiatic origin, and known in 9th century Europe. A broad-based 3-stringed Byzantine type, illustrated on ivory caskets and illuminated MSS., had a body like a pear halved lengthwise, pierced with sound holes. A narrow 2-stringed boat-shaped type reached Moorish Spain. Violins ultimately superseded both.

Rebecca Riots Disturbances that broke out in South Wales in 1839 and the following years. They were caused by the charges made at the toll gates for the use of the roads, although there were contributory causes. The rioters, dressed as women and calling their leader "Rebecca," went about the country destroying the toll gates; some of them rode horses. Troops were sent against them and the rising was put down. The name was taken from a passage in Genesis xxiv. where Rebecca says, "Let thy seed possess the gate of those which hate them."

Rebekah Sister of Laban, wife of Isaac and mother of Esau and Jacob. By her ruse her younger son deprived Esau of the paternal blessing (Gen. xxvii.). She was buried in Abraham's tomb at Hebron. The Jewish and Christian personal name commonly follows the N.T. spelling "Rebecca."

Rebus Riddle that is a representation of a sentence or object by means of pictures or words, or both in combination. They originated in France. An example is "be independent, but not too independent," which as a rebus may be represented by the letter B pendant in the letter D, a butt, a knot and the figure 2 pendant in D. In heraldry a rebus is an allusion to the name of the bearer in a coat of arms. Thus a hammer for Hammerton is an example.

Récamier **Madame.** French society leader and beauty. Born Dec. 4, 1777, she married, at sixteen, a rich banker of fifty-four, and gathered many distinguished people in her brilliant salon. Her husband was ruined in 1806, and Madame visited Madame de Staël at Coppet, where she met Prince August of Prussia. He wished to marry her if M. Récamier would consent to a divorce, but although this was granted, Madame refused to leave her husband in his adversity. One of her greatest friends in after years was Chateaubriand. She died on May 11, 1849.

Receipt Acknowledgement of a payment made. By English law a receipt for £2 or over must be stamped. This was long a penny stamp, but in 1920 it was raised to twopence. A person giving an unstamped receipt is liable to a fine of £10. A receipt can be stamped at the inland revenue offices on payment of £5 within 14 days, or £10 within a month.

Receiver Person appointed to look after the property of a company or person who is unable to meet its or his liabilities. To supervise the affairs of bankrupt estates there are official receivers in the various county courts and in London. Debenture holders usually appoint a receiver when the interest on the debentures is not forthcoming after a stated time.

Receiving Order Order made by a court of law in the case of a bankrupt individual, or a company that cannot meet its liabilities. One or more of the debtors usually make the application, and if it is granted a receiver takes over the assets of the individual or company and distributes them as the law directs.

Rechabites Hebrew religious community. Originated in Jehu's reign by Rechab's son, Jehonadab, who followed his father's practice, they dwelt in tents, and avoided wine, vine-planting and grain-growing (2 Kings x.). Three centuries afterwards, Jeremiah commended their devotion (Jer. xxxi.). The **Independent Order of Rechabites**, a total abstinence Friendly Society, founded 1835, numbers about 725,000, including overseas members.

Reciprocity Exchange of commercial privileges. It is usually experienced when two nations make tariff concessions to each other. Much was heard of the word in 1911 when there was a proposal for reciprocity between the United States and Canada. The proposal was, however, defeated.

Reclamation Recovering land from the sea. It has occurred in the building of sea walls and embankments and is usually done when the sea is receding. In England much land around the Wash has been reclaimed, and there are other instances, notably on the south coast of Kent, and in the estuary of the Ribble while an ambitious scheme in progress in Holland has already reclaimed many square miles from the Zuyder Zee. Another kind of reclamation is to drain off inland water, as when Whittlesea Mere was so drained. It is now a tract of agricultural land, but it was once a lake.

Recognizance In England a legal obligation entered into before a magistrate. It is usually a promise, under penalty, to commit or not to commit a particular act. For instance a man summoned for dangerous driving may be asked to give recognizances that he will not drive again for six months.

Recollect Fathers (or **Recollects**). Franciscan friars of the Strict Observance. Founded in 15th century Spain, and approved by Pope Clement VII., 1532, they were among S. America's earliest Christian missionaries. Gaining renown by preaching, they served as army-chaplains in pre-revolutionary France, and operated in India, Canada and Jerusalem, where they have the charge of Latin Christendom's holy places.

Reconstruction Term used in the United States for the work of restoring the country to prosperity after the devastation caused by the Civil War. It was used in a similar sense in Great Britain after the Great War. From 1917 till 1920 a ministry of reconstruction existed to prepare for the return of soldiers to civil life and for other changes consequent on the return of conditions of peace.

Reconstruction is also used in a legal sense. It describes the reorganisation of a company's finances, usually in consequence of trading losses. A scheme of reconstruction must be approved by the shareholders and by the courts of law.

Recorder In England a judge. Certain cities and towns have the right to hold courts of quarter sessions and to preside over them, a barrister, called a recorder, is appointed. He receives a salary and holds office for life or until promoted.

He ranks next after the mayor. A recorder cannot sit in Parliament for his own city or borough.

Recorder Instrument used in telegraphy for registering signals on submarine cables. The earlier form was a type of mirror galvanometer, but is now generally replaced by the "siphon recorder," which marks the message in ink upon a moving paper ribbon. The name recorder is given also to a soft-toned musical instrument of the flute type.

Record Office Public building in London. It stands between Chancery Lane and Fetter Lane, and in it the state papers and other historical documents are kept. It is controlled by the Master of the Rolls, and students can consult its records. The museum contains Domesday Book and other priceless historical documents.

Rectifier Electrical device for the conversion of an alternating current into a direct one. It is used for motors, arc lamps, and wireless receivers working from an alternating current main. In the mercury vapour type of rectifier an electric arc is maintained between two electrodes through mercury vapour in a vacuum, the current receiving high resistance in one direction. In an electrolytic rectifier the current readily passes only in one direction from a lead electrode to one of aluminium.

Rector Latin word meaning "ruler." In the Church of England a rector is one who holds a living in which all the tithes belong to him. A vicar has only the lesser tithes. It is also used for the heads of certain colleges at Oxford, *e.g.*, Exeter, and for the headmaster of some of the chief of the Scottish schools, *e.g.*, Edinburgh Academy. In the United States the incumbents of the episcopal churches are called rectors—as they are in Scotland. The title is also held by certain ecclesiastics who are engaged in teaching duties in the Roman Catholic Church.

Reculver Village of Kent, 3 m. E. of Herne Bay. The old church was pulled down in the 19th century, but its two towers have been taken over by Trinity House to serve as a seamark.

Redcar Borough, market town and watering place of Yorkshire (N.R.). It is 8 m. from Middlesbrough, on the L.N.E. Rly. The attractions include good bathing and golf links, but more notable is the fine, firm expanse of sand which is used for motor racing. Horse races are held regularly in the town. Pop. (1931) 20,159.

Red Cross International agency for the alleviation of human suffering, especially for giving relief to the sick and wounded in time of war. Its origin may be dated from a meeting held at Geneva on Feb. 9, 1863, to discuss the suggestions contained in a booklet by Henri Dunant entitled *Un Souvenir de Solferino*, which contained a moving description of the sufferings endured by the wounded in that battle (1859). As a result of this meeting, an international conference at Geneva accepted the principle of giving protection in war to the personnel of military hospitals and authorised as the symbol of such protection the now familiar red cross on a white background.

Red Deer Large species of deer (*Cervus elaphus*), widely distributed in temperate Europe, W. Asia and N. Africa. The male, 4 ft. high at the withers is called a stag, becoming in the sixth year a hart; the female is the hind, the young the fawn. It is greyish in winter, reddish-brown in summer, with lighter underparts. It occurs wild in parts of Britain; tame herds are maintained in parks. The male develops finely-branched antlers each breeding season, shedding them by Feb.-Mar. *See* DEER.

Red Deer Town of Alberta. It is on the river of the same name, 99 m. from Calgary and 93 from Edmonton. It is an important junction on both the trans-continental lines, C.P.R. and C.W.R., and is also served by the Alberta Central Rly. It is the centre of a farming district and possesses grain elevators. Pop. 2006.

Reddish District of Lancashire. It is 4 m. from Manchester and is reached by the L.M.S. and L.N.E. Rlys. The chief industries are cotton mills and the making of machinery and chemicals.

Redditch Market town and urban district of Worcestershire. It is on the Arrow River, 15 m. from Birmingham by the L.M.S. Rly. It is famous for its manufactures of needles and fish hooks. Motor cycles are also made. Pop. (1931) 19,280.

Redemptorists Order of missionary priests in the Roman Catholic Church. It was founded by Alfonso Liguori in 1732. The members aim at teaching the belief of the Church and reforming public morals by visiting, preaching and hearing confessions. The order must be distinguished from the Redemptionists, whose work is to ransom negro children from slavery.

Redesdale District of Northumberland. It is the valley of the little River Rede, and extends for 20 m. from Reedsmouth on the Tyne to the border of Scotland. Owing to its position it figured much in the wars between England and Scotland, and the men of Redesdale won a great reputation as fighters. Otterburn is in the valley.

The title of **Baron Redesdale** is borne by the family of Freeman-Mitford. The first baron, John Mitford, a landowner in Northumberland, was Solicitor-General, Attorney-General and Lord Chancellor of Ireland between 1793 and 1806. His son, John Thomas Freeman-Mitford (1805-86) was created Earl of Redesdale in 1877, but the title became extinct on his death. In 1902 a diplomatist, Algernon Bertram Freeman-Mitford, was created Baron Redesdale. He wrote a volume of *Memoirs*, and died Aug. 17, 1916, when his son, David, became the 2nd baron.

Redhill Market town of Surrey. It is 21 m. from London, and is a junction on the S. Rly. It possesses a picturesque common. Redhill is part of the borough of Reigate.

Redistribution In political language the rearrangement of the constituencies that return members to the House of Commons. It is usually worked in connection with a measure extending the franchise, as was the case in the United Kingdoms in 1832, 1867, 1884 and 1918. There was, however, no redistribution after the extension of the franchise to all women in 1928. It serves to correct inequalities that have grown up in the various areas, some places having increased in population and others decreased. In some countries, Canada for instance, there is a redistribution of seats in the Dominion House of Commons after each census, according to a fixed plan.

Red Letter Days The greater festivals of the Church, which in old manuscripts were written in red to distinguish them from the lesser festivals, written in black. The term now signifies an outstanding or fortunate day.

Redmond **John Edward.** Irish politician. He was born at Hoeyfield, Co. Wexford. Sept. 1, 1856, educated at Trinity College, Dublin, and called to the bar in 1886. He represented New Ross, 1881-85. N. Wexford, 1885-91, and Waterford from 1891 until his death. He was one of the leaders of the Home Rule party, becoming chairman of the National party in 1900, and was a strong upholder of Parnell. Redmond's aim was not separation, but the attainment by friendly means of a "free Ireland within the Empire," and he expressed his abhorrence of the rebellion of April, 1916. He died March 6, 1918.

Redpoll Song-bird of the finch family, distinguished by the male's crimson crown and rosy breast. The name applies loosely to the cock linnet in summer plumage and to the mealy redpoll, *Acanthis linaria*, with white-marked wings, a winter visitor to Britain. The lesser redpoll, *A. rufescens*, darker and with unmarked wings, is resident.

Red River River of North America. Rising in N. Dakota, it flows between that state and Minnesota into Manitoba and discharges into Lake Winnipeg. A settlement formed by the Hudson Bay Company where Winnipeg now stands combined with one composed of French settlers nearby. The latter rebelled in 1869 when the territorial rights were purchased by the Canadian Government, necessitating the intervention of troops.

Another **Red River** is the southernmost large tributary of the Mississippi, joining in Louisiana.

Redruth Market town and urban district of Cornwall. It is 9 m. from Truro, and is served by the G.W. Rly. Redruth is an important centre of the tin and copper mining industries. It has also a trade in cattle. Pop. (1931) 9904.

Near the town are Carn Brea, a hill with Druidical remains and ruins of a castle, and Gwennap Pit, where John Wesley preached, is still a place for meetings of Methodists.

Red Sea Inland sea separating N.E. Africa from Arabia. It is 1460 m. in length, from Suez in the north to the Strait of Bab-el-Mandeb in the south, which connects it with the Indian Ocean. Its greatest breadth is 250 m. Navigation in the Red Sea is difficult owing to the irregularity of the tides. The completion of the Suez Canal in 1869 restored to the sea the position which it had held in ancient times as a great commercial highway.

Redshank British shore-bird (*Totanus calidris*) akin to the sandpipers, and ranging over Europe, Asia and N. Africa. Measuring 11 in., with greyish-brown plumage, whitish beneath, bright red legs and black-tipped yellow bill, it lays four blotched yellowish-grey eggs in grass-lined ground-nests. The slightly larger **spotted redshank**, with more mottled plumage, is a bird of passage in E. England.

Redstart Genus of song-birds (*Ruticilla*) of the thrush sub-family, natives of Europe, Asia and Africa. The common European *R. phoenicurus*, with white forehead and black throat, habitually flirts the tail; the male, 5¼ in. long, has a bright bay breast. It reaches Britain in March for breeding. The **black redstart** visits S. England autumnally.

Reduction Term used in metallurgy for the process by which a metal is separated from the ore. In the first stage the ore is reduced to a suitable degree of fineness by mechanical means and after washing and sorting is concentrated in a fine powder. The concentrate is then smelted by the aid of various reducing agents, in the case of oxides such as charcoal, cyanide of potassium and other substances which remove oxygen.

Redwing Small species of thrush (*Turdus iliacus*). The male, 8¼ in. long, with reddish-orange under wing-coverts and axillaries, is distinguishable from the song-thrush by a white streak over the eye. Breeding in N. Europe, it is a winter visitor to Britain.

Redwood Name applied to several unrelated trees. The California redwood, *Sequoia sempervirens*, a cone-bearing evergreen growing 130 to 340 ft. high, with a trunk 8 to 25 ft. across, clear of branches ⅓ to ½ its height, yields light durable timber extensively used in Europe. Baltic redwood is the Scots pine. There are also Andanan, Cape and Indian redwoods.

Reed Name of various tall perennial water-loving grasses. The widely-distributed common broad-leaved reed, *Phragmites communis*, 6 to 10 ft. high, abounds in Britain. The Provence reed or Spanish cane, *Arundo donax*, sometimes 18 ft. high, is used for bagpipes and other wind instruments. The sea-reed or marram grass, *Ammophila arenaria*, is extensively planted for binding sand-dunes.

Reed Speaking part (made of coarse cane-like grass) in the mouthpiece of wood-wind instruments, saxophones and in harmoniums. Organ reeds are made of metal.

A **"free" reed,** when vibrating, passes through the slotted plate to which it is fixed, enabling the wind so to push it that the opening closes. The harmonium has a free reed.

A **"beating" reed** strikes the edges of the slot. Beating reeds can be single or double.

Reedbuck Boer name, *rietbok*, for several allied African antelopes, especially *Cervicapra arundinea*. Standing 3 ft. high at the shoulders, short-tailed, pale-fawn, orange-tinted on the head, and dingy-white underneath, the male alone bears upright horns 12 to 13 in. long, and curving slightly forwards. Formerly common, it is now rare S. of the Vaal, and extinct in Bechuanaland.

Reel Scottish dance. It is danced by couples to the music of the bagpipe or the fiddle. It may be a foursome, a sixsome or eightsome, according to the number of couples in the dance.

Reeves **John Sims.** English vocalist. He was born at Woolwich on Sept. 26, 1818. His first musical performances were given in boyhood on the organ, and he made his *début* in opera in 1839 as a baritone soloist. It was, however, as a tenor that he achieved fame owing to a voice of surpassing strength and beauty, and at the age of 30 he was recognised as the leading English tenor. He died on Oct. 25, 1900.

Refectory Architectural term for the common dining hall in a monastery. It was usually placed on the ground floor or sometimes raised on vaulted cellars or even as a detached building. During the meals one of the brethren read aloud from a lectern supported by corbels on one of the side walls.

Referee Arbitrator or judge. The term is used generally for the men who control games at football, boxing matches and other sporting events. In football the referee is usually chosen from a list of old and experienced players, and has no connection with either of the clubs playing. He is paid a fee.

Referees of another kind are lawyers appointed to discharge certain duties in the law courts. The Supreme Court in London possesses three official referees and there are referees to decide matters that arise under the Finance Acts, 1915-27.

Referendum Method in politics by which the people decide in favour of or against a certain proposal. It has long been used in Switzerland and in the states and cities of the United States, but never as yet in Great Britain. It has been used in Australia on several occasions, and there is provision for it in the constitution of the republic of Austria. Several countries, among them Finland, have decided the question of prohibition by a referendum. Since the Great War the referendum has been used in Germany. In 1926 a referendum decided that the property of the former reigning princes should not be confiscated, and in Aug., 1931, another supported the Government in the measures taken against the followers of Adolf Hitler, but the referendum of Nov., 1933, approved the policy of the Nazi government, and that of Aug., 1934, confirmed Hitler's unifying in his own person the offices of President and Chancellor of the Reich after Hindenburg's death. The Saar plebiscite or referendum, Jan., 1935, showed a 90.36 per cent. vote in favour of return to Germany, and in Nov., 1935, the Greeks expressed by plebiscite their desire to return to monarchy.

Refinery Name given to a place where the process of refining or purifying such things as metals, oils, sugar, etc., is carried on. The refining process naturally varies with the character of the product; in a petroleum refinery the process involves fractional distillation by which hydrocarbons such as motor spirits, lubricating and lighting oils, etc., are obtained. In metal refineries the crude metal is purified by furnace methods or electrolysis, and in sugar refining the colour is removed by animal charcoal or other methods.

Reflation Term used during the economic crisis of 1931-32 as an alternative to inflation, or an increase in the amount of currency in existence. It is defined by Sir Arthur Salter as the "raising of the general level of wholesale prices by concerted monetary action, to a selected level, not higher than that of the beginning of the world depression in 1929 and its maintenance at this level hereafter."

Reflection Term applied in optics to the change of direction when a ray of light strikes a surface and is thrown back or reflected in a new path. The degree of reflection varies with the nature of the surface. A smooth, polished surface, as in a mirror, reflects nearly all the light, a perfectly reflecting surface being invisible.

Reform Improvement, literally reforming, used chiefly in political life. More especially it is applied to the alteration in the United Kingdom of the method of sending members to the House of Commons. The act of 1832, which abolished the rotten boroughs and gave votes to householders on a uniform plan, is known as the great **Reform Act**. In 1932 its centenary was celebrated. Other measures on the same lines were passed in 1867, 1884, 1918 and 1928, when all men and women over 21 received the right to vote. Reform is also used for the proposals to alter the constitution of the House of Lords.

Reformation **The.** Religious and political movement in Europe in the 16th century, which ended in the establishment of the Protestant Churches. Its causes are to be found in the abuses prevalent in the Roman Catholic Church during the previous centuries, the new critical spirit, fostered by the Renaissance, and the growing force of nationalistic feeling. In 1517, Martin Luther nailed to the church-door at Wittenberg his famous ninety-five theses, in which he attacked the sale of indulgences. He followed this by a stout resistance to the attempts made by the Pope to suppress him, and was excommunicated in 1520. His followers received the name of "Protestant" from their protest made at the Diet of Spires against a decree which enacted that no change should be made in Church practice and doctrine.

Not all the early Protestants, however, were Lutherans. In Switzerland, Zwingli and Calvin were the leaders of an independent movement, which spread rapidly in France, the Netherlands and (through the influence of John Knox) in Scotland. The name **Reformed Churches** was given to the bodies established as a result of the Calvinistic teaching, including the Huguenots in France and the Presbyterian Church in Scotland.

The **Counter-Reformation** was the attempt of the Roman Catholic Church to reform itself in the 16th century and to stem the flow of Protestantism, for which purpose the Papacy summoned the famous Council of Trent.

Reformatory Schools

Schools in Great Britain "for the industrial training of youthful offenders" (Children's Act, 1908). These institutions are subject to periodical inspection by the Children's Branch of the Home Office, and are supported mainly, but not entirely, from public funds. Only boys and girls between the ages of 12 and 16 may be received in such schools, and that after a recorded conviction, and for a period of detention lasting from 3 to 5 years.

Reformed Episcopal Church

Religious denomination. It originated in New York in 1873 when Bishop Cummins seceded from the Episcopal Church of America and consecrated other bishops to act with him. This body has a small following in England (generally known as the *Free Church of England*) and preserves the principle of episcopacy without some of the doctrines and practices which have generally been associated with it in church tradition.

Refraction Term in optics applied to the change in direction when a ray of light passes from one medium to another, becoming bent or refracted out of its rectilinear path into a new one.

Refrigeration Process of applying cold for the preservation of foods. The simplest method is the use of a freezing mixture of ice and salt, but on a larger scale several types of refrigerating machines are used. In one type refrigeration is obtained by alternately expanding and compressing air, in another a medium such as ammonia is subjected to a cycle of expansion and compression, heat being absorbed from surrounding objects. In still another type a liquid such as carbonic acid or sulphurous acid is vaporised and then mechanically compressed again into liquid form. Refrigerating plant is used extensively for perishable products

Regalia Emblems of sovereignty. They consist of the crown, sceptre, orb and other articles used at a coronation. The British regalia, in which are some priceless jewels, is kept in the Tower of London.

Regatta Name for a meeting where races are held for yachts, rowing boats and other craft. Regattas are held at many watering places. In England the chief meetings are the regatta at Henley, the great event of the rowing season, and the yachting week at Cowes. *See* HENLEY-ON-THAMES.

Regeneration Power of renewing lost limbs or organs. It is possessed by animals of the lower orders. Thus the Hydra can regrow lost tentacles, etc., and a whole animal may even grow from a morsel of tissue. The annelids (earthworms), crustaceans (crab), fish, and lizards are able to recreate lost parts in a varying degree. In the higher animals the power is manifested only as that process which replaces lost tissue when a wound heals.

Regeneration Theological term denoting the spiritual change which all experience in becoming Christians. The necessity for it, declared by our Lord to Nicodemus (John iii.) is universally admitted by the Christian Church. Protestant evangelical theologians hold that it is a conscious experience independent of any act or ceremony, attending the incident of conversion. The Roman Catholic position regards baptism as the real point of transition from the natural to the spiritual life, conferring the grace of baptismal regeneration.

Regent One who rules on behalf of a sovereign. When a sovereign is a minor, or is insane or in any other way incapable of ruling, it is usual to appoint a regent to act for him. This was the case in England during the latter part of the reign of George III., when his eldest son, afterwards George IV., was made regent. His powers were defined by Act of Parliament.

In Spain there was a regent, the Queen Mother, during the long minority of the ex-King Alphonso XIII., and in Bavaria there was a regent when King Louis was insane. Prince Paul of Yugoslavia has acted as First Regent on behalf of the young King Peter II., whose father, King Alexander I., was assassinated at Marseilles in Oct., 1934.

Regent's Park Park in London; also the name of the district around it. It is to the north-west of the city in the borough of Marylebone and contains the zoological and botanic gardens. It was laid out in 1812 and named after the Prince Regent (George IV.). The garden was opened to the public in 1838. It covers 473 acres.

Regent Street London thoroughfare. It reaches from Waterloo Place to Langham Place, crossing other important thoroughfares at Piccadilly Circus and Oxford Circus. It was built between 1813 and 1820 and was named after George IV., then Prince Regent. The Quadrant and most of the buildings were designed by John Nash, and it became a great shopping centre. In 1919 the leases, which were crown property, began to fall in, and the shops were rebuilt during the next few years. In June, 1927, the street was formally opened by King George V.

Regillus Small lake in Italy, now drained. It lay to the east of Rome. It is famous because near here, in 496 B.C., the Latins were defeated in battle by the Romans. The story of the battle, used by Macaulay in one of his *Lays of Ancient Rome*, tells how Castor and Pollux, riding on white horses, came to the aid of the Romans and turned the fight in their favour.

Regiment Body of soldiers. Every army is divided into regiments, but the nature of these differ. In the British army the regiment of infantry is not a fighting unit; it is an organisation consisting of several battalions with a colonel and a depôt for them all. Before the reforms of 1871 the regiment of infantry was a fighting unit; the regiments were numbered according to the order in which they were raised and were called regiments of the line. In the cavalry the regiment is still the fighting unit. The artillery is organised into one regiment the Royal Regiment of Artillery. Each regiment has its colours, but these are no longer carried into action.

Regina City of Canada and the capital of the province of Saskatchewan. It is 360 m. from Winnipeg and is served by both the trans-continental lines, C.P.R. and C.N.R. The city has an enormous trade in wheat and the manufactures include agricultural implements. In 1932 a world's grain exhibition was held here. Before 1910 Regina was the capital of the North-West Provinces and the headquarters of the North-West Mounted Police. Pop. (1931) 53,209.

Registrar Any one who keeps a record. In Great Britain there is in every locality a registrar to whom particulars of births, marriages and deaths must be given, and by whom marriages can be celebrated. This work is supervised by the **registrar-general** at Somerset House, London, who is responsible for the census. There is a registrar-general for Scotland in Edinburgh. There are registrars in the law courts and other registrars are responsible for keeping the names and addresses of the shareholders in public companies.

Registration Act of registering or entering in a register. It is used for the official entries in books kept by a registrar of births, marriages and deaths, and also for recording a great variety of other information for the public use. It is also used for the act of insuring, by paying an extra fee, the safe delivery of letters, articles and luggage. Letters and postal packages can be registered at any post office.

Registration is used also in printing where it means the exact adjustment or correspondence of two pages of printed matter, or in colour photography the correct impression and combination of the various tones. It is used in music for the act of combining the stops of an organ and in photography for making the focusing screen correspond with the plate or film.

Regulator Device for regulating the working of various indus-

trial processes or machinery, either in relation to proper conditions of temperature, humidity, speed, pressure, etc., or voltage, density of current, etc., in electrical apparatus, timing of operations, or of steam pressure in engines. Many different types of regulators are used, some being self-operated, others worked by air, steam or electricity. Examples are the timing devices used in dyeing and vulcanising, rheostats and tachometers, and flow-meters.

Regulus Marcus Atilius. Roman general. Victorious over the Carthaginians several times, he was defeated by them in 255 B.C., and held in captivity five years. In 250 B.C., according to tradition, the Carthaginians sent Regulus, under parole to sue for peace. He strongly advised the Senate to reject their proposals, and resisting all efforts to make him break his promise to return, went back to Carthage, where he was put to death.

Rehoboam King of Judah, 10th century, B.C. Son of Solomon, his accession occasioned a revolt of the N. tribes and their separation as the kingdom of Israel under Jeroboam (*q.v.*). Reigning 17 years, he fortified 15 towns in Judah against the Egyptian King Shishak, who destroyed them and despoiled Jerusalem.

Reichstag Name used for one of the houses of the legislature of the federal republic of Germany. It means "the day of the empire," and was used for the assemblies or diets called together by the rulers of the empire that lasted until 1806. In 1870 the name was given to the elected assembly established in Berlin for the new German Empire, and it was retained in 1919 by the republic. In 1933 its members numbered 647; they are elected by all men and women for four years. Early in 1933 the building was burned, and later in the year the supposed incendiaries were tried in Berlin.

Reigate Borough of Surrey. It is 23 m. from London, on the S. Rly. From 1295 to 1867 Reigate was separately represented in Parliament. It has an agricultural trade and is a residential district for Londoners. Redhill is part of the borough. Pop. (1931) 30,830.

Reign of Terror Phrase used for the culminating period of the French Revolution. It began in July, 1793, when the Jacobins formed the committee of public safety. Hundreds of persons, including Marie Antoinette and many aristocrats, were sent to the guillotine. The leaders then turned upon one another, and Danton and Robespierre were put to death. The latter event took place on July 28, 1794, which may be regarded as the end of the Reign of Terror. It was replaced by the Directory.

Reincarnation Belief that the soul returns to human life after death. This theory had been held in many parts of the world and is a cardinal tenet of modern theosophy. Pythagoras enjoined abstinence from flesh diet, on the ground that all living things were akin. Plato taught that birth was not the creation of a soul, only its transgression from one body to another.

Reindeer Sole species of deer antlered in both sexes (*Cervus* or *Rangifer tarandus*). Standing 4 ft. high at the shoulders, swift-footed, it is brownish-grey, with whitish face and neck; the antlers are more or less palmated. The European form, which reached to the Pyrenees in the early stone age, has long been domesticated, especially by the Lapps, large herds being maintained for their milk, flesh and hides. The untamed form inhabiting Canada is called the caribou (*q.v.*).

Reindeer Moss (*Cladonia rangiferina*). Widespread species of lichen, native of Britain and especially abundant in high latitudes. Comprising an intermingled mass of much-branched tubular structures, 2 to 12 in. high, it covers barren plains in Lapland and elsewhere, being the reindeer's winter food.

Reinhardt Max. Famous Austrian theatrical producer. He was born near Vienna, Sept. 9, 1873, making his first stage appearance in Salzburg in 1893. The next year he was appointed to the Berlin *Deutsches Theater*. During his connection with this and other theatres he has practically revolutionised stage presentation, making it essentially dramatic rather than literary. He has produced many plays in different European cities, and some striking ones in New York. In London he produced *Sumurun* and *The Miracle*, Offenbach's *Helen of Troy* and *King Oedipus*, and in 1933 at Oxford, *A Midsummer Night's Dream* (out-of-doors). In 1920 he started the famous Salzburg Festivals and every year produced *Everyman* there. But in April, 1933, a ban was placed upon him in Germany, and the Schauspielhaus which he had constructed was closed.

Relapsing Fever Acute infectious fever due to a specific micro-organism. Also called seven-day fever, it has prevailed at intervals since the mid-18th century in Britain, Central Europe, Russia and the Levant, destitution and overcrowding being predisposing causes. It manifests varying symptoms in India, China, Africa—sometimes called there tic fever—and the Panama-Colombia region of tropical America. After developing for several days it subsides spontaneously with profound perspiration, but tends to recur.

Relativity Mathematical theory of the universe first put forward by Einstein in 1905. In it he postulated first, that absolute motion has no observable effect upon physical phenomena, or in other words, that all physical phenomena are so constituted that it is not possible to observe by their means absolute motion; and second, that the rate of travel of light is the same in all directions at a given place, and its value is constant for all places in the universe, no matter what may be the relative movements of the earth or other system of reference involved. The experimental research of Michelson, and the speculations of Fitzgerald and Lorentz paved the way for Einstein's investigations. In the theory of relativity the ideas of force and the action of one body upon another are rejected and inertia and gravitation are shown to be equivalents of one another.

Relievo Term in art derived from the Italian and used for a modelled surface as distinct from sculpture in the round, for decorating walls and other flat surfaces in buildings. When the object is in low relief or less than half its natural projection, the term *basso relievo* is used; in middle relief it is termed *mezzo relievo*; and when more than half its natural projection, *alto relievo*. An example of relievo work is seen in the Baptistery gates at Florence.

Religion No completely satisfactory definition of religion has yet been offered. Lueba, in his *Psychological Study*

of Religion, discusses no less than forty-eight different definitions. The term, however, may be said to indicate an attitude of reverence to the Supreme Being, together with the resulting system of behaviour (including worship).

It seems probable that man's religion began in nature worship. To primitive man the world contained many objects, which, because they appeared to possess mysterious powers, he believed to be inhabited by spirits. Hence he came to think of his world as full of deities needing to be propitiated by worship and sacrifice. Thus polytheism arose, particular tribes choosing deities regarded as specially favourable to them. In the higher forms of polytheism (*e.g.*, Brahmanism) the many gods came to be regarded as so many impersonations of the attributes belonging to the one God; but polytheism was not finally transcended until Judaism, followed by Islam and Christianity, arrived at a faith in which monotheism was absolutely fundamental.

Remainder Legal term for a bequest of land or other real property to a person after the death of another. It was very usual before 1925, but since the legislation of that year land can only be bequeathed like other forms of property. The same end can be secured, but by different means.

Rembrandt **Rembrandt Harmensz van Rijn.** Dutch painter. He was born at Leyden on July 15, 1606, studied painting from an early age, and began as an etcher. In 1631 he settled in Amsterdam, and devoted himself to his work with great diligence. His output was enormous, and there remain still about 600 paintings, 2000 drawings, and 300 etchings. These include landscape work and portrait studies, of which his studies of old age are particularly noteworthy.

He was the leader of the reaction against Italian influence in the Dutch school, and strove to replace artificial classicism with colourful paintings from nature. He combines in his work a noticeable power with a peculiarly delicate skill. He died on Oct 4, 1669.

Remembrancer Public official. In England the **King's Remembrancer** is a high official in the law courts, the office being held by the senior Master of the Supreme Court. In Scotland he is a high official of the Court of Session. The City of London has also a Remembrancer, who is one of the chief officials of the corporation.

Remington **Philo.** American inventor. Born in Lichfield, New York, Oct. 31, 1816, he achieved fame as the inventor of the first typewriter, and also of a breech-loading rifle. He died on April 4, 1889.

Remus Brother of Romulus (*q.v.*), with whom he is fabled to have founded Rome, and by whom he was slain.

Renaissance **The.** Revival of art and letters in Europe during the 15th and 16th centuries. In 1453 Constantinople was captured by the Ottoman Turks. Their advance accelerated the migration to Italy of Greek scholars, who brought with them their knowledge of the Greek language and gave a strong impetus to the new learning. The literature of ancient Greece and Rome was studied with great ardour, and the search for old manuscripts was pursued by prince as well as scholar. The movement was aided by the invention of printing by John Gutenberg of Mainz in 1438. In England the Renaissance was associated especially with the names of Sir Thomas More, John Colet, and Erasmus.

Renan **Ernest.** French historian and philologist. He was born in Brittany on Feb. 27, 1823. Educated originally entirely under clerical influence, with a view to entering the church, he was forced to abandon traditional Christianity as the result of his study of Hebrew and of German criticism. His *Vie de Jesus*, the first of a series of studies on the origins of Christianity made him famous throughout Europe. Among his other numerous works are studies of S. Paul and Marcus Aurelius, and a history of the people of Israel. He died on Oct. 2, 1892.

Renfrew Burgh and seaport of Renfrewshire. It is on the Clyde, 5 m. from Glasgow, and is served by the L.M.S. Rly. Renfrew is a shipbuilding centre and has docks. There are also engineering works and other industries. There is an aerodrome at Moorpark. Pop. (1931) 14,986.

Renfrewshire County of Scotland. In the south-west of the country, it is quite small, being only 240 sq. m. in extent. The Clyde cuts it into two unequal parts. Renfrew is the county town but much of the county business is done at Paisley. The southern and western parts are agricultural districts, but in the north are Paisley, Greenock, Port Glasgow, and parts of Glasgow, There are hills in the south; the rivers are tributaries of the Clyde. Pop. (1931) 288,575.

Reni **Guido.** Italian painter. Born at Calvenzano, near Bologna, on Nov. 5, 1575, after studying with Ludovico Carraci, he went to Rome in 1599 and again in 1605. He painted there his famous "Aurora and the Hours." He returned to Bologna after a quarrel with the papal authorities and died there on August 8, 1642. He was famous also as an etcher, and is noted particularly for his colour and expression, and the accuracy of his drawing.

Rennes City of France. It is the capital of the department of Ille-et-Vilaine and the ancient capital of the Duchy of Brittany. The town was burnt down in 1720 and rebuilt in the style of the period in grey granite. The most distinguished building is the Palais de Justice which was completed in 1654 as the seat of the parliament of Brittany. It has a broadcasting station (272 M., 1.3 kW.). Pop. (1931) 88,659.

Rennet Substance contained in the membranous lining of an unweaned calf's fourth stomach. It is used for curdling milk, especially in cheesemaking. It comprises gastric juices including a ferment, rennin, which affects the coagulation. It is used by softening the salted lining or vell and adding portions to the milk, or in the form of an extract.

Rennie **John.** Scottish engineer. Born June 7, 1761, he achieved fame as a bridge builder, designing among others the Southwark, Waterloo and London Bridges, and also docks at London, Liverpool, Dublin, Greenock and Hull. As a harbour designer he did notable work in the ports of the south coast, including the breakwater at Plymouth. He died Oct. 4, 1821.

Rent Payment made for the use of land or buildings, made by the tenant to the landlord, weekly, monthly, quarterly or as arranged. Arrears of rent are recoverable by process of law, but the landlord cannot now, as he could before 1914, distrain without

applying to the court for permission to do so. A payer of rent is entitled to deduct the income, or property, tax paid by him from the amount handed over to the landlord.

In theory rent is fixed by an economic law. It is the amount which one will pay for land that is of greater value than no-rent land as it is called. The net value of the crop produced on such land over the value of that produced on no-rent land will be paid by the tenant for its use because the land is worth that much and no more to him. The same principle is true of site values. A man will pay for a site in Regent Street, London, the amount by which that site exceeds, in productive value to him, a site in the country.

This theory, however, needs qualification. As regards agricultural land, capital has been put into it in buildings, drainage, etc., so that rent is for the most part interest on capital. The rent paid for sites of great value because they are in populous centres is another question and there is some justification for treating these in an exceptional way in matters of taxation.

RENT RESTRICTION. In 1915, to deal with the changed conditions due to the Great War, it became desirable to restrict the power of landlords to raise rent, as the serious shortage of houses would have enabled them to do this to a very considerable extent. At first only temporary, the restriction has been continued by a series of Acts of Parliament, culminating in the Act of 1920.

The Acts apply to dwelling houses built on or before April 21, 1919, where the standard rent does not exceed £105 in London, £90 in Scotland, and £78 elsewhere. House in this sense does not include any part of a dwelling house let off separately, or furnished houses or rooms. The standard rent is that which was paid in August, 1914.

Where a house comes under the Act, the landlord can increase the standard rent by 40 per cent. if he does all the repairs. He can also increase it to recover any amount which he has paid in increased rates. If the tenancy of a house comes to an end the landlord can have the house decontrolled, and can then charge for it any rent he can get, as can the landlords of houses built since 1919.

In 1931 a committee reported upon the subject of rent restriction, advising that it should be discontinued for the larger houses, but continued for the smaller ones. The Rent Restrictions Regulations, 1933, simplified the form scheduled to the 1920 Act, making clear conditions of possession and decontrol.

Rentes Name given in France and Italy to part of the public debt. *Rentes* are the equivalent of consols in Great Britain, being issued to investors and then bought and sold on the stock exchanges.

Rentier One who receives a fixed income on investments in government and other securities. In 1930-32 much was heard of the *rentier* who was said to be in a very favoured position, because while prices and many incomes had fallen, his own income had remained stationary and was, therefore, in terms of commodities, larger than before.

Renton Town of Dumbartonshire. It is 2 m. N. of Dumbarton, and 16 m. from Glasgow by the L.M.S. Rly. Situated on the Leven, the town has cotton industries. Here Smollett, the novelist, was born.

Repairs In connection with property, making good damage due to wear and tear. The duty of keeping a house in repair falls, by English law, on the landlord in the case of small houses, which are defined as those worth not more than £40 a year in London, £26 a year in larger boroughs and urban districts, and £16 elsewhere. In other cases repairs are a matter of contract. To take a house on a repairing lease is to undertake to keep it in good repair and to leave it, at the end of the tenancy, in as good condition as it was when taken.

Reparations Term used especially for the payments made in money and kind by Germany as compensation for the damage done by her troops during the Great War. The principle that reparations must be paid was laid down in the Treaty of Versailles, and a commission appointed to fix the amount. Various sums were suggested, and in 1921, at a conference held in London, the amount was fixed at £6,600,000,000 to be paid over a period of years. A payment was made, but the scheme soon proved impossible, and a moratorium was granted to Germany.

In 1923 a committee was appointed to inquire into the subject and a plan, called the Dawes Plan, was agreed upon. This provided for the payment by Germany of certain sums to France, Great Britain, Italy and Belgium, but the total amount was not fixed. Under this plan payments were regularly made until 1928, when it broke down. Another committee then inquired into the matter and the Young Plan was evolved. By this the total sum payable was fixed and Germany was to pay it in annuities ending in 1988. The economic and financial paralysis of 1930-32 made this plan inoperative, and in June, 1931, a moratorium of one year was granted to Germany. Before the end of this period Germany stated that she was unable to meet her liabilities in connection with reparations, and in June, 1932, a European conference met at Lausanne to effect, if possible, a permanent settlement. This decided to abolish reparations, provided a settlement about war debts was reached. In return, Germany undertook to contribute £150,000,000 towards European reconstruction.

REPARATIONS PAYMENTS. The following figures are extracted from a return published in June, 1932 :

RECEIPTS OF REPARATIONS

	Paid by Germany	Paid by Other Countries	War Debt Received
United States ..	£16,700,000	— ..	£434,400,000
Great Britain .	121,000,000	£200,000 ..	71,300,000
France .. .	273,000,000	300,000 ..	500,000
Italy	58,700,000	1,400,000 ..	100,000
Belgium . ..	126,200,000	100,000 ..	—
Yugoslavia ..	34,200,000	2,300,000 ..	—
Rumania ..	5,500,000	200,000 ..	—
Portugal ..	4,000,000	10,000 ..	—
Greece	2,100,000	1,000,000 ..	—
Japan	4,000,000	10,000 ..	—

PAYMENTS OF WAR DEBTS

Great Britain	£326,200,000	Yugoslavia	£1,500,000
France	109,400,000	Rumania	1,800,000
Italy	31,300,000	Portugal	1,500,000
Belgium	7,200,000	Greece	1,700,000

Repertory Theatre Theatre in which a semi-permanent company gives a repertoire of plays. The term is more widely used in England to denote a theatre in which a resident company gives a new play at frequent intervals. The most famous repertory theatre was Miss Horniman's Company at the Manchester Gaiety Theatre, from 1907-16. The oldest existing one is at Liverpool, which has produced many new plays by English and Continental authors.

There is also a famous one at Birmingham, under Sir Barry Jackson, and others on a non-commercial basis in different parts of the country. Among the most famous is the Abbey Theatre, Dublin.

Reporter Journalist who makes reports of meetings, etc., for newspapers. Every paper has its staff of reporters, who work under the news editor, and attend meetings of all kinds to report speeches. A knowledge of shorthand is essential. Cases in the law court are also taken down by reporters or shorthand writers. There is an official staff for reporting the debates in the House of Commons; formerly it was done by the firm of Hansard. *See* JOURNALISM.

Repoussé Form of metalwork. It consists of a raised pattern produced by hammering on the reverse side. Many brass articles are ornamented in this way; it is also used for silver.

Representation In politics to take the place of other persons. The word also means to reproduce, describe or bring to the mind. To-day all civilised countries possess representative institutions, as they are called. Under this system the people, unable, owing to their numbers, to rule themselves directly, elect certain persons to do this for them. These representatives are responsible to those who elect them because the latter can refuse to re-elect them at the end of their term of office.

The system arose in England in the Middle Ages, when districts were asked to send men to the county courts for a particular purpose, *e.g.* to state who owned certain land, or who had committed a certain crime. These men were chosen by their fellows and were therefore representatives. From this local representation developed the central representative assembly of Parliament (*q.v.*). In time other countries followed the example of England until representative government has become the rule. Since the Great War, however, there has been a movement away from it and neither the Fascism of Italy, nor the Soviet system of Russia can properly be called representative.

Representatives **House of.** Name of the lower house of Congress of the United States and of the Parliament of the Commonwealth of Australia. The former consists of 435 members, elected for four years and paid salaries, as well as two delegates and three commissioners from territories outside the United States. Its president is the Speaker. All legislation needs its assent, but it differs from the House of Commons in that no minister can sit and vote therein. They can attend and speak.

The Australian House consists of (1932) 76 members who are paid salaries and elected for three years, or less. It is under a Speaker and resembles the British House of Commons. In both the United States and Australia there are arrangements for increasing or decreasing the number of members from the several states according to changes in population.

Repression Term used in psycho-analysis to describe instinctive tendencies and memories which are repressed into the unconscious mind. Though repressed, they remain active and may express themselves indirectly in conduct as neurotic symptoms. *See* INHIBITION, UNCONSCIOUS, SUBCONSCIOUS.

Reprieve Release or respite, but more strictly the suspension of a sentence of death. In Great Britain a person sentenced to death can be reprieved by the king acting on the advice of the Home Secretary, and this is sometimes done.

Reprisals Retaliation, especially *in* time of war. There were cases of reprisals during the Great War especially in connection with the bombing of towns from the air and the treatment of prisoners of war.

Reproduction Process of propagation. It may be asexual or sexual. In protozoa new individuals arise by fission of the adult cell or by budding. In the lower metazoa (multicelled animals) these asexual processes serve also, but in the great majority of the metazoa the sexual form is the rule. The gametes (sperm cell and ova) conjugate and a new cell is formed which becomes the embryo, undergoing in turn segmentation, gastrulation, and thereafter the gradual growth of differentiated tissues and organs within the egg envelope, or safely enclosed within the body of the female parent. Some organisms are hermaphrodite, and in others parthenogenesis—development from egg-cells without fertilisation by the male—may occur. In yet other creatures sexual and parthenogenetic generations may alternate. *See* EGG, EMBRYOLOGY.

Reptile Class of vertebrate animals ranking above amphibia and fishes but below birds and mammals. All bear epidermal layers of scales, often shed and replaced. They are cold-blooded with three-chambered hearts, breathe by lungs, never by gills, and bear eggs, sometimes hatched within the mother's body. Except some herb-eating tortoises, all are flesh-eating. Five orders exist; lizards, snakes, crocodiles, tortoises and one, formerly important, now represented solely by the iguana-like tuatera of New Zealand. Five other orders, which flourished in the mesozoic age, containing the giants of the class, are extinct. Known only from their fossil remains, they include dinosaurs, ichthyosaurs, plesiosaurs and pterodactyls.

Repton Village of Derbyshire. It is 5 m. from Burton-on-Trent, on the L.M.S. Rly., and was once the chief town of the kingdom of Mercia. The church is partly Saxon.

Repton School dates from 1557, its founder being Sir John Port. It has accommodation for about 500 boys.

Republic State in which there is no hereditary sovereign, the opposite of a monarchy. Most of the Greek states were republics and Rome, before the time of Augustus, was a great republic. Republics were rare from that date until the revolt of the American colonies and the French Revolution, Venice and the United Provinces of the Netherlands being the exceptions. France was a republic for a short time after the deposition of Louis XVI. and again in 1848. The present republic dates from 1871.

In the 19th century several republics came into being, especially in Europe and S. America, and there were a number of new ones after the Great War, including Germany, Austria, Turkey and in a sense Russia. Spain was added to the number in 1931. The method of government in a modern republic is very like that in a monarchy, except that a president is elected for a certain period, usually four or seven years.

Republican One who believes in a republic, but more exactly a member of one of the two great political

parties in the United States, the other being the Democrats. The party is descended from the anti-federalists of Washington s time, and since the Civil War has been dominant except for a few years. Nearly all the presidents since Lincoln have belonged to the Republican party, Woodrow Wilson and Franklin D. Roosevelt being exceptions. Harding, Coolidge and Hoover have all been Republicans. The party is strong among the business men and in the north ; it stands for high protection and an extension of the power of the National Government.

Requiem In the Roman Catholic Church a mass sung for the repose of the soul of a dead person. It is also the name of a musical composition in honour of the dead which is played at funerals and similar services.

Reredos Screen at the back of an altar in a cathedral or church. Some are of stone adorned with statues and carving ; others are of wood with paintings thereon. There are some magnificent examples in English cathedrals : *e.g.*, at Winchester.

Research **Industrial.** Scientific study of manufacturing and raw material problems in industry. Processes used for ages in industries became the subject of special study only within recent times. Research is now carried out by manufacturers and associations and by governments. In Great Britain the Department of Industrial Research controls the geological survey and the National Physical Laboratory, and conducts investigations in building, chemistry, food, forest products, fuel, radio and water pollution.

Reservation In ecclesiastical usage the practice of keeping the elements that have been consecrated at the Mass or Eucharist for future use. In the Roman Catholic Church these elements, having become the body and blood of Christ, called the Host, are kept where worship can be paid to them.

The prayer book of the Church of England allows the reservation of the elements in order that the sacrament can be administered without delay to the sick and dying, but forbids their worship or adoration. Nevertheless, the custom of reserving the elements where they can be worshipped is practised by many of the High Church clergy. The difficulty of reconciling the conflicting ideas on reservation was one of the chief reasons why the revised Prayer Book was rejected by the House of Commons in 1928-29. The compromise suggested by the bishops allowed reservation but forbade adoration.

Reservoir Structure or enclosure for storing water in large quantities for supplying towns, etc. In some cases a natural lake or an artificial one made by damming a stream is used to store the surface waters over a large area. Another type of storage reservoir is constructed by damming a valley, or it may be entirely artificial, the water being conveyed by an aqueduct or pumped in from a river.

Resident In a special sense the representative of a country in a foreign land. The term is confined to men sent to represent their country in a state that is under its protection. Thus the Government of India has residents in the capitals of the native states.

Resin Substance which occurs as an exudation from some plants. It appears in globules, which become hard when exposed to air. Resins are insoluble in water, but soluble in alcohol, and some oils, and are very inflammable. The soft resins are malleable and are used in medicine as an ointment ingredient, while the hard resins are used chiefly as varnishes, such as mastic, copal and sandarac.

Resistance Term in electricity for the measure of the opposition of a conductor to the passage of an electric current, the practical unit being the ohm (*q.v.*). All substances offer some resistance to a current, but the amount varies with the nature of the material, its length and cross-section. Metals offer little resistance and copper the least, hence its use as a conductor. With an increase of temperature there is an increased resistance.

Resolution Formal proposal put before a meeting of any kind. It is usual for a resolution to be proposed and seconded, and then discussed and voted upon. Any alteration in it must be begun by proposing and seconding an amendment. If this is accepted the resolution may be altered to include the amendment, and then either accepted or rejected The House of Commons does some of its business by resolutions. Taxes and duties are put before the House as resolutions before they are included in the Finance Act.

Resonance Sympathetic vibrations of two or more objects, due to the coincidence of their vibratory periods. A common example is the greatly increased vibration of some swing bridges, due to the tramp of marching troops. The order is usually given to " break step."

Respiration Process in both plants and animals by which oxygen is absorbed into the body and some of the products of combustion, viz., carbonic acid and water, are removed In unicellular organisms oxygen is absorbed over the general surface, but in the more complex animal types special respiratory organs appear. In aquatic forms such as fishes respiration takes place through the gills, but in the land animals by means of lungs and the air passages from the mouth.

Rest Harrow Low growing perennial shrub (*Ononio spinosa*), of the leguminous order. Sometimes of creeping growth, sometimes more erect, the taller growth is spiky, the lower covered with viscid hairs. The toughness of the rootstock, both on and beneath the ground, is so great that it is said to arrest the harrow when clearing the ground, so giving rise to its popular name.

Restigouche River of New Brunswick It rises in the W. of the province and flows mainly E. until it falls into Chaleur Bay. It is 225 m. long and during part of its course forms the boundary between Quebec and New Brunswick. It is famous for its salmon fishing.

Restoration Act of restoring. It is used specially for the restoration of a sovereign, or his successor, to a throne. The most notable instance in English history was the return of Charles II. in 1660, which is called **The Restoration.** Other famous restorations were those of the Bourbons in 1814 and again in 1815.

Resurrection Rising again of the body and its reunion with the soul. Very few traces of this Christian belief are to be found in the Old Testament.

It appears to have developed during the period "between the testaments," probably owing to the Persian influences of the Exile. By New Testament times the doctrine had been accepted by the Pharisees in opposition to the Sadducees. The Christian belief in the Resurrection is based on the rising of Jesus from the tomb, and His appearances to the disciples. *See* IMMORTALITY.

Resurrection Men Popular term in England between 1760 and 1835, used to denote a class of men who drove a flourishing trade by exhuming newly-buried corpses and selling them to the medical schools for dissection. The practice is referred to by Dickens in his *Tale of Two Cities*.

Reszke Jean de. Polish singer. Born in Warsaw, Jan. 14, 1850, he was educated at the university there. He studied in Italy and soon made his first appearance in opera. He appeared in London in 1875 and regularly from 1888 to 1900. Beginning as a baritone, he became a tenor and was regarded as one of the finest tenor singers in the world until his retirement in 1914. He died on April 3, 1925.

His brother, **Edouard de Reszke,** was born at Warsaw, 1855. He became a famous bass, and appeared at Covent Garden with his brother from 1888 to 1900. In later life he taught singing. He died May 29, 1917.

Retaining Wall Term in civil engineering applied to a wall which supports a bank or terrace, preventing horizontal movement of the material. Retaining walls are employed for supporting embankments, quays, canal banks, reservoirs, weirs, mountain roads, etc., their form and construction varying greatly with the character of the forces brought to bear upon them.

Retford East. Borough and market town of Nottinghamshire, on the Idle, 138 m. from London, by the L.N.E. Rly. There are corn mills, engineering works and other industries, and also a trade in agricultural produce. Pop. (1931) 14,228.

Retina Innermost layer and lining membrane of the cavity of the eyeball. The retina is an expansion of the optic nerve and forms the receiving nervous surface upon which images are formed by light rays entering the eye. It consists of twelve layers, the most important being the layer of rods and cones which transmit visual impulses to the optic nerve and brain.

Retort Vessel or chamber used for distilling or volatilising substances by the aid of heat or chemical action, the volatile products being conveyed to a receiver for condensation. In the chemical laboratory retorts of glass, earthenware, etc. are used, but for manufacture of coal gas on a large scale the retort takes the form of a large iron or fireclay chamber, and in the extraction of zinc, mercury, etc. from their ores, special iron or fireclay vessels are used.

Retriever Sporting dog. There are four varieties. The flat haired is evolved from the mating of a setter and a Welsh collie sheep dog. The curly haired has a poodle strain and is good either in water or in the field. The golden haired is highly ornamental and has all retriever qualities. The Labrador, besides being an excellent gun dog, is popular as house dog and pet. It has a smooth, black coat.

Returning Officer Official responsible for the proper conduct of an election. In Great Britain the returning officer is the mayor or provost of the boroughs, and the high sheriff in the counties. To him the writ is addressed and he is responsible for the arrangements for the election, and for the counting of all votes and the declaration of the result. The bulk of the work is done by the clerk to the county council and his staff.

Réunion French island. It is in the Indian Ocean, 420 m. E. of Madagascar. It was discovered by the Portuguese early in the 16th century, annexed by France in 1649, and occupied by Britain between 1810 and 1814. The capital is St. Denis, the chief port Point-des-galets and the island is 970 sq. m. in area. Pop. (1931) 197,933.

Reuss German district. It was formerly two principalities, Reuss-Greiz, ruled by the elder line and Reuss-Schleiz-Gera, by the younger line. At the close of the World War, they became part of the republic of Thuringia. The district, which covers an area of 450 sq. m., is situated N. of Bavaria and W. of Saxony. More than a third of this is forest land. Pop. 226,000. Before 1918 the principalities were ruled by a family who all bore the Christian name Heinrich.

Reuters International agency for the collection of news for the Press, founded by a German, Paul Julius de Reuter, in 1849. He began with a pigeon post between Brussels and Aix-la-Chapelle and in 1851 he became a British subject, and started a news agency in London. He controlled the business, which became a limited company in 1865, until his death, Feb. 25, 1899. In 1916 Reuters was bought by a syndicate. The headquarters are on the Thames Embankment, London, E.C.

Reval Capital and seaport of Estonia, on the S. coast of the Gulf of Finland, 250 m. from Leningrad. It is also called Tallinn. At the beginning of the Great War, the province, of which it was the capital, was a part of the Russian Empire. After the war, it was established as an independent republic, with its own National Council meeting at Reval. Reval has extensive shipyards and exports textiles, timber, paper, etc., of local manufacture. An International Industrial Fair is held each year in June. Pop. (1932) 134,000.

Revelation Book of. Last book of the Bible. It is the only example contained in the New Testament of an extensive Jewish apocalyptic literature (cf. Book of Daniel in O.T.). The book is typical of apocalyptic writings in that (1) it arose out of conditions of terrible trouble (the persecution of the Church by Domitian); (2) its message is expressed in a mysterious form of dream and vision; (3) it seeks to comfort those who are sorely tried in the present, by bidding them look forward to a great divine triumph in the future.

Revelstoke Baron. English financier. Born in 1863, John Baring succeeded to the barony on the death of his father, the first Lord Revelstoke, in 1897. He was a partner in the banking firm of Baring Bros., a director of the Bank of England and a privy councillor. He died in 1929.

Revenue Term applied to the income of a government or state. It is largely derived from taxation, direct and indirect. *See* TAXATION; CUSTOMS; EXCISE.

Reversion Term in biology applied to the fact that species tend to reproduce in some of their characteristics some ancestral type. In domesticated animals where different breeds have been crossed there is a tendency to an occasional reversion to an ancestral form, and this may occur also in pure breeds. In some cases the reversion appears to be the result of some irregularity in development of the germ cell. In the case of atavism a feature is reproduced in the individual that was present in a former generation.

In law reversion means the right which remains to the grantor of property when the agreement made by him with the grantee expires, *e.g.*, the owner of land who grants a lease of it for a term of years is said to have the reversion of it on the termination of the lease.

Revival Renewal of interest, chiefly used for periods when great interest is taken in religious matters. Protestant evangelicals believe in revivals, which are also popular in some parts of the United States. One of the greatest religious revivals was associated with the name of John Wesley. A revival of another kind was the revival of learning in the 16th century, usually called the Renaissance (*q.v.*).

Revolver Type of pistol having a revolving cylinder containing a number of chambers for cartridges, which are fired in turn by a one-lock mechanism. The modern revolver is self-ejecting and in the automatic type the force of the recoil is utilised to eject the empty cartridge, cock the revolver and reload it.

Revue Theatrical production. It is a medley, partly musical, and containing topical allusions in its songs and speeches. It was introduced into Britain from France in the 20th century and became very popular after the Great War. When it originated in France, it was a satirical and humorous review of the events of the year and was produced in December. It was called in full *La revue de fin d'année*.

Reykjavik Town and capital of Iceland. It is on the coast at the S.W. corner of the island. It has a cathedral and a university and is the seat of the Althing, or parliament. Its broadcasting station operates at 1200 M., 21 kW. It exports fish, skins, and butter. Pop. (1931) 28,847.

Reynolds **Sir Joshua.** English painter. Born at Plympton in Devonshire, July 16, 1723, he studied art under Hudson, himself a leading portrait painter, and soon surpassed his teacher, becoming the first president of the Royal Academy in 1768. The following year he was knighted, and in 1784 received the appointment of painter-in-ordinary to George III. His friends included such distinguished men as Burke, Johnson and Goldsmith, whose portraits are among his finest works, which include the famous "Mrs. Siddons as the Tragic Muse." He wrote the *Discourses*, a series of addresses on art. He died Feb. 23, 1792.

Rhadamanthus In Greek legend one of the judges of the dead in Hades. A son of Zeus and Europa he was made a judge because of his reputation for justice.

Rhayader Market town of Radnorshire, on the Wye, 212 m. from London by the G.W. Rly. It is a centre for the sale of sheep and farm produce generally. About 4 m. from the town, among the hills, are the huge reservoirs that supply Birmingham with water.

Rhea American ostrich, represented by three species, all found in the pampas of S. America. It has three toes on the feet, unlike the African ostrich, which has two, and is smaller than the African bird. The eggs are laid in a shallow excavation on the ground, and the male is said to hatch them.

Rhea In Greek legend a daughter of Uranus and Ge (the earth). She was the mother of Zeus, Hera, Poseidon and Pluto, and was worshipped as the goddess of fertility. She is represented in art as wearing a crown and attended by lions.

Rheims City of France, 98 m. E.N.E. of Paris. Founded in pre-Roman times, it became Christian in the 3rd century. Here Clovis (*q.v.*) was baptised in 496, and later kings were consecrated here, including Charles VII. in 1429, at the instance of Joan of Arc, who won the city back from the English. Rheims is famous for the cathedral of Notre Dame, begun in 1212, one of the finest examples of Gothic architecture, its façade having been one of the greatest medieval masterpieces. Another notable monument is the Mars Gate, a triumphal arch, probably of the 3rd or 4th century. During the Great War the city suffered severely, even the cathedral being extensively damaged by the German bombardment. Restoration was carried out after the War.

Rheims is an important centre of the woollen industry, and the manufacture of champagne is important. Pop. (1931) 112,820.

Rheostat Electrical instrument devised for varying an electrical resistance in a circuit and used in diverse forms for controlling direct-current motors, as motor starters, and in wireless apparatus. In one type, the circuit is connected with a movable arm whose free end is moved over a series of brass studs, each connected with a resistance coil and the end one with the circuit.

Rheumatic Fever **or Acute Rheumatism.** Disease characterised by inflammation and pain in the joints, with fever. In young persons the heart is very likely to become affected. The attack, which continues for a period varying from two to six weeks, may sometimes be marked by little pain and slight increase of temperature. In fact, "growing pains" of children are often a manifestation of such an attack. Any indication of acute rheumatism demands immediate attention by the physician. *See* RHEUMATISM.

Rheumatism Popular name for various painful diseases of joints or muscles, including lumbago; fibrositis, or inflammation of the fibrous tissue of muscles; rheumatoid arthritis, or inflamed membranes and fibrous tissue of joints; and acute rheumatism, or rheumatic fever (*q.v.*). Inflammation and stiffness with great pain are associated with all these conditions. The so-called "growing pains" of children are due to acute rheumatism. Rheumatoid arthritis is brought about by bacterial infection originating perhaps at some distant focus such as teeth or tonsils. Chronic rheumatism is often caused by a septic focus in teeth, tonsils, nose or digestive tract, etc.

Treatment should aim at removing the infective cause and raising the general health. Spa treatment, massage and the use of electrical

appliances offer the best hope of relief. Five drops of tincture of iodine in a wineglassful of water once or twice daily is usually beneficial, and intestinal poisoning may be remedied by a course of bacillus acidophilus emulsion or a lactic acid preparation. Attention should be paid to the diet, omitting salt and sugar as much as possible, and replacing meat, with dairy products and vegetables.

Children with a tendency to rheumatism should have plenty of good food, fresh air, warm clothing and rest, with a limited meat diet. Damp garments, exposure to a damp atmosphere, fatigue and heart strain must be specially guarded against.

Rhine European river. It rises near the St. Gothard Tunnel and flows for the first 250 m. of its course through Switzerland, the next 450 through Germany, and the last 100 through Holland, where it divides into North and South, the south branch joining the Maas, while the north empties itself into the Zuider Zee. It is connected with central and southern France by the Rhine-Rhone and Rhine-Marne canals, and with the Danube by the Ludwigskanal. From the earliest times it has been one of the chief waterways of Europe and formed a natural defence for the Roman Empire against the barbarians. Its total length is 800 m. and the area of its basin 75,700 sq. m.

Rhineland German province, on the W. of Prussia, bordering on Belgium and Luxembourg, and drained by the Rhine and its tributaries. It has a population of 7,256,978 and an area of 9478 sq. m., nearly a third of which is forest land. The Rhineland contains the important vine-growing district of the Moselle the famous Ruhr coalfields and a number of great industrial centres, including Essen, Dusseldorf and Cologne.

Rhinitis Affection of the nose arising from inflammation of the mucous membrane. Cold, dust, acrid fumes, or pollen from grass or flowers may induce an attack. It takes the form of acute catarrh, accompanied by thick mucous discharge.

Rhinoceros Ungulate mammal of the order *Perissodactyla*. A clumsy, heavily built animal 5 to 6 ft. high at the shoulders, it is timid and nocturnal, frequenting swampy regions, where it feeds on herbage, young shoots, etc. There are one or two horns, on snout or forehead. In the Indian species the thick warty skin is disposed in folds which give the appearance of a coat of armour, and there is one horn. The white rhinoceros, 6 ft. high, is the largest, and, with the black species, is native to Africa. Smaller species are met with in Sumatra and Java.

Rhode Island State of the United States. The smallest in the union, it covers only 1300 sq. m., of which 246.9 sq. m. are water. It has a coastline on the Atlantic and includes several islands. Providence is the capital: other places are Pawtucket, Woonsocket, Newport and Warwick. It is governed by a legislature of two houses and sends two representatives and two senators to Congress. The chief industries are manufactures; there is only a little agriculture. Rhode Island was settled by people from Massachusetts and became a separate English Colony in 1663. It is one of the 13 original states of the union. Pop. 687,500.

Rhodes Island of the Aegean Sea, 12 m. from the coast of Asia Minor and 542 sq. m. in area. Vines and fruit are grown and kaolin is mined. It was a great centre of Greek culture, equally famous for its artists and its rhetoricians, and its code of maritime law has influenced modern European law. It was part of the Roman and Byzantine empires. From 1309 to 1523 it was the headquarters of the Knights Hospitallers; from 1523 to 1918 it was a Turkish possession, and after the Great War it was assigned to Italy.

The capital and chief seaport is also called Rhodes. On the N.W. coast of the island, its hospital, now a museum, was built by Knights Hospitallers when they ruled here. In the street of the knights some of their houses still stand. Pop. 12,000.

Rhodes **Cecil John.** English statesman. Born July 5, 1853, at Bishops Stortford, Herts, he was sent to S. Africa for his health. He amassed a fortune at Kimberley, returned to England fired with the ideal of extending British possessions in Africa, and entered Oriel College, Oxford. Returning to S. Africa, he entered politics in 1881. In 1884 he was deputy commissioner in Bechuanaland, which he made a British protectorate in 1885, and in 1889 he formed the British South Africa Company to penetrate northwards. He was Prime Minister of Cape Colony from 1890 to 1896, his ministry ending owing to his connection with the Jameson Raid (*q.v.*). He now turned his attention to the development of Rhodesia, to which he devoted the rest of his life. He died March 26, 1902. In his will he bequeathed some six million pounds for the founding of **Rhodes Scholarships** at Oxford. Thirty-four scholars come each year from the British Empire, thirty-two from the United States, and two from Germany. Imperial and American students hold their scholarships for three years, the Germans for two.

Rhodesia British S. African territory stretching from the Transvaal northward to Tanganyika Territory and the Belgian Congo. Bounded on the east by Portuguese East Africa, Nyasaland and Tanganyika Territory, and on the west by Belgian Congo, Portuguese West Africa and Bechuanaland, it is divided into two regions, Northern Rhodesia, a British territory, and Southern Rhodesia, a self-governing British colony.

Historically, both areas must be treated as one, the modern history of Rhodesia beginning in 1888 when the British, through Cecil Rhodes, made a treaty with the Matabele king, Lobengula, giving the right to seek and work minerals in the country. The British S. Africa Company, formed by Rhodes, then began the penetration of the country, and settlement proceeded, interrupted by the Matabele War, the Jameson Raid and the S. African War. Rhodesia did not enter the Union in 1910, and in 1914 the Company's charter was renewed for ten years, but the mineral rights in S. Rhodesia were purchased by the government in 1933 for £2,000,000. Southern Rhodesia was annexed as a crown colony in 1923, while Northern Rhodesia was separately administered from 1911, being taken over by the British Government in 1924. Much has been done by offering loans and improving social services to attract settlers to the land.

Northern Rhodesia is a high plateau, the watershed of the Congo and the Zambesi, and is mainly agricultural, maize, tobacco, cotton and fibre being grown; some cattle ranching is carried on. It is administered by a governor, with an executive council and a legislative council of 16 members. Copper, zinc, lead and

gold have been discovered, copper in large quantities. Livingstone, near the Victoria Falls, is the administrative centre. Area, 290,320 sq. m. Pop. (est., 1933) European, 11,278; native, 1,371,213.

Southern Rhodesia is part of the great South African plateau, lying in part between the basins of the Zambezi and the Limpopo. Silver, copper, coal, diamonds and other minerals are produced: cattle are raised, and maize, cotton and citrus fruits are exported. Administration is by a governor, with a legislative council and a legislative assembly of 30 members. Salisbury is the capital, but Buluwayo is larger. Area, 150,344 sq. m. Pop. (est., 1933) 1,212,000, of whom 52,950 are whites.

At a joint meeting of the Legislative Council of N. Rhodesia and delegates from all political parties of S. Rhodesia a resolution was passed on Jan. 24, 1936, proposing amalgamation of the Rhodesias as a self-governing colony.

Rhododendron Genus of ornamental flowering shrubs and trees of the order *Ericaceae*. First introduced into England in the 17th century, they are now commonly grown. They will thrive in ordinary soil that does not contain lime or chalk. A little peat is an advantage, and protection from cold winds is desirable.

Rhondda Urban district of Glamorganshire, 16 m. from Cardiff, on the G.W. Rly. It consists of a number of mining centres in the valleys of the rivers Rhondda Fawr and Rhondda Fach, united in 1897 into an urban district, one of the largest in the country. Among the villages included are Tylorstown, Ferndale, Treherbert, Tonypandy and Pentre. The staple industry is coal mining. Pop. (1931) 141,344.

Rhondda **David Alfred Thomas, first Viscount.** British coal-owner and statesman. Born in Aberdare, March 26, 1856, the son of a coal merchant, on leaving Cambridge he entered his father's business. He represented Merthyr Tydvil, and later Cardiff in Parliament, and was president of the Local Government Board, 1916-17. He rendered great services to the country during the war, first at the Ministry of Munitions and later as Food Controller (1917); as such he introduced rationing, controlled prices, and prevented speculation. He died July 3, 1918.

Rhône River of Switzerland and France. It rises on the W. slopes of Mt. St. Gothard in Switzerland in the famous Rhône glacier at a height of 6000 ft. During the greater part of its upper course it is little more than a mountain stream. After flowing through the whole length of Lake Geneva, it follows a winding course to Lyons, where it becomes navigable. Thence it flows in a southerly direction into the Gulf of Lyons. Its length is 500 m. and the area of its basin 38,170 sq. m.

Rhubarb Herbaceous plant of the genus *Rheum* and order *Polygonaceae*. A native of Siberia, it is widely cultivated in other countries for its edible stalks, which are stewed or made into tarts, and used also as preserves. Medicinal preparations are made from root and stalks. The leaves are poisonous.

Rhyl Watering place and urban district of Flintshire, on the coast, 30 m. from Chester by the L.M.S. Rly. Here the River Clwyd falls into the sea. The sands are good, and the attractions include a marine lake and winter gardens. Pop. (1931) 13,489.

Rhythm Metre of music. It governs not only the periodic pulsation of the constituent bars, but also the symmetrical planning of melody into sentences, phrases and smaller sub-divisions. It is the third essential element of music.

Rib In anatomy the name given to one of the series of twelve pairs of arched bones forming the wall of the thorax. The ribs articulate with the backbone behind, but in front the first seven join the breast bone, and of the remaining five three have the extremities united and two remain free.

The term rib also refers to the timbers strengthening the sides of a ship, and in architecture to a narrow moulding on a wood ceiling.

Ribble River of England. It rises on Whernside in Yorkshire and flows into Lancashire to the Irish Sea beyond Preston, a length of 75 m., ending in a large estuary. The sea is receding in the estuary. The picturesque district through which the river flows is called **Ribblesdale.**

The title of **Baron Ribblesdale** was borne by the family of Lister from 1797 to 1925. Thomas Lister, M.P., a Lancashire manufacturer, was the first holder. **Thomas Lister,** the 4th baron, was a prominent social figure. He died Oct. 21, 1925, and his only son, Charles, having been killed in the Great War, his title then became extinct. The family seat was Gisburne Park, near Clitheroe.

Ribbon Fish Deep sea fish (*Regalescus*) native to the North Sea, Atlantic and Mediterranean. It has a thin, narrow, elongated body along the length of which is borne the dorsel fin. At the head the fin has lengthened rays which form a kind of crest, and the ventral fins are long and thin, with an expansion at the tips. It reaches a length of 18 ft., and is also known as the oar fish.

Ribbon Grass (*Phalaris arundinacea variegala*). Cultivated variety of tall grass with broad, striped leaves of green and white. The wild weed grass of the same genus grows in damp and marshy places, but ribbon grass grows easily in any soil. It is also known as gardeners' garters.

Ribchester Village of Lancashire, on the Ribble, 5 m. from Blackburn. Here the Romans had an important station called Brenntonacum. Excavations have revealed many Roman remains for which a museum has been opened.

Rice Dressed grain of the annual grass, *Oryza sativa*. Grown in vast quantities in the east as the principal food, it is also cultivated in the U.S.A., Africa, S. Europe and elsewhere. Though grown chiefly in wet land, the young plants being set out actually under water which subsequently dries, some varieties require drier conditions. For Europe, rice is specially dressed, somewhat reducing its value as food. Rice possesses less fat and protein than other cereals, but the small starch grains are easily digested.

Rice Paper Smooth white paper made from the pith of *Fatsia papyrifera*, a small tree of the ivy family growing in Formosa. The pith is removed and cut into thin sheets which are pressed firmly together. Rice paper is used in China and Japan for painting on, and also for making artificial flowers.

Richard I. King of England. The third son of Henry II., he was born Sept. 8, 1157, and made Duke of Aquitaine

in 1170. He passed his time in fighting against his father and with his brothers until 1189, when he succeeded Henry as king. He reigned for ten years, but passed only a few months in England. He took a leading part in the Crusades and won a great reputation as a warrior. In 1192 he was taken prisoner in Germany and remained a captive until 1194, when a large sum was paid for his release. He was killed in battle at Chaluz, April 6, 1199. He married Berengaria, daughter of the King of Navarre, but left no legitimate children. His successor was his brother John.

Richard II. King of England. Son of the Black Prince, he was born April 13, 1366, succeeding his grandfather, Edward III., in 1377. With the exception of eight years, 1389 to 1397, his reign was full of trouble. Taxation was heavy, and risings took place in many parts of the country, the most serious being that of Wat Tyler (1381). The preaching of the Lollards (*q.v.*) helped to increase the discontent. Henry of Lancaster forced Richard to abdicate in Sept., 1399, and Parliament condemned him to perpetual imprisonment. He was almost certainly murdered, not long after his abdication.

Richard III. King of England. He was born Oct. 2, 1452. Throughout the reign of his brother, Edward IV., he gave him loyal assistance, and was duly rewarded with many high offices, but on his death he usurped the crown from his nephew, Edward V., whom, together with Edward's younger brother, the Duke of York, he is believed to have had murdered in the Tower. He met his death Aug. 22, 1485, fighting against Henry of Richmond at Bosworth. The chronicles of this reign are wholly Lancastrian in origin and the traditional character of Richard is not borne out by modern historical research.

Richardson **Samuel.** English novelist. Born in Derbyshire in 1689, he became a successful London printer. At the age of 50, he was persuaded to write *Pamela* (1740), a description in the form of letters of the trials of a virtuous country girl. This was followed by *Clarissa* (1748), and *Sir Charles Grandison* (1753). He may be regarded as one of the originators of the modern novel. His writings reveal a special understanding of women. He died July 4, 1761.

Richardson **Thomas.** English cricketer. Born at Byfleet in Aug., 1870, he played for Surrey in 1892 and for the next few years was the chief bowler in the team. He also played for England against Australia in his own country in 1893 and 1896, and also in Australia. He died July 3, 1912. Many judges consider Richardson the finest fast bowler who has ever lived.

Richborough Seaport of Kent, on the estuary of the Stour, just outside Ramsgate. There are some ruins of a fortress built by the Romans, who had an important station here. In 1916 a port was established here for sending men and material to France. A harbour was made in the estuary and a train ferry begun. After the war the works were sold in order to make the port suitable for shipping coal.

Richelieu River of Canada. It rises in Lake Champlain and falls into the St. Lawrence at Sorel. It is 80 m. long, and forms part of the water route from the Hudson to the Great Lakes.

Richelieu **Armand Jean du Plessis, duc de.** French cardinal and minister of Louis XIII. He was born in Paris, Sept. 5, 1585. Consecrated Bishop of Lucon in 1607, he was made cardinal in 1622, and chief minister in 1624. His policy had three great aims: the suppression of the political power of the Huguenots, the vindication of the royal authority, and the security of France against the threatened domination of the Habsburgs. He was successful in his aims, largely owing to the consistent support of the king. He died Dec. 4, 1642.

Richmond Borough of Surrey, on the Thames, 9 m. from London, by the S. and District Rlys. It includes Kew and Petersham, and is famous for its beauty spots, especially the hill overlooking the Thames near where the Star and Garter Hotel once stood, and where are now the terrace gardens. A bridge crosses the Thames here. There is a meteorological observatory. Pop. (1931) 37,791.

Richmond Park, where there was once a royal residence, is still Crown property. It covers 2250 acres and stretches from Sheen to Kingston and in the other direction as far as Wimbledon. It contains deer and some fine old trees and in it are White Lodge, Sheen Lodge and other residences.

Richmond Borough and market town of Yorkshire (N.R.), on the Swale, 50 m. from York, on the L.N.E. Rly. The church of Holy Trinity in the market place and the tower of a monastery are of interest. On the hill are the keep and other remains of a large and magnificent castle, while below an old bridge crosses the river. The town has an agricultural trade and races are held here. Richmond was, in the Middle Ages, the chief town of an honour, *i.e.* a great feudal estate. Pop. (1931) 4769.

Richmond City and seaport of Virginia, capital of the state. It stands at the mouth of the James river, 115 m. from Washington. Its fine buildings include the State Capitol, a replica of the Maison Carrée at Nîmes, and the Valentine Museum. The house in which the President of the Confederate States lived during the Civil War is now a museum and there are monuments to Washington and Lee. The industries include shipping, especially of tobacco, and manufactures of machinery, motor vehicles and fancy goods. Pop. (1930) 182,929.

Richmond **Sir William Blake.** English painter and decorator. Born in London, Nov. 29, 1842, his first Academy picture, in 1861, showed the influence of Italy, where he studied for some years. On his return in 1869 he exhibited "A Procession in Honour of Bacchus" at the Academy. He became Slade Professor at Oxford, and was elected A.R.A. (1888) and R.A. (1895). In 1896 he became Professor of Painting to the Royal Academy. He did decorative work in St. Paul's Cathedral. He died Feb. 11, 1921.

Richmond **and Gordon, Duke of.** British title. An earldom of Richmond appears in the 11th century, when William I. conferred the title on **Alan Rufus,** son of the Count of Brittany. Henry VIII. created his natural son **Henry Fitzroy,** Duke of Richmond. Charles II.'s natural son, **Charles Lennox,** created by him Duke of Richmond, was the ancestor of the present Duke of Richmond and Gordon. The third duke (1734-1806) was noted for his advocacy of manhood suffrage, annual parliaments, and other electoral changes. The fifth (1791-1860), on inheriting

the estates of his maternal uncle, the last Duke of Gordon, assumed the name of Gordon. The present holder of the title, **Frederick Charles Gordon-Lennox**, the ninth Duke, was born in 1904 and succeeded his father in May, 1935.

Richthofen **Baron Freiherr von.** German military airman. During the Great War he was the leader of the famous "Circus" on the western front, and probably responsible for the defeat of more British and French airmen than any other enemy aviator. The German higher command claimed for him 80 victories in single combat. He was brought down and killed on the Somme on April 23, 1918.

Rickets (or **Rachitis**). Disease of defective nutrition. It is a so-called deficiency disease, due to absence or insufficiency of the antirachitic vitamin D in the food. It shows itself in the early months of infancy, by soreness of body, restlessness, poor appetite and bad digestion. Later there are changes in the bones, the leg bones becoming bowed, the chest flattened, and the back humped.

Treatment.—Improve the general hygiene and do not allow the child to stand or walk. Give a diet rich in vitamins and fats (fresh milk, cream, orange juice, raw turnip juice, cod-liver oil). Ultra-violet light treatment and exposure to air and sunlight will greatly improve the condition. Natural feeding from birth prevents the occurrence of rickets.

Ricketts **Charles.** English painter. He was born in Geneva, Oct. 2, 1866, and educated in France. He founded the Vale Press, and was publisher of the Vale books. His pictures are found in the National Gallery and in the Luxembourg, Paris. He gained fame as a stage decorator, providing designs for *King Lear*, *St. Joan*, *King Henry VIII.*, *Macbeth*, *The Mikado*, *The Gondoliers*. He was elected R.A. in 1928 and died Oct. 7, 1931.

Rickmansworth Urban district of Hertfordshire 18 m. from London, where the rivers Chess and Colne unite. It is on the L.M.S. and Metropolitan Rlys. Brewing and printing are industries. The Grand Union Canal passes by the town. Pop. (1931) 10,810.

Rickshaw Shortened form of *jinrickisha*, an Indian vehicle. It is a small carriage on two wheels covered with a hood, and is drawn by one or two men.

Rideau River of Canada. A tributary of the Ottawa, it rises in **Lake Rideau** about 40 m. from the city of Ottawa. There is also a canal called the Rideau, which goes from Ottawa to Kingston on Lake Ontario and is 125 m. long. Rideau Hall, at Ottawa, is the residence of the Governor-General.

Riding Word meaning a third, used for the divisions of the county of York, which is divided into three ridings, West, East and North. The three meet at York. The Irish county of Cork is also divided into three ridings. *See* YORKSHIRE.

Ridley **Nicholas.** English bishop and martyr. Born about 1500, he was a devoted leader of the reformed faith and one of the compilers of the English Prayer Book (1548). In 1550 he succeeded Bonner as Bishop of London, when the latter was deprived of his see. On the death of Edward VI., he supported Lady Jane Grey in opposition to Mary, and when Mary became queen, he was arrested and tried for heresy. He was burned at the stake in Oxford Oct. 6, 1555.

Rienzi **Cola di.** Roman tribune. Born *c.* 1313, his aim was to restore the former glory of Rome by putting an end to the disorders which prevailed in and around the city. In 1347 he led a successful rising against the nobles, and took the title of Tribune with dictatorial power. Encouraged by this triumph, he essayed to unite all Italy in a great republic, with Rome as capital, but he soon began to show the most incredible vanity, which caused the people to withdraw their support. He was killed in a popular rising, Oct. 8, 1354.

Rievaulx Village of Yorkshire (N.R.), 3 m. from Helmsby, on the L.N.E. Rly. Ruins of a Cistercian abbey, very extensive and beautifully situated, now belong to the nation and a certain amount of restoration work has been done. The word means "the valley of the Rye," this being a small river that flows past the ruins.

Rif District of Spanish Morocco. It is a mountainous region near the coast, chiefly known because its inhabitants, of Berber stock, are constantly at war with Spain.

Rifle Firearm of the musket class characterised by having its barrel spirally grooved to give greater accuracy in firing owing to the rotary motion given to the bullet. Progressive improvements have been made since the early 19th century by the adoption of a breech-loading mechanism, the use of smokeless powder, and the magazine. There are many types of rifles, both military and sporting, the former ranging from .256 to .315 inch bore, and the latter .360 to .600 inch.

In 1859 the **National Rifle Association** was formed for the promotion of rifle shooting and holds its meetings at Bisley.

In 1800, a regiment known as the **Rifle Brigade** was raised and served with distinction in various wars up to the Great War, when its death roll was 11,245. Another distinguished regiment, the **King's Royal Rifle Corps**, was formerly the 60th Foot, dating from 1755. Both regiments have their depots at Winchester.

Riga Seaport and capital of Latvia. It stands on the river Dvina, 7 m. from its mouth in the Gulf of Riga. It exports flax and wood, and as a rail outlet for the interior of Russia is now (1932) beginning to recover from the set-back it received through the economic collapse of that country. It has a broadcasting station (525 M., 15 kW.). Riga was founded in 1158, and was for a time a member of the Hanseatic League. It fell to Poland in 1561, was taken by Sweden in 1621, and finally by Russia in 1710. Occupied by the Germans from 1917-19, it became capital of Latvia on the creation of the republic. S. Peter's church and the castle both date from the 15th century. Pop. 338,000.

Rigging Term used in the narrower sense for the cordage or tackle of a sailing ship, but more usually in the wider meaning which includes also the masts, yards, sails, etc. Sailing ships fall into two groups, the fore-and-aft rigged as in a schooner, and the square-rigged as in a full-rigged vessel. In steamships rigging is reduced to the masts and tackle used in lifting cargo or as wireless aerials.

Right In politics any party holding moderate views, the opposite of the Left. Its use in this sense is due to the fact that in 1789 when the National Assembly met at Versailles the moderate members sat, at first by accident, on the right side of the room.

Right of Way Phrase meaning the right of the public to pass over land in private ownership. It is a question of custom. If a way over land has existed without interruption for 20 years, it is for ever a right of way. Many landlords close the footpaths on their estates for one day in seven years, or some other period, in order to prevent a right of way being established. This is done in the district of London that belongs to the Inner and Middle Temples. In 1931 an act of parliament was passed, assuring right of way to the public.

Rigi Swiss mountain. It rises, an isolated mass, between the lakes of Lucerne and Zug. Two mountain railways from Vitznau on the S. and Arth on the E. run to its summit, **Rigi Kulm** which is 5906 ft. high and commands one of the world's most famous views of glorious Alpine scenery.

Rigidity Term in physics applied to that property of matter of resistance to change of form, that distinguishes solids from fluids. In the ideal state of rigidity the component particles of a body retain their relative position to one another although the whole body may move, but such a condition does not exist in nature as all substances undergo some degree of deformation.

Rig Veda Hindu sacred literature. The Rig Veda is the most important and the oldest of the four extant collections of Hindu Scriptures. It consists of 1028 praises or hymns in the Sanskrit language arranged in 10 books. The date at which the collection was made is believed to be about 1000 B.C. It is an important source for the study of Hinduism.

Rimmon Assyrian thunder god. The name is mentioned in 2 Kings xviii., in a passage where Naaman after he has been healed by Elisha, seeks pardon from the prophet if in the course of his official duties as a "captain of the host of the King of Syria" he worships in the Temple of Rimmon at Damascus.

Rimsky-Korsakov **Nicholas Andreievich.** Russian composer. He was born at Nijni-Novgorod on March 18, 1844. After service in the navy, he became (1873) a professor at the St. Petersburg conservatoire and conductor of the Russian symphony concerts. From 1878-1907 he composed a succession of operas, characterised by light and colour, and dealing with Russian subjects. He died June 2, 1908.

Rinderpest Cattle plague. In the form of an eruptive and contagious fever, it is the most serious disease to which cattle are liable, proving fatal after 6 to 10 days. A serious outbreak in 1865 is estimated to have caused the death of 250,000 cattle in Britain. The plague of 1877 was less deadly and there has been no recurrence of the disease in Britain since.

Ringbone Disease of the horse. It shows itself in an osseous growth on the pastern bones and may be due either to injury or to rheumatic tendencies. In the latter case it is hereditary. Complete rest is an essential part of the treatment, and a cold water compress may be found useful in giving relief.

Ring Dove (*Columba palambus*). Largest species of the common wood pigeon. It derives its name from the light feathers that give the effect of a ring on its neck. Common in the British Isles and Europe, it frequents open spaces in cities, as well as the countryside, assembling together in flocks. A voracious feeder, it causes much damage to crops in its quest for food.

Ring Ousel Species of mountain song bird (*Turdus torquatus*) of the family of thrushes. Common in Scandinavia and other parts of Europe, it is a summer visitor to the British Isles from April to October. It breeds in the mountainous districts of the N., in the Peak district and the wilder parts of Devon and Cornwall. Somewhat larger than the common blackbird, the plumage is black with greyish margins and a crescent of white on the breast. It nests usually in heather or grass, sometimes on a low ledge of rock. It feeds on snails, slugs and insects.

Ringwood Market town of Hampshire, on the Avon, on the edge of the New Forest. Brewing and glass-making are industries. Pop. 4600.

Ringworm Contagious skin disease caused by species of fungus. Most common among children of school age, it usually appears in the form of a small irritating round patch among the hair on the scalp. As it is highly contagious, medical treatment should at once be obtained and precautions taken to prevent spreading the infection. Ringworm of the beard, *tinea barbi*, is a form very difficult and tedious to treat. Cats, dogs and other animals are subject to ringworm, which can be communicated by them to human beings. Its medical name is tinea.

Rio de Janeiro Seaport and capital of Brazil. It stands on the W. side of the Bay of Rio de Janeiro, backed by mountains. At the entrance to the bay is the famous Sugar Loaf rock, and the harbour is one of the finest natural harbours in the world. The city has some fine streets, numerous parks and gardens, a great thoroughfare, the Avenida Rio Branco, and a marine boulevard, constructed on reclaimed land. The buildings, apart from the government buildings and the National Library, are not very notable. The city has extensive manufactures, including textiles, clothing, furniture, cigars and cigarettes, chocolate, etc., and its exports include coffee, sugar, fine woods, gold, diamonds, etc. It is the centre of a federal district administered by a prefect representing the government and a council representing the people. Pop. (1930) 1,468,621.

Rio de Oro Spanish possession, on the N.W. coast of Africa, S. of Morocco. In soil and climate it belongs to the Sahara Desert. The population consists for the most part of nomad Arabs and Berbers, and the area is about 70,000 sq. m. It is under the control of the Captain-General of the Canary Islands.

Rio Grande River of N. America. It rises in the Rocky Mountains near Colorado, flows across New Mexico, forms the boundary line between the United States and Mexico, and falls into the Gulf of Mexico. It is 1800 m. long.

Riot Word meaning any disorder caused by a number of people, not fewer than three according to English law. They must be gathered for an unlawful purpose, or one calculated to terrorise ordinary citizens.

By the common law of England any citizen may be called upon to help to suppress a riot. By the **Riot Act** of 1714, if 12 or more persons,

having gathered together, refuse to go away after a magistrate has read a proclamation ordering them to do so, they can be dispersed by soldiers. A law passed in 1886 makes the police responsible for damages done in a riot, thus the cost of such damage falls upon the county or borough concerned.

Rio Tinto Town of Spain. In the S.W. of the country, it is not far from Seville, and stands near the source of the river Tinto. The town is celebrated for its copper mines, among the oldest and richest in the world. They were worked by the Romans and are now managed by an English company.

Ripley Market town and urban district of Derbyshire, about 13 m. N.W. of Nottingham and 134 from London by the L.M.S. Rly. Here are collieries and textile mills. Pop. (1931) 13,415.

Ripley Village of Surrey, 5 m. from Woking and a stopping place on the road to Portsmouth.

Ripley Village of Yorkshire (W.R.), on the Nidd, 3 m. from Harrogate, on the L.N.E. Rly. **Ripley Castle** dates from the 16th century, but has been modernised.

Ripon City and market town of Yorkshire (W.R.), on the Ure, 24 m. from Leeds and 214 from London, by the L.N.E. Rly. The cathedral, restored in the 19th century, is notable for its west front, crypt and chapter house. Ripon became the seat of a bishopric in 1836. Its chief official was called the wakeman, and the wakeman's house still stands. It was famed for its cloth in the Middle Ages. To-day it is an agricultural centre and has baths and a pump room for its waters which have healing properties. Races are held here. Pop. (1931) 8576.

Ripon **Marquis of.** English statesman. George Frederick Samuel Robinson, a son of the Earl of Ripon, was born Oct. 24, 1827. In 1880 he was appointed viceroy of India, the first Roman Catholic to hold the post. He held various ministerial posts as a Liberal, including Secretary for War (1863), for India (1866), Lord President of the Council (1868), First Lord of the Admiralty (1886), Colonial Secretary (1892), and Lord Privy Seal (1905-1908). He was also a prominent freemason until his conversion to Catholicism in 1874. Created Marquess of Ripon in 1871, he died July 9, 1909.

Risaldar Title of native officer in the Indian army. He commands a troop of cavalry.

Risca Urban district of Monmouthshire, 6 m. E. of Newport, 147 m. from London by the G.W. Rly., and situated on the Ebbw. A colliery centre, it has manufactures of tinplate and chemicals. Pop. (1931) 16,605.

Rishton Urban district of Lancashire, 3 m. N.E. of Blackburn and 211 from London by the L.M.S. Rly. In a colliery district, it has cotton and paper mills. Pop. (1931) 6631.

Ritchie **Baron.** English politician. Born in Dundee, Nov. 19, 1828, and educated at the City of London School, Charles Thomson Ritchie had a long political career, beginning in 1874 as Conservative member for Tower Hamlets. He held many ministerial appointments—at the Admiralty, the Local Government Board, the Board of Trade, the Home Office—and was responsible for the creation of the County Councils, and legislation dealing with many social problems. He was raised to the peerage in 1905, and died Jan. 9, 1906.

Ritual Prescribed order in the performance of religious worship. Strictly speaking, ritual should be distinguished from ceremony, the former being the order, the latter the acts of worship, but the distinction is not generally maintained.

Ritual figures to a greater or less degree in all religious observances. In primitive religions it often reaches a high degree of complexity. In ancient religions it was of the utmost importance, since the smallest mistake in word or action would result in failure to obtain the favour desired of the god. Ritual observance was important in the Jewish religion, being stressed especially by the Pharisees. The ritual of primitive Christianity was simple, but it became more complex as the theology and the organisation of the Church was developed.

There is a ritual for every service of the Christian Church, *e.g.*, the ritual of the Mass, the ritual of the baptismal service. The ritual of the Catholic Church is more elaborate than that of the Protestant churches, within which there are also degrees of ritual observance.

River Stream of water flowing in a natural channel to the sea, a lake or other river. The water percolates slowly through the soil and may be supplemented in wet weather by the actual run off from the land, sometimes causing floods. The river bed tends to become wider by erosion of the banks leading to alterations in the course, and deeper, by scouring of the channel. River water carries much material in suspension which accentuates erosion. The material is deposited when the current ceases, as in floods whereby the fertility of the land is increased, or when the river enters a lake or the sea, resulting in the well known delta formation.

Rivera **Primo de.** Spanish dictator. He was born on Jan. 8, 1870. Entering the army from the Madrid Military Academy, he saw active service in Morocco and the Philippines, and attained the rank of lieutenant-general. He organised the military revolution of 1923 and was appointed by the king president of the military directorate. On the dissolution of the directorate in 1925 he became premier. He died in Paris on March 16, 1930, two months after the king had compelled him to resign.

River Hog Ungulate mammal (*Potamochoerus*) native to W. Africa, where it ranges in herds among swampy forest regions. Its natural food is roots and herbage, but the herds raid plantations and cause great damage to crops. The bristles are red.

Riverina District of Australia. It is situated in New South Wales, between the Murray and Darling rivers. Owing to its fine grazing-grounds, it is famous as a sheep-rearing area.

River Plate Estuary of S. America, formed by the two rivers Parana and Uraguay. The Plate attracts much shipping, which engages in the export of grain and animal products from the ports on its shores, the chief of which is Buenos Aires.

Riveting Process by which rivets are driven into metal plates, performed by hand, machines or hydraulic appliances. The iron rivets are heated first in a portable furnace or rivet hearth and after

being forced into the holes in the plates are finished off by forming conical heads by hammering, or rounded heads by use of a hollow punch or hydraulic tools, or countersunk heads where the surface must be plain.

Riviera Name given to a strip of land in France and Italy on the Ligurian Sea, a branch of the Mediterranean. It extends for about 140 m. and is noted for its wonderful climate, its beautiful scenery and its rich vegetation. In the French Riviera are such popular places as Cannes, Nice, Monte Carlo, Mentone and Antibes. In the Italian are Rapallo, Bordighera and other places.

Rivière du Loup River of Quebec. It rises in the N. of the province and falls into Lake St. Peter, near Fraserville, the lake being really part of the St. Lawrence. Fraserville is sometimes called Rivière du Loup.

Rizzio **David.** Secretary to Mary, Queen of Scots. Born in Italy, about 1533, he first entered Mary's service as a musician, afterwards becoming her valet and in 1564 her private secretary. After his marriage to the queen, Lord Darnley became suspicious of Rizzio's dealings with his wife. On March 9, 1566, helped by other nobles, he dragged the Italian from her presence at Holyrood Castle and stabbed him to death.

Roach Freshwater fish. Of a deep and silvery colour and from 10 to 15 in. long, it is common in N. Europe and of gregarious habits.

Road Highway for traffic. The great road makers were the Romans, who made roads of great durability, some of which may be seen to-day. They were driven in straight lines across the country and consisted of several layers of different kinds of earth.

For a long time after the fall of the Roman Empire most of the roads were in a very bad condition, being mere tracks for horses, but a new era began in the 18th century. Good roads on the Roman model were made in France, England, Italy and elsewhere, and these made possible the period of travel by coach which lasted until the building of railway lines. The great English road builder of this time was J. L. Macadam (*q.v.*). In the 19th century the existing roads were maintained in a fair state of repair by the highway authorities, but no great attention was paid to them until the advent of the motor car.

In the 20th century many new roads have been constructed and some improvements introduced are important, one being the use of surface materials which do not raise dust. The main roads are of hard stone with a covering of granite chippings; tar products and slag thoroughly rolled in concrete are also used, and in the United States there are many miles of concrete road. In city streets asphalt or wood blocks are laid on a foundation of concrete. Rubber has also been tried, not without success, as a road surface. In Great Britain there are 178,500 m. of road. Of these 26,400 have been classed as class I. and 15,900 as class II. The rest are inferior roads. They cost over £60,000,000 a year in improvement and maintenance. In the United States there are over 3,000,000 m. of road.

In 1929 an important measure affecting the roads of Great Britain became law. It made the county councils the highway authorities, and they receive grants for making and improving roads from the road fund. This fund is obtained from the taxation of motor vehicles and amounts to something like £30,000,000 a year. Since Mr. Hore-Belisha became Minister of Transport in 1934 he has taken strong measures to reduce road accidents and meet the needs of modern traffic. The Road Traffic Act, 1934, imposed a speed limit of 30 m.p.h. in "built-up areas," and a Five-year Plan of new road construction promises vast improvement. There is a Road Improvement Association at 180 Clapham Road, London, S.W.9.

Road Board Former department of the British Government. It was established in 1909 and consisted of five members. Its duties were to provide new roads and improve the existing ones. In 1919 its duties were taken over by the Ministry of Transport which has a road department. *See* TRANSPORT, MINISTRY OF.

Roaring Forties Area of the southern oceans lying between 40° and 50° S. The name was given by sailors in the days of sailing ships because in this part of the world strong westerly gales usually prevail.

Robert Name of three kings of Scotland. The first is more generally known as **Robert Bruce** (*q.v.*). **Robert II.** was a son of Walter the Steward and a grandson of Robert Bruce. He was born March 2, 1316, and for some time was regent for his nephew, David II. In 1371 he became king in succession to David and reigned until his death, May 13, 1390. He is important as being the first of the Stuart kings. **Robert III.** was a son of Robert II. Born about 1340 he reigned from 1390 until his death on April 4, 1406. His successor was his son, James I.

Robert Name of two dukes of Normandy. **Robert I.**, called the Devil, succeeded his brother, Richard, as duke in 1028. He died in 1033 and was succeeded by his son, William the Conqueror.

Robert II., the eldest son of William, was born about 1055. In 1087 he succeeded him as Duke of Normandy, but not as King of England. In 1096 he obtained money by handing over Normandy to his brother, William II., and went to Palestine on crusade. On his return he quarrelled with Henry and a battle was fought between them at Tenchebrai. Robert was taken prisoner and was still a captive when he died at Cardiff, in Feb., 1135.

Roberts **Earl.** English soldier. Born at Cawnpore, Sept. 30, 1832, Frederick Sleigh Roberts entered the Indian army in 1851, and served throughout the Mutiny, winning the V.C. in 1858. He then saw service in Abyssinia and Afghanistan and was made a K.C.B. in 1879.

In 1880, Roberts, now a general, made his famous march through Afghanistan to the relief of Kandahar. 1881 saw him appointed Commander-in-Chief in Madras and made a baronet. From 1885 to 1893 he was Commander-in-Chief in India and became Lord Roberts of Kandahar and Waterford in 1892. He was then promoted Field Marshal.

He was sent to South Africa to retrieve the situation after the early defeats of the Boer War. In 1901 he was created Earl, and became Commander-in-Chief of the British Army. He retired in 1904, but during the Great War visited the troops in France, and died November 14, 1914.

Robertson **Frederick William.** English preacher. Born in London, Feb. 3, 1816, the son of an officer in the army,

he was educated in Edinburgh and abroad, and articled to a solicitor at Bury St. Edmunds, but later he graduated at Oxford and was ordained in the Church of England in 1840. He was a curate at Winchester and Cheltenham before 1847, when he was made incumbent of Trinity Chapel, Brighton. During his six years here, Robertson won his place as one of the greatest preachers of the 19th century. His *Life and Letters* was edited by S. A. Brooke. He died Aug. 15, 1853.

Robertson **Sir William Robert.** British soldier. Born at Welbourn, Lincolnshire, Sept. 14, 1860, he enlisted as a private in 1877, and served in the ranks until 1888, when he won a commission in the Dragoon Guards. He was the first officer risen from the ranks to pass through the Staff College, 1897-8. He accompanied Lord Roberts in South Africa, and was at the War Office from 1901-07. From 1910-13 he was at the Staff College and the War Office.

In 1915 Robertson was chief of the general staff to Sir John French. He was recalled to the War Office, and made immediate improvements in the office, and in the disposal of forces in the different theatres of war. After the war he received a baronetcy, succeeded French as Commander-in-Chief of Great Britain, and commanded the British troops on the Rhine. He was made field-marshal in 1920.

Robertson **Thomas William.** English actor and dramatist. Born at Newark-on-Trent, Jan. 9, 1829, he came to London in 1848, where, after a long and varied experience of every department of stagecraft, he produced his first successful play, *David Garrick*, in 1864. His fame was definitely established by *Ours* (1866). Other successful plays followed, including *Caste* (1867), *School* (1869), *Home* (1869) and *Dreams* (1869). Nearly all his works were performed by the Bancrofts at the Prince of Wales's Theatre. He died Feb. 3, 1871.

Robeson **Paul.** Negro actor and vocalist. He was born on April 9, 1898, at Princetown, N.J., the son of a Presbyterian minister. Having graduated with honours at Rutgers College, and later, in law, at Columbia University, he started his career on the stage and concert platform as a singer of negro spirituals. He came to London in 1928 and played the title-rôle in *Emperor Jones* and *Othello*. Since then he has given many vocal recitals and has made films, including *Sanders of the River* (1935).

Robespierre **Maximilien François Isidore de.** French lawyer, statesman and revolutionary leader. Born at Arras, May 6, 1758, he became a deputy to the States General of 1789, and rose rapidly to power. After defeating his rivals, Hébert and Danton, he established the Committee of Public Safety. As leader of this committee he was responsible for the Reign of Terror in Paris in 1793. Among the thousands guillotined were his former rivals. With the support of the Paris commune he inaugurated the cult of the Supreme Being. He achieved dictatorial power, but was overthrown by his opponents, and was guillotined when dying from a gun wound on July 28, 1794.

Robey **George.** British comedian. Born Sept. 20, 1869, he was educated at London and Dresden. He made his first appearance on a music-hall stage at the Oxford in June, 1891, and since then has played in London, the provinces, and the colonies, in variety, revue, and pantomime. During the war he served with the Motor Transport, and organised performances for war charities, for which he was created a C.B.E. in 1919. In 1932 he won a success in *Helen*, and he has also acted in a film version of *Don Quixote* and in a musical play, *The Jolly Roger*. He is a clever artist and has exhibited at the Royal Academy. His autobiography appeared in 1933.

Robin British bird. It is bold in approaching houses and a cheerful songster, especially in winter. It is very prolific, often nesting two or three times in the year, with five to seven eggs in each brood. The familiar red breast is not so brightly coloured on the females as the males.

Robin Hood English legendary hero. He is represented in a series of old English ballads as a chivalrous outlaw living a care-free life with his companions, Little John and Friar Tuck, in the Sherwood Forest, helping the poor with his plunder from the rich. It is very doubtful if there is any historical basis for this legend, which certainly dates from the 14th century, for the "rymes of Robin Hood" are mentioned in *Piers Plowman* (1377).

Robin Hood's Bay Watering place of Yorkshire (N.R.). The town stands at the N. end of the bay, 6 m. from Whitby, on the L.N.E. Rly. The fishing village is on the coast and the modern town a little way inland.

Robinson **Lennox.** Irish dramatist, born at Douglas, County Cork, Oct. 4, 1886. His first play was *The Clancy Name*, produced at the Abbey Theatre, Dublin, in 1908. From 1910-14 he was manager of the Abbey Theatre, and in 1915 he was appointed organising librarian to the Carnegie Trust, which position he held until 1925. He again managed the Abbey Theatre from 1919-23, when he became its director. His best-known plays are *The Lost Leader* (1918), *The Whiteheaded Boy* (1916), *The Far-off Hills* (1931), *All's Over, Then?* (1932), and *Church Street* (1934). He has written a novel, *The Young Man from the South*, and several volumes of short stories, and has edited several volumes of verse.

Robinson **Mary.** English actress known as Perdita. Born in Bristol, Nov. 27, 1758, she first appeared on the London stage in 1776 as Juliet. Her beauty attracted much attention and as Perdita in *The Winter's Tale* she made a great reputation. In 1779 she became mistress of the Prince of Wales and later she lived with Charles James Fox. She died in poverty on Dec. 26, 1800.

Robinson **William Heath.** English artist. He was born May 31, 1872. His humorous drawings are a popular feature of many English periodicals. He has also done successful work as an illustrator of books, and has designed comic scenery for stage productions and decorations for the Knickerbocker Bar and Children's Room on the *Empress of Britain*.

Robot Mechanical man. The term was first used by Karel Capek in his play, *R.U.R.*, 1920, where it described a piece of mechanism, extraordinarily efficient, but wholly without heart or soul. Robots of varying degrees of efficiency have been invented.

Rob Roy Scottish outlaw. Born in 1671, his real name was Robert Macgregor, but in 1693 he adopted Campbell as a surname. In 1712 he gathered together a band

of followers and carried out raids on the estate of the Duke of Montrose, who, he alleged, was unfairly pressing him for debt. After a long career as a free-booter, which included many amazing escapades, he was arrested and imprisoned, but afterwards pardoned. He died at Balquhidder in Perthshire on Dec. 28, 1734.

Robsart Amy. English heroine. A daughter of Sir John Robsart, she was born about 1532. In 1550 she married Robert Dudley, who later became Earl of Leicester. She was found dead at Cumnor Place, near Oxford, Sept. 8, 1560, and it is believed that she was killed by Dudley, but there is no definite proof. Sir Walter Scott made her the heroine of his novel *Kenilworth*.

Roc Legendary bird. The roc appears in many Eastern tales, *e.g.*, the *Arabian Nights*. It is represented as possessing gigantic size and strength, sufficient, in the story of *Sinbad the Sailor*, to lift an elephant.

Roch French saint. He was born at Montpellier about 1295 and won renown by looking after the sick while a plague was raging. He died in prison, Aug. 16, 1327. S. Roch was regarded as the patron saint of those suffering from the plague and many Italian and other artists have portrayed scenes from his life.

Rochdale Borough and market town of Lancashire, on the Roch, 11 m. from Manchester and 196 m. from London, by the L.M.S. Rly. It is a centre of the cotton and woollen industries, but has also engineering and asbestos works. Cattle markets are held here. Rochdale is famous as the starting place of the co-operative movement. Pop. (1931) 90,278.

Roche **Sir Boyle.** Irish politician. Born in 1743, he became a soldier. In 1777 he was elected to the Irish House of Commons and in 1782 he was made a baronet. Owing to his wit and humour, which included some of the most celebrated "bulls" on record, he won a great reputation. He remained in Parliament until 1800 and died June 5, 1807.

Rochefoucauld **La.** *See* LA ROCHEFOUCAULD.

Rochelle **La.** French town, on the W. coast, opposite the Ile de Ré. It possesses the distinguished Hôtel de Ville, built in the Renaissance style. In 1891 the harbour at La Pallice, 3 m. away, was opened for the use of larger vessels. As a shipping centre, La Rochelle has important connections with the Newfoundland fishing industry. It was a Huguenot centre in the 16th and 17th centuries. Pop. (1931) 45,043.

Rochester City and market town of Kent, on the Medway, 33 m. from London, by the S. Rly. It is famous for its cathedral and its castle. The cathedral with a Norman front, has many other features of interest, including the crypt. The keep of the Norman castle overlooking the Medway is the most complete of its kind in England. Eastgate House is now a museum with a wing added in 1924. Restoration House is associated with Charles II. The city has several memories of Dickens, including the Bull Inn of the *Pickwick Papers* and Watts' Charity, where six poor men are fed and lodged every night, is described in *Edwin Drood*. The manufactures include cement and there is a trade along the river. Pop. (1931) 31,196.

Rochester City of New York state, U.S.A., on the river Genesee, 7 m. from its mouth, on the S. coast of Lake Ontario. It is a university town and also a manufacturing centre for clothing, boots, shoes, furniture, flour milling, etc. The most noteworthy structure is an aqueduct of seven arches by which the Erie Canal formerly crossed the river. Pop. 328,132.

Rochester **Earl of.** English title now extinct. The first earl was **Henry Wilmot,** who fought for Charles I. in the Civil War and was made an earl in 1652. His son, **John Wilmot,** the 2nd earl, was born April 10, 1647, and educated at Oxford. He is known as the author of satires and plays, and as one of the most licentious figures in a licentious age. Some of his plays cannot be published owing to their indecencies. He died July 26, 1680, and when his son, **Charles Wilmot,** the 3rd earl, died on Nov. 12, 1681, the title became extinct. It was then granted to **Lawrence Hyde,** but it became extinct again on his son's death in 1758.

Rochet Ecclesiastical vestment worn by bishops. Resembling a surplice with long tight sleeves. It was originally worn by bishops and abbots for religious ceremonies. In the Anglican Church loose sleeves of lawn are now attached to the black chimere under which the garment is worn.

Rock Term in geology for the constituent masses of the earth's crust, consisting of aggregates of minerals either of one kind as in pure sandstone or of several as in granite. From their origin, rocks are classified as sedimentary, metamorphic, and igneous. **Sedimentary rocks** have been deposited by the action of water and may be mechanically formed as in sands and clays, organically formed as in limestones and coals, or chemically formed as in certain limestones, gypsum and rocksalt. **Metamorphic rocks** have undergone alteration through pressure or heat as in slates and schists, while **igneous rocks** have solidified from a molten state and include granites, basalts, dolerites, etc.

Rockefeller **John Davison.** Oil magnate and philanthropist. Born at Richford, N.Y., July 8, 1839, he became, at the age of 50, the richest man in the world. By gradually absorbing smaller oil-producing companies, he ultimately controlled, through the Standard Oil Company, about 90 per cent. of the American refineries. He has distributed some $600,000,000 of his wealth, most of it for the establishment of—

1. The **Rockefeller Institute for Medical Research,** "to conduct, assist and encourage investigations in medicine, surgery and allied subjects."
2. The **Rockefeller Foundation,** "to promote the well-being of mankind throughout the world."
3. The General Education Board.
4. The **Laura Spelman Rockefeller Memorial.**

His son, John D. Rockefeller, Jr., born Jan. 29, 1874, has collaborated with his father in all his interests. In 1932 he made a public declaration against the failure of prohibition in the U.S.A. He is also largely responsible for the very costly new Rockefeller Center in the heart of New York City. When the site of the former Botanic Garden became available he saw its advantages as a retail business centre with headquarters for foreign interests and a complete radio city.

Rocket (*Hesperis*). Genus of plants of the order *Cruciferae*, including annual and perennial varieties. The single

flowered white or mauve rocket can be grown from seed sown in March or April. The double perennial variety is more successfully increased by cuttings. Another name is Dame's Violet.

Rocket Type of firework used in pyrotechnic displays and for signalling and life-saving. It consists of a cardboard cylinder closed at one end and fastened to a stick. The cylinder contains a gunpowder charge and fuse at the lower end, and a smaller charge with colours and stars in its head. When ignited at its base the rocket is propelled into the air where finally the head charge explodes, setting free the stars.

An engine in which a series of rockets are exploded in succession has been devised recently for propelling a car, boat or aeroplane and although some success has been obtained many initial difficulties have yet to be overcome.

The Rocket is the name of the first locomotive, invented by George Stephenson, which ran on the Manchester and Liverpool Railway in 1830. It can now be seen in the Science Museum at S. Kensington.

Rock Ferry Watering place of Cheshire, on the estuary of the Mersey, adjoining Birkenhead. It is connected by a ferry with Liverpool.

Rockhampton Town of Queensland, 35 m. up the Fitzroy river. It has excellent modern buildings, wide streets planted with trees. It is the port for the important pastoral and mining neighbourhood and is connected by rail with the Northern and Central Districts and with Brisbane. Pop. 30,000.

Rockingham Village of Northamptonshire, 8 m. from Kettering and famous for the ruins of its castle. **Rockingham Forest** once covered a large district near the village, but only a little of it remains.

Rockingham **Marquess of.** English title. In 1714 **Thomas Watson,** Baron Rockingham, was made an earl, but the title became extinct in 1746 when he died. His barony passed to **Thomas Watson-Wentworth,** a descendant of the great Earl of Strafford. He inherited the Northamptonshire estates of the Watsons and the Yorkshire estates of the Wentworths and in 1746 was made a marquess.

Charles Watson-Wentworth, his son, was born May 13, 1730, and succeeded to the title in 1750. He soon became prominent as a leader of the Whigs, and he was Prime Minister in 1765-66. In 1782 he was again Prime Minister, but three months later he died July 1, 1782. His titles then became extinct.

Rockingham Ware was made at Swinton, near Sheffield, in the 18th century. It is chocolate in colour and includes vases on which landscapes were painted.

Rocky Mountains American mountain range, or system of ranges. It is the watershed of the American continent, reaching from the Yukon river in Alaska to New Mexico in the S., a distance of 2200 m. In Colorado there are more than 40 peaks over 14,000 ft. high, the highest being Mt. Elbert. From this district northward the Rocky Mountains decrease in altitude as they contract in breadth. In the United States the northern group of mountains is divided from the southern by a broad depression in Central Wyoming, through which runs the Union Pacific railroad.

Rococo Architectural term for a peculiar style of ornamentation prevailing in France during the reigns of Louis XIV. and Louis XV. It was characterised by an excess of ornament in imitation of rocks and shell work associated with an irregular arrangement of doors and windows and an excessive use of curves.

Rod Measure of length and area, also called a pole or perch. In long measure it is 5½ yards and 40 rods make a furlong. A square rod, called a rood, is 40¼ square yards. In brickwork a cubic rod consists of 272 square feet of a standard thickness of 1½ bricks, or 306 cubic feet. It contains about 4500 bricks.

Rodent (Lat. *rodere*, to gnaw). Member of an order of gnawing mammals called *rodentia*. The beaver, rat, squirrel, mouse and rabbit are rodents.

Rodeo Spanish word used for the act of gathering together cattle for the purpose of branding them. It is done by the cowboys on the ranches of S. America and needs a good deal of skill. The word has come to be used for an exhibition at which cowboys show their skill in pursuing and catching the animals by means of ropes. Such exhibitions are held in both N. and S. America and have been seen in London.

Rodin **Auguste.** French sculptor. Born at Paris in 1840, from 1864 to 1870 he worked with Carrier-Belleuse, and then spent six years in Brussels, where he worked on the decoration of the Bourse. His first exhibition in the Salon was the "Bronze Age" of 1877, now in the Luxembourg. This was followed by several busts and the beginning of his twenty years' work on the "Portal of Hell." His famous "Burgesses of Calais" was exhibited in 1889, and the "Kiss" in 1898. His best known work in England is "Le Penseur," which was purchased in 1904 for the British nation. He died Nov. 17, 1917.

Rodney **Baron.** British admiral. Born at Walton-on-Thames, Feb. 13, 1719, and appointed admiral in 1778, George Brydges Rodney stands next to Nelson and Blake among the greatest of English seamen. One of his most brilliant victories was at Cape St. Vincent in 1780, when he defeated the Spanish fleet, allowing only 4 out of 11 ships to escape. In 1782 he drove the French fleet from the Atlantic by his crushing victory over De Grasse. He died May 24, 1792.

Roe-Deer Small deer (*Capreolus*) widely distributed in Europe, including Britain. About 2 ft. high at the shoulders, it has a reddish coat (brown in winter) and a white rump. The antlers are short, nearly vertical, with two or three tines. *See* DEER.

Roehampton District of Surrey. To the S.W. of Putney, it was once a park around a residence built by the 2nd Earl of Portland. Here is Queen's hospital for providing maimed soldiers with artificial limbs.

Rogation Days Three fast days in the Roman Catholic and Anglican churches. They are the Monday, Tuesday and Wednesday before Ascension Day, the preceding Sunday being Ascension Sunday. They are days on which special intercessions are made.

Rogers **Samuel.** English poet. Born at Stoke-Newington on July 30, 1763, he entered his father's bank, and became

its head in 1793. In 1781 he contributed essays to the *Gentleman's Magazine* and wrote a comic opera the following year. In 1792 appeared his chief poetical work, *The Pleasures of Memory*. In 1803 he retired and lived a life of gentle luxury in St. James's Place, touring abroad, giving celebrated breakfasts, and collecting art. He was also very generous in a quiet way, despite his bitter wit, for which he is most often remembered. He died Dec. 15, 1855.

Rokeby Village of Yorkshire (N.R.), 3 m. from Barnard Castle, at the junction of the Greta and the Tees. Here the family of Rokeby had a castle in the Middle Ages. The village was the scene of Scott's poem *Rokeby*.

Roland Frankish hero. A soldier in Charlemagne's army, he was killed at Roncesvalles in 778, when the Franks, returning from a campaign in Spain, were suddenly attacked in the pass. Legend made him a great hero, one of the paladins. He appears in Italian poetry as Orlando.

The Song of Roland was written between 1066 and 1099. It is the oldest and best of the *chansons de geste* and deals with the conquest of Spain by Charlemagne.

Roland **de la Platière, Manon Phlipon, Madame.** Wife of Jean-Marie Roland de la Platière. She was born in Paris, March 18, 1754, and was a woman of great intelligence and warmest sympathies. Devoted to literature and the arts, she held a famous salon, frequented mostly by Girondins, the political influence of which was considerable. The machinations of the Montagnards sent her to the guillotine, Nov. 8, 1793. Gazing at the statue of liberty, she exclaimed, "O Liberty; what crimes are committed in thy name!" Her *Mémoires* are widely read.

Rolland **Romain.** French writer. Born at Clamecy, Nièvre, Jan. 29, 1866, he became a professor at the Sorbonne, where he introduced the study of music and history. He has written many critical and historical works, including *Millais* (1902), *Beethoven* (1906) and *Jean-Christophe* (1904-1912), the biography of a German musician. In 1924 he wrote *Mahatma Gandhi* in defence of the Indian leader, and since then he has written *L'Ame Enchantée* (1927), *Goethe et Beethoven* (1931), etc. Some of his works have been translated into English, including *The Death of a World*, in 1933.

Roller Genus of birds, found in Europe and Asia and remarkable for their brilliant plumage. The blue roller, *corocias garrula*, with plumage brown and blue, visits Great Britain. The male bird has the curious habit, during the breeding season, of rolling over when in flight, hence the name.

Rolleston Village of Staffordshire, on the Dove, 4 m. from Burton-on-Trent, on the L.M.S. Rly. The hall, which stands in a large park, was long the seat of the Mosley family.

Rolling Mill Name given to a department of a steel works where ingots of metal are reduced to a convenient size and rolled into bars or sheets. The preliminary reduction in size of heavy ingots is done in a cogging mill where the metal is passed first between angular-grooved rollers and then between flat-grooved rollers. For making plates or sheets plain cylindrical rollers are used and the machines are furnished with a reversing gear.

Rollright Name of two villages in Oxfordshire, Great and Little Rollright, 3 m. from Chipping Norton. The **Rollright Stones**, near Little Rollright, are important remains of early man, and number about 60 in a circle. Apart from these is the King's Stone, 8 ft. high, and a dolmen of five stones called the whispering knights.

Rolls **Charles Stewart.** English engineer and airman. A son of Lord Llangattock, he was born in London, Aug. 28, 1877, and was educated at Eton and Trinity College, Cambridge. He studied engineering, both on the theoretical and the practical sides, and won a reputation by racing in motor-cars. He founded the works which became the **Rolls-Royce Co.** He next devoted his time to aviation and made flights which at that time were remarkable. He was killed at Bournemouth during a flight, July 12, 1910.

Roman Catholic Church

Numerically the largest body in Christendom. According to its own definition it is not *a* church among churches, but *the* Church. It claims (*a*) "One" in doctrine, sacraments and government. (*b*) "Holy" with a sanctity of life and character arising especially out of the sacramental system. (*c*) Catholic because its members are found in every part of the world. (*d*) "Apostolic," through an unbroken succession going back to the Apostle Peter. Among the distinctive doctrines of the Roman Church are the authority of ecclesiastical tradition, the seven sacraments, transubstantiation, the sacrificial aspect of the Mass, purgatory, the infallibility of the Pope and the immaculate conception of the Virgin Mary. The principal act of worship is the celebration of the Mass, said or sung in Latin, which, except in certain Eastern districts, is the official language of the Roman Church. The supreme council of the Church is the College of (70) Cardinals, who act as advisers to the Pope and at his death elect a successor. In 1935 the total Roman Catholic population of England and Wales was estimated at 2,321,117, Scotland, 608,000, Ireland (census 1926), 3,171,697.

Romanes **George John.** British biologist. Born in Canada, May 20, 1848, and educated at Cambridge, he published various works describing his research, and supporting the Darwinian theory of evolution. His works include *Scientific Evidence of Organic Evolution* (1881) and *Mental Evolution in Man* (1888). He also lectured extensively. He was elected F.R.S. in 1879, and in 1890 settled in Oxford where he founded the annual Romanes lectureship. He died May 23, 1894. His work, *Darwin and after Darwin*, was published partly in his lifetime and partly posthumously.

Romanesque Architecture

Style of architecture prevailing in Europe from the 9th to the middle of the 12th century and representing a development of the Roman tradition. The Roman basilica became the type for the church and from this developed the complex cruciform building. The use of the round arch and vaulting, the slenderness of the columns, the basket form of capitals, arched cornices and an increase in size, number and tracery of the windows are among the characteristics of this style.

Romani Town of Egypt, 20 m. E. of the Suez Canal. Here on Aug. 3, 1916, the Turks attacked a British force of Australian and New Zealand troops defending

the canal. The Turks won an initial success, but their advantages were soon lost and on the 8th they retreated with heavy losses.

Romania Term used by historians for the Latin kingdom that was founded at Constantinople in 1204. It was set up by Baldwin, Count of Flanders, and other crusaders, who took Constantinople and made Baldwin its king. The kingdom had a troubled career and in 1261 came to an end when the Byzantine emperor, Michael Palaeologus, retook Constantinople.

Romanoff Family name of the Tsars of Russia. It means "son of Roman," a Russian noble of the 16th century. His descendant, **Michael**, became Tsar in 1613, but the male line died out in 1730. The later Romanoffs are descended from Anna, daughter of Peter the Great, and her husband, Duke of Holstein-Gottorp. They ruled until the abdication of the Tsar **Nicholas II.** in 1917. Since his murder the Romanoffs have been represented by several grand dukes, uncles or cousins of the last Tsar. *See* NICHOLAS II.

Romans **Epistle to the.** First of the Pauline epistles in the New Testament Canon. It was probably written at Corinth at the close of Paul's third missionary journey to the Christians at Rome, whom he hoped to visit later. It is the most systematic and theological of all the apostle's writings, setting forth his doctrine of the revelation of God's righteousness for man's salvation. It also contains much ethical teaching.

Romanticism Name used for a free and imaginative style in literature and art. It tends to idealise the experiences and facts of nature and life, and is thus the opposite of realism. The **Romantic movement** developed late in the 18th century and with it the names of Scott, Burns and others of that period are associated. In the 20th century there has been a movement from romanticism to realism, both in literature and art.

Rome Capital city of the kingdom of Italy, the headquarters of the Roman Church, and formerly the capital of the Roman Empire. It stands on both banks of the Tiber, 17 m. from its mouth, and is an important railway centre. In it is the Vatican city, an independent state under the sovereignty of the Pope. The seven hills are the Capitoline and the Palatine, the centres of ancient and imperial Rome, the Quirinal, the royal and official quarter, the Esquiline and the Viminal, which are industrial districts, and the Aventine and Coelian, which are partly open country.

One of the world's most wonderful cities, Rome is full of objects of interest. Chief among these are the Forum, where in recent years excavations have discovered remains of many temples and other buildings, the forum of **Trajan**, the cathedral of St. Peter, and the Vatican with its artistic and other treasures and the Sistine chapel. Of the many churches that of S. John Lateran may be mentioned; near it is the Lateran palace. Other buildings are the ruined Colosseum, the castle of S. Angelo and the Pantheon; there are a number of palaces where the great Roman families lived. Modern buildings include those erected since 1871 for government purposes. The walls and some of the gates of the old medieval city still stand. Other features are the Catacombs (*q.v.*), the triumphal arches and the fountains. The Corso is the chief street. Rome has a university and for it new buildings, forming a university city, were begun in 1932.

The foundation of Rome is usually dated 753 B.C. The emperor Augustus and his successors added building to building and made it the most magnificent city in the world. These buildings were chiefly temples and palaces, the latter on the Palatine hill, including the Golden House built by Nero, and the residence erected by Domitian. Other emperors were responsible for baths, aqueducts and other features of the city's life. These buildings began to decay after the fall of the empire, but a new era opened with the popes of the Renaissance, especially Sixtus V. To them we owe S. Peter's and most of the older buildings of the modern city. After 1871 a period of expansion began. It has three broadcasting stations, of which the most important operates at 441 M., 50 kW. Pop. (1931) 999,964. *See* VATICAN.

Rome Empire of the ancient world. It grew up around the city of Rome which remained its capital for the thousand years of its existence. Traditionally the city was founded in 753 B.C. and the first inhabitants were people of a Latin race. A few years later they united themselves with the Sabines and a series of wars made them famed in the region in which they lived. Ostia, at the mouth of the Tiber, was built, and the authority of the state was extended in other directions. In 529 Tarquin, the last of the seven kings, was exiled, and the city became a republic.

Kings having been removed, the chief officials were the consuls, who served for a year. Under them many conquests were made, with the result that in some 200 years after Tarquin's expulsion the whole of Italy, with some slight exceptions, was ruled by Rome, which was soon strong enough to take full advantage of the decline of Greek civilisation. In 264 B.C. the first of Rome's wars with Carthage began. These lasted for over a century and in the end Carthage was not only beaten but destroyed.

During this struggle, Rome, now a strong naval power, made her first acquisition of territory outside the mainland. Sicily and then Corsica and Sardinia were acquired, and a little later Greece was invaded. The Macedonian kingdom was destroyed and the Roman armies were also victorious in Asia Minor. Spain and then Gaul were brought within the Roman sphere of influence and the Roman possessions in Africa were extended. Meanwhile the constitution of the city was being slowly altered so as to meet the new conditions. The conquest of Gaul was largely the work of Julius Caesar, in whose time the realm was torn by civil war, not however for the first time. In 46 B.C. Caesar made himself dictator, but in 44 he was murdered. His heir was his nephew, Octavian, who, as Augustus, became the first of the Roman emperors, a position he reached after crushing Antony and his other rivals, his crowning victory being at Actium in 31 B.C.

Soon after the death of Augustus the Romans conquered England and invaded Scotland, but this was almost the last of their conquests. The age of expansion was over. The Empire centred around the Mediterranean and included the south and north-west of Europe, Asia Minor and a fringe of Africa. It was divided into provinces, and under Augustus and his immediate successors was governed with wisdom and moderation. There were many wars with the barbarians who lived beyond its frontiers, but in the empire itself peace and

security prevailed, at least during the Augustan age, one also of great literary activity.

Augustus was followed in 11 B.C. by Tiberius and the succeeding emperors included Caligula, Nero and Domitian. Vespasian, a usurper, was a better ruler, but the best of all were Trajan, Hadrian and the Antonines, and the period during which they governed the empire is regarded by Gibbon as the most fortunate in the world's history. But with the death of Marcus Aurelius the decline began. His son, Commodus, a worthless ruler, was assassinated by the soldiers, who nominated emperors in quick succession, while the barbarians became more and more menacing. The decline was arrested by the efforts of Claudian, Aurelian, and above all, Diocletian, but the old system of government had been destroyed and the new one, with the realm under two, three or four caesars, was unequal to its tremendous task. In A.D. 323 Constantine the Great became emperor and soon made himself sole ruler, and in 330 he moved his capital from Rome to Byzantium. After his term there was one ruler in the east and another in the west, and most of them were fully occupied in resisting the barbarians who were bursting into the empire on all sides. Italy was overrun and Rome itself was sacked by Alaric. In 455 the last emperor of the west, Romulus Augustus, resigned his barren honour and the Roman empire ceased to exist, the mediaeval and Holy Roman Empires arising from its ashes. *See* EMPIRE.

Romford Urban district and market town of Essex, on the Rom, 16 m. from London, by the L.N.E. and L.M.S. Rlys. The industries include breweries and engineering works and important cattle markets are held here. An arterial road connects it with Wanstead. Pop. (1931) 35,918.

Romilly **Sir Samuel.** English lawyer. He was born in London on March 1, 1757, and entered Gray's Inn, specialising in chancery practice. He was appointed Solicitor-General and knighted in 1806, and sat in Parliament until 1818. Despite heavy opposition, he persevered in introducing bills to mitigate the severity of the criminal laws. He took part in the anti-slavery agitation, and opposed the suspension of the Habeas Corpus Act. He committed suicide on Nov. 2, 1818.

Romney **New.** Borough of Kent, 75 m. from London, on the S. Rly. It was one of the Cinque Ports and was governed by jurats, but in the course of time the sea receded and the harbour was left useless. About 2 m. to the W. is the village of **Old Romney.** Pop. (1931) 1786.

Behind the town is the district called **Romney Marsh,** covering about 200 sq. m., and noted as a grazing ground for sheep.

The title of **Earl of Romney** has been borne since 1801 by the Kentish family of Marsham.

Romney **George.** English painter. He was born at Dalton-in-Furness, Dec. 15, 1734, and after a period as a cabinet-maker, studied painting, became a portrait painter and came to London in 1762. For 35 years he devoted himself to his art, living mainly in London, and was very successful. His best known portraits are those of Lady Hamilton. He died Nov. 15, 1802.

Romsey Borough and market town of Hampshire, on the Test, 10 m. from Southampton and 80 m. from London, by the S. Rly. The magnificent Norman church was once the church of a religious house for women. There is a trade in agricultural produce and some manufactures. Near the town is Broadlands, once the residence of Lord Palmerston. Pop. (1931) 4863.

Romulus Founder of Rome and its first king. Legend says that he was the son of Mars and Rhea, the daughter of a king and a vestal virgin. In infancy, Romulus and his twin brother, Remus, were thrown into the Tiber by their uncle, but the trough in which they were placed went aground. The children were suckled by a wolf and brought up by a shepherd. While Romulus and Remus were building walls around the city they founded, a quarrel arose and Remus was killed. Romulus became king of Rome and united the Romans and the Sabines. Taken to heaven in a chariot, he was deified and worshipped by the Romans as Quirinus.

Ronald **Sir Landon.** English musician. Born June 7, 1873, he studied music at the Royal College of Music, and in 1894 he conducted opera at Covent Garden. The same year he accompanied Melba on an American tour. He has been principal of the Guildhall School of Music since 1910, and conductor of the New Symphony Orchestra since 1908. He is the author of some 300 songs and a great deal of music for the orchestra. In 1931 he published a volume of reminiscences.

Ronaldshay Two islands of the Orkneys, called North and South, 3 m. and 8 m. long respectively. South Ronaldshay is the more fertile of the two, with some interesting remains, and 2000 inhabitants. North Ronaldshay has only 400.

The title of **Earl of Ronaldshay** is borne by the eldest son of the Marquess of Zetland. **Lawrence John Dundas,** who succeeded to the marquisate in 1929, was prominent in public life when Earl of Ronaldshay. He travelled much and wrote on his travels, was M.P. for Hornsey, 1907-16, and Governor of Bengal, 1917-22. He wrote the *Life* of Lord Curzon of Kedleston.

Roncesvalles Village of Spain, in the Pyrenees, 21 m. from Pampeluna. The pass through the mountains here is regarded as the place where the army of Charlemagne was defeated by the Basques in 778, the paladin Roland being killed.

Rondeau Form of poem. It consists of close rhymes and a refrain, and was popular in France in the 17th century, when it contained 13 lines. These were divided into three unequal strophes. The 2 or 3 first words of the first line served as the burden and recurred after the 8th and 13th lines. There are English examples in the works of Swinburne.

Rondebosch Suburb of Capetown, South Africa. It lies 5 m. to the south of the city and comprises Groote Schuur (*q.v.*). There is a town hall in Rondesbosch which is a favourite place of residence for workers in Capetown.

Ronsard **Pierre de.** French poet. He was born at the Chateau de la Poisonniere in Vendôme, Sept. 11, 1524. After spending his youth as page and courtier, he became deaf and turned to study and poetry. He formed a group with du Bellay and other poets which aimed at reviving French verse, and adopted the name of *La Pléiade.* This group of writers was responsible for the increase of classical influence in French poetry. He died at Tours, Dec. 27, 1585.

Röntgen **Wilhelm Konrad von.** German physicist. He was born in

Prussia, March 27, 1845, and after studying at Zurich, he was professor at Strassburg, Giessen, Wurzburg and Munich. His original discoveries in science were numerous, but his most famous work was the discovery of the X-rays (1895), called now the **Röntgen rays.** Following on research by Hertz, Röntgen first showed that these rays would pass through the body and print a shadow picture of the bones on a sensitive photographic plate. He died Feb. 10, 1923.

Rood Measure of land. It is 40 perches or a quarter of an acre and therefore consists of 1210 sq. yards. It is sometimes known as a square pole.

Rood Term applied to a cross and especially to the large crucifix in churches representing the scene of the Passion with the figures of angels or S. John and the Virgin on either side. It was placed usually upon the **rood screen** separating the nave from the chancel, and was probably coloured. The rood was common in English churches up to the time of the Reformation.

Rook Gregarious bird of the crow family (*Corvus frugilegus*). In Gt. Britain it remains through the year, in more northern climes it is a migrant. Its colonies are usually in high elms. The plumage is black, with a bare patch at the base of the bill, said to be caused by digging for the insects and grists which mainly form its food.

Rooke **Sir George.** English sailor. He was born near Canterbury in 1650, son of Sir William Rooke. Entering the navy, by 1689 he had risen to the rank of Rear-Admiral. In 1692 he was knighted for his services at Cape La Hogue. He commanded the successful Cadiz expedition of 1702, and with Sir Cloudesley Shovel he captured Gibraltar in 1704. He died Jan. 24, 1709.

Roosevelt **Franklin Delano.** American president. Born in New York, Jan. 30, 1882, and educated at Harvard and Columbia, he was admitted to the New York Bar in 1907 and was a member of the New York Senate, 1910-13. From 1913-20 he was Assistant-Secretary of the navy, and was made Governor of New York, 1929-31. In 1932 he was elected as President of the United States, defeating Mr. Hoover. A member, like Woodrow Wilson, of the Democratic party, he threw himself at once into the task of economic reconstruction, and handled with skill and vigour the various international problems in which his country was involved. Though insisting on the payment of war debts, he invariably showed willingness to discuss terms with the debtor countries. He is the author of *Whither Bound?* (1926), *The Happy Warrior* (1928), *Looking Forward* (1933) and *On Our Way* (1934).

Roosevelt **Theodore.** 26th President of the U.S.A. He was born in New York, Oct. 27, 1858, his father being of Dutch descent, and his mother, Scotch-Irish-Huguenot. He was educated at Harvard University. Entering public life early, he was President of the New York Police Board, 1895-97, where he made strenuous efforts to stem corruption. At the outbreak of the Spanish War he raised the famous "Rough Riders," commanding the regiment himself. In 1898 he became Governor of New York State, and in 1900 Vice-President of the U.S.A., automatically becoming President on the assassination of McKinley, Sept. 14, 1901. During his term of office he had many conflicts with "Big Business," directing all his efforts to prevent the gradual strangulation of the free development of industry in the interests of the people. The result was that in 1904 he was re-elected for a second term by an overwhelming majority. In 1905 he was largely instrumental in bringing about peace between Japan and Russia, and was awarded the Nobel Peace Prize. In 1912 he split the Republican vote between himself and Taft, thus causing the election of Woodrow Wilson, Democrat. His great interest, apart from politics, was big-game hunting. He made expeditions to Brazil and Africa, and wrote several books on the subject, also on historical and general matters. He died Jan. 6, 1919.

Root **Elihu.** American lawyer and politician. He was born at Clinton, New York, Feb. 15, 1845. After serving with the Republican Party as Secretary for War (1899-1904) and Secretary of State (1905-09), he devoted himself to the cause of international peace and was awarded the Nobel Peace Prize in 1912. He headed the U.S. Diplomatic Mission to Russia in 1917 and represented his country at the Washington Disarmament Conference in 1921. His writings include *The Citizen's Part in Government*, 1907, and *Men and Policies*, 1924.

Rorke's Drift Historic place on Buffalo River, Zululand. On Jan. 22, 1879, shortly after the disaster to a British force under Lord Chelmsford at Isandhlwana, Rorke's Drift was successfully held against a Zulu onslaught by a handful of the 24th Regiment under Lieutenants Chard and Bromhead.

Rorqual Animal belonging to one of the two divisions of the whalebone whales. They include the largest living animal, the blue whale, but are less valuable than right whales as their whalebone is coarse and short and there is less blubber. They live in northern waters.

Rosa **Carl August Nicolas.** German musician. He was born at Hamburg, Mar. 22, 1842. The opera company which bears his name was formed in 1875 with the object of encouraging English composers and producing their works. His first wife was the famous operatic soprano Madame Parepa. He died in Paris, April 30, 1889.

Rosa **Salvator.** Italian artist. The son of an architect and law surveyor, he was born at Renella, near Naples, July 21, 1615. He studied under Riberia and afterwards under Falcone, the battle-painter. His picture, "Tityus tortured by the Vulture," brought him fame in 1638. His reputation rests mainly upon his landscapes, which are characterised by a wild and rugged freedom. He died in Rome, March 15, 1673.

Rosario Second largest city in Argentina. On the River Parana, 190 m. from Buenos Aires, it is an important railway centre and possesses an excellent harbour, and the largest sugar refinery in Argentina is found here. The town is laid out with mathematical regularity. It was founded in 1730, but was still no more than a small village in 1850. Pop. (1931) 485,351.

Rosary String of beads used by Roman Catholics for counting their prayers. The devotions themselves are sometimes called rosaries. The festival of the Rosary, kept on the first Sunday in Oct., commemorates the victory of the Christians over the Turks at Lepanto in 1571.

Roscoe **Sir Henry Enfield.** British chemist. Born in London, Jan. 7, 1833, he studied chemistry at University

College, London, and later at Heidelberg (under Bunsen). For thirty years he held the Chair of Chemistry at Manchester University, and was M.P. for South Manchester from 1885-95. He served as Vice-Chancellor of London University from 1896-1902, became an F.R.S. in 1863, and a knight in 1884. He died at Leatherhead, Dec. 18, 1915.

Roscommon Market town of Co. Roscommon, Irish Free State: also the county town. Founded about 700, it is an agricultural centre, 85 m. from Dublin, on the G.S. Rlys. There are ruins of a 13th century castle. Pop. (1931) 1830.

Roscommon County of Ireland. It is in the Province of Connaught and wholly inland. It covers 990 sq. m. and is bounded by the Shannon and the Suck. There are hills in the north and east and the country has many lakes, Ree and Allen among them. Cattle, sheep and pigs are reared, especially on the plain of Boyle. Oats and potatoes are grown and a little coal is mined. Roscommon is the county town; other places are Elphin, Boyle and Castlereagh. Pop. (1926) 83,556.

Roscrea Market town of Co. Tipperary, Irish Free State. It is on the Little Brosna River, 77 m. from Dublin, on the G.S. Rlys. The town has a round tower, and was the seat of a bishop. It is a centre for the sale of cattle and agricultural produce. Pop. (1926) 2770.

Rose Flowering tree or shrub of the order *Rosaceae*. From the wild rose, *Rosa canina*, have been developed numerous strains, added to each year, with widely different characteristics. The main groups are ramblers, climbing roses, bush and standards, in each of which are a profusion of varieties. As a result of hybridization and careful selection types have been evolved which are free flowering and yield blooms for 5 or 6 months of the year. Autumn is the best time to plant.

Rosebery **Earl of.** English statesman. Archibald Philip Primrose was born in London, May 7, 1847, the son of Archibald, Lord Dalmeny, his paternal grandfather being the 4th Earl of Rosebery. He went to Eton and Christ Church, Oxford, and in 1868 succeeded his grandfather in the earldom.

In 1878 he married the heiress, Hannah Rothschild, and in 1881 he joined the Liberal Ministry as Under Secretary to the Home Office. In 1883 he was made first Commissioner of Works and in 1885 Lord Privy Seal. He followed Gladstone when the Liberal Party was divided on home rule and in 1886 was Foreign Secretary. He was again Foreign Secretary, 1892-94 and in 1894 succeeded Gladstone as prime minister.

The Radicals disliked his idea of a continuous foreign policy and the Nonconformists his association with the turf. In 1895 he resigned and he never took office again, using his influence in the House of Lords till his retirement from politics in 1905. In 1910 he denounced the budget introduced by Lloyd George. He died at Epsom, May 31, 1929. In 1911 he was made Earl of Midlothian. Three times his horses won the Derby—1894, 1895 and 1905.

Rosebery's fame rests upon his literary gifts, rather than his political career. A graceful speaker, he coined phrases that have become historic, while he was equally attractive with his pen. His books include studies of Pitt, Peel, Napoleon and Chatham, and a short life of his friend, Lord Randolph Churchill.

Lord Rosebery had four children. His elder son, Lord Dalmeny, a cricketer and hunting man, succeeded him as 6th earl. The younger son, Neil Primrose, was killed in Palestine, Nov. 18, 1917.

Rose Mallow (*Hibiscus*). Genus of tropical and subtropical plants and shrubs of the order *Malvaceae*. The beautiful flowers are striking and richly coloured. Largely cultivated under glass, some varieties can be grown in the open air under suitable conditions. There are many species, the two shrubs, *H. syriacus* and *H. rosa-sinensis*, together with *H. roscus*, being the true rose mallows. The name is also given to a specially large and beautiful species of hollyhock.

Rosemary (*Rosmarinus officinalis*). Hardy evergreen perennial shrub. Two or three feet in height, it has fragrant green leaves from which an aromatic oil is extracted. The small violet flowers are borne in early summer.

Roseneath Watering place of Dumbartonshire. It is on the Gareloch, near Helensburgh, and is a calling place for steamers. Roseneath Castle, a modern building near the site of an older one, is a seat of the Duke of Argyll.

Rose of Jericho (*Anastatica hierochuntica*). Cruciferous plant of S. Europe with small, white flowers. After flowering the plant withers and the stems curve inward, forming a dry, shrivelled ball. Being light, these balls are carried by the wind in all directions.

Roses Wars of the. Civil war that took place in England between 1455 and 1485. It arose when Henry VI. was king. He became insane, and Richard, Duke of York, like Henry, a descendant of Edward III., claimed the throne. Henry's supporters, the Lancastrians, took a red rose as their symbol, and the Yorkists a white one.

There were a number of battles, beginning with St. Albans in 1455, with periods of truce between them. At the Battle of Northampton, in 1460, Henry was made prisoner and in 1461 York was killed at the Battle of Wakefield. The Lancastrians were defeated at Towton and their cause was hopeless until the Earl of Warwick changed sides in 1470. Henry was then released from prison and restored to the throne. However, at Barnet and Tewkesbury in 1471, the Lancastrian armies were crushed and the war was virtually over, although it is usually regarded as ending with the Battle of Bosworth, where Henry VII. defeated his enemies in 1485.

Rosetta Stone Inscribed slab of black basalt found at Rosetta in the western delta of the Nile by a French artillery officer in 1799. It came into the possession of the British Government later and is now in the British Museum. It bears fourteen lines of hieroglyphic writing, thirty-two of demotic, and fifty-four of Greek, and records a decree made by Ptolemy V. Epiphanes about 196 B.C. It furnished a key to the decipherment of Egyptian writing.

Rosewater Solution of a small quantity of otto of roses in water prepared usually by distillation. Considerable quantities are made in and exported from the South of France and other rose-growing countries.

Rose Window Large, circular window in Romanesque and especially Gothic cathedrals. It is divided by elaborate tracery into a central compartment with others radiating from it, the divisions being filled with stained glass.

Rosicrucians Supposed secret society. It is represented in a book called *Fama Fraternatis des loblichen Ordnungs des Rosenkreuzes*, which appeared at Cassel in 1614, as having been formed about 150 years earlier to (among other things) relieve sickness and poverty with gold manufactured by use of the philosopher's stone. Though the literature on the subject is extensive it is doubtful whether such a society existed. The word is used as the title of an order in Freemasonry.

Roslin Village of Midlothian. It is 6 m. south of Edinburgh, on the L.N.E. Rly. It is famous for its chapel and ruined castle. The chapel is the choir of an unfinished church and is remarkable for the beauty of its carvings, especially its prentice pillar. It dates from 1446. The castle, of which a considerable portion remains, was a seat of the St. Clair family. At one time Roslin was a burgh, to-day it is a mining centre. From it the family of St. Clair Erskine takes the title of earl.

Ross Urban district and market town of Herfordshire. It is an agricultural centre, on the Wye, 12 m. from Hereford, on the G.W. Rly. Pop. (1931) 4738.

Ross **Sir John.** Arctic explorer. Born in Wigtownshire, June 24, 1777, he entered the navy at the age of nine. After good service in the wars against France, he began Arctic exploration in 1818, when he attempted to find a North-West Passage, and explored Baffin's Bay. He was knighted in 1833, and in 1850 attempted without success to find Sir John Franklin. He died on Aug. 30, 1856.

Ross **Sir Ronald.** British physician and bacteriologist. Born at Almora, India, May 13, 1857, he studied medicine in London, and in 1881 entered the Indian Medical Service. Until 1899 he made researches into the disease-carrying insects, and later became Professor of Tropical Medicine at Liverpool University. After being at King's College, London, in 1913, he became Director-in-Chief of the Ross Institute and Hospital for Tropical Diseases. During the Great War and after he was the chief consultant on malaria. He received a Nobel prize for medicine in 1902, and knighted in 1911. Died Sept., 1932.

Rossall Village of Lancashire. It is on the coast, three m. from Fleetwood. Here is a school for boys opened in 1844, and one of the great public schools.

Rosse **Earl of.** Irish title borne by the family of Parsons. It dates from 1806 and the family seat is Birr Castle, Parsontown. Its most famous holder was William Parsons, the 3rd earl. He was born, June 17, 1800, and sat in Parliament from 1823 to 1834. He won a great reputation as an astronomer. At Birr Castle he built a great telescope and did much valuable work. He was president of the Royal Society, 1849-54 and died Oct. 31, 1867.

Rossetti **Christina Georgina.** English poetess. She was born in London, Dec. 5, 1830, and, except for very short absences, her life was spent in the metropolis. Her first published book of poems was *Goblin Market* (1862). This was followed by a steady output of verse characterised by deep religious feeling and delicate grace. Miss Rossetti was the sister of Dante Gabriel Rossetti. She died Dec. 29, 1894.

Rossetti **Dante Gabriel.** English poet and painter. He was born in London, May 12, 1828, the son of Gabriele Rosetti, an Italian poet and critic. His poem *The Blessed Damozel* was written before he was twenty, but his early fame was that of a painter. In art he was influenced by Ford Madox Brown and became one of the founders of the Pre-Raphaelite Brotherhood (*q.v.*) in 1848. A collection of poems, after being buried with his wife (Elizabeth Siddall, d. 1862) was disinterred and published in 1870. A great passion for beauty is the principle which unifies his art and poetry. He died at Birchington, April 9, 1882.

Rossetti **William Michael.** English literary critic. Brother of Dante Gabriel Rossetti, he was born in London, Sept. 15, 1829, and was a civil servant until his retirement in 1894. He translated Dante's *Inferno* (1865) and wrote a memoir of his brother (1895). He also edited the *Germ*, the magazine of the Pre-Raphaelite Brotherhood. He died Feb. 5, 1919.

Rossi **Giovanni Battista de.** Italian painter and sculptor. He was born at Florence in 1494. At the invitation of Francis I. he undertook the decoration of Fontainebleau Castle. His work consists of frescoes, representing mythological scenes and incidents from the life of S. Francis. One of his pictures, "Lamentation for Christ," hangs in the Louvre. He committed suicide in 1541.

Rossini **Gioacchino Antonio.** Italian composer. He was born at Pesaro, Feb. 29, 1792. The son of a strolling player, he studied music at Bologna, and began his musical career as a singer and later as accompanist. His most famous compositions are *Il Barbiere di Seviglia* (1816), *Guillaume Tell* (1829) and *Stabat Mater* (1832-39). Though he composed no work of importance after the age of thirty-seven, his place among the greatest writers of opera is unquestioned. He died Nov. 13, 1868.

Rosslare Seaport and holiday resort of Wexford, Irish Free State. It is 6 m. from Wexford and 97 from Dublin, on the G.S. Rlys. Its harbour was enlarged for the G.W. Rly. steamer service between Fishguard and Ireland, started in 1906.

Rosslyn **Earl of.** Title borne by the family of Erskine. The 1st earl was Alexander Wedderburn. Born Feb. 13, 1733, the son of a Scottish lawyer, he became a barrister in London, and an M.P. In 1771 he was made Solicitor-General, and in 1778 Attorney-General. In 1780 he became Chief Justice of the Common Pleas, and from 1793 to 1800 he was Lord Chancellor. In 1780 he was created Baron Loughborough, and in 1801 Earl of Rosslyn. He died Jan. 2, 1805.

Leaving no sons, Rosslyn's title passed to a nephew, James St. Clair-Erskine, who, since 1782, had sat in the House of Commons. He was Lord Privy Seal, 1829-30, and Lord President of the Council, 1834-35. He died in 1837. James Francis St. Clair-Erskine (b. 1869), became the 5th earl in 1890. His eldest son is called Lord Loughborough.

Ross Sea Antarctic Sea. It was discovered by, and named after,

Capt. J. C. Ross, R.N., in 1839. In 1841, after penetrating a wall of pack ice, he found the sea to be ice-free.

Ross-shire County of Scotland, in full Ross and Cromarty. In the N. of the country, it stretches from the E. to the W. coast. It includes part of Lewis and some other islands of the Hebrides. Dingwall is the county town: other places are Stornoway, Cromarty, Tain, Strathpeffer and Invergordon. The soil is unfertile and largely devoted to deer forests. Of the many mountains, some are nearly 4000 ft. high. The Alness, Oykell and Conon are the chief rivers. Maree and Fannich are the chief of many lochs. The area is 3089 sq. m. One member is returned to Parliament. Ross and Cromarty were separate counties until 1889, when they were united, as Cromarty consisted of small pieces of land scattered throughout Ross. Pop. (1931) 62,802.

Rostand **Edmond.** French dramatist. He was born at Marseilles, April 1, 1868, and educated at the Lycée there. He is the author of numerous plays, including *Les Romanesques*: the brilliant *Cyrano de Bergerac*: *L'Aiglon* and *Chantecler*, a farmyard fantasy. He died Dec. 2, 1918.

Rostock Town in the German republic of Mecklenburg. It is 8 m. from the coast, on the River Warnow, which is navigable up to the town for sea-going ships of 19 ft. draught. It is one of the most important commercial centres on the Baltic. Pop. 72,200.

Rostrum Platform from which a speaker addresses an audience. In ancient Rome the rostra (plural) was the platform between the forum and comitium used by public speakers. It was so-called from the rostra or beaks of captured galleys which decorated it.

Rosyth Seaport of Scotland. It is on the N. side of the Firth of Forth. The dockyards and other works were begun in 1909 and greatly enlarged during the World War, when Rosyth became one of the chief naval stations. It had wet and dry docks capable of taking the largest warships. Land was recovered from the sea and protected by a sea-wall. The great basin was nearly a mile long, and near it was a submarine basin. In 1925 the dockyard was closed.

Rotary Club Organisation for business men. The first club was established in 1905 by Paul Harris, a Chicago lawyer. Each member represented a different trade or profession, and its motto was service not self. Other clubs were established in the United States, and the idea spread to Britain. The members meet at stated times for luncheon, and afterwards discuss some social or other topic. The clubs are federated into an international association which holds an annual convention. The international headquarters are in Chicago.

Rotation Form of motion in a circular path of a line, plane or solid. In a line having one end fixed, the other or free end may describe a circle round it in the same plane or parallel planes. Similarly, a plane may rotate around any point or line in it: and a rotating solid revolves round a row of fixed points forming a straight line and termed the axis of rotation. The rate of rotation may be measured by the number of revolutions in a given time, or may be expressed in terms of angular velocity.

Rothamsted Village of Hertfordshire. It is near Harpenden. Its manor house and the estate were the property of Sir John Bennet Lawes (1814-1900), who here carried out valuable agricultural experiments. In 1889 he endowed the station and since then the work has been carried on by the Lawes Agricultural Trust. The experimental station covers 40 acres and receives assistance from public funds.

Rothbury Market town and urban district of Northumberland. Much frequented by tourists, it is situated on the Coquet, 11 m. from Alnwick, on the L.N.E. Rly. Pop. (1931) 1255.

Rothenburg Town of Bavaria. It stands on the Tauber, 36 m. from Nuremberg. One of the most perfect medieval towns existing, it is still surrounded by its walls and gates, and its narrow streets remain unchanged. The town's capture during the Thirty Years' War is annually celebrated by a play. Pop. 9000.

Rothenstein **Sir William.** English artist. He was born Jan. 29, 1872, in Bradford, and studied at the Slade School of Art. He became famous through his lithographed portraits of distinguished authors, and during the Great War was made one of the official painters to the British armies. In 1920 he was appointed Principal of the Royal College of Art, South Kensington. He published his *Reminiscences* in 1932.

Rother River of Sussex. It rises S. of Rotherfield and enters the sea at Rye. Its length is 30 m., and for part of its course it forms the boundary between Kent and Sussex.

Rotherfield Village of Sussex. It is 8 m. from Tunbridge Wells and 39 from London, by the S. Rly.

Rotherham County borough and market town of Yorkshire (W.R.). It is 6 m. N.E. of Sheffield and 163 from London, by the L.M.S. Rly. The rivers Don and Rother meet near the town, which has glass and pottery manufactures, and metal and chemical works. Pop (1931), 69,689.

Rotherhithe District of London. Part of the borough of Bermondsey. A tunnel connects it with Stepney across the river, and in the district are the Surrey Commercial Docks.

Rothermere **Viscount.** English newspaper proprietor. Harold Sidney Harmsworth was born at Hampstead, April 26, 1868, being a younger brother of Viscount Northcliffe. He left the civil service to join his brother in the publishing business, and the two soon made of this a gigantic concern. In 1896 the two started *The Daily Mail* side by side with that of the Amalgamated Press, which was confined to weekly and monthly publications. In 1910 he was made a baronet: in 1914 a baron: and in 1919 a viscount. In 1916 he was made Director-General of the army clothing department, and in 1917 he was Minister for Air.

In 1922, on his brother's death, he returned to *The Daily Mail* as chief proprietor, and became a leading figure in the newspaper world.

Lord Rothermere is one of the most generous private benefactors of his time. He has endowed professorships at both the older universities. He bought the site of Bethlem Hospital for a public pleasure ground, and

has made the acquisition of the site of the Foundling Hospital possible.

Rothes Burgh of Moray. It is on the Spey, 10 m. from Elgin, on the L.N.E. Rly. Pop. (1931) 1260.

The title of **Earl of Rothes** has been borne by the family of Leslie since 1457 or earlier. In 1680-81, its holder, who was Lord Chancellor of Scotland, was a duke. The title has several times been held by a woman. The earl lives at Leslie House, Fife, and his eldest son is called Lord Leslie.

Rothesay Burgh and watering place of Bute, also the county town of Buteshire. On Rothesay Bay, and 40 m. from Glasgow, the town has a good harbour and some fishing and shipping, and is a popular pleasure resort and yachting centre. Pop. (1931) 9316.

The Prince of Wales bore the title of **Duke of Rothesay.** The 1st duke was David, son of King Robert III., and it was borne by other heirs to the Scottish throne.

Rothley Village of Leicestershire. It is 108 m. from London and 5 from Leicester, on the L.N.E. Rly. Here is Rothley Temple, the house in which Lord Macaulay was born. In the Middle Ages the knights templars had a preceptory here.

Rothschild Name of a world-famous banking family. The founder was Meyer Amschel, who was born in Frankfurt in 1743, and who laid the foundations of their great fortune by gaining the confidence of the Landgrave of Hesse, by commissions on moneys sent by the British Government to Wellington in Spain during the Peninsular War, by raising large loans for Denmark, 1804-12, and by skilful management of the Landgrave's fortune. He died Sept. 13, 1812, leaving five sons, who established themselves respectively in Frankfurt, Vienna, London, Naples and Paris. The grandson of the third (1840-1915), was the first Jew to be made a peer (1885), and the present holder of the title, Lionel Walter (b. Feb. 8, 1868), succeeded his father in 1915.

Rothwell Urban district of Yorkshire. It is 4 m. from Leeds and is a centre of the coal-mining and cloth-manufacturing industries. Pop. (1931) 15,639.

Rothwell Urban district of Northamptonshire. It is 4 m. from Kettering, on the L.M.S. Rly. The town has a Jesus hospital dating from 1590. The chief industry is the manufacture of boots and shoes. Pop. (1931) 4516.

Rotorua Town and lake in New Zealand. The lake is 7 m. long by 5 m. broad, with the volcanic island of Mokaia in the centre. The town, on the S.W. shore of the lake, is famous as a beauty spot and health resort, and also has a scientific interest as the centre of the remarkable volcanic hot spring district. It is surrounded by luxuriant forests, with the curative baths at Whaharewarewa close at hand.

Rotten Row Thoroughfare in Hyde Park, London. It extends from Hyde Park corner to Coalbrookdale Gate, and is reserved for horse-riding. *See* HYDE PARK.

Rotterdam City and seaport of Holland. It is on the New Maas, 20 m. from the sea, is accessible to the largest ships and has 16 m. of quays. Long a famous city, Rotterdam was the birthplace of Erasmus (*q.v.*) whose statue is in the great market-place. The 15th century Groote Kerk contains a famous organ with nearly 5000 pipes, and there are a number of museums and an old and a new town hall. Apart from shipbuilding, Rotterdam manufactures tobacco cigars, margarine, rope, leather, etc., but is more important as a commercial centre, having an extensive overseas trade. The city has many canals. Pop. (1932) 587 316.

Rotunda Circular building usually with a dome. The most famous example is the Pantheon at Rome built by Hadrian in the 2nd century and now used as a church.

Roubaix Town of France. It is 6 m. from Lille, and is served by railway and canal. Before the war the town shared with Turcoing pre-eminence as one of the busiest industrial centres in France, especially in the production of woollen, cotton and other textiles. It was occupied by the Germans, 1914-18. After the war it was adopted by Bradford and was rebuilt. Pop. (1931) 117,190.

Rouble Russian coin. Before 1917 it was coined in silver and to some extent in gold. It was worth 2s. 1½d., and was divided into 100 kopecks. Paper roubles were issued in immense quantities during the war period and soon became valueless. Under the Soviet rule the rouble has been restored to its former value.

Rouen City and river port of France. It is on the Seine, 87 m. from Paris and 54 from the coast at Havre. As the capital of the old duchy of Normandy, the old part of the city is full of interest. Chief among its buildings is the Gothic cathedral. It dates mainly from the 13th century and is notable for its west front, its towers, its monuments and its stained glass. The Church of St. Ouen is regarded as a wonderful work of art. Those of St. Maclou and St. Vincent are famous for their stained glass. The palais de justice is a fine Gothic building, and there is a gateway containing a large clock, the celebrated *grande horloge*. There are suburbs across the river which is crossed by three bridges, one a transporter bridge.

Rouen is a prosperous river port. Other industries are the manufacture of cotton, chemicals, machinery, soap, boots and other articles, the refining of oil and railway shops. Pop. (1931) 122,957.

Rouge-et-Noir Gambling card game also known as Trente-et-Quarante (*q.v.*)

Roughrider Trainer of unbroken horses. In its plural form the name is also given to irregular mounted troops, such as T. Roosevelt raised for service in Cuba during the war between the United States and Spain.

Roulers Town of Belgium. It is 19 m. from Bruges, and is an important railway junction. It is a centre of textile manufactures, and at one time was famous for its cloth. From 1914 to 1918 it was in German occupation. Pop. (1931) 27,669.

Roulette French game of chance. It is a feature of the gambling rooms of Monte Carlo. The roulette table, covered with a green cloth, is made up of two similar halves with a space in the middle for the wheel, the spaces at the side being marked "passe," "pair," "manque," "impair,' and with black and red diamonds. The wheel is divided into 37 compartments, alternately

black and red, the 37th being zero. The croupier throws the ball as the wheel is spinning, and the number upon which it comes to rest wins.

Roundel Name used for a tune, a poem and a dance. The poem was sung to the tune, the first strain being repeated at intervals and so giving the idea of a circle, or small round. In the dance the dancers stood in a cirle and joined hands. In heraldry roundels are circular charges, and are given different names according to their tinctures, gold or yellow being called bezant and silver or white a plate.

Rounders Outdoor game. The implements are a stick and a ball. The members of one side strike the ball in turn, when it is tossed to them, each as he does so running to a base, of which there are several in the field: if possible he runs round to the striking post, passing all the bases. If a member of the fielding side hits him with the ball before he reaches a base, he is out. He is also out if the ball is caught in the field or if he fails three times in succession to hit the ball.

In 1889 an association was founded, and rules for the game were drawn up. These provide for sides of 10 players each, and a stick or bat not more than 35 inches in length. There are five bases, 15 or 20 yards from each other, and the field is shaped like a pentagon. A hard ball is used, and to be out the striker must be touched with it instead of having it hurled at him. Baseball certainly, and cricket probably, owe something to rounders. *See* BASEBALL: CRICKET.

Roundhead Epithet of derision applied by the king's men to a supporter of the Parliament during its struggle with Charles I. It was an allusion to the puritan habit of wearing the hair cropped close to the head.

Round Robin Name for a petition signed by several persons. It was given a round shape so that those addressed could not tell who first wrote his signature, and so possibly penalise him as a ringleader. The name is also used popularly for certain small fishes.

Round Table Table which King Arthur and his knights used for their feasts. It was made round so that there should be no jealousies about precedence. According to legends an order of the round table was founded by Uther, the father of Arthur. It had 150 members. There are references to it in Malory's *Morte d'Arthur* and Tennyson's *Idylls of the King*.

Round Tower Tall, slender, circular and somewhat tapering edifice surmounted by a conical cap. Round towers are found mostly scattered over Ireland, but three occur in Scotland, and they are supposed to have been used as watch-towers or refuges. The older towers probably date from the 9th century, but many were built in the 12th and 13th centuries. The door of the tower was 6 to 20 ft. above ground, and communicated by ladders with the several storeys.

Roup Disease of poultry. It is something like catarrh and may arise from keeping the birds in restricted surroundings. It is marked by discharges from nose and mouth and is very contagious. The birds attacked should therefore be isolated and treated by a veterinary surgeon.

In Scotland a roup is the usual name for an auction.

Rousseau **Jean Jacques.** French writer and philosopher. He was born at Geneva, Jan. 28, 1712. After a more or less vagabond career, he found his way to Paris, and achieved fame in 1750 with his *Discours sur les Sciences et les Arts*. *La Nouvelle Héloise*, with its genuine sentiment and love of nature, was the forerunner of Romantic literature in France. *Émile* did much to promote modern theories of education and the upbringing of children, and *La Confession de Foi d'un Vicaire Savoyard* helped to purify and simplify the religion of his contemporaries. In the political sphere, *Du Contrat Social* was to a large extent responsible for the ideas and policy of the revolutionary leaders in 1789. He died July 2, 1778.

Rousseau **Pierre Étienne Theodore.** French artist. Born in Paris, April 15, 1812, he studied art there. Soon he attracted attention by his landscapes, although it was not until 1849 that they were admitted to the Salon. In 1848 he settled at Barbizon, and was a leading member of the group there until his death, Dec. 22, 1867. Rousseau was much influenced by the Dutch painters, and in his turn influenced those who followed him.

Rowfant Railway station of Sussex. It is 4 m. from E. Grinstead, on the S. Rly. Near is a Tudor house, famous for the collection of books made here by Frederick Locker-Lampson (1821-95).

Rowing Art of propelling a boat by means of oars. It forms part of every seaman's calling, whether in the fighting or the merchant service, and is also a sport. As a sport it has been brought to a wonderful state of perfection by improvements in the build of the boats and the style of oarsmanship. The most famous rowing race is that held annually between the universities of Oxford and Cambridge. It has been held since 1829, each crew numbering eight. In other races the crews number four or two, an even number being essential as each man pulls a single oar.

In sculling, a man uses two sculls, and, therefore, sculling races can be held between two competitors. A rowing crew usually carries a cox for steering the boat, but races between coxswainless fours are held. A great event of the rowing year in England is the regatta, founded in 1839, at Henley-on-Thames, to which crews come from many parts of the world: and of which there is an offshoot in Australia. Practically all rowing races are strictly confined to amateurs. To control the sport there is an amateur rowing association, and the chief rowing club is the Leander, with headquarters at Henley.

Rowlandson **Thomas.** English artist. Born in London in 1756, he studied art here and in Paris. His landscapes and portraits made him popular in his day, but his more enduring fame rests upon his caricatures. These dealt with current political events and occupied him from 1784 until his death. They were remarkably powerful, both in conception and in design, and expressed the idea of the populace. Rowlandson died in London, April 22, 1827. In another vein were his drawings entitled "The Three Tours of Dr Syntax."

Rowley Regis Market town and urban district of Staffordshire. It is 5 m. from Birmingham

on the G.W. Rly. The industries include the manufacture of hardware and coal-mining. Pop. (1931) 41,238.

Roxana Wife of Alexander the Great. She was the daughter of a prince of the Bactrians. The king met her when on a campaign in Asia and married her a short time before his death. After that event she bore him a son, Alexander, the heir to the vast empire. She took him to Macedonia, but soon the pair were imprisoned, and in 311 B.C. were murdered by order of Cassander.

Roxburgh Burgh of Scotland, now represented by a village. Near Kelso on the Tweed, it is on the L.N.E. Rly., and is sometimes called New Roxburgh. The burgh stood where the Tweed and the Teviot unite, and was an important border fortress in the Middle Ages.

Roxburghe Duke of. Scottish title borne by the family of Innes-Ker. In 1616 Robert Ker was made Earl of Roxburghe, and in 1707 John Ker, the 5th earl, was made a duke. He was a Secretary of State at that time, and this title was a reward for helping to unite the two parliaments. John, the 3rd duke, is known as the curator of a famous library which was sold in 1812. He died in 1804 without sons and the dukedom was claimed by Sir James Innes, a descendant of the 1st earl. His claim was admitted, and his descendants, the family of Innes-Ker, have since held the title. The duke's seat is Floors Castle, near Kelso, and his eldest son is called the Marquess of Bowmont.

Roxburghshire County of Scotland. It is in the S., touching the English border, and covers 666 sq. m. It contains peaks of the Cheviot and the Eildon Hills, and is famous for its scenery. The chief river is the Teviot: others are the Tweed, Liddel, Ale and Jed. Jedburgh is the county town; other places are Hawick, Melrose, Kelso and St. Boswells. The county contains the ruined abbeys of Melrose and Jedburgh, and such famous border strongholds as Hermitage, Branxholm and Harden. Roxburghshire is famous for its sheep. With Selkirkshire it sends one member to Parliament. Pop. (1931) 45,787.

Royal Academy of Arts, *see* ACADEMY; of Music, *see* MUSIC.

Royal College of Music, *see* MUSIC; of Organists, London college. It has commodious quarters in Kensington, which include a fine organ and well-appointed library, and offers Associateship and Fellowship by a combined practical and theoretical examination. The college, whose president is elected annually, was founded in 1864.

Royal Family Term including the sovereign and all the members of his family. In Great Britain, the members of the royal family are confined to the descendants of Queen Victoria, the other descendants of George III. and earlier sovereigns, having, for one reason or other, passed out of the circle. Some of the descendants of Victoria have also passed out of it by having married into foreign royal or imperial families. Members of the royal family are addressed as royal highness, and enjoy precedence on state occasions.

The British royal family traces its descent back to Alfred the Great and the Anglo-Saxon kings of England. Matilda, the wife of Henry I. was a descendant of these kings. From this pair the line continued to Richard III., and then came Henry VII. who was descended from Edward III. After the death of Elizabeth, James VI. of Scotland, a descendant of Henry VII. succeeded, and his granddaughter, Sophia, was the mother of George I. Since then descent has been in the direct line. The line of succession is now (1936) the Duke of York, the Princess Elizabeth, the Princess Margaret, the Duke of Gloucester, the Duke of Kent, his young son and the Princess Mary and her children.

Royal Household Inclusive term denoting the attendants of the sovereign. In England it consists of the Lord Steward's department, the Lord Chamberlain's department, and the department of the Master of the Horse. The Lord Steward and the Lord Chamberlain are always peers and members of the government. The Lord Steward's department includes the Treasurer, Comptroller, Master of the Household, Almoner and Paymaster of the Household, and the Lord Chamberlain's consists of the Vice-Chamberlain, Master of the Ceremonies, the Gentleman Usher of the Black Rod (*q.v.*), Lords- and Grooms-in-waiting, and others, including the Dean of the Chapels Royal and other attendants, religious, medical and for the arts. The Master of the Horse, who has charge of the horses and hounds of the sovereign, has under him equerries and pages-of-honour. There is also a Privy Purse department, consisting of the king's personal staff.

Other members of the royal family have their own households, that of the queen consort being under a lord chamberlain and including, among others, a mistress of the robes, ladies of the bedchamber and maids-of-honour.

Royal Society English learned society, the chief of its kind. It was founded in 1645, and received a charter from Charles II. in 1660. It has had its headquarters in various places, including Wadham College, Oxford, but since 1857 has been at Burlington House, London, W.C. The society holds meetings, gives medals and in other ways encourages scientific research. Its membership (F.R.S.) is a coveted distinction and its president is usually one of the great scientists of the day.

The **Royal Society of Edinburgh** fulfils a like purpose in Scotland. It was founded in 1739. Its headquarters are at 22 George Street, Edinburgh, and its members are known as F.R.S.E. or F.R.S. (Edin.).

Royat Inland watering place of France. It is near Clermont-Ferrand in the Puy-de-Dôme district, and stands high amid the mountains. Its waters, known to the Romans, are arsenical, chalybeate and alkaline.

Royston Urban district and market town of Hertfordshire. It is 12 m. from Hitchin, on the L.N.E. Rly. Its church belonged to an Augustinian priory. James I. had a palace here, and near the town a hermit's cave was found in 1742. Pop. (1931) 3831.

Royston Urban district of Yorkshire. It is 4 m. from Barnsley, on the L.M.S. Rly. The main industries are coal and steel. Pop. (1931) 7156.

Royton Market town and urban district of Lancashire. It is 3 m. from Oldham, on the L.M.S. Rly., and is a centre of the cotton manufacture. Pop. (1931) 16,687.

Ruabon Town of Denbighshire. It is 5 m. from Wrexham, on the G.W. Rly. There are some manufactures and around are coal mines. Pop. 3386.

Ruanda District of Africa. It lies between Tanganyika and Uganda, and is governed by Belgium under mandate from the League of Nations. Before 1919 it was part of German E. Africa. Nianza and Kigali are the chief places. With Urundi its area is about 15,000 sq. m., and the population is about 3,000,000.

Rubber Elastic substance also known as caoutchouc. It is derived from the milky latex of various tropical trees, the chief commercial kind, Para rubber, being from a species of Hevea, a euphorbiaceous genus. Ceará rubber is derived from another genus, *Manihot*, while Assam rubber is chiefly the latex of *Ficus elastica* belonging to the *Moraceae*. Rubber chemically consists of a mixture of resins, hydrocarbons, water and other substances.

Formerly S. America was the chief source of rubber, but Hevea trees are cultivated now in immense plantations in Malaya, the E. Indies, Ceylon and other countries. The trees are tapped when about five years old by making incisions in the bark, the latex being collected in cups. The crude rubber is formed into sheets or crepe for export, and its strength and elasticity are improved by vulcanisation. Rubber enters in some form into most industries and, as ebonite, or vulcanite, has many uses in electrical, chemical and similar trades.

Rubble Small undressed blocks of stone of various shapes and sizes used in masonry. In rubble work for walls the stones in some cases are slightly dressed with the hammer and laid unevenly. In many ancient walls the outer surfaces were of ashlar or dressed stone in proper courses, with the middle space filled with rubble.

Rubefacients Group of medicinal substances. When applied to the skin they cause a slight temporary congestion or dilatation of the superficial capillaries, producing a reddening effect. They are used as a counter-irritant in inflammation of the deeper structures. Among rubefacients in common use are mustard, turpentine, chloroform, pepper, hot fomentations and friction.

Rubens **Peter Paul.** Flemish artist. He was born at Siegen in Westphalia, June 29, 1577. His father was a citizen of Antwerp, and in that city the son settled when only ten years old. His father being then dead, he lived with a family called Lalaing, and there began to study art. He worked under several great painters, and spent some years in Venice, Rome, Milan and other Italian cities. In 1608 he returned to Antwerp where he lived until his death, May 30, 1640. Though primarily occupied in painting, he found time to go on missions for the Dutch Government to Madrid, London and elsewhere.

Rubens was the greatest painter of his day, and one of the greatest of all time. He painted about 1250 pictures, of which over 30 are in the National Gallery, London. The works in Antwerp, notably those in the cathedral, are perhaps his masterpieces.

Rubicon Small river of Italy. At one time it formed the boundary between Italy and Gaul. In 49 B.C., Caesar crossed it and so gave the signal for civil war, and to-day the phrase "crossing the Rubicon" is used as a synonym for any decisive step.

Rubinstein **Anton Gregorovitch.** Russian musician. Born Nov. 28, 1829, in Bessarabia, he studied music in Moscow, Paris and Berlin. As a boy he attracted the attention of Chopin and Liszt. In 1858 the tsar appointed him court pianist, and in 1862 he founded a conservatoire of music in St. Petersburg. This he conducted for some years, but he also found time for tours in England and the United States, where he became very popular. He was in Russia when he died, Nov. 20, 1894. Rubinstein wrote much music for the piano, as well as many operas. He left some *Memoirs*.

Rubric Order to the clergy about the conduct of services. Originally rubrics were written or printed in the old service books in red, hence the name (Lat., *ruber*, red). In the English Book of Common Prayer the rubrics are usually printed in italics.

Ruby Transparent variety of corundum coloured red by ferric oxide. When pure in colour and flawless, the ruby comes next in value to the diamond, and is of greater value when of large size and of a bright carmine shade known as "pigeon's blood." The best rubies are found in crystalline limestone in Burma, also in gem gravels in Ceylon and Siam. Many so-called rubies are garnets, spinels or tourmaline.

Rudd (*Leuciscus erythropthalmus*). Small freshwater fish. It has red fins and eyes, and is known also as the red eye. Like a roach in appearance, it is common in British rivers, and usually weighs about 1 lb., but is seldom used for the table.

Rudyard Lake of Staffordshire. It is near Leek and is 2 m. long, being the largest sheet of water in the Midlands. It serves as a reservoir for the Trent and Mersey Canal. The village of Rudyard is on the edge of the lake.

Rue (*Ruta graveolens*). Perennial plant. Of shrub-like growth, it has small bluish-green leaves and clusters of yellowish flowers. The leaves are bitter and contain an oil used for medicinal purposes. Rue is also known as herb of grace.

Ruff Small bird found in Europe and Asia. At one time it was common in the marshy districts of England. It is migratory, moving southwards to the Mediterranean region in the cold weather. The ruff is about 12 in. long and its plumage is mottled-brown, grey and black. In the breeding season the male grows tufts of feathers on both sides of the head, and a broad ruff of feathers on the throat. The female, called the reeve, lays its eggs in a nest of coarse grass placed among rushes.

Ruffe (*Acerina cernua*). Small freshwater fish. Allied to the perch, it is about 6 in. in length, and has only one dorsal fin; its food consists of worms and insects. It is also known as the pope.

Rufford Abbey Seat of Lord Savile. It is 2 m. from Ollerton, Nottinghamshire, and occupies the site of a Cistercian abbey founded in 1148. When the monasteries were dissolved, the estate passed to the Talbots and then to the Saviles. The first house was built about 1648; the present one is modern in the

Jacobean style. The earlier one was the home of the Marquess of Halifax, who passed here the days of his retirement. In 1784 it came to the Earl of Scarborough, and in 1856 was bequeathed to John Savile, a natural son of the 8th Earl of Scarborough. He was made Baron Savile, and the abbey remained the residence of his successors in the title until 1932, when it was closed.

Rufiji River of Africa. It rises in Nyasaland and flows through Tanganyika to the sea opposite the island of Mafia. Its course is mainly N.E. and E., and parts of it are navigable. In July, 1915, the German cruiser *Königsberg* was destroyed in the river.

Rugby Borough and market town of Warwickshire. It stands on the Avon, 82 m. from London and 30 from Birmingham, and is an important junction on the L.M.S. and L.N.E. Rlys. The chief buildings are the churches of Holy Trinity and St. Andrews and the hospital of St. Cross. The principal industry is engineering. Cattle and sheep fairs are held. Rugby was made a borough in 1932. At Hillmorton, nearby, the Post Office has a radio transmitting station with a world-wide range.

Rugby School is one of the great English public schools. It was founded in 1567 by Lawrence Sheriff, and until the 19th century was a small grammar school. Its present site was bought in 1740, and in 1809 the existing buildings were begun. In 1827 Thomas Arnold became head master, and under his direction the school took a prominent place. The buildings now include a chapel, observatory, museum, library and laboratories. There is accommodation for about 600 boys. The school is governed by trustees and is divided into three blocks. There is a war memorial, part of which consists of scholarships for the sons of old boys who were killed. Rugby gives its name to a form of football and a form of fives, and the school has been immortalised in Thomas Hughes' story, *Tom Brown's School-days*.

Rugby Union Association controlling football as played according to Rugby rules. There is an association in each of the four countries, England, Scotland, Ireland and Wales, all of which are represented on an international board responsible for the rules. The English union was founded in 1871, and the others at later dates. The union, which is confined to amateurs, owns the ground at Twickenham, where its headquarters are.

Rugeley Urban district of Staffordshire. It is 124 m. from London, on the L.M.S. Rly. The industries are agricultural, and near are coal mines. Pop. (1931) 5263.

Rügen Island of the Baltic Sea. It belongs to Germany, and covers 373 sq. m. Divided from Pomerania by the narrow strait of Strelasund, it is a summer holiday resort. The inhabitants are chiefly engaged in fishing and rearing cattle. Bergen is the capital. From 1648 to 1815, when it was ceded to Prussia, the island was a Swedish possession. Pop. 49,000.

Ruhr River of Germany. A tributary of the Rhine, it flows through Rhenish Prussia to fall into the larger river at Ruhrort. It is 145 m. long and the last 45 m. of its course are canalised. It flows through a great industrial district, in which are Essen and other iron and steel manufacturing centres.

In Jan., 1923, as the Germans failed to pay the money agreed upon as reparations, the French occupied the Ruhr district. This led to trouble, as the German inhabitants refused to work. Though this difficulty was overcome, the French remained in the region until 1925. The British took no part in the occupation.

Ruislip District of Middlesex. It is 13 m. to the N.W. of London, on the Metropolitan Rly. A residential area, its population has greatly increased in recent years.

Rule Controlling principle or regulation. The term is found in the rules of a game or of a society. It is also used for the regulations (rules of court) that govern the procedure in a court of law. The regulation of a monastic order is known as its rule, *e.g.*, the rule of S. Benedict.

The **rule of the road** consists of regulations laid down by convention or sometimes by law, to facilitate the movement of traffic. In Great Britain the rule for vehicles is to keep to the left and to pass a vehicle in front on the right. In France, Germany and other parts of Europe, also in the United States, the rule is to keep to the right. Pedestrians in crowded streets should keep to the left.

At sea the rule of the road is for ships to pass port to port, port being the left-hand side. A red light shows the port side and a green the starboard. The jingle used by sailors is, "Green to green, or red to red, perfect safety, go ahead." Steamers give way to sailing ships. There is also a rule of the road for aircraft.

Rum Spirit distilled from diluted cane sugar molasses which have been fermented by the action of a yeast. Inferior grades are distilled from the skimmings of the pans, fresh cane juice, etc., and in France from beet molasses. It is coloured with caramel or by storing in sherry casks, and its aroma is increased by age. Jamaica, Demerara and Martinique are the chief centres of rum manufacture. A liqueur known as rum shrub is made from rum, sugar and lime juice.

Rum Island of Scotland. It is one of the Hebrides, and belongs to the county of Inverness. It covers 42 sq. m. The soil is poor and the only inhabitants are a few crofters and fishermen. The mainland is 15 m. away.

Rumania Kingdom of Europe. It occupies a piece of land between Ukraine, Poland, Hungary, Yugoslavia and Bulgaria, with a coastline on the Black Sea. It consists of Moldavia and Wallachia, the original Rumania, to which, in 1918-19, were added Bessarabia, Bukovina and Transylvania. The surface is hilly in parts, but mainly a plain. The rivers include the Sereth, Pruth, Jiu, Arges and Aluta, while the mouth of the Danube is here. The Dniester forms the N. boundary. The area is 122,282 sq. m. Pop. (1930) 18,025,037.

The capital of Rumania is Bucharest; other places are Chishinau, Cernauti, Iasi and Galatz. Galatz, Braila and Constantza, are the chief ports. Agriculture is the main industry. Maize, wheat and barley are grown, and there are large forest areas. Much oil is produced; salt is a state monopoly, and there are coal mines. The country has a national bank, and uses the metric system of weights and measures. There is an army raised by compulsory service and a small

navy on the Black Sea. The people belong to the Greek Church, there being a national orthodox church of Rumania under two metropolitans.

Rumania is governed by a legislature of two houses. One is the chamber of deputies, the members being elected by all adults. The second chamber is the senate which consists of elected and life members, bishops and others. The executive is in the hands of a council of ministers under a premier.

In 1859 Moldavia and Wallachia, then part of Turkey, were united under a hospodar, or lord. In 1861 he became Prince of Rumania and ruled as a vassal of Turkey until 1866, when Carol, a Hohenzollern prince, was chosen as ruler.

In 1878 Rumania became independent of Turkey, and in 1881 Carol took the title of king. He died in 1914 and was succeeded by his son, Ferdinand, during whose reign Rumania entered the Great War on the side of the Allies. In 1927 Ferdinand died, and, his son Carol having renounced the succession, a grandson, Michael, became king. In 1930, however, Carol returned from his retirement and the legislature accepted him as king in place of his son Michael.

Rumelia **Eastern.** District of Bulgaria. In the S. of the country, it lies along the valley of the Maritza. Philippopolis is the chief town and Burgas, on the Black Sea, the chief port. Long part of the Turkish Empire, it was united with Bulgaria in Sept., 1885. *See* BULGARIA.

Rumford **Kennerley.** English singer. Born in London, Sept. 2, 1870, he was educated at King's School, Canterbury. He studied singing in Paris and London, and in 1897 first appeared in London. Possessing a beautiful bass voice, he was for the next 30 years one of the most popular singers in the country. In 1900 he married Clara Butt (*q.v.*).

Ruminant Type of ungulate mammals. They chew the cud and have the stomach divided into three portions. The unmasticated food is passed into the paunch where it becomes macerated; it is then returned to the mouth for thorough mastication, and again swallowed for digestion in the second and third stomach chambers. Cattle, sheep, goats and deer are ruminants.

Runciman **Walter.** English politician. He was born at S. Shields, Nov. 19, 1870, the son of a wealthy shipowner, Sir Walter Runciman. After passing through Trinity College, Cambridge, he joined his father in business, and between 1924 and 1929 held some of the chief positions in the shipping industry. In 1899-1900 he was Liberal M.P. for Oldham, and from 1902-18 for Dewsbury. In 1924 he was elected for Swansea West, and in 1929 and 1931 for the St. Ives division. In 1898 he married Miss Hilda Stevenson, who was Liberal M.P. for St. Ives, 1928-29.

In 1905 Runciman was made Parliamentary Secretary to the Board of Trade, and in 1907 Financial Secretary to the Treasury. From 1908-11 he was President of the Board of Education, from 1911-14 of the Board of Agriculture and from 1914-16 of the Board of Trade. Although a free trader he expressed himself in favour of some kind of tariff reform during the economic crisis of 1929-31, and was one of the Liberals who broke away from the leadership of Lloyd George. In 1931 he took office as President of the Board of Trade in the National ministry, continuing in this office in June and Nov., 1935. He was largely responsible for the import duties imposed in 1932, and represented Great Britain at the Ottawa conference.

Runcorn Market town, urban district and river port of Cheshire. It is on the Mersey and the Manchester Ship Canal, 16 m. from Liverpool and 28 from Manchester, on the L.M.S. Rly. Chemicals and soap are made, and for the shipping there are ample docks. A transporter bridge across the Mersey connects the town with Widnes. Pop. (1931) 18,158.

Rune Character in the old Scandinavian alphabet. This had at first 24 characters, but was later reduced to 16. Having no curves, they were well adapted for carving on stone, and stone inscriptions in Runic characters are still found, one or two being on crosses in Great Britain. Runes were inscribed on bone and metal and on coins.

Runge Island in the Bay of Riga. It belongs to Estonia, and on it about 200 people are occupied in fishing and farming. For about 1000 years they and their ancestors have lived on communistic principles, there being no private property except clothing and personal belongings. Each farm consists of narrow strips scattered over the island. The community elects its own officials to see that the island customs are safeguarded.

Running Form of sport and exercise since very early times. The Greeks were, perhaps, the first to popularise it, when they included it among the contests at the Olympic Games. To-day running is divided into the following classes:

(*a*) The sprint, or short distance, where the start is of paramount importance.
(*b*) Middle distances, which require more endurance and running skill.
(*c*) Long distances, which may be anything from 3 m. and upwards, and where a high level of training and a sound knowledge of timing are essential.

Steeplechasing and cross-country, relay and team racing are all popular varieties.

Runnymede Field near Egham, Surrey. It is on the S. side of the Thames, 20 m. from London. Here in 1215 King John is believed to have signed Magna Carta, although the event may have taken place on Charter Island in the river. Magna Carta house has been built on the supposed site. The field, or mead, is the property of the National Trust.

Rupee Monetary unit of India. It is a silver coin worth normally 1s. 6d. in English money. It is divided into 16 annas. It also circulates in Ceylon, British E. Africa and Mauritius.

Rupert German prince and English soldier. A son of the elector palatine Frederick V. and Elizabeth, daughter of James I., he was a nephew of Charles I. He was born at Prague, Dec. 17, 1619, and when little more than a boy became a soldier. In 1642 he came to England to assist Charles, and made a reputation as a cavalry leader, the impetus charges of his men being very successful until Cromwell organised his force.

In 1648 Rupert went to sea in command of the fleet, and did good service in this capacity until defeated by Blake off Malaga in 1650. He returned to England in 1660 and, a man

of considerable gifts, left his mark in two spheres of activity. He had something to do with the colonisation of the great area named after him, Rupertsland, and he introduced into England the mezzotint process of engraving. He died Nov. 29, 1682.

Rupert's Land Old name for the part of Canada that lies around Hudson Bay, and is now known as part of the N.W. Territories. It was long the property of the Hudson Bay Company, but was sold in 1867, and is now divided between the N.W. Territories and the provinces of Ontario, Manitoba and Quebec. The Anglican Church in Canada calls one of its heads the Archbishop of Rupert's Land.

Rupprecht **Prince.** Until 1918, crown prince of Bavaria. Owing to his descent from Charles I., he is regarded by legitimists (*q.v.*) as the rightful king of England. In the Great War he commanded an army on the western front.

Rupture Term used in two senses by medical men. In one it is another name for hernia, or the protrusion of a part of the body through an abnormal opening. *See* HERNIA.

The other rupture is a breaking or a bursting, as the rupture of a blood vessel.

Rural Dean Clerical official in the Church of England. Rural deans existed in the Christian church in early times, but disappeared during the Middle Ages. Their duties were to assist the bishops. In the Church of England they were revived in the 19th century. Each diocese is now divided into rural deaneries. Rural deans assist the bishops in pastoral matters, leaving business affairs to the archdeacons.

Rush Genus of plants, mainly perennials. The botanical name is *Juncus*. Rushes grow in temperate and cold climates and in wet and sandy soil, and are distinguished by their long, straight, smooth stems. They bear small flowers in clusters, and the stems are either hollow or filled with a white pith. Rushes were long used for lighting purposes. To-day they are gathered chiefly for plaiting into mats and similar articles.

Rushden Urban district of Northamptonshire. It is 66 m. from London and 4 from Wellingborough, on the L.M.S. Rly. The main industry is the manufacture of boots and shoes. Pop. (1931) 14,247.

Ruskin **John.** English art critic and author. He was born in London, Feb. 8, 1819, and educated at Oxford, winning the Newdigate Prize in 1839. His autobiography, *Praeterita*, tells the story of his early days. From 1869-79 he was Slade Professor of Art in Oxford. *Modern Painters*, begun in 1840, is an elaborate treatise on the principles of art which excited much controversy, but Ruskin's opinions ultimately prevailed. In the region of political economy and social reform he was equally a force, and there is no doubt that his ideas (set forth in *Unto This Last* (1862), *Munera Pulveris* (1872) and *Fors Clavigera* (1871-84), a series of letters to the working men and labourers of Great Britain) helped to mould the changing political doctrines of his time. His collected works fill 39 volumes and treat not only of art and political economy, but also of Greek myths, home industries, wayside flowers, and so on. Among his outstanding books are *Seven Lamps of Architecture*, *Sesame and Lilies* and *The Stones of Venice*. He died Jan. 20, 1900. **Ruskin College** was founded in Oxford in 1899 to provide working-class students with opportunities for the study of social service.

Russell Famous English family. It is descended from Henry Russell, who was M.P. for Weymouth in the 15th century. A descendant, John Russell, became a courtier. In 1539 he was made a baron, and about this time obtained much of the land taken from the monasteries, notably Covent Garden in London, and estates in Devon and Bedfordshire. Other estates, including Chenies, came to him by marriage. In 1550 John was made Earl of Bedford, and in 1694 a later earl was made a duke. This title is still held by the Russells, and branches of the family hold the titles of Earl Russell and Baron Ampthill. *See* BEDFORD, DUKE OF.

Russell **Earl.** English statesman. John Russell, a son of the Duke of Bedford, was born Aug. 18, 1792, and entered Parliament at the age of 21, identifying himself with the parliamentary reform movement. The first Reform Bill of 1832 was the work of "Lord John" and four other members of the Liberal Government. He served in Lord Grey's ministry in 1830, and later was Home Secretary under Melbourne.

In 1836, after being converted to the support of the repeal of the Corn Laws, he succeeded Peel as Prime Minister of a Whig government. He was then Foreign Secretary in the coalition under Lord Aberdeen (1851). His bad management of the Crimean War made him unpopular, and he resigned, returning as Foreign Secretary under Palmerston in 1859. He was created Earl Russell in 1861, and was again Prime Minister in 1865. After his defeat in the same year, he lived in retirement at Richmond. His written works include recollections and studies of the members of the Russell family. He died May 28, 1878.

Russell **Earl.** English scientist. Born at Monmouth, May 18, 1872, Bertrand Arthur William Russell was the younger son of Viscount Amberley and a grandson of the 1st Earl Russell. He went to Trinity College, Cambridge, where he became a Fellow and lecturer; but later he settled in London and devoted himself to social and political work. He married Dora, daughter of Sir F. W. Black, and in 1930 succeeded his brother in the title.

As a philosopher and mathematician Russell is in the first rank, though he is a destructive rather than a constructive thinker. In the sphere of mathematical philosophy, he is without a rival in Great Britain. He has written much on philosophy and also on social questions, his books including *Principles of Social Reconstruction*, *Mysticism and Logic*, *The Analysis of Matter*, *Roads to Freedom* and *Freedom and Organisation*, 1814-1914 (1935). His shorter works include *The A.B.C. of Relativity*, *Why I am not a Christian*, *Marriage and Morals*, and *The Conquest of Happiness*. Not unfairly, his ideas in all these fields may be described as revolutionary, while his fearlessness and honesty are unquestioned. A member of the Labour Party, he stood for Parliament, but failed to secure election.

Russell **Lord William.** English politician. A younger son of the 1st Duke of Bedford, he was born Sept. 29,

1639, and studied at Cambridge. He entered the House of Commons in 1660, and later made himself conspicuous by his opposition to a proposal to exclude James II. from the throne. In 1683 he was arrested for his share in the Rye House Plot (*q.v.*), and on July 21, 1683, he was beheaded for treason.

Russell of Killowen **Baron.** Irish lawyer. Born at Newry, Nov. 10, 1832, Charles Russell was educated for the law and became a solicitor. In 1859 he became a barrister in England. He practised in Liverpool before settling in London. In 1880 he was elected M.P. for Dundalk, and in 1885 for S. Hackney. In 1886 he was appointed Attorney-General in the Liberal Ministry and was knighted. He was again Attorney-General in 1892-94 and had much to do with drafting the home rule bills. In 1894 he was made a Lord of Appeal and a life peer, but almost immediately became Lord Chief Justice and received an hereditary peerage. He died Aug. 10, 1900, leaving five sons. The eldest, the 2nd baron, became a judge and later a Lord of Appeal. Russell was an ardent Roman Catholic and a great patron of the turf.

The greatest advocate of his day, Russell's great cases include his defence of Parnell before the commission and his defence of Mrs. Maybrick. He was concerned in the arbitration about the Bering Sea fisheries and the Venezuelan boundary and he presided at the trial of Dr. Jameson and his associates in 1896.

Russell **William Clark.** English novelist. Born in New York, Feb. 24, 1844, he wrote much for the papers, but is best known by his novels. *The Wreck of the Grosvenor* and *List, Ye Landsmen* may be mentioned. Russell died Nov. 8, 1911.

Russell **Sir William Howard.** English war correspondent. Born, Mar. 28, 1821, in Ireland, he was educated at Trinity College, Dublin. He joined the staff of *The Times* and in 1854 was sent out to the Crimea. There he made his reputation by his despatches, went next to India to describe the Mutiny and then to America for the Civil War. He represented his paper during the Austro-Prussian War of 1866 and the Franco-Prussian War of 1870-71. In 1879 he was in South Africa describing the campaign against the Zulus. Knighted in 1895, Russell died Feb. 10, 1907.

Russia Country in Europe and Asia, the successor of the empire of Russia, and now controlled by the Union of Socialist Soviet Republics. Its area is 8,241,921 sq. m. It is divided into Russia proper, or the Russian Socialist Federal Soviet Republic, and six other republics, namely, White Russia, Ukraine, Transcaucasia, Turkmenistan, Uzbekistan and Tazhikistan. European Russia extends from the Arctic Ocean to the Caucasus and from Poland to the Urals. Asiatic Russia includes Siberia from the Urals to the Pacific, a vast district in central Asia, stretching eastward from the Caspian and some parts of Asia Minor. The population (1931) is estimated at 161,006,200.

Of this immense area Russia proper covers 7,626,717 sq. m. and contains 11 autonomous republics and 15 autonomous regions. In Ukraine is one autonomous republic, Moldavia. Moscow is the capital of the union and the largest city. The next largest are Leningrad, Harkoff, Baku, Kiev, Odessa and Rostov.

The republic is governed by Soviets, at the head of which is the all-Russian Congress of Soviets which consists of representatives of the provincial congresses of Soviets and of the town Soviets. The executive authority is in the hands of a council of people's commissaries, each member being responsible for one of the departments of state. They are elected by the congress. The right of voting for the Soviets is granted to all over 18 years of age, except employers, those who live on unearned incomes, priests and certain others. These may, however, vote under special conditions. The church has been disestablished, but the exercise of their religion is permitted to all. Education is compulsory. There is an army, called the Red Army, raised by universal service, a small navy and an air force.

Russia is an agricultural country and most of the people work on the land. The majority of the farms are under collective control, though a proportion still retain their peasant owners. Manufacturing industries have been started in some places and are worked on a very large scale in accordance with the five year and other plans prepared by the rulers. They are controlled by trusts, including the rubber trust, silk trust and others. The chief minerals produced are coal and oil. Foreign trade is a monopoly of the state and all imports and exports are strictly controlled.

The standard coin is called the chervonetz. It is valued at 7.30 to the £ sterling. The metric system of weights and measures is in force. The country has its own calendar: five days make a week, six weeks a month, and twelve months a year. The extra days are kept as festivals to celebrate the revolution.

The Russian empire began as a collection of principalities with Moscow as its capital. The first to take the title of tsar was Ivan in 1547. Of his successors the greatest were Peter, who founded St. Petersburg, which became the capital, and introduced modern ideas into the country, and Catherine II. Catherine and her successors greatly extended the area of Russia, first in Europe and then by acquiring Siberia and other districts of Asia. In the Napoleonic age and later the country ranked as one of the Great Powers.

In spite of much unrest the empire of the tsars lasted until 1917. Dissatisfaction with the sufferings caused by the Great War brought matters to a head, and in March, 1917, a socialist republic was established. This was replaced later in the year by the Bolshevist or Soviet régime in which Lenin (*q.v.*) and Trotsky were the dominant figures. Peace was made with Germany, and later certain parts of Russia became independent states, as Finland, Poland, Estonia, Latvia and Lithuania. The last tsar, Nicholas II., and his family, were murdered at Ekaterinburg, July 16, 1918, a few days after the adoption of the Soviet constitution. In Dec., 1922, a Union of Socialist Soviet Republics was set up, comprising four republics—Russia, Urkaine, White Russia and the Transcaucasian Federation—to which the Uzbek, Turkoman and Tazhikistan republics were afterwards added. The constitution of the Union was ratified in 1924, and since then Russia had continued under the Soviet régime. When Lenin died in 1924 Stalin became leader of the Russian Communist Party and expelled his rival, Trotsky. Then in 1928 the Five-year Plan for industrial and social reconstruction was inaugurated and continued in 1933. In Sept., 1934, Russia entered the League of Nations and was given a permanent seat on the Council. Recently it has been suggested that parliaments be introduced within the Soviet Union.

Russo-Japanese War

War caused by the threat to Japan involved in Russia's ambition to become a naval power in the Pacific. It was begun by Japan, Feb. 8, 1904, with a successful attack on the Russian fleets at Chemulpo and Port Arthur. On April 3 an engagement on the Yalu River ended in a complete rout of the Russian force. In August the Russian fleet at Port Arthur and the Vladivostok squadron both suffered reverses. By October the Russian army under Kuropatkin had been driven back on Mukden after four days continuous fighting. January witnessed the handing over of Port Arthur to the Japanese, and in March a decisive battle between the rival armies at Mukden resulted in the capture of that town, with heavy losses on both sides.

The Russian resistance was finally broken on May 27, when the remnant of her fleet under Rozhdestvensky was routed. Peace was signed, Sept. 5, 1905, at Portsmouth, U.S.A., when Russia secured surprisingly favourable terms. Russian casualties were estimated at 385,000 and Japanese at 167,000.

Russo-Turkish Wars

The war of 1827-9 was due to Sultan Mahmoud II.'s cruel treatment of insurgent Greeks, which united Britain, France and Russia against him. The fleets of the three powers destroyed the Turkish navy in the harbour of Navarino, 1827, and the victorious Russian army advanced as far as Adrianople, where the Sultan was forced to acknowledge by Treaty, 1829, the independence of the Greeks.

Another war arose in 1853 owing to the rejection by the Sultan of the claim made by Czar Nicholas I. to be recognised as protector of the "Greek" Christians in Turkey. The Turks won a surprising victory at Olenitza, but their fleet was destroyed at Sinope. Turkey's Eastern allies were successful in the Crimea and by the Peace of Paris (1856) Russia was temporarily crippled.

Again in 1877 she declared war on the Porte, captured Plevna after a brilliant defence, and within sight of Constantinople dictated the terms of the Treaty of San Stefano (1878), which ended Turkish rule in Europe.

Rust

Reddish-brown, hydrated oxide formed on iron in water or by exposure to moist air. The presence of carbonic acid in water or the atmosphere will promote the formation of rust, the carbonic acid possibly acting as a catalyst, or the action of rusting may be electrolytic in character. Experiments show that pure iron does not rust in pure water, even when oxygen is present. When rusting has once started the process continues as the oxide is hygroscopic.

Rustenburg

Town of the Transvaal. It is 60 m. by rly. from Pretoria and the centre of an orange and tobacco-growing district. Behind the town are the Magaliesberg Mts. Pop. 1700 (whites).

Ruth

Character in the Old Testament. She was a Moabitess and married a certain Mahlon, who, with his father and mother, Elimelech and Naomi, had come to Moab from Bethlehem. The two men died and Naomi and Ruth were left widows. Naomi went back to her own country and Ruth went with her. There she married a kinsman, Boaz, and from the pair Jesse and David were descended.

The Book of Ruth is one of the shortest but most moving in the Bible. It dates from the time of the judges, but the author is unknown.

Ruthenes

Word used for the Ukrainians found in Poland, Czechoslovakia and other parts of that region, especially Galicia and Bukovina. Before the Great War they were under Russian and Austro-Hungarian rule. They numbered about 4,000,000. The district in Czechoslovakia in which many of them live is called Ruthenia. It has a certain amount of self-government. The Ruthenes belong to a Uniate church in connection with Rome and are under an archbishop at Lemberg.

Rutherford

Ernest Rutherford, Lord. British physicist. Born at Nelson, New Zealand, Aug. 30, 1871, he studied at the University of New Zealand. He became Professor of Physics at McGill University, Montreal, in 1898, at Manchester, 1907, and Cambridge, 1919. His researches established the existence of radio-active transformations, the nuclear nature of the atom, and the electrical structure of matter. He was awarded the Nobel Prize for Chemistry in 1908, was knighted in 1914, awarded the O.M. in 1925, and created Baron Rutherford in 1931.

Rutherglen

Burgh of Lanarkshire. It stands on the Clyde, 2 m. from Glasgow, on the L.M.S. Rly. The industries include the making of chemicals. It is the oldest royal burgh in Scotland, founded in 1126. Pop. (1931) 25,157.

Ruthin

Borough and market town of Denbighshire. It is situated on the Clwyd, 215 m. from London and 8 from Denbigh, on the L.M.S. Rly. The chief building is St. Peter's church, which has cloisters. The castle occupies the site of the one built by the English in the 13th century. Pop. (1931) 2912.

Ruthven

Baron. Scottish title borne by the family of Hore-Ruthven. In 1488 Sir William Ruthven was made a Lord of Parliament. William, the 4th lord, who, in 1581, was made Earl of Gowrie, was responsible for the seizure of James VI., which is called the Raid of Ruthven. With some associates he took the young king to his castle at Ruthven and for a short time ruled the land in his name. Soon, however, James was released and in 1584 Ruthven was executed for high treason. The title then became extinct, but in 1651 it was given to Sir Thomas Ruthven, from whom the present holder is descended.

Ruthwell

Village of Dumfriesshire. At one time a burgh, it is 5 m. from Annan, on the L.M.S. Rly. It is famous for its 7th-century cross, restored in 1802, on which are carvings of the crucifixion and, in runic letters, some verses of one of Caedmon's poems.

Rutland

Smallest county of England. It covers only 152 sq. m., and is wholly inland. It is an agricultural area, fairly level, and famous as a hunting shire. Oakham is the county town; Uppingham is the only other place of importance. With the Stamford division of Lincolnshire, it sends a member to Parliament. It is in the diocese of Peterborough. Pop. (1931) 17,397.

Rutland

Duke of. English title borne by the family of Manners. Richard Plantagenet, the Duke of York, who was killed in 1461, was Earl of Rutland and through his daughter he was the ancestor of Thomas

Manners, who was made Earl of Rutland 1525. He received lands in Leicestershire and a later earl married Dorothy Vernon and obtained lands in Derbyshire. John, the 9th earl, was made Duke of Rutland in 1703.

Charles, the 4th duke, was Lord Lieutenant of Ireland under Pitt. **John James Robert,** the 7th duke (1818-1906) when Lord John Manners sat in the House of Commons for many years and was a member of the various Tory governments between 1851 and 1892. He died Aug. 4, 1906, and his son and then his grandson succeeded to the title. The duke's eldest son is called the Marquess of Granby. His seats are Belvoir Castle in Leicestershire and Haddon Hall in Derbyshire.

Ruwenzori Range of mountains in East Africa. They are in Uganda, between Lakes Edward and Albert, and extend for about 70 m. The highest peaks rise about 16,000 ft. The range was discovered by H. M. Stanley and may be the Mountains of the Moon, mentioned in ancient fables.

Ruysdael **Jakob van.** Dutch painter. He was born in Haarlem about 1628, and passed his life there, except for a few years in Amsterdam. He died Mar. 14, 1682. Ruysdael's pictures are chiefly of rural scenes around his home. There are examples in the National Gallery, London.

Ruyter **Michael Adrianszoon, de.** Dutch seaman. Born at Flushing, Mar. 24, 1607, he became an officer in the Dutch service. In 1666 he was in command of the fleet that defeated the English ships off the North Foreland and sailed up the Thames and the Medway. In a fight off Sicily, against the French, he was wounded so seriously that he died at Syracuse, April 29, 1676.

Rydal Water Lake of Westmorland. It is only about half a mile long, but is very beautiful and can be reached from Windermere. At the east end is the little village of Rydal, where are **Rydal Hall** and **Rydal Falls. Rydal Mount,** the home of Wordsworth from 1813 to 1850, is near the lake.

Ryde Borough and watering place of the Isle of Wight. A yachting centre, it is 10 m. from Newport, on the S. Rly., and is the chief port for visitors, having regular steamer services with Portsmouth, 4 m. away. Pop. (1931) 10,519.

Rye One of the five cereals. It will flourish on a poorer soil than any other cereal and is much grown as a food for cattle. The ears are also ground into flour and a bread called black bread is made from it. There are two kinds, summer rye and winter rye. The straw is suitable for thatching and for bedding. The world's production in 1931 was 185 million quarters, or about a third of the amount of wheat. This was chiefly produced in North America, although a good deal was grown in Russia, Germany and Poland. In Great Britain and Ireland only 27,000 acres were under rye in 1931. Rye grass is grown for permanent pasture. There are several species, but the best are the Italian kinds.

Rye Borough of Sussex. It stands on a hill above the Rother, about 2 m. from the coast and 72 from London, on the S. Rly. Formerly one of the Cinque Ports, Rye is a place of unusual interest. The Land Gate dates from the 14th century and St. Mary's church, a fine building, is older. The Ypres Tower, like the gate, is part of the old fortifications. The town has the remains of two monasteries. The Mermaid Inn is notable. The sea has receded and consequently Rye is now of little consequence as a seaport, although in the Middle Ages it was one of the busiest in England. To-day an agricultural trade is done here and a new harbour has been built at the mouth of the Rother. Pop. (1931) 3947.

Rye House House near Hoddesdon in Hertfordshire. Here, some discontented persons planned to murder Charles II. and his brother James as they were returning from Newmarket to London, in 1683. The plot failed, as warning was given. Some of the conspirators were taken and hanged. Lord William Russell and Algernon Sydney were also arrested, tried and beheaded, though their guilt was by no means proved.

Ryhope Watering place and market town of Durham. It stands on the coast, 3 m. from Sunderland, on the L.N.E. Rly. Pop. 11,600.

Rylands **John.** English merchant. Born at St. Helens, Feb. 7, 1801, he joined his father and brother in a cotton manufacturing business at Wigan. The firm, Rylands & Sons, opened other departments and soon became one of the largest concerns in the textile trade. In 1847 John Rylands became head of the firm, which in 1873 was made a limited company. He died at Stretford Dec. 11, 1888, leaving no children, and his widow inherited a fortune of over £2,000,000.

In 1888 Mrs. Rylands bought for £250,000 the magnificent library of Earl Spencer at Althorp. To house it she erected in Deansgate, Manchester, a Gothic building. An endowment was also provided and the collection has been enriched by other books and manuscripts, making it one of the most valuable in the country. It is called the **John Rylands Library.**

Ryswick Village of the Netherlands. It is 2 m. from the Hague. Here, in 1697, was signed the treaty which ended the war between Great Britain, Austria, Spain and their allies on the one side and France on the other. France surrendered all the lands taken since 1679, except the city of Strasbourg and received back Nova Scotia and her possessions in India. William III. was recognised as King of England and James II. compelled to leave France. England, Spain and the Netherlands signed the treaty with France on Sept. 20, 1697, but the representatives of Austria did not sign until Oct. 30.

Ryton Urban district of Durham. It is on the Tyne, 6 m. from Newcastle-on-Tyne, on the L.N.E. Rly. The industries are coal mining and the making of iron and steel. Pop. (1931) 14,204.

SAALE River of Germany. It rises in Bavaria and flows past Halle to join the Elbe, after a course of 225 miles. About half of its course has been canalised.

Saar River of Europe. It rises in the Vosges in Alsace and flows into Germany where, near Trèves, it joins the Moselle. It is 152 m. long. Saarbrucken is on its banks. Much of it is navigable and the Saar Canal connects it with the Rhine-Marne canal.

The **Saar basin** is the name given to a district along the river's course in which are coal mines. **Saarbrücken** is the chief town therein and it covers 750 sq. m. In 1919 the district, previously part of Germany, was placed under the League of Nations, and governed by a commission of five persons, but in 1934, according to the terms of the Treaty of Versailles, a plebiscite vote was taken, when a large majority voted for return to Germany.

Sabbath The seventh day of the Jewish week. Its observance as a day set apart for rest and sacred purposes became increasingly stringent in exilic and post-exilic times, till, by the time of Jesus, rigorous Sabbath-keeping, chiefly of a negative kind, was regarded as the supreme form of righteousness. *See* SUNDAY.

Sable Term used in heraldry for a black armorial colour or tincture on the surface or field of the escutcheon or shield, on which the various heraldic animals or objects are portrayed. It is represented in engraving or incised work by fine horizontal and vertical lines crossing one another.

Sable Island in the Atlantic Ocean. It lies off the coast of Nova Scotia, being 100 m. from Cape Canso, and is 20 m. long. It is, as the name suggests, little more than a sandbank and is very dangerous to navigators. In the island is a great lagoon. It has been planted with trees to make it more pronouncedly visible, and to bind the sand.

Sabre Form of heavy sword with one cutting edge and usually slightly curved towards the point, although the cavalry sabre of the British Army has a straight blade. The sabre is employed in fencing and duelling, also as a weapon for mounted troops.

Saccharin Extremely sweet synthetic compound prepared from toluene. A coal tar derivative, saccharin is a light crystalline powder slightly soluble in water. Chemically it is a benzoic sulphonimide and is 300 to 500 times sweeter than sugar. It is used as a sweetening agent in foods and instead of sugar in diabetic complaints.

Sacheverell Henry. English divine. Born in 1674 at Marlborough, he was educated at the grammar school there, and at Oxford. In 1709 he delivered two sermons which made him famous, railing against the Low Church attitude of the Government, for which act he was impeached. He became a popular hero, but was suspended from preaching for three years. In 1713, after a change of ministry, he was allowed to preach before the House of Commons at St. Margaret's, Westminster, and was given the rich living of St. Andrew's, Holborn. He died on June 5, 1724.

Sack Old name for a white wine used in the 16th century. Not unlike sherry, sack was often sweetened, flavoured with spices and mulled, this being probably the drink of Sir John Falstaff in *Henry V*. The word comes from the French, *sec*, dry.

Sackbut Musical instrument used in the Middle Ages. It was a wind instrument, not unlike a trumpet, and was made in sets. It was very popular, and later it was used by wandering singers and on the stage. It developed into the modern trombone. The sackbut of the Bible (Daniel iii.) was a stringed instrument, the Roman *sambuca*.

Sackville Famous English family. Richard Sackville was a Kentish landowner in the time of Henry VIII. He was made a knight, and his son, **Thomas**, was made Earl of Dorset in 1604 (*see* DORSET, EARL OF). In 1720 his successor was created a duke, but the title became extinct in 1843, when the Sackville estates, which include Knole, Sevenoaks, passed to a daughter of the 3rd duke. She married Earl de la Warr and their son, Mortimer Sackville-West, was created Baron Sackville in 1876. In 1928 Sir Charles John Sackville-West, a soldier, became the 4th baron.

Victoria Sackville-West, daughter of Lionel Edward, the 3rd baron (1867-1928) has made a name in literature. In 1927 she won the Hawthornden Prize with a poem, *The Land*. She is married to the Hon. Harold Nicolson. **Lady Margaret Sackville**, a daughter of the 7th Earl de la Warr, has also published several volumes of poems, including *Songs of Aphrodite*.

Sacrament (Latin *sacramentum*, an oath). In religion, and especially in Christianity, a sacred ceremony. There are, broadly speaking, two views of the sacrament. One, held by the Roman Catholic Church, the Greek Church, and the official Anglican Church, is that without the reception of certain sacraments the believer cannot attain salvation. They are the channels by which God, through the priest, confers His grace or authority upon men. The other view is that they are symbolic only, beneficial to the believer because of his belief in the verities of which they are the sign, but not essential to salvation. A sacrament is "the outward and visible sign of an inward and spiritual grace."

The Greek and Roman Churches recognise seven sacraments: baptism, confirmation, marriage, penance, ordination, the eucharist and extreme unction. The Anglican Church insists that only two of these are necessary for salvation, baptism and the holy communion.

Sacramento City of California, the capital of the state. It is on the Sacramento River, 88 m. inland from San Francisco. The city has some manufactures and its other industries include railway shops and works for packing meat.

The **Sacramento River** rises in the north of the state and enters the Pacific Ocean about 50 m. N. of San Francisco. It is 600 m. long and is navigable for nearly half of that course. Its first 200 m. are known as the Pitt.

Sacrifice Offering to God, or to a god. Sacrifices form part of almost every religion and take the most varied forms. The offering must be that of a living thing,

and animal sacrifices were common among the Jews, Greeks and Romans, as well as among less cultured peoples. In many religions human beings were sacrificed and there are traces of this practice among the Jews, for instance in the thwarted slaying of Isaac by Abraham. Gradually it died out on any large scale, although there have been individual cases in recent years, and animal sacrifices persist among primitive peoples to-day. The idea of human sacrifice passed from Jewish into Christian thought, and the voluntary death of Jesus Christ is regarded as the supreme sacrifice; by it the human race is redeemed from the consequences of sin. *See* ATONEMENT.

The **Sacrifice of the Mass** is a term used by Roman Catholics who believe that every Mass is, in a sense, a repetition of Christ's sacrifice on Calvary, a doctrine which has been repudiated, in its exact form, by the Anglican Church, and has never been held by the Greek Church.

Sacrilege In English law theft from a church. The term is also used for the act of alienating property left for church purposes. In the former sense it is a felony to break into a church or other place of divine worship, and can be punished as such.

Saddleback Mountain of Cumberland. It is 4 m. from Keswick and reaches a height of 2850 ft. It is sometimes called Blencathra.

Saddleworth Market town and urban district of Yorkshire (W.R.). It stands on the Tame, 12 m. from Manchester, by the L.M.S. Rly. A canal passes the town. The chief industry is the manufacture of woollen goods. Pop. (1931) 12,577.

Sadducees Jewish sect. The name is taken from that of the high priest Zadok, and the sect appeared about 200 B.C. They were originally priests who regarded themselves as superior to other priests, but after a time they became known by their religious opinions which differed from those of the Jews in general. As stated in the gospels they did not believe in the resurrection of the dead or in the existence of spirits. They opposed the teaching of the Pharisees, believing that the law did not require explanation and interpretation. Little was heard of them after the destruction of Jerusalem.

Sadler's Wells Name of a London theatre. It is in Rosebery Avenue, Islington, near a well that in the 18th century was a fashionable spa. It was discovered by a man named Sadler who built a music hall here. When this was pulled down a theatre was built on the site. Dating from 1765, this became very famous in the 19th century, especially when Samuel Philips presented Shakespearean plays here. After his time it became a music hall and then a cinema. In 1922 it was decided to rebuild Sadler's Wells and to make it a centre of drama. Money was subscribed and in 1931 it was opened under the same management as the Old Vic near Waterloo Station. In 1932 the Carnegie Trust made a grant to help its finances.

Sadowa Village of Czechoslovakia. It is near the Elbe, 74 m. from Prague. Here, on July 3, 1866, the Prussian army gained a great victory over the Austrians and so ended the war between the two countries. The victory was partly due to the use of the needle gun by the Prussians. The Austrians lost about 40,000 men; about 200,000 were engaged on each side. The Germans call the battle Königgrätz, after a town 4 m. away.

Safe Special form of chest or chamber for storage of money and valuables against fire and burglary. A safe is made of sheet iron or steel, and in the modern types, of which there are many, the space between the cast steel walls may be filled with insulating material in which steel rods are embedded. The doors, especially in safe deposits and banks, are massive, and time or combination locks control the bolts.

Safeguarding Word used for the protection of industry against foreign competition, especially competition that is regarded as unfair. In Great Britain the first duties of this kind were introduced in 1921, a duty of 33⅓ per cent. being placed on gloves, optical and other glass, and on articles made in Germany. In 1925 the principle was extended. An import duty of 33⅓ per cent. was placed on lace, gloves, cutlery and other articles. It was decided that any industry injured by unfair foreign competition could apply to the Board of Trade for safeguarding, and if on enquiry the case was proved, a duty would be imposed. This held good for several classes of articles. The duties were imposed for 5 years, so some of them expired in 1930 and were never renewed. In 1932, on the adoption of a general scheme of protection, safeguarding duties were no longer necessary.

Safety First Movement for reducing the number of accidents on the roads and in industrial life. It is directed by the **National Safety First Association**, 52 Grosvenor Gardens, London, S.W.1, which was founded in 1924. This seeks in various ways to instruct people in methods by which accidents may be avoided, for instance, by issuing literature and holding competitions. It has a **Safety First Institute** for children, and carries on propaganda in factories and schools.

Safety Lamp Special form of lamp used in mines for safety against the inflammable fire damp or methane gas which tends to accumulate in the workings. Both George Stephenson and Sir Humphrey Davy invented safety lamps, and the Davy lamp in improved form is used in modern mines. The lamp has a hollow cylinder of glass below and gauze above surrounding the flame, thus allowing the fire damp to pass through and burn without exploding.

Safety Valve Form of valve fitted to a steam boiler or vessel holding gases or liquids under pressure to relieve the pressure when too great for safety. Suitable for low pressure in its simplest form, the valve consists of a circular hinged metal plate with a rim of leather which is pressed down over the opening by a weight. Where pressure is greater, as in marine boilers and locomotives, the valve may be regulated by a spring acting sometimes through a lever.

Safflower Herb, the flowers of which are much used as a dye. It belongs to the order *Compositae* and is found in Europe, Asia and Africa. It bears oval leaves and groups of orange coloured flowers. The dye, obtained from the flowers, is much used in the East for dyeing silk, the shades produced ranging from pink to scarlet.

Saffron Perennial herb. Its botanical name is *Crocus sativus*, and it grows in Europe and Asia. The leaves are narrow, somewhat like grass, and the flowers

are purple. The root is a corm rather larger than that of the garden crocus. From the herb a substance is obtained which is used in medicine and cooking. It is aromatic, but bitter, and is suitable for flavourings.

Saffron Walden Borough and market town of Essex. It is 44 m. from London by the L.N.E. Rly. The name comes from the saffron crocus which formerly grew around the town. Pop. (1931) 5930.

Saga Icelandic word meaning "to say," and used for a story in prose. Sagas may be either historical or mythical, but many contain both elements. The best were written between 1000 and 1300. Some deal with the deeds of the heroes of Iceland, including their adventures at sea, and give a good picture of the life in the island as it was at that time. It is from these sagas that we obtain our information about the earliest voyages to America. Other sagas deal with the deeds of the gods and heroes and are purely legendary, *e.g.*, the story of the Volsungs.

Sage Herb much used in cookery. It grows to a height of about a foot, and bears purple flowers and oblong leaves. Dried or crushed and packed in air-tight bottles, it is much used as a flavouring in cookery.

Sago Farinaceous foodstuff prepared from the starchy pith of several species of palms of the genus *Metroxylon* growing in Malaya and the Dutch East Indies. The soft fibrous pith is removed and beaten in water to separate the starch, which settles and is dried and granulated to form pearl sago.

Saguenay River of Quebec. It rises in Lake St. John and falls into the St. Lawrence at Tadoussac. It passes by Chicoutimi and is navigable from Ha Ha Bay, a pleasure resort on its banks. The river proper is 120 m. long but with its head stream, the Peribonka, is 400 m. long.

Sahara Desert of Africa, the largest in the world. It stretches from the Atlantic Ocean to the Red Sea and southwards from Morocco, Tunisia and Algeria into the heart of Africa. It covers 3,500,000 sq. m., and is mainly French territory. There are a number of oases in the desert, which is crossed by caravan routes. It takes a caravan of camels three months to make the journey by the most direct route. The least known part is the district that is in the east called the Libyan desert, where, during the 20th century, a good deal of exploration work has been done.

It is believed that the desert in the past was far less waterless and sterile than it is to-day. It contains lofty mountain ranges and deep valleys through which at one time rivers ran. Plans for crossing it by a railway line have been prepared and another proposal is to irrigate great portions.

Sainfoin Leguminous plant. It has long leaves and pink flowers. The seeds are borne singly in pods. It is grown in the warmer parts of England and in France for grazing purposes and also for hay.

Saint Holy person, one who has been consecrated to the divine service. More exactly it refers to persons who have been canonised by the Christian Church and are recorded as saints in its calendar. The Church of Rome has some thousands of saints, and from time to time fresh names, *e.g.*, Joan of Arc in 1920 and Albertus Magnus in 1932, are added. The Church of England has retained only some of these; 73 have days given to them in the Prayer Book. The Roman Church permits the invocation of saints. In the Church of England certain saint days are observed by special reference in the service to the saint, and by the provision of a special collect, epistle and gospel.

Churches are frequently dedicated to a particular saint or group of saints. Christian countries and societies, as well as professions and charities, have each their patron saint. S. George, S. Andrew, S. Patrick, and S. David, are respectively the patron saints of England, Scotland, Ireland, and Wales, and their days are respectively, April 23, November 30, March 17, and March 1. S. Luke is the patron saint of the medical profession; S. Dunstan the patron saint of the blind.

The greatest book of reference concerning saints is the *Acta Sanctorum* of the Bollandists.

St. Abb's Head Headland of Berwickshire. It is 4 m. from Eyemouth, and is 300 ft. high; upon it stands a lighthouse. The village of St. Abbs, a small watering place, is 2½ m. to the south-east.

St. Agnes Seaport and town of Cornwall. It is 9 m. from Truro, on the G.W. Rly. Near the town are **St. Agnes Head** and **St. Agnes Beacon.**

One of the Scilly Islands is called **St. Agnes.**

St. Albans City and market town of Hertfordshire. It stands on the little River Ver, 21 m. from London, and is reached by the L.M.S. and L.N.E. Rlys. The cathedral is a fine cruciform church restored in 1856 and once an abbey. Notable features are the Norman tower, the Gothic nave, the longest in England, and the shrine of S. Alban. In St. Michael's is the tomb of Francis Bacon. The industries include brewing and printing.

St. Albans occupies the site of the Roman city of Verulanium, and excavations have revealed extensive Roman remains, including the forum and a theatre and a system of central heating. The abbey was founded in memory of S. Alban in 793, and in 1875 its church became the cathedral of a new diocese. Pop. (1931) 28,625.

During the Wars of the Roses, two battles were fought at St. Albans. On May 22, 1455, the Yorkists defeated the Lancastrians, and made Henry VI. prisoner; and on February 17, 1461, the Yorkists were beaten here.

The title of **Duke of St. Albans** has been borne by the family of Beauclerk since 1684. The first duke was a son of Charles II. and Nell Gwynn. The duke's eldest son is the Earl of Burford.

St. Aldwyn **Earl.** English statesman. Michael Edward Hicks-Beach was born Oct. 23, 1837, and educated at Eton and Christ Church, Oxford. In 1854 he became a baronet, succeeding his father. In 1864 he was elected M.P. for East Gloucestershire and he remained in the House of Commons until made a viscount in 1906.

A Conservative, he held office in 1868; from 1874-78 he was Chief Secretary for Ireland and from 1878 to 1880 Colonial Secretary. In 1885 he was Chancellor of the Exchequer, and in 1886-87 Chief Secretary for Ireland. In 1888, after a short retirement, he was made President of the Board of Trade. He left office in 1892, returning in 1895, and was Chancellor of the Exchequer until 1902, when he resigned on account of his free trade views. In 1915 he was made an earl, and died April 30, 1916. A

grandson succeeded to the earldom. Lord St. Aldwyn's *Life* was published in 1932.

St. Andrews Burgh and watering place of Fifeshire. It stands on a bay, an opening of the North Sea, and is one of the most picturesque places in Scotland. It is 12 m. from Dundee and is reached by the L.N.E. Rly. There are ruins of the castle and the cathedral, both closely associated with the history of Scotland and the names of Knox, Beaton and others. The Martyrs' Memorial, to the honour of the Protestant martyrs of the Reformation period, stands on a cliff overlooking the sea.

The University of St. Andrews dates from 1411. University College, Dundee, is part of the university.

St. Andrews is the headquarters of the Royal and Ancient Golf Club, the controlling body of the game. It was founded in 1754 and has four links. The burgh is named after St. Andrew whose bones are said to have been brought here in the 7th century. In the 9th century it was made a bishopric and until 1688 its archbishop was Primate of Scotland. Pop. (1931) 8269.

St. Anne's-on-Sea Watering place of Lancashire. It stands on the estuary of the Ribble, 4 m. from Blackpool, and is part of the urban district of Lytham (*q.v.*). St. Anne's is on the L.M.S. Rly., and possesses golf links and other attractions for visitors.

St. Asaph City and market town of Flintshire, 5 m. from Denbigh, on the L.M.S. Rly. The cathedral dates from the 15th century and was restored in the 19th. The city has an agricultural trade. Near here the rivers Clwyd and Elwy unite; the latter is crossed by an old bridge. The Welsh name of the city is Llanelwy. Pop. 1833.

St. Austell Urban district and market town of Cornwall. It is 14 m. from Truro on the G.W. Rly. St. Austell is a centre for the mining of china clay; tin is also worked. Pop. (1931) 8295.

St. Bartholomew's Day Festival of St. Bartholomew, Aug. 24. On it in 1572 a number of Huguenots were massacred in France. The occasion was the marriage of Henry, King of Navarre, with Marguerite, sister of King Charles IX. Feeling between the adherents of the two faiths, Roman Catholic and Protestant, was very bitter, and it did not need much to create a riot. This began on the wedding day and continued until October. It is believed that it was an organised attempt, favoured by the queen mother, Catherine de Medici, to crush the Huguenots, of whom perhaps 30,000 were killed. Pope Gregory XIII. celebrated the event by issuing a medal.

St. Bees Seaside resort of Cumberland, 4 m. from Whitehaven, on the L.M.S. Rly. Near is the promontory called St. Bees Head. Pop. (1931) 950.

St. Bernard Name of two passes over the Alps. The **Great St. Bernard** goes from Valais in Switzerland into Italy. It is over 8000 ft. high, and was used by the Romans. The pass is known for its monastery, or hospice, founded in the 10th century and famed for sheltering travellers and for succouring, by aid of its dogs, those lost in the snow. Here is a museum.

The **Little St. Bernard** crosses the Graian Alps. It is 7000 ft. high and was also used by the Romans. On it is a hospice and an observatory.

St. Bernard Breed of dog. It is a kind of mastiff, but possesses individual points, especially an exceptional intelligence. The dogs are distinguished for their great size, hanging lips and large ears. They are kept at the St. Bernard hospice for finding lost travellers and also by private persons as pets.

St. Boniface City of Manitoba. It stands on the east side of the Red River at its junction with the Assiniboine. Winnipeg is on the other side. The city is served by the C.P. and C.N. Rlys., and its industries are the same as those of Winnipeg. Pop. (1931) 16,305.

St. Brelade Village of Jersey. On St. Brelade's Bay, on the west side of the island, it is a small watering place.

St. Christopher Name for the island of the West Indies, also known as St. Kitt's (*q.v.*).

St. Cloud Town of France. It is on the Seine, just outside Paris, and can be reached by steamer, as well as by rail. It is noted chiefly for its palace and its porcelain. The palace was built about 1600 and at one time Napoleon lived there, as did several of the kings. It was damaged by the Germans in 1871 and later was pulled down. The park is a popular pleasure resort. The porcelain, known as St. Cloud, was made here from 1697 to 1773 in a factory belonging to the kings.

The **Ordinances of St. Cloud**, issued by Charles X. in July, 1830, abolished many of the liberties of the people and so were responsible for the Revolution and the king's abdication.

St. Cyr Village of France. It is 13 m. from Paris and is famous because here is the college for training officers for the French army, the equivalent to Sandhurst. Originally it was a school founded by Madame de Maintenon for girls of good birth who had fallen on evil times. Napoleon converted the building in 1806 to its present purpose.

St. Davids City of Pembrokeshire. It is 15 m. from Haverfordwest and is reached by motor coach. About a mile from the coast and near St. David's Head, it is the most westerly point of Wales, and is famous for its cathedral, restored in the 19th century. There has been a bishop of St. Davids since about 600. Near the cathedral are the ruins of the bishop's palace and of a college.

St. Denis Town of France. It stands on the Seine, 4 m. from Paris, and is famous for its church. St. Denis, the patron saint of France, was buried here and near his tomb a monastery and a church were built. In the church some of the early Frankish kings were buried. A large and magnificent building, it was restored in the 19th century. The town has a number of manufactures and a considerable trade along the river. Pop. (1931) 82,412.

St. Dunstans Institution or hostel in London for training the blind. It was founded by Sir Arthur Pearson for soldiers blinded in the war and its home is a fine house in Regent's Park called St. Dunstan's Lodge. In addition to the teaching of Braille, trades of all kinds are taught and various social and other activities organised. The hostel has a holiday home at North Berwick.

Sainte-Beuve **Charles Augustin.** French writer. He was born at Boulogne, Dec. 23, 1804, studied

medicine in Paris, after an early education at Boulogne, and soon began to write. In 1840 he was made librarian of the Mazarin Library in Paris, and in 1845 was elected to the Academy. From 1848 to 1851 he was an exile in Liége, after which he was professor at the College de France and the École Normale in Paris. In 1865 he was elected to the senate, and he died Oct. 13, 1869.

Sainte-Beuve is best known for his literary criticisms. They have been collected into several volumes, *Causeries du Lundi*, *Nouveaux Lundis*, *Premiers Lundis*, etc., the names being due to the fact that they were first contributed to periodicals that appeared on Monday. He also wrote a valuable *Histoire de Port Royal*, a novel, *Volupté*, as well as *Critiques et Portraits Littéraires*, and many other volumes.

St. Elias Mountain of Alaska. It is near the frontier of Canada and is one of the loftiest peaks in North America, its height being 18,000 ft. On it is a glacier covering 1200 sq. m.

St. Elmo's Fire Silent electrical discharge between the atmosphere and such structures as masts of ships, flagstaffs and trees. It is accompanied by a pale brush-shaped light, and is seen sometimes at night during thundery or stormy weather. This phenomenon is known also as corposant, or fire of St. Elias.

St. Eloi Village of Belgium. It is 2 m. from Ypres and was the scene of constant fighting during the Great War. An attack was delivered here by the Germans on March 14, 1915, at the close of the battle of Neuve Chapelle. They took some ground, but most of this was recovered by the British. In March, 1916, the British attacked here, and there was some determined fighting. The British, however, kept the village until the end of the war.

St. Etienne Town of France. It is 36 m. from Lyons by railway. Of modern growth, it is a great manufacturing centre, making not only textile goods, but also iron and steel products. During the Great War its output of munitions was immense. Pop. (1931) 191,088.

St. Gall City of Switzerland. It is 52 m. from Zurich and 9 m. from the Lake Constance. It is famous for its Benedictine monastery founded by St. Gall, which was a great centre of learning in the 8th and 9th centuries. Its church was restored in the 18th century and is now a cathedral. The abbey library possesses some of the most valuable manuscripts in the world. The city has some manufactures and is the capital of the canton of St. Gall. Pop. (1931) 63,947.

St. Gaudens Augustus. American sculptor. Born in Dublin March 1, 1848, of French and Irish parentage, he was brought up in New York. There and in Paris he studied art and soon made a name by his works. These include a bust of R. L. Stevenson and a statue of Lincoln, a copy of which is near the Houses of Parliament at Westminster. He died Aug. 3, 1907.

St. George's Channel Opening of the Atlantic Ocean. It extends for about 100 m. between Ireland and Wales and is connected to the north with the Irish Sea. It varies in breadth from 50 to 90 m.

St Germain **Treaty of.** Treaty which concluded the war between the Allied Powers and Austria. It was signed at St. Germain-en-Laye, Sept. 10, 1919, and ratifications were exchanged July 16, 1920. It established the frontiers of Austria, including German Tyrol, South of the Bronner in Italy, and of German Bohemia in Czechoslovakia. Allowances were made for the protection of minorities, but Austria had to renounce all claims in Egypt, China, Morocco, and Spain. All armed forces were limited, and reparations were imposed.

St. Germans Market town of Cornwall. Nine miles from Plymouth, on the G.W. Rly., it stands on the opening of Plymouth Sound called Lynher Creek or the St. Germans River. The parish church is a beautiful old building, partly Norman.

The title of **Earl of St. Germans** has been borne by the family of Eliot since 1815. Port Eliot, near St. Germans, is the family seat, and the earl's eldest son is named Lord Eliot.

St. Gotthard Pass over the Alps. It leads from Switzerland into Italy and beneath it is one of the most famous tunnels in the world. The pass itself is just under 7,000 ft. in height and was used in the 6th century or earlier. In the 19th century it was made a carriage road, and later (1872-82) a railway was built across it from Lucerne to Milan. It reaches a height of nearly 4,000 ft. and has 80 tunnels. The chief tunnel is over 9 m. long. There is a hospice at the summit of the pass which has been at least twice rebuilt. It existed in 1330 or earlier.

St. Gregory the Great **Order of.** Papal order. It dates from 1831 and is given for services to the church, both in a civil and military capacity. The badge is a Maltese cross bearing in the centre a golden bust of St. Gregory on a blue field. The ribbon is red with a yellow border.

St. Helena Island in the Atlantic Ocean. It is a British possession and is 1140 m. from the coast of Africa and 4477 m. from Southampton. The nearest land is Ascension Island, 760 m. to the north-west. The island is 10 m. long, covers 47 sq. m. and is partly mountainous. Cedar and other trees grow freely and New Zealand flax is cultivated here. Jamestown on St. James Bay is the capital, and the island is under a governor. It is a coaling station and a cable station.

In 1502 the island was discovered by a Portuguese sailor on S. Helena's day, and some Portuguese were its first inhabitants. For a time a Dutch possession, in 1651 it was taken by the English East India Company, which introduced slaves and cultivated the soil. The company handed it over to the British Government in 1834. From 1815 to 1821 it was Napoleon's prison, Longwood being his residence. In 1900-02 Boer prisoners were kept here and there was a garrison on the island until 1906. Before the opening of the Suez Canal it was an important place of call for ships. Pop. (1930) 3905.

St. Helens County borough and market town of Lancashire. It is situated on a tributary of the Mersey, 14 m. from Liverpool, on the L.N.E. and L.M.S. Rlys. It is also connected with other centres by a canal. The town's chief industry is the manufacture of glass, but there are also chemical works, pottery works and iron foundries. In the neighbourhood are collieries. Pop. (1931) 106,793.

St. Helen's Urban district and watering place of the Isle of Wight. It is on the north-east coast of the island, 4 m. from Ryde, on the S. Rly. Pop. (1931) 5478.

St. Helier Seaport, market town and capital of Jersey. It is on a bay on the south side of the island and is a railway terminus. There is a good harbour, improved since the Great War, and regular communication with Southampton (air and steamer), Weymouth, Cherbourg and other places. There is some fishing. Pop. 26,314.

St. Hyacinthe City of Quebec. It stands on the Yamaska River, 36 m. from Montreal, and is served by both the C.P. and C.N. Rlys. There are some manufactures. Pop. (1931) 13,448.

St. Ives Seaport, borough and market town of Cornwall. It stands on St. Ives Bay, on the west side of the county, 8 m. from Penzance, and is on the G.W. Rly There is a harbour and the industries include fishing and some shipping. It is a famous resort for artists in the summer. Pop. 6687.

St. Ives Borough and market town of Huntingdonshire. It stands on the Ouse, 3 m. from Huntingdon, on the L.N.E. and L.M.S. Rlys. An object of interest is the picturesque chapel on the old bridge across the river. There is an agricultural trade and large cattle markets. Pop. (1931) 2664.

St. James's Palace Royal palace in London. It occupies the site of a leper hospital dedicated to St. James-the-Less and became royal property in the time of Henry VIII., who built a palace here. In the 17th century it became the chief London residence of the sovereign, and so it remained until the time of George III. when it was replaced by Buckingham Palace. It is now used for levees and in it certain officials of the royal household live. Part of it forms York House, the residence of King Edward VIII. when Prince of Wales. The chapel royal, the gateway and the presence chamber date from the time of Henry VIII.; the rest is more recent.

St. James's Park, once the park of the palace, extends from Whitehall to Buckingham Palace and is flanked by the Mall and Birdcage Walk. It covers 93 acres and in it is an ornamental lake. It was laid out by Charles II. and is now open to the public.

St. John Seaport and capital of county in New Brunswick, Canada, at the mouth of the St. John River on the Bay of Fundy. A terminus of the C.P. and C.N. Rlys., it shares with Halifax the Atlantic trade during the winter, and is an important distributing centre. Pop. (1931) 69,093.

The **St. John River** has a branch rising in Maine, U.S.A., and another in Quebec province. It is navigable for large steamers for 80 m. and for small ones for 220 m.

St. John of Jerusalem, Order of. Charitable religious order. It was founded in Jerusalem about 1048, for the relief of Christian pilgrims to the Holy Land, and now helps to carry on the work of the St. John Ambulance Association. Its distinctions are conferred in recognition of services in the cause of humanity throughout the British Empire.

St. Johns Capital and chief seaport of Newfoundland. It stands on the east coast of the island, 560 m. from Halifax, and is the terminus of a railway line. There is a good harbour and from here ships go regularly to Liverpool and elsewhere. Another industry is fishing, and the city is the financial and administrative centre of the island. It was founded in 1582. Pop. (1931) 42,645.

St. John's Town of Quebec. It stands on the Richelieu River, 30 m. from Montreal, and is served by the C.P.R. and C.N.R. and two American railways, as it is near the frontier of the U.S.A. It has a trade in agricultural produce and some manufactures. The name was formerly Dorchester. The French call it St. Jean. Pop. 7734.

St. John's Wood District of London, once the property of St. John's priory at Clerkenwell. It is to the north-west of the city in the borough of Marylebone, on the Metropolitan Rly. Here is Lord's cricket ground.

St. John's Wort Perennial evergreen plant (*Hypericum Perforatum*) one or two feet in height with branching stems and clusters of large yellow flowers. It thrives in shady places and is easily propagated by planting rooted pieces in late summer.

St. Just Market town and urban district of Cornwall. It is 7 m. from Penzance and is a centre of the mining industry. It is reached by the G.W. Rly. and by motor omnibus from Penzance. The town possesses a round, or theatre, in which morality plays were produced. Pop. (1931) 4356.

St. Kilda Island of the Hebrides. It is part of Inverness-shire, being 40 m. to the west of North Uist, and the most westerly of all the islands. It is now uninhabited as, in 1930, at their own request, the inhabitants were removed to the mainland. It covers about a square mile and is a great haunt of sea fowl.

St. Kitts Island of the Leeward group, West Indies, also called St. Christopher. It is 46 m. from Antigua and covers 68 sq. m. Basseterre is the capital and the chief seaport. Sugar is the staple product of the island. For purposes of government St. Kitts ranks as part of the Leeward Islands. It was discovered by Columbus in 1493 and became British in 1713. Pop. 17,978.

St. Lawrence River and gulf of North America. The river issues from Lake Ontario, where it contains the Thousand Islands, and flows past Montreal, Quebec and many other places to the Atlantic Ocean. During a large part of its course it is over a mile wide; near Anticosti it is 100 m. wide. Its tributaries include the Richelieu, Saguenay, Ottawa and Outarde. Its total length is nearly 2300 m.

The St. Lawrence is one of the world's greatest waterways, as canals have been cut to make it navigable by large vessels up to the head of Lake Superior. Ocean steamers can get as far as Montreal, but ice closes it in the winter months. In 1932 a treaty was signed between Canada and the U.S.A. to improve the channel between Kingston and Montreal, so as to allow ocean vessels to reach the head of the Great Lakes; development to involve the generation of some 5,000,000 h.p. of electric energy. In 1934 U.S.A. refused to proceed with the scheme.

The **Gulf of St. Lawrence** is 500 m. across and covers 80,000 sq. m. It is formed by the St. Lawrence and begins at the strait of Belle Isle between Canada and Newfoundland. That strait, the Gut of Canso and Cabot Strait, connect it with the Atlantic.

St. Leger English horse race. It was started in 1776 by Col. St. Leger of Parkhill, Doncaster, and is one of the great races. It is run at Doncaster in September. The course is just under two miles and the race is for three year old horses.

St. Leonard's Forest District of Sussex. It is a woodland area lying to the east of Horsham.

St. Leonards-on-Sea Watering place of Sussex. Part of the borough of Hastings, lying to the west of that town, it has a fine promenade and a pier. *See* HASTINGS.

Saint Louis City of Missouri. On the Mississippi River, it is the fourth largest city in the States, and one of the finest. Since 1796, when it was settled as a trading post, its growth has been steady, and it now boasts of fine federal buildings, wide open streets, a magnificent bridge and a university. It has a large German population. Its chief trades are meat-packing, leather, tobacco and white lead. Pop. (1930) 821,960.

St. Louis is also the name of the capital of the French colony of Senegal, West Africa. It is situated on an island 11 m. above the mouth of the Senegal River. It has an active trade with the countries around, but a borne trade is rendered difficult owing to a sandbar at the mouth of the river.

St. Lucia One of the Windward Islands. The largest of the group, it is 24 m. south of Martinique and belongs to Great Britain. Its area is 233 sq. m., and its length 27 m. Castries is the capital and the chief seaport. The interior is mountainous, but there are fertile valleys in which sugar, coffee and spices are produced. There are many forests and much timber is cut. It is governed by an administrator who has the assistance of two small councils. The island was discovered by Columbus in 1502 and, having been alternately French and English, finally became a British possession in 1803. Pop. (1931) 59,676.

St. Malo Seaport and watering place of Brittany, France. It stands on a peninsula opposite Dinard at the mouth of the Rance and is reached by steamer from Southampton and elsewhere. The town walls, with their eight gates, still stand. There is a casino and good sands, a good harbour and a considerable export trade. Many of the inhabitants are fishermen. A seawall, called the Sillon, connects St. Malo with the mainland, and boats go regularly to Dinard and elsewhere. Pop. 13,000.

St. Martin Island of the West Indies. It is one of the Lesser Antilles and covers 37 sq. m. It is owned in part by France and in part by the Netherlands. The northern portion, which is French, is governed from Guadeloupe, the Dutch portion from Curacao.

St. Mary's Largest of the Scilly Isles. It lies about 27 m. from Land's End and is reached by steamer from Penzance. On it is Hugh Town, the capital of the island. The objects of interest include Star Castle and remains of early man, including a prehistoric village. There is a good harbour and the main industry is the growing of flowers and vegetables for the English market.

St. Mary's River of Canada. It flows from Lake Superior to Lake Huron and is 40 m. long. It is known for its *sault* or rapids, about 1 m. long. To avoid these, two ship canals, the Sault Sainte Marie canals, have been cut. *See* SAULT SAINTE MARIE.

St. Mawes Seaport and watering place of Cornwall. It stands on an opening of Falmouth Bay, 3 m. from Falmouth. The chief object of interest is the castle. Fishing and catering for visitors in the summer are the principal industries. It is reached by ferry from Falmouth.

St. Michael and St. George. English order of knighthood. It was founded in 1818 for persons from the Ionian Islands and other British possessions of the Mediterranean. Later it became an order for those who have served the crown in the overseas parts of the British Empire. Members are of three grades: G.C.M.G., or knight grand cross; K.C.M.G. or knight commander; C.M.G., or companion. The badge is a white cross, with the figure of St. Michael trampling on Satan in the centre. On the other side is St. George. The motto is *auspicium melioris aevi* (augury of a better age). The ribbon is blue with a crimson centre.

St. Michael's Mount Islet in Mount's Bay, Cornwall. It is 3 m. from Penzance, and at low tide can be reached by a causeway. On the isle is a castle, a seat of Lord St. Levan. Earlier there was a hermitage and then a Benedictine abbey here. The castle stands on a rock 230 ft. high and the isle is about a mile round.

St. Mihiel Town of France. It stands on the Meuse 20 m. from Verdun. It was famous for its Benedictine abbey founded in the 8th century.

The town was taken by the Germans in Sept. 1914, and there was a good deal of fighting around it during the Great War.

St. Moritz Pleasure resort of Switzerland. It is in the Engadine, 27 m. from Coire, and stands at a height of 6000 ft. Its mineral springs attract invalids, but it is perhaps more famous for its winter sports, as here is the Cresta run.

St. Nazaire Seaport of France. It stands near the mouth of the Loire, is the port of Nantes and has an old and a new harbour, the latter being able to take the largest vessels. There are dry docks and other accommodation for the shipping, which is chiefly with S. America. Pop. 39,711.

St. Neots Urban district and market town of Huntingdonshire. It is situated on the Great Ouse, 8 m. from Huntingdon, on the L.N.E. Rly. Paper is made and there is an agricultural trade. Pop. (1931) 4314.

St. Omer Town and river port of France. It is 42 m. from Lille on the little River Aa and is also served by a canal that connects it with the sea. The Church of Notre Dame was once a cathedral. Haut Pont is a suburb inhabited by Flemings. The town has some manufactures and there is a harbour for the shipping on the canal. From Oct., 1914, to March, 1916, St. Omer was the British headquarters in France. Pop. 18,858.

St. Pancras Borough of the county of London. It lies to the north-west of the city and includes the populous districts of Camden Town, Kentish Town and Somers Town, as well as part of Highgate. In it are the great railway termini of Euston, St. Pancras and King's Cross. University College is in the borough. Pop. (1931) 198,113.

St. Pancras Station, opened in 1871, was, until the amalgamation, the headquarters and London terminus of the Midland Rly. It now fulfils the same function for the L.M.S. Rly.

St. Patrick Order of. Irish order of knighthood. It was founded in 1788 and its rules were altered in 1905. It consists of 22 knights, who are distinguished as K.P. The ribbon is sky-blue and the motto, *quis separabit*, is surrounded by a wreath of shamrock.

St. Paul City of Minnesota and the capital of the state. On the Mississippi and served by several lines of railway, it is an important railway junction and great distributing centre, especially for cattle. Other industries are the manufacture of clothing and hardware, printing, meat packing, etc. On the other side of the Mississippi is Minneapolis. Pop. (1930) 271,606.

St. Paul's Cathedral Cathedral church of the diocese of London. It stands at the top of Ludgate Hill in the heart of the city, and is surrounded by streets with ecclesiastical associations, such as Amen Corner, Creed Lane and Paternoster Row. The present building is the third to occupy the site. The first was burned down in 1086 and the second in 1666 during the Great Fire. The third and present one was built between 1675 and 1710 from designs by Sir Christopher Wren. It is a Renaissance building, unlike any other English cathedral. Features of the building are the dome, the crypt, in which many famous men are buried, and the whispering gallery. It contains many naval, military and other memorials. The choir has stalls carved by Grinling Gibbons and is decorated with mosaics by Sir W. B. Richmond. The churchyard has been reduced in size; the existing part is a public garden and in it are the remains of an open air pulpit on the site formerly known as "Paul's Cross."

In 1913 grave anxiety was felt about the foundations of St. Paul's, and a good deal of work was done to strengthen them. This proved inadequate, and in 1925 much of the building was closed for more extensive operations, which included the placing of a chain around the dome. The cathedral was reopened in 1930. The height to the top of the cross on the dome is 365 ft.

St. Peter Port Town and watering place of Guernsey; also the capital of the island. It is on the east coast and has a large harbour. There is a regular service from here to Southampton, Weymouth, Cherbourg and elsewhere. Here are the royal court house, and Hauteville House, once the residence of Victor Hugo and now a museum. Objects of interest include Castle Cornet, on an islet in the harbour, and two old forts.

St. Peter's Church in Rome. It is the largest in the world, and the chief shrine of Roman Catholicism. It was begun in the 15th century, on the site of a basilica erected by Constantine over the tomb of St. Peter. It was added to and decorated by Michelangelo, and was finished in 1667. The interior is in the form of a cross, and a huge dome resting on four massive piers rises above the centre. Under the dome is the High Altar, where Mass is celebrated by the Pope.

St. Quentin City of France. It stands on the Somme, 95 m. from Paris by railway. The church, once a cathedral, was almost destroyed during the Great War, but was afterwards restored. The town hall was also badly damaged. The industries are the manufacture of cotton goods and other textiles. It has a broadcasting station (175 M.). Pop. (1931) 49,448.

Owing to its frontier position St. Quentin has been the scene of a good deal of fighting. Here, in 1557, the Spaniards defeated the French and in 1871 the French defeated the Germans. In Aug., 1914, the Germans entered the city, which they retained until Oct., 1918. The great German attack of Mar. 21, 1918, in which the British fifth army was overwhelmed, is sometimes called the **Battle of St. Quentin.**

Saint-Saëns **Charles Camille.** French composer. Born in Paris, Oct. 9, 1835, he studied music at the Conservatoire there. In 1853 he was appointed organist of the Church of St. Merri in Paris, and in 1858 of the Madeleine. He retired from that position in 1877, and gave recitals in Europe and America. He composed several operas, notably *Samson and Delilah*, and some pieces for the orchestra, in addition to church music. He died Dec. 17, 1921.

St. Sampson Town of Guernsey. It is on the east coast, 2 m. from St. Peter Port, with which it is connected by tramway. There is a small harbour from which a kind of blue granite, quarried in the neighbourhood, is exported.

Saintsbury **George Edward Bateman.** English scholar. Born at Southampton, Oct. 23, 1845, he was educated at King's College School, London, and at Merton College, Oxford. He was a schoolmaster in the Channel Islands for 8 years, after which he turned to journalism. In 1895 he was made Professor of Rhetoric at Edinburgh, and there he remained until 1915, when he retired to Bath. He died in 1933.

Saintsbury has won for himself a unique place as a writer and critic. He has read enormously in both French and English, more perhaps than any of his contemporaries, and the fruits of this are in the long list of books that stand to his credit. These include *A History of Criticism*, *The English Novel*, *A Short History of English Literature*, *A Short History of French Literature* *A History of the French Novel*, *Elizabethan Literature*, *A Consideration of Thackeray*, and others, each showing an unrivalled knowledge of the subject.

Saint-Simon **Duc de.** French writer. Louis de Rouvroy Saint-Simon was born at Versailles, Jan. 16, 1675, and in 1693 became a duke. He joined the army and fought in the war against England. In 1714 he became a member of the council of regency for Louis XV., and he took part in public affairs until 1723, chiefly as the friend and supporter of the Duke of Orleans. The rest of his life, which ended in Paris, March 2, 1755, was passed in retirement.

His *Memoirs* are one of the most valuable sources for the history of the time.

St. Thomas City of Ontario. It is 157 m. from Toronto and stands on an opening of Lake Erie. It is served by the C.P.R., C.N.R., and other lines. There are some manufactures and a trade in agricultural produce. Pop. 16,026.

St. Thomas One of the Virgin Islands, West Indies. It is 38 m. from Porto Rico and covers 32 sq. m. Charlotte Amalie is the capital. There is a fine harbour used by ships for obtaining coal and oil, and

the climate makes the island a popular winter resort. St. Thomas belonged to Denmark from 1671 until it was bought by the U.S.A. in 1916. The people are mainly negroes. Pop. 9834.

St. Thomas Island of Africa. On the west coast, it is 170 m. from the mouth of the Gabun River and is in the Bight of Biafra. It covers 360 sq. m., and San Thomé is the capital. Cocoa and rubber are grown and exported, as the soil is very fertile. The island belongs to Portugal and is governed from Principe. Pop. 68,000.

St. Vincent One of the Windward Islands, West Indies. It is 21 m. to the south of St. Lucia and 95 m. from Barbados. In it is an active volcano, Soufrière, which erupted and did great damage in 1902. The soil is generally fertile and produces cotton, sugar, coffee and spices. Kingstown is the capital. The island covers 150 sq. m. and is 18 m. long. It has been British since 1783. It is governed by an administrator assisted by a small council. Pop. (1931) 47,961.

St. Vincent Cape of Portugal. Near it, on June 16, 1693, a French fleet defeated the British under Sir George Rooke, and on Jan. 16, 1780, a British fleet under Admiral Rodney defeated the Spaniards. Near here, too, on Feb. 14, 1797, a British fleet of 15 ships under Sir John Jervis attacked 27 Spanish vessels. After a hard fight the Spaniards were beaten, four of their ships being taken, and England was saved from attack by the combined Franco-Spanish fleet. The victory was largely due to the genius of Nelson, who disobeyed the orders of Jervis at a critical moment.

St. Vincent Earl of. English title borne by the family of Jervis. John Jervis was born Jan. 9, 1735, and joined the navy when a boy. He served in the Seven Years' War (1756-63) and again when France went to the assistance of the American colonists. His exploits included the capture of the islands of Martinique and Guadeloupe after war broke out with France in 1793, but he is best known for his victory over a Spanish fleet off Cape St. Vincent in Feb., 1797, which made it impossible for the French, the allies of Spain, to invade England. He was then created an earl. St. Vincent commanded a fleet from 1799-1801 and 1806-07, and was first Lord of the Admiralty, 1801-04. He died March 14, 1823, and the title is now extinct.

St. Vitus's Dance Popular name for the nervous affection properly called chorea (*q.v.*).

Sakaria River of Asia Minor It flows in a very circuitous course through the country until it enters the Black Sea. On its banks a battle was fought between the Greeks and the Turks in 1921. Fighting began on Aug. 23, when the Greeks reached the defences erected by the Turks and continued until Sept. 12, when they withdrew.

Saké Drink made in Japan. It is made from rice and is strongly alcoholic. In colour it resembles a light beer, but it is much more potent, its strength being due to elaborate fermentation.

Sakhalin Island of Asia. It lies near the east coast of Siberia and covers about 56,000 sq. m. It is 670 m. long. The northern part is Russian territory, but the southern belongs to Japan, to whom it was ceded in 1905.

Until about 1800 the island was a Chinese possession, after which it became Russian and was used as a station for convicts. The people are Gilyaks in the north and Ainus in the south. The chief industry is fishing, salmon and herring especially, coal is mined and there are oil wells. Railway lines have been built. The climate is cold and there are extensive forests. The Japanese call their portion of the island Karafuto.

Saki Genus of monkey. Found only in South America, especially in the forests of the Amazon, they have white and yellow faces and the body is covered with thick hair. A feature is the long tail. The best known species is the black saki.

Salaam Arabic word meaning peace. It is part of a general salutation used by Mohammedans on meeting and parting. It is also a general term for a salutation, as when an Indian bows low with the hand upon the forehead as a sign of respect.

Saladin Sultan of Egypt. Born in 1137, he won renown when fighting in Egypt for the Caliph against the Christians, and in 1170 he became vizier of the country. He extended his authority and was soon Sultan of Egypt and Syria and had conquered Mesopotamia and most of Asia Minor.

Saladin is best known for his campaigns against the Latin kingdom of Jerusalem in the third crusade, which began in 1187. In spite of the efforts of the Crusaders, he captured Jerusalem and other places, and continued his victorious career until he was checked by Richard I., who arrived with a fresh army. A truce was made in 1192, and on Mar. 4, 1193, Saladin died.

A tax levied in England in 1188 to raise money for the third crusade was called the Saladin tithe.

Salamanca Town of eastern Spain, on the River Tormes, 172 m. by rail N.W. of Madrid. Ruled in turn by Carthaginians, Romans, Goths and Moors, it was famous in the middle ages for its university. It has two cathedrals possessing relics of great historical interest, while the university buildings include fine examples of 15th century Gothic work. There are some beautiful old houses, and a bridge of twenty-six arches, fifteen of which are Roman. The colonnaded Plaza Mayor is one of the finest squares in Europe. To-day it is an important railway centre and has a broadcasting station (453.2 M., 1 kW.). Pop. (1931) 48,235.

Salamanca Battle of. Engagement in the Peninsular War, fought July 22, 1812. It was the most important victory that Wellington gained in the Peninsular War. He used the fortresses of Ciudad Rodrigo and Badajoz as the bases of his operations, and then marched into Spain, against Marmont, whom he completely routed. Both opposing forces were about 42,000, but the French lost about 8000 men, and 7000 prisoners, and the way was then clear for Wellington to march on into Madrid.

Salamander Members of an amphibian family. Salamanders are found in Europe and West Asia, and have four fingers and five toes. *Salamandra maculosa*, the fire or spotted salamander, is about 6 in. long, and when afraid, ejects a white poisonous fluid through the skin. Its young are born as larvae in spring, and it eats flesh. *Salamandra atra* bears two well-developed young at once; and the male Caucasian salamander is distinguished by having a projection at the root of the tail.

Salamis Island of Greece. It is in the Bay of Eleusis near Athens, and covers 35 sq. m. Salamis, on the west coast is the chief town and seaport. The island was an independent state until about 620 B.C. Later it was ruled by Athens.

The famous **Battle of Salamis** was fought between the Greeks and the Persians in 480 B.C. Themistocles, by giving the enemy wrong information, persuaded the Persians to attack, and for some hours the battle raged, the Persians, in the end, being utterly defeated. The destruction of the Persian fleet saved Athens, as the Persian army withdrew into Thessaly.

Sal Ammoniac Common name for ammonium chloride, obtained by absorbing ammonia from gas liquor in hydrochloric acid and afterwards purifying the product by sublimation. It is a white fibrous substance when sublimed, and is used as a charge for electric batteries, also in galvanising iron, as a flux in soldering, and in medicine.

Salcombe Urban district, seaport and watering place of Devonshire. It is 11 m. from Dartmouth. Standing on Salcombe Haven, it was once a port of some importance, and its vessels, Salcombe clippers, were famous. There is a coasting trade. The climate is very mild and there are great attractions for visitors. Pop. (1931) 2383.

Sale Transfer of property for money or other equivalent. English law distinguishes between the sale of goods and the sale of land. As regards the former the law is contained in an Act passed in 1893. The property in the goods passes to the buyer as soon as the contract is made; he need not wait for their actual delivery as is the case in some countries. Thus, if a man buys a suit and asks for it to be sent home, it is his property from that moment, not from the moment it reaches his home. In some legal systems ownership only comes with actual possession. In the case of a sale of goods for over £10, there must be a memorandum in writing, or a part payment, or acceptance of the goods, or something to show that a contract has been made; otherwise no action can be brought in the courts. The sale of land is done by conveyance of the title, quite a different process. *See* CONVEYANCING, LAND.

Sale Urban district of Cheshire. It is 5 m. from Manchester, of which it is practically a residential suburb, and about a mile from the Mersey. It is reached by the Cheshire Lines Rlys. Pop. (1931) 28,063.

Salem City of Palestine. It was a city of the Jebusites and is mentioned in the Bible (Gen. xiv.), its king being Melchizedek. It was identified with Jerusalem, which is called Salem, or the city of peace, in the Psalms and in other poetic literature.

Salem City and seaport of Massachusetts. It stands on Massachusetts Bay, 16 m. from Boston, and is served by several lines of railway. It has some manufactures, but as a seaport is less prosperous than formerly.

As one of the oldest places in the United States, Salem has some interesting relics of the past. It was dominated by the Puritans and was noted for its aversion to witchcraft. Many supposed witches were put to death here, and the house in which they were examined still stands. Salem is also associated with Nathaniel Hawthorne, and the house in which he was born, also the house of the Seven Gables, may be seen. Pop. (1930) 43,353.

Salerno City and seaport of Italy. It is situated on the gulf of the same name, 34 m. from Naples. The 11th century cathedral contains some magnificent carvings. For some time in the Middle Ages the city was a stronghold of the Normans. In 1150 they founded a university here, and this became famous as a centre for the teaching of medicine. It ceased to exist in 1817. Pop. (1931) 62,308.

Salesmanship Art or practice of selling goods. Since the Great War a good deal of attention has been paid to this branch of commerce and schools have been opened, where it is taught. This is especially the case in the United States, where the teaching of salesmanship is carried out in great detail. There are in Great Britain associations for arousing interest in the necessity of an improved technique of salesmanship. *See* ADVERTISING.

Salford County borough of Lancashire. It is on the south side of the River Irwell, which divides it from Manchester, and is 190 m. from London. It is reached by the L.M.S. Rly. The industries include engineering works, cotton mills and chemical factories. The borough includes Broughton, Pendleton and other districts, and in it are Kersal Moor, Peel Park, Albert Park and other open spaces. Its water supply is provided by Manchester, and other services are common to the two places, but Salford retains its own mayor and corporation. Pop. (1931) 223,442.

Salicin Crystalline glucoside occurring in willow and poplar bark, and forming colourless tabular crystals having a bitter taste. It is used in medicine for rheumatism and influenza.

Salic Law Law made by the tribe called the Salian Franks. It came to be applied to a law that no woman may succeed to a throne, and it is still used in this sense to-day. The Salic Law was in force in Hanover, but not in Great Britain, in 1837.

Salicylic Acid Complex organic acid occurring in nature in oil of wintergreen (*Gaultheria procumbens*). It may be prepared from salicin and synthetically by the action of carbon dioxide upon phenol. It is a white crystalline substance having strong antiseptic properties. Its salts are used in medicine for febrile conditions, and as a food preservative.

Salient Name for part of a line of trenches or other defensive works that bulges out towards the enemy, and so requires a greater force to guard it. There were several salients in the Great War, the most famous being that in front of Ypres.

Saline Term used for preparations containing various salts having an aperient or other medicinal action upon the digestive organs. The principal salt of this character is sulphate of magnesia or Epsom salts. The waters of many mineral springs or spas are used as natural salines, the salts varying with the character of the spring.

Salisbury City, market and county town of Wiltshire. It is 84 m. from London on both the G.W. and S. Rlys. Here the Avon is joined by three small rivers, Nadder, Bourne and Wylye. The industries include brewing, but the old manufactures of cutlery and woollen goods have disappeared.

The city is famous for its cathedral, built in the 13th century, and one of the finest Gothic buildings in existence. It is beautifully

placed with the close around it, and the spire is the loftiest in the country. The close is entered by its old gates and in it are several colleges and some beautiful houses. Other buildings are three old churches, St. Thomas, St. Martin and St. Edmund. St. Nicholas Hospital, with its beautiful chapel, and the old George Inn are relics of the city's past, and there are several others including the hall of John Halle, once a guildhall. The council house is more modern (1795), but the poultry cross dates from the 15th century. There is a spacious market place, and the city is laid out in squares called chequers.

Salisbury has a large agricultural trade, and is important as a military centre. Sometimes called New Sarum, it was built to replace Old Sarum, 2 m. away. Pop. (1931) 26,456.

Salisbury City of Rhodesia, the capital of Southern Rhodesia. It is 1660 m. by railway from Capetown, and is also reached from Beira, 370 m. away. The industries are chiefly connected with the produce of the country and the management of its affairs. Pop. 28,800.

Salisbury **Earl of.** English statesman. Robert Cecil was born about 1565, the youngest son of the 1st Lord Burghley, and was educated at Cambridge. He entered Parliament in 1584, was knighted in 1591, and, after a diplomatic mission to France, succeeded his father in 1588 as secretary and chief adviser to Queen Elizabeth. Cecil now began a secret correspondence with James VI. of Scotland, assuring him of the English succession, and when James came to the throne he was created a baron. Created Earl of Salisbury in 1605, in 1608 he was made Lord Treasurer and became solely responsible for the conduct of the realm. In foreign affairs he favoured peace, and at home endeavoured to check and counteract the extravagance of the court, by instituting the granting of an annual subsidy from Parliament to the crown. Though he did nothing to solve the great national problems, England was secure under his guidance. He died May 24, 1612.

Salisbury **Marquess of.** English statesman. **Robert Arthur Talbot Gascoyne-Cecil** was born at Hatfield House, Feb. 3, 1830, being a younger son of the 2nd marquess. He was educated at Eton and Christ Church, Oxford, and became a fellow of All Souls College. In 1853, being known as Lord Robert Cecil, he was elected M.P. for Stamford, and in 1857 he married a daughter of Sir Edward Alderson. He first became known by his writings in *The Saturday Review* and other periodicals, and by his attacks on the Liberal Government led by Earl Russell. In 1865 his elder brother died and he became Viscount Cranborne and heir to the title, to which he succeeded in 1868.

In 1866 Salisbury became Secretary for India under Disraeli, but he resigned in 1867. He took the same office, however, in 1874, and in 1878 became Foreign Secretary, in which capacity he attended the Congress of Berlin. In 1881 he succeeded Beaconsfield as leader of the Conservative Party, and in 1885 he was Prime Minister for six months. In 1886 he entered upon his second term of office as Premier, which lasted until 1892; his third term was from 1895 until his retirement in July, 1902. He was also Foreign Secretary during these periods, except during the last years, 1900-02. He died Aug. 22, 1903.

Although not a popular figure, Lord Salisbury was a great statesman and a successful Prime Minister.

He left five sons and two daughters. The sons were the 4th marquess, Viscount Cecil of Chelwood, Lord William Cecil, appointed Bishop of Exeter in 1916, Lord Edward Cecil, Financial Adviser to the Government of Egypt until his death in 1916, and Lord Hugh Cecil, member for Oxford University. The daughters were the Countess of Selborne and Lady Gwendolen Cecil, who wrote her father's biography.

Salisbury Plain District of Wiltshire. It is in the south-east of the county and is best reached from Salisbury which lies to the south. It is about 20 m. across from north to south and covers 200 sq. m. The Avon crosses it as does the S. Rly. It is a chalk plain, but on it are hills, the highest being 770 ft. high. The plain contains Stonehenge and Amesbury with their prehistoric monuments. Most of it is used for military purposes, and both the army and the air force have camps thereon. The centres are Bulford, Larkhall, Netheravon, Upavon, Tidworth and others.

Saliva Secretion from the salivary glands poured into the mouth, the flow being stimulated by the nerves of taste, smell, and sight, and by the act of mastication. Saliva is a slightly alkaline fluid containing mucin and the ferment, ptyalin, which acts upon starch, changing it into more digestible substances, dextrin and maltose.

Sallust Roman historian. Gaius Sallustius Crispus was born in 86 B.C., in the Sabine country, and was made tribune in 52 B.C. After service in Africa, he became Governor of Numidia, where he extorted great wealth by scandalous oppression. He then lived in magnificent retirement and wrote his histories, the most famous being his history of the Catiline conspiracy, and his study of Jugurtha, King of Numidia. He died in 34 B.C.

Salmon Food fish (*Salmo*) of the family *Salmonidae*. It attains a length of 5 ft. and a weight of 40 lb., the average being about half these. Its pink flesh is esteemed for its delicate flavour and nutritive value. The adult fish ascends the rivers where, in the shallow head waters, the ova are deposited and fertilised. In the second year the young fish journey to the sea, staying there two, three or more years till, in turn mature, the majority migrate to the riverine spawning ground to breed. The fish is widely distributed in northern waters.

Salmond **Sir John Maitland.** English airman. Born July 17, 1881, in 1901 he entered the army. He served in South Africa, 1899-1902, and was one of the first to join the Royal Flying Corps. He became an instructor at the flying school and served with the air force in the Great War. In 1917 he was made Director-General of Military Aeronautics, and in 1918 head of the air force on the western front. In 1919 he was knighted and made an air vice-marshal. Sir John went to Mesopotamia in 1922 as head of the air force there. From 1924-29 he was in command of the air defences of Great Britain; in 1929-30 he was a member of the Air Council, and in 1930 he was appointed Chief of the Air Staff. He retired in 1932.

His elder brother, **Sir William Geoffrey Hanson Salmond,** had a similar career, passing from the army into the air force. In 1927 he was made commander of the British air force

in India, and in 1932 he succeeded his brother as Chief of the Air Staff. He died in 1933.

Salome Daughter of Herodias, the wife of Herod Antipas, by a former husband. Urged on by her mother, she asked Herod, after having charmed him with her dancing, for the head of John the Baptist, who was in prison. John was accordingly beheaded and the head given to her. Oscar Wilde wrote in French a play on Salome which was first produced in London in 1905. A sister of Herod the Great was also named Salome. She plotted against her sons and was murdered.

Salon French word for a large room, especially a reception room. It came to be used for a gathering held in such a room, usually one of literary or political persons. Many of these were held in Paris in the homes of famous women, such as Madame Necker, Madame Roland and Madame de Staël. In London, Holland House was such a salon.

To-day **the Salon** is the name given to the exhibition of pictures and other works of art held every year in Paris. It corresponds to the Academy in London and is held in the Palais de l'Industrie.

Salonika City and seaport of Greece. It is in Macedonia at the head of the Gulf of Salonika, and is well served by railways. The city has a good harbour and does a considerable trade, and since 1925 part of it has had a free fiscal zone. It is the Thessalonica to which S. Paul wrote two of his epistles. Pop. (1928) 236,900.

In Oct., 1915, a French and British army landed at Salonika and retained it as a base during the rest of the war. From it expeditions were organised to help Serbia. In 1916 it was the centre of a movement of the Greeks against the policy of King Constantine, and a provisional government was set up here.

Salop Alternative name for the county of Shropshire (*q.v.*).

Salsify Biennial plant, (*Tragopogon porrifolius*), also known as the oyster plant. Found wild in European countries, it is cultivated for its edible root.

Salt Common name for sodium chloride. Salt occurs in nature as a mineral deposit, rock salt, also in brine springs and as an ingredient of sea water. **Rock salt** occurs in large deposits in Germany, Poland and Galicia, also in the Triassic beds of Cheshire and neighbouring counties. **Commercial salt** is obtained either from rock salt or by evaporation of natural brines or artificial brine formed by running water into mines to dissolve the salt. Salt is used as a preservative for meat, fish, butter, etc., and in the manufacture of caustic soda, soda ash and other sodium and chlorine compounds.

Salt **Sir Titus.** English manufacturer. Born at Morley, Sept. 20, 1803, he was apprenticed to the woollen trade in Bradford. In 1824 he started in business with his father as a wool stapler. He realised the value of alpaca and was the first to use it in the manufacture of cloth. The business became very large and new mills were built near Bradford at a place which he named **Saltaire.** In 1859 Salt was elected M.P. for Bradford, and in 1869 he was made a baronet. He died Sept. 20, 1876.

Saltaire Town of Yorkshire (W.R.). It is 4 m. from Bradford, on the River Aire, and is served by the L.M.S. Rly. and a canal. It owes its origin to Sir Titus Salt (*q.v.*) Pop. 13,500.

Saltash Borough, market town and seaport of Cornwall. It is on the Tamar, just opposite Devonport, on the G.W. Rly. It is a fishing and agricultural centre. The Tamar is here crossed by a lofty railway bridge, the work of Isambard Brunel. It is 2240 ft. long. Pop. (1931) 3603.

Saltburn Urban district and watering place of Yorkshire (N.R.). It is 16 m. from Middlesbrough and is reached by the L.N.E. Rly. There are excellent sands, good bathing and golf links. The town has brine baths. Pop. (1931) 3911.

Saltcoats Burgh and seaside resort of Ayrshire. It is on the shores of the Firth of Clyde, adjoining Ardrossan, and 30 m. from Glasgow. It has become a popular watering place and has the usual attractions for visitors. At one time the collection of salt was the chief industry; later it was shipbuilding. Pop. (1931) 10,173.

Salter **Sir James Arthur.** English administrator. Born in Oxford, Mar. 15, 1881, the son of an owner of pleasure steamers, he was educated at the high school there. He won a scholarship at Brasenose College, and in 1904 entered the civil service by open competition. He took a post in the Admiralty, and during the war period was one of the chief officials who dealt with shipping problems. In 1919-20 he was made head of the economic and financial section of the League of Nations, and he returned to that position in 1922, having in the interval been secretary to the Reparations Commission. In 1922 he was knighted. In 1930 he published a most valuable survey of the world's economic difficulties entitled *Recovery.* In 1933 he was appointed Gladstone Professor of Political Theory and Institutions at Oxford.

Saltire Term used in heraldry for an armorial charge or ordinary on a shield in the form of a St. Andrew's cross.

Salt Lake City Capital of the State of Utah, U.S.A., the home of the Mormons (*q.v.*). It contains many churches of these "Latter Day Saints" and the Great Mormon Temple, begun in 1853. Salt Lake City is one of the main centres in the West for agricultural produce, sheep, coal, precious metals, books and malt. The Mormons, under Brigham Young, first settled here in 1847, but since the Civil War, the proportion of Mormons in the city has sensibly decreased. Pop. (1930) 140,267.

Saltney Town and river port of Flintshire. It is on the Dee, 2 m. from Chester, on the G.W. Rly. The industries include railway shops and coastal shipping, for which there are wharves.

Saltoun Two villages of Haddingtonshire, also called Salton. Known as East and West Salton, they are 16 m. from Edinburgh. Andrew Fletcher was laird of Salton, and his estate was famed for its barley. The title of **Baron Saltoun** has been held by the family of Fraser since 1445.

Saltpetre Common name for nitre or potassium nitrate, a white saline substance found in nature as an incrustation of the soil in India, or mixed with the porous soil in many parts of the world. It is used in the manufacture of gunpowder, nitric acid, fertilisers, and for salting meat.

Salts Compounds formed by the chemical union of acids with bases such as hydroxides. The oxy-acids form with a base **oxy-salts, thus nitric acid and potassium oxide**

form potassium nitrate. A normal salt is one where all the available hydrogen in the acid is replaced by the base, while in an acid salt only a part of the hydrogen is displaced. Haloid salts are formed from the halogen acids such as hydrochloric acid.

Saltwood Village of Kent. It is on the coast near Hythe and is famous for the ruins of its castle. It has also an old church. The castle was a residence of the Archbishop of Canterbury, and from here the four knights started for Canterbury to murder Thomas à Becket.

Saltwort Species of herb (*Salsola kali*). Known as the prickly saltwort, it is common on the seashore in Great Britain. It is a source of barilla, crude carbonate of soda, obtained by burning the plant, and used in soap and glass-making.

Salute Sign of respect or recognition paid by members of the naval, military and air forces to one another, and on ceremonial occasions. On meeting one of superior rank the officer or man, if unarmed, raises the right hand smartly to the forehead. The salute should be returned. When stationary, troops salute by presenting arms, *i.e.*, raising the rifle. When marching past the king, a member of the royal family, or an officer who is reviewing them (who is said to take the salute), at the command, the men turn the head towards him in salute.

There are other forms of salute. A boy scout raises his hand, but does not touch the forehead. The Fascists raise the hand above the head.

Salvador Republic of Central America. Bounded on the N. and E. by Honduras, on the S. by the Pacific Ocean, and on the W. and N.W. by Guatemala, it is mountainous with many volcanoes, and is subject to earthquakes. The smallest and most populous of the Central American republics, it is intensively cultivated, and produces coffee, sugar, maize, indigo, rice, balsam, etc., these products forming the principal exports. There are small exports of minerals, principally gold. Salvador is governed by a president, elected for four years, a cabinet of four, and a legislative chamber of 42 members. San Salvador is the capital, and La Union the principal seaport. Area (est.) 13,176 sq. m.; pop. (1931, est.) 1,437,157.

Conquered in 1526 by Pedro de Alvarado, Salvador was a Spanish possession till 1821, when it joined the Central American federation. It became independent in 1840.

Salvage Saving property from loss or destruction. It is chiefly used in connection with loss caused by fire or shipwreck. In 1917, to deal with the vast amount of waste material resulting from the operations of war, an army salvage corps was formed. Factories were opened at Dagenham, Newport and elsewhere for dealing with the material collected.

To deal with material damaged by fire there exists the **London Salvage Corps**, in close association with the Metropolitan Fire Brigade. Its headquarters are at 24 Watling Street, London, E.C.4.

Salvarsan Organic compound containing arsenic and known also as "606," or arsenobenzol. Salvarsan was discovered by Dr. Ehrlich in 1909 and found to have a destructive action upon the syphilis germ and protozoan parasites causing sleeping sickness and other diseases. A modification, neo-salvarsan, is less toxic and more convenient for use.

Salvation Army Religious organisation. It was founded in 1877 by William Booth for the revival of religion among the masses. His book, *Darkest England and the Way Out* (1890), outlined the scheme of rescue work which soon became a prominent feature of the Army's activities. The movement was organised on a military model and at first met with much criticism and opposition. But in 1904 King Edward sent for General Booth to express his admiration for the work. The Salvation Army is now active in 88 countries and uses 71 different languages. Its social services include maternity homes, children's homes, industrial homes, prison gate homes, shelters and cheap food depots for the homeless, labour bureaux, farms, industrial schools and slum posts. The total amount raised in the British Isles during its "Self-Denial Week" in 1934 was £148,236.

Salvia Genus of the *Labiatae*, widely spread in temperate and warmer areas. Many species are garden plants popular for their showy flowers, usually brilliant scarlet. They are easily grown and propagated in good soil.

Salvini Tommaso. Italian actor. He was born in Milan, Jan. 1, 1829, and soon became known as an actor. In 1857 he made his reputation as Othello. For the next 50 years he was one of the world's leading actors, distinguishing himself in Shakespearean parts, as well as in pieces by the great Italian dramatists. He died Dec. 31, 1915.

Salween River of Asia. It arises in Tibet, but most of its course of 1800 m. is in Burma. It falls into the sea near Moulmein in the Gulf of Martaban.

Salzburg Capital of the province of Salzburg, Austria, lying in the beautiful valley of the River Salzach. Salzburg, formerly rich in salt deposits, contains an ancient citadel of the 9th century, a university and a cathedral of Renaissance style. It was the birthplace of Mozart (1756) and musical festivals are sometimes held there, the last being in 1931. It has a broadcasting station (218 M., 0.7 kW.).

Samaria Ancient district of Palestine. In the centre of the country, it was inhabited by a people who were partly of Jewish blood and therefore distinct from their neighbours. Its capital was Samaria, founded about 920 B.C., but later destroyed by the Assyrians. Herod the Great rebuilt it and called it Sebaste.

Samarkand City of Asiatic Russia. It is the capital of the Uzbek republic. An ancient place, it was conquered by Alexander the Great, became important during the Arab Samanid dynasty, and was later the capital of the Mongol prince, Tamerlane. Later it came under the domination of China, then of Bokhara, and was taken by the Russians in 1868. Connected with the Caspian and Russia by railway, it is an important trading centre. Pop. (1933) 154,600.

Sambar Variety of deer. It lives in the forests of India and Ceylon. Its average height is 4½ ft. and the horns of the male are sometimes 3 ft. long. A distinguishing feature is the mane of long hair.

Sambre River of France and Belgium. It rises in France and flows north-east, passing into Belgium where at

Namur it joins the Meuse. It is navigable by barges, and canals connect it with the Scheldt and other rivers. Its length is 112 m.

The Battle of the Sambre was the last engagement of the Great War. It began on Nov. 1 and was carried out by three British armies. In ten days they advanced 25 m., taking Valenciennes, Landrecies, Maubeuge and finally Mons, and 19,000 prisoners. The battle ended with the armistice on Nov. 11, 1918.

Samoa Group of 14 islands in the Pacific, 450 m. N.E. of Fiji. Discovered by Roggeveen, a Dutchman, in 1722, nine of the group formed a German possession, now administered under a mandate by New Zealand; the others belong to the U.S.A. They are mountainous with an active volcano, are surrounded by coral reefs and are very fertile, producing copra and cocoa. The natives are Polynesians who have embraced Christianity. R. L. Stevenson is buried on Upolu. Area—U.S.A. portion, 76 sq. m., pop. 10,055; N.Z. portion, 1133 sq. m., pop. (1932) 46,271.

Samos Island of the Aegean Sea. It is 1 m. from the coast of Asia Minor and belongs to Greece. Its area is 180 m. and it is mountainous, but has fertile valleys, where fruit and vines are grown. Vathy, on the north coast, is the capital. Pop. 70,500.

In classical times Samos was a notable centre of culture, its sculptors being famous. Its capital was a town of the same name.

Samovar Tea urn used in Russia, and generally made of copper. The water is heated by burning charcoal contained in an inner tube.

Samoyede Breed of dog. Primarily a sledge-dog, it is much in favour as house dog and pet. In appearance the Samoyede is like a large Pomeranian, with a long, thick, silky coat. The true sledge dog is white, black, or black-and-white, but the type bred for show in Great Britain is pure white. They should be between 18 and 22 in. in height and weigh between 40 and 55 lb.

Samphire Perennial herb (*Crithmum maritimum*) of the natural order *Umbelliferae*. It is found in many parts of Europe including Great Britain, usually on rocks near the sea. It has a stout stem and leaves which are blue-green in shade and bears white flowers. The leaves of the samphire, which have a salty flavour, are gathered in some places and made into a pickle.

Samson Biblical character. The Book of Judges (chaps. xiii. to xvi.) represents him as an Israelitish hero of vast strength, who, by a number of single-handed exploits, inflicts great injury on the Philistines. His hair, left unshorn from birth as the token of his consecration to God as a Nazarite, is, according to the narrative, the source of his strength—a secret disclosed to his enemies by his lover, Delilah.

Samuel Prophet of the Israelites. He was born at Ramah, his mother being Hannah, who vowed him to the service of God. As a child he became an attendant to Eli, the high priest, and later the judge, or ruler, of the Israelites.

The Books of Samuel are two historical books of the Old Testament. The period of history covered extends roughly over a hundred years, during which Israel emerged from the state of anarchy described in the Book of Judges, and became a nation. The establishment of the monarchy was an important instrument in the consolidation of the kingdom. Hence the central figures in these books are Samuel, who took a prominent part in the foundation of the kingdom, and Saul and David, the two earliest kings.

Samuel **Sir Herbert Louis.** English politician. Born in Liverpool, Nov. 6, 1870, a son of E. L. Samuel, he adopted a political career. He was elected to Parliament in 1902, and in 1905 joined the Liberal Ministry as Under-Secretary for Home Affairs. In 1909 he entered the Cabinet as Chancellor of the Duchy of Lancaster; from 1910-14 he was Postmaster-General; in 1914-15 President of the Local Government Board; in 1915-16 again Chancellor of the Duchy and for a short time Home Secretary.

In 1920 Samuel was knighted and went to Palestine as High Commissioner. On his return in 1925 he was Chairman of the Royal Commission on the Coal Industry, its report being known as the Samuel Report. In 1929 Sir Herbert was elected Liberal M.P. for the Darwen division and in 1931 he took a leading part in the formation of the National Government. In this he became Home Secretary, resigning in Sept., 1932. In 1934 he was again in Palestine. His writings include *Liberalism*: *Its Principles and Proposals*; *Practical Ethics* (1935).

San River of Poland. It rises in the Carpathians and flows mainly north-west until it joins the Vistula near Sandomir. Przemysl is on its bank and its length is 260 m.

There was a good deal of fighting along the San during the earlier part of the Great War. Two **Battles of the San** are recognised. The first was fought between the Austrians and the Russians. It began on Oct. 13, 1914 and lasted until Nov. 6, the Russians being victorious. In the second battle the Germans came to the assistance of the Austrians and the Russians were defeated and driven back. The fighting began about May 14, 1915, and lasted two weeks.

Sanatorium Building set aside, in a school or elsewhere, for sick persons. It is also used for buildings erected for the treatment of consumption, such as the King Edward VII. Sanatorium at Midhurst. In Great Britain treatment in sanatoria was one of the benefits given to persons insured under the National Health Scheme from 1911 to 1921, when it was withdrawn. It is still given, however, in Northern Ireland.

Sancroft **William.** English prelate. Born at Fressingfield, Suffolk, Jan. 30, 1617, he was educated at Emmanuel College, Cambridge. He became a Fellow of his college, but in 1651 was deprived of the position owing to his opinions. After the restoration he was made Chaplain to the King. In 1678 he was appointed Archbishop of Canterbury and in 1688 he was the leader of the seven bishops who refused to read the Declaration of Indulgence and were imprisoned and tried for treason. He declined to recognise William III. as the rightful king and in 1690 his office was taken from him. He died at Fressingfield, Nov. 24, 1693.

Sanction Term used in international law. It has been much used since the Great War for a penalty suggested in case an agreement is violated. Such were the sanctions imposed by the Treaty of Versailles in 1919.

Sanctuary Holy place, particularly one where fugitives and criminals

could take refuge without fear of arrest. The Jews had three centres of refuge for this purpose. In the Christian era churches, especially cathedrals, were sanctuaries. Westminster Abbey was a noted sanctuary, as were the abbey at Holyrood and the cathedral at Durham. The word is also used for the part of a cathedral where the sacred vessels are kept. In the Jewish temple the Holy of Holies was the sanctuary.

Sanctus Hymn said or sung in the Roman Catholic Church during the prayer of consecration at the celebration of the mass. It also finds a place in the communion service in the Prayer Book of the Church of England and in other liturgies. The words, adapted from passages in the Bible are "Holy, Holy, Holy, Glory be to Thee, O Lord most high."

Sand Natural fine-grained material resulting from the disintegration of granite and other highly siliceous rocks. While essentially of quartz grains, other minerals according to the nature of the parent rock may be present with various impurities. White quartz sands from granites are known as silver or glass sands, but more commonly sands are yellow, brown or red, due to the presence of iron. Sands are used in making mortar and cements, bricks, glass and pottery; also as an abrasive and filtering material.

Sand River of the Orange Free State, South Africa. A tributary of the Vet, it gave its name to a convention by which, in 1852, the British Government recognised the independence of the settlers across the Vaal, the present Transvaal.

Sand **George.** Pen-name of Amandine Lucile Aurore Dudevant, French novelist. Born July 1, 1804, in Paris, she read widely as a child, married unhappily and parted from her husband in 1831, becoming a journalist in Paris. Her first novel, *Indiana* (1832), was an immediate success and won her the friendship of the great critic Sainte-Beuve among others. She formed a liaison with the poet, Alfred de Musset, and later with Chopin (*q.v.*). The latter half of her life was spent mostly in the country at Nohant. She died June 8, 1876. Her earlier books, including *Lélia* and *Jacques*, show a spirit of revolt, but her best work is in the later pastoral novels such as *Jeanne* and *La Mare au Diable*.

Sandal Village of Yorkshire (W.R.). It is 3 m. from Wakefield, on the L.N.E. Rly. The castle, now in ruins, was a stronghold of the Yorkists during the Wars of the Roses. Near it the Battle of Wakefield was fought in 1460. Pop. 2900.

Sandalwood Fragrant wood from a small evergreen tree, (*Santalum album*), growing in India and the East Indies. Sandalwood is used for carving and turnery, and the raspings are used in incense or distilled for an aromatic oil. Australian sandalwood from *Fusanus spicatus* is an inferior substitute.

Sandbach Urban district of Cheshire. It is 4 m. from Crewe, on the L.M.S. Rly. There are some manufactures. There are two crosses dating from the 7th century in the market place. Pop. (1931) 6411.

Sanderling Small bird, *Calidris arenaria*, allied to the plover, which it resembles. It is a winter visitor to the shores of seas and lakes in Great Britain and other parts of Europe. About 8 in. in length, its plumage is brown and grey above and white below.

Sandgate Urban district and seaside resort of Kent. It is 2 m. from Folkestone, on the S. Rly. The chief building is the castle, erected in the 16th century to defend the coast; it is now a museum. Pop. (1931) 2596.

Sand Grouse Small game bird. It is unlike the real grouse, but is related to the pigeon which it resembles in appearance. The birds have beautiful plumage, long and pointed wings and very short legs and toes. They are found in Asia and Africa and sometimes in Europe. One species, Pallas's, has been seen in Great Britain. Like pigeons, they move in droves and feed on insects and vegetables.

Sand Hopper Small, shrimp-like crustacean, occurring in large numbers on the seashore between tide marks. It is of a pale yellowish colour and has a hopping movement produced by flexing the tail under the body. They act as scavengers, feeding upon decaying animal matter.

Sandhurst Village of Berkshire. It is 33 m. from London and 4 from Wokingham, its station on the S. Rly. Here is the Royal Military College, erected in 1812, and usually known as Sandhurst, where officers for the cavalry and infantry receive their training. It has accommodation for 700 cadets. Officers for the Royal Army Service Corps and for the Indian army are also trained at Sandhurst, but in 1932 arrangements were made to open a college of this kind in India. Another **Sandhurst** is a village in Kent.

Sand Lizard Small lizard (*Lacerta agilis*) found in Britain frequenting sandy districts. The sexes differ in colour, the male being a bright green while the female is brownish and grey. The female is larger than the male, which is about seven inches in length.

San Domingo Capital and seaport of the Dominican Republic. It stands on the south coast of the island, at the mouth of the River Ozama. There is a cathedral dating from the 16th century. The town was founded by the Spaniards in 1496 and the fort erected by them still stands. The city has a trade in sugar and coffee, but there is no harbour. The remains of Columbus were in the cathedral here from 1536 until 1795. Pop. 30,957.

Sandow **Eugen.** German athlete. Born at Königsberg, April 2, 1867, he was educated at Göttingen and made a name as a wrestler. Possessed of enormous strength, he engaged in public wrestling contests, and performed feats of weight lifting which won for him the championship of the world. Later he devoted himself to teaching physical culture. He wrote *Strength and How to Obtain It*. Sandow died Oct. 14, 1925.

Sandown Watering place and urban district of the Isle of Wight. It is 6 m. from Ryde, on the S. Rly. Pop. (1931) 6167.

Sandown Park Racecourse in Surrey. It is 15 m. from London, its station being at Esher, on the S. Rly. The chief meeting is held in July, when the Eclipse stakes are run.

Sandpiper Small bird allied to the snipe, curlew and plover. The common sandpiper (*Totanus hypoleucus*),

equalling the skylark in size, is very common in Britain and departs in winter for India and Australia. Among other sandpipers may be mentioned the red sandpiper, greenshank and the purple sandpiper, a visitant from Greenland. America is inhabited by so-called spotted sandpipers.

Sandringham Estate in Norfolk, the property of the King. It is 6 m. from King's Lynn and 2 m. from Wolferton, on the L.N.E. Rly. The estate was bought by the Prince of Wales, afterwards Edward VII., and the house was built in 1869-71. It stands in a park of 200 acres. On the estate is a smaller royal residence, York Cottage.

Sandstone Sedimentary rock, consisting of sand grains cemented together. A pure sandstone is formed of quartz grains with silica as the cementing material, but many sandstones contain fragments of felspar, mica and other minerals with a calcareous, clayey or ferruginous cement. Sandstones are used as building and paving material, also as road metal.

Sandstorm Hot whirlwind which sweeps over desert areas in Africa and Arabia, carrying with it great quantities of sand. The sudden heating of the lower atmospheric layers causes ascending eddies of hot air which raise the sand in whirling clouds. The dreaded simoom of the Sahara is of this character.

Sandwich Borough, market town and holiday resort of Kent. It is 5 m. south-west of Ramsgate and 87 from London, by the S. Rly. It stands on the Stour and was one of the chief of the Cinque Ports, but the sea has receded, and the town is now two miles inland. There are many interesting old buildings, including the Guildhall, and two hospitals dating from the 13th and 14th centuries. Of the old fortifications two gates are left. Pop. (1931) 3287.

Sandwich Earl of. English title borne by the family of Montagu. Edward Montagu (1625-72), born July 27, 1625, is chiefly known as a seaman, first under the Commonwealth and then under Charles II. In 1660 he was made Earl of Sandwich; he fought in several battles against the Dutch and went as ambassador to Spain. He was killed in a sea fight in Southwold Bay, May 28, 1672. The title in 1729 came to a descendant, **John Montagu**, who became the 4th earl. A prominent politician, twice First Lord of the Admiralty and Secretary of State, he took part in the prosecution of John Wilkes, and died April 30, 1792. From him the present earl is descended. The earl's eldest son is called Viscount Hinchingbrooke and his estates are in Huntingdonshire.

Sandwort Genus (*Arenaria*) of Alpine plants of the order *Caryophyllaceae*. The leaves grow in pairs on slender jointed stems and the flowers are small and dainty. *A. montana* and *A. balearica* are popular for rock gardens; the latter is a creeping variety with delicate leaves and minute white blossoms.

Sandy Urban district of Bedfordshire. It is on the Ivel, 7 m. from Bedford, on the L.N.E. Rly. It is an agricultural centre. In the neighbourhood are Roman remains. Pop. (1931) 3140.

Sandy Hook Peninsula of New Jersey. It is 6 m. long and partly forms one side of New York Bay. On it is a fort and a lighthouse, familiar to those approaching New York. Around it is the course for the America Cup.

San Francisco City and seaport of California, U.S.A. It stands on the Bay of San Francisco, one of the world's finest natural harbours, entered from the Pacific by a channel, the Golden Gate. A suspension bridge over the Golden Gate, to be completed in 1937, is one of the world's great feats of engineering. The city, which is built on a hilly site and has a fine climate, is the chief seaport on the Pacific coast of the U.S.A. and a great industrial centre. The chief manufactures include coffee, meat-packing, automobiles, clothing, machinery, canning and furniture, and the principal exports, mineral oil, barley, preserved fruits, cotton, tobacco, etc. The harbour has over 15 m. of docks. Important buildings are the domed city hall, the public library and the State building, and the city has 46 parks and fine thoroughfares. A cosmopolitan city, it has a large Chinese quarter. Pop. (1930) 634,394.

Founded in 1776 by Spaniards, San Francisco was seized by the U.S.A. in 1848, from which year the gold rush brought a great increase of population. The city has suffered greatly from fires, especially in 1906, following a disastrous earthquake.

Sanger George. English showman. A son of John Sanger, a sailor who had become the owner of a circus, he was born at Newbury, Dec. 23, 1827, and about 1850 took control of his father's business. He called himself Lord George Sanger and made the circus very profitable. In 1871 he bought Astley's circus and for some years leased the Agricultural Hall, Islington. He also had circuses in Liverpool, Glasgow, Birmingham, Dundee, Bristol and other cities. In 1905 he sold the undertaking, and on Nov. 28, 1911, he was shot by a former employee.

Sanhedrin Council of the Jews. It had only a brief existence, but it was powerful in the time of Jesus Christ. Consisting of 71 members, persons of importance, with the high priest as president, it was a court of justice for all Jews and for some time had over them power of life and death. It disappeared at the time of the destruction of Jerusalem.

Sanitary Authority In English local government the body that is responsible for looking after public health. It may be a borough, urban district or rural district council. In London the borough councils are the sanitary authorities. In seaports a special body—the port sanitary authority—deals with shipping.

Sanitation Department of public health. It comprises the arrangements for disposal of sewage and refuse, water supply, etc. The relative laws are administered by the local authorities. These maintain sanitary inspectors to see that building by-laws as regards internal sanitation, drains, etc., are observed, and that no nuisance is allowed to arise in respect of the disposal of filth or domestic refuse. A sewer drainage system is tested by the sanitary authority before completion, and thereafter no alteration is allowed to be made without the authority's sanction. Defective drains may be condemned, whereupon the owner of the property must provide new ones.

San Juan Capital and seaport of Puerto Rico. It stands on a small island off the west coast and is linked with the main island by bridges and a causeway. It was founded by the Spaniards in 1511 and its old castle and some of its fortifications still stand. There is a good harbour and shipping is one of the principal industries. The city has been modernised since it became an American possession in 1898. Pop. (1930) 114,715.

Sankey Viscount. English lawyer and politician. John Sankey was born Oct. 26, 1866, and educated at Lancing and Jesus College, Oxford. He became a barrister in 1892 and in 1909 a K.C. and was prominent as an ecclesiastical lawyer. In 1914 he was made a judge and in 1919 he was selected to preside over the Royal Commission on the Coal Mining Industry. In 1928 he was made a Lord Justice of Appeal and in 1929 he joined the Labour Ministry as Lord Chancellor, an office he retained until June, 1935, when Mr. Baldwin formed a new cabinet. He was made a baron in 1929, and a viscount in 1932. Lord Sankey took a leading part in the conferences on India in 1930 and 1931.

Sankey Ira David. American singer. Born in Pennsylvania, Aug. 28, 1840, he became an evangelist. In 1870 he joined D. L. Moody in his evangelistic work and the two met with extraordinary success in the United States and Great Britain. They travelled about holding revival services, the share of Sankey, who had a fine voice, being to sing solo hymns. He was responsible for the popular volume *Sacred Songs and Solos*. In 1903 he became blind, and he died Aug. 14, 1908.

San Marino Republic of Europe. It is in the Apennines, 12 m. from Rimini and is entirely surrounded by Italian territory. Its area is 38 sq. m. The capital is the little town of the same name which stands on a hill, 2656 ft. high. The republic is governed by an elected council of 60 members, two of whom act as regents for six months at a time. San Marino has been independent since 1631. Pop. (1932) 13,948.

Sanquhar Burgh of Dumfriesshire. It is situated on the Nith, 26 m. from Dumfries, on the L.M.S. Rly. There are ruins of a castle. The town has cattle and sheep fairs and its interests are agricultural. Pop. (1931) 1753.

San Remo City and health resort of Italy. It is on the Riviera, 26 m. from Nice. The old city stands on a hill a little away from the sea. Here, in 1920, the Allies held one of their conferences. Pop. 24,740.

San Salvador City and capital of the Republic of Salvador. It is connected by railway with the coast, which is 25 m. away. There is a considerable trade and some manufactures. The city is named from the extinct volcano of San Salvador near the town. Pop. (1930) 95,692.

Sansculottes Insulting nickname given by the French aristocrats, at the beginning of the French Revolution, to the proletarian members of the Revolutionary army, who wore long trousers, instead of the fashionable knee-breeches. At first very popular, the name fell into disrepute after the atrocities.

San Sebastian Town, watering place and seaport of Spain. It is on the Bay of Biscay, only a few m. from the border of France. There is a fine bay and casino. Its popularity dates from 1886 when the Queen of Spain made it her residence and until 1931 the royal family retained here their palace called Miramar.

At one time San Sebastian was a strong fortress, but its walls have been pulled down. In 1813 it was stormed by the British under Wellington, who was advancing into Spain. Its castle was then taken and destroyed. The town has some manufactures and there is a little shipping. It has a broadcasting station (453.2 M., 0.6 kW.). Pop. (1931) 80,119.

Sanskrit *San*, "with," and *krita*, "perfected," the compound signifying "to perfect," indicating the superiority of Sanskrit, the ancient Indian language, over Prakrit, the dialect tongue. Sanskrit represents the Eastern branch of the Aryan tongues and dates from about 1500 B.C. It is the elder sister of Persian, Greek, Latin, Teutonic, Slavonic and Celtic languages. Its literature falls into two periods, vedic and classical; to the latter period, belong the two great epic poems, *Mahabharata* (by Vyasa), and the *Ramayana* (poem of Rama, by Valmiki), together with romances, dramas, philosophical, scientific and technical literature.

Sansovino Andrea. Italian artist. Born in 1460, he studied art in Florence and became known as a sculptor and an architect. He assisted in decorating the baptistery at Florence and was responsible for the Sforza monument in the church of S. Maria del Popolo in Rome. He died Nov. 27, 1570.

San Stefano Town of Turkey. It is on the Sea of Marmara, 7 m. to the west of Istanbul. The Cape of San Stefano is a landmark. By a treaty between Russia and Turkey, signed here on Mar. 3, 1878, Bulgaria, Rumania, Serbia and Montenegro became independent of Turkey, and Russia obtained several concessions.

Santa Barbara City of California. It is on the Pacific, 100 m. from Los Angeles. The Southern Pacific Rly. serves the city. It is a picturesque place of Spanish origin. Pop. (1930) 33,613.

Santa Cruz Capital and seaport of the Canary Islands. It stands on the north-east coast of Teneriffe and has a good harbour protected by a mole. The city is pleasantly situated and has a delightful climate. Much produce is exported and it is an air station. Pop. (1931) 63,052.

Another **Santa Cruz** is the capital of Palma, a smaller island of the Canary group. It also is a seaport.

Santa Cruz Island of the West Indies. It is one of the Lesser Antilles, 60 m. from Porto Rico, and belongs to the United States. Its area is 84 sq. m. and it is 21 m. in length. The chief towns are Christiansted, the capital, and Fredericksted. The chief product is sugar. Santa Cruz was a Spanish possession and later a French one. In 1733 it was sold to Denmark by its owners, the French West India Company, and in 1916 Denmark sold it to the United States. In 1801 and from 1807-14 it was occupied by the British. Pop. 15,500.

Santa Cruz Group of islands in the Pacific Ocean. They are 100 m. from the New Hebrides. The largest is Ndendi or Santa Cruz. A British possession, the group is part of the Solomon Islands. *See* SOLOMON ISLANDS.

Santa Fé City and capital of New Mexico, United States. It is on the Santa Fé River and is served by railway. The cathedral is said to be the oldest Christian edifice in the United States. Santa Fé was made the state capital in 1851. Pop. (1930) 11,176.

Another **Santa Fé** is a city of Argentina. It is 95 m. from Rosario and near the Parana river. It has some manufactures and a provincial university, and is the capital of the province of Santa Fé. Pop. (1930) 59,574.

Santander City, seaport and watering place of Spain. It stands on the opening of the Bay of Biscay, 315 m. by rail from Madrid. There is a cathedral dating from the 13th century in the old town, where are other buildings of interest, notably the keep of the castle. Shipping is an important industry, for which there is a large and excellent harbour. Iron ore and fish are the principal exports. Pop. (1931) 86,381.

Santarem City and river port of Portugal. It stands on the Tagus, 51 m. from Lisbon. Its interest is mainly historical, although it does a little trade in wine. At one time it was a Roman settlement and later was a residence of the kings. There are ruins of a castle and some remains of the town walls. Pop. 10,000.

Santiago City of Spain, in full Santiago de Compostela. It is in the north-west of the country, only 33 m. from Corunna on the coast. In the Romanesque Cathedral is the shrine of S. James, visited by pilgrims. The cathedral cloisters are especially fine. There is a university founded in 1504, which has a large and valuable library. Under the monarchy, the city, which has lost much of its glory, was the headquarters of the Knights of Santiago. It had a pantheon which was burned down in 1921. Pop. 26,000.

Santiago City and capital of Chile. It is finely situated on a plain, 1860 ft. above sea level, below the Andes, on the river Mapocho. An up-to-date city, it has some fine buildings, including the cathedral (rebuilt 1748) in the handsome Plaza de la Independencia, the Capitol, and the University of Chile, founded in 1842. The principal industries include breweries, flour and knitting mills, foundries, machine-shops, and soap and clothing factories. It is connected with Valparaiso (*q.v.*) by rail.

Founded in 1541 by Pedro de Valdivia, the conqueror of Chile, the city has suffered from floods, earthquakes and political upheavals, but has never been actually besieged. An international conference of American states was held here in 1923. Pop. (1932) 702,431.

Santiago City and seaport of Cuba. It stands on the Bay of the same name, 540 m. by rail from Havana. There is a large harbour and a good deal of shipping. Other industries are connected with the minerals found in the neighbourhood and with tobacco. From 1515 to 1556 Santiago was the capital of Cuba. It was taken by the Americans in July, 1898. Pop. (1930) 44,975.

Santo Domingo (Dominican Republic). Republic of the West Indies. It occupies the western part of the Island of Santo Domingo and covers 19,332 sq. m. Santo Domingo is the capital and Puerto Plata is the chief port. The republic produces sugar, tobacco, coffee, etc., as well as much useful timber. Cattle are reared and it is rich in minerals. The republic has a railway system.

Santo Domingo is governed by a president and ministry responsible to a legislature of two houses. The republic was founded in 1844. From 1916 to 1924 it was occupied by American troops. The existing constitution dates from 1929 (modified 1934). The language spoken is Spanish, but racially the inhabitants are very mixed. Pop. (1932) 1,200,000.

Santos City and seaport of Brazil. It stands on an island off the Atlantic coast, 49 m. by rail from Sao Paulo and 230 m. W.S.W. from Rio de Janeiro (*q.v.*), and is low lying, but has a good harbour with accommodation for 50 vessels. The world's greatest coffee port, it also exports sugar, rice, rum, hides and manufactured goods. Bananas are grown nearby. Pop. (1930) 160,000.

Saône River of France. It rises in the Vosges Mts. and flows mainly south until it joins the Rhône at Lyons. Canals connect it with the Rhine on the one side and the Loire on the other. Its length is 282 m.

Sao Paulo City of Brazil. It stands on the River Tieté, 49 m. by rail from Santos and 308 m. from Rio de Janeiro. The city is well built and progressive, with excellent public buildings, schools, hospitals and a fine theatre. It manufactures textiles, clothing, food products, furniture, etc. Electric power is supplied for industry from the falls of the Tieté. On the Plain of Ypiranga, near the city, Brazilian independence was declared, Sept. 7, 1822. Pop. (1930) 879,788.

Sap The fluid contents of the plant cells and tissues, the sap contains a number of substances in solution or suspension in water which is derived from the soil by root absorption. Nitrates and other inorganic salts, amides, sugars, pigments, and organic acids may be present. The sap diffuses from cell to cell, thus carrying food materials to the tissues.

Saponification Chemical term meaning the decomposition of fats, which are glycerolesters of the fatty acids (stearic, palmitic, butyric, etc.), by the action of alkalis resulting in the formation of soap. It is now usually referred to as hydrolysis, which covers the decomposition of other esters involving the addition of the elements of water.

Sapper Name given unofficially to a private in the Royal Engineers. Originally a sapper was a soldier employed in digging saps, or ditches, below the surface, in order to facilitate the attack on a fortress. From 1813 to 1856 the British Army had its corps of sappers and miners, and the Indian army still has a similar force.

Sapphire Precious stone. The sapphire is a blue variety of corundum, the colour varying from different shades of blue to lilac, the most valuable stones being of a bright cornflower blue. It is found in Siam, Burma, the river gravels of Ceylon and in granites in Kashmir.

Sappho Greek poetess. She lived in Mitylene in the 6th century B.C. There are several traditions about her, one being that she was banished and passed her last days in Sicily. She was regarded as one of the great poets of antiquity; her extant work, although very scanty, bears out this high estimate. It includes two poems and several fragments, one poem being an ode to Aphro-

dite; they are sensuous, but possess exquisite felicity of language.

Saracen Word used at one time for an Arab and later for a Mohammedan. It referred especially to a Mohammedan of high birth who fought against the Crusaders.

Saragossa City of Spain. It is on the Ebro, 212 m. N.E. of Madrid. There are two cathedrals, one old and the other new, and a university; also a citadel built by the Moors, and some ancient houses. The bridge across the river is notable. Before the union of Spain, Saragossa was the capital of the kingdom of Aragon. It has now become a prosperous manufacturing centre. It was unsuccessfully besieged by the French, 1808-9. Pop. (1931) 177,250.

Sarasate **Pablo Martin Meliton.** Spanish violinist. Born at Pampeluna, March 10, 1844, he became one of the great masters of the violin, and played in many parts of the world. In 1861 he first played in London. He died at Biarritz, Sept. 21, 1908.

Sarawak State of Borneo. It is in the N.W. of the island and covers 50,000 sq. m., with a coastline of about 500 m. on the China Sea. There are several rivers, one being called the Sarawak. In the E. are mountains rising to 10,000 ft. The soil is fertile and coffee, rubber, pepper, sago and other tropical plants flourish. Gold and coal are mined, and the state possesses valuable oil fields and great reserves of timber. Kuching is the capital.

The state is ruled by a rajah assisted by two councils. The people are chiefly Malays, Dyaks and Chinese. Sir James Brooke, an Englishman, became rajah in 1842, and the office has since been held by his descendants. Sir James obtained the territory from the Sultan of Brunei, and his land came under British protection in 1888. Pop. 475,000.

Sarcoma Medical name for a malignant form of tumour developed in connective tissue and differing from carcinomata (cancer) in having more fibrous tissue. Sarcomata may occur in the skin and underlying tissues, the breast, periosteum or wherever there is connective tissue. As the disease spreads into neighbouring parts, it may cause death by pressure upon some vital organ.

Sarcophagus Stone coffin used especially in ancient Egypt as a receptacle for the mummified body. A sarcophagus was made of granite, basalt, quartzite, limestone or alabaster, and in many cases bears inscriptions and tableaux. At first stone sarcophagi were reserved for kings, but later came into more general use.

Sard Variety of chalcedony of a brownish-red colour and somewhat horny lustre, thus differing from carnelian which has a waxy lustre. It is cut and engraved for use in signet rings.

Sardanapalus King of Assyria. He reigned probably about 900 B.C., and may have been Ashurbanipal who reigned about 650 B.C.

Sardine Small fish preserved in oil. In England the word is used only for a pilchard when it is preserved and tinned. These sardines are a popular article of food. At one time the word referred to a kind of herring caught off the coast of Sardinia, hence the name.

A species of herring, found off the E. coast of the United States is called the American sardine.

Sardinia Island in the Mediterranean Sea. An Italian possession, it lies 7½ m. S. of Corsica and has an area of 9,299 sq. m. The island is mountainous and the climate variable. Agriculture is the principal occupation and stock is raised. Of minerals, lead, zinc and salt are the most important. There is a large tunny fishery. There are universities at Cagliari, the capital, and Sassari. La Maddalena, Terranova, Cagliari and Porto Torres have good natural harbours. Pop. (1931) 973,125.

Sardinia has a long and interesting history. Occupied by Carthage about 500 B.C., it was ceded to Rome in 238 B.C. In the 8th century of our era it was invaded by the Saracens, was taken by Pisa in 1050 and by the King of Aragon in 1326. From 1478 it was governed as a Spanish vice-royalty until 1708, when it became an Austrian possession. In 1720 it passed to the dukes of Savoy who took the title of king of the island. In 1848 the island was united politically with Piedmont (*q.v.*) and in 1861 Victor Emmanuel II. (*q.v.*) became king of united Italy.

Sardis Capital of the ancient kingdom of Lydia. The site is 50 m. N.E. of Smyrna in Asia Minor, and is represented by a village called Sart. Having been the capital of Lydia, the city was taken by the Persians in 546 B.C., and by Alexander the Great in 334 B.C. Under the Greeks it was a flourishing city. In Roman times it had a bishop and was one of the seven churches mentioned in the Book of the Revelation. It was destroyed by Timur in the 15th century.

Sardonyx Variety of red banded onyx, consisting of alternate layers of carnelian or sard and chalcedony, the sardonyx is used as a gem-stone for rings, etc.

Sardou **Victorien.** French dramatist. Born in Paris, Sept. 5, 1831, he married the actress Brécourt, and through her met Déjazet, for whom he wrote *Monsieur Garat*, and *Les Prés Saint-Gervais* (1860). He wrote several plays including *Les Intimes* and *Les Vieux Garçons*; and later, in 1883, began to write for Sara Bernhardt, with *Fédora*, followed by *La Tosca*; and with Moreau, *Madame Sans-Gêne*. He wrote *Robespierre* (1899), and *Dante* (1903), for Irving. He had a good sense of the theatre, and his dialogue was full of movement, quick, easy and witty. He died Nov. 8, 1908.

Sargasso Sea Section of the Atlantic Ocean. It lies S. of Bermuda and extends eastwards. It is distinguished by the masses of brown seaweed that float therein, especially the weed called *Sargassum bacciferum* washed from the coast in great masses. The Sargasso Sea was discovered by Columbus, and for long had an evil reputation with sailors who feared destruction if they sailed their ships among its masses of seaweed.

Sargent **John Singer.** English artist. He was born in Florence in 1856, his parents being Americans, and studied art there and in Paris. His work, exhibited in Paris and London, soon made him known. In early life he made his home in England, and exchanged his American nationality for a British one. In 1894 he was elected A.R.A., and in 1897 R.A. He died April 14, 1925.

Sargent painted landscapes, but his fame rests more upon his portraits, notably his

paintings of Ellen Terry as Lady Macbeth, and of the members of the Wertheimer family. The Tate Gallery contains these and other examples of his work including the beautiful "Carnation, Lily, Lily, Rose."

Sargon King of Assyria. The name is properly spelt Sarrukinu. He made himself king in 722 B.C., and reigned for 17 years. A great conqueror, he brought many cities under his power. He died in 705 and was succeeded by his son Sennacherib.

Another **Sargon** was a king of Akkad. He lived about 3000 B.C., and founded a powerful dynasty.

Sari Bair Hill in Gallipoli. It is nearly 1000 ft. high, and came into prominence in April, 1915, when it was attacked by Australian and New Zealand troops who had landed near Gaba Tepe. They gained some successes, but a sustained advance proved impossible.

Sark One of the Channel Islands. It is 6 m. from Guernsey and consists of two parts, divided by a causeway called the Coupée. It is 3 m. long and covers about 2 sq. m. The only harbour is Creux on the E. coast. The island is famed for its caves and its cliffs which are unrivalled for their magnificence. It is governed from Guernsey, and the inhabitants are engaged in fishing and farming. Pop. 900.

Sarnia City and river port of Ontario. It is on the St. Clair River, 170 m. from Toronto, on the C.N. Rly. Sarnia is a calling place for steamers between the Great Lakes and the St. Lawrence, and its industries include lumber mills. Pop. (1931) 18,191.

Sarpi **Fra Paolo.** Italian writer. Born in Venice in 1552, he joined an order of friars and passed his early years in studying science in Venice, and soon made a reputation by his researches. Defending the cause of Venice against the pope in 1606, he was excommunicated, and more than once was almost murdered. He died Jan. 15, 1623. Sarpi, although a Roman Catholic, denounced the doctrine of papal infallibility. His chief work has been translated into English as *The History of the Council of Trent.*

Sarrail **Maurice Paul Emmanuel.** French soldier. Born at Carcassonne, April 6, 1856, he entered the army as an officer in 1877, and later became an officer in the Foreign Legion. He was given command of an infantry school in 1901, and in 1905 of a regiment. In 1914, when the Great War began, he was in command of an army corps. Soon he was transferred to the head of the third army, and in Aug., 1915, was sent to Salonika as commander of the forces. In 1923-25 he was High Commissioner in Syria.

Sarsaparilla Dried rhizome and roots of various species of *Smilax*, especially *S. officinalis*, climbing plants native to C. America. Sarsaparilla is credited with diuretic and alterative properties, and is used in the form of an extract and decoction. It contains a volatile oil, a bitter principle known as parillin, and starch.

Sarthe River of France. It rises in the N. of the country and flows mainly S. until it joins the Mayenne, the two forming the Maine, a tributary of the Loire. It is 175 m. long, and on it are Alençon and Le Mans. The department of Sarthe covers 2400 sq. m. in the N.W. of the country. The capital is Le Mans.

Sarum **Latin name for Salisbury. Old Sarum** is 2 m. away from the modern city. It was vacated in the 13th century when the present city was built, but until 1832 it sent two members to Parliament. The site is now national property and has been excavated.

The **Use of Sarum** is a service book drawn up for the use of the diocese of Salisbury in the 11th century. Much of it was incorporated in the Prayer Book of the Church of England.

Saskatchewan Province of Canada. It lies between Manitoba on the E. and Alberta on the W., and stretches from the N.W. Territories to the border of the United States. It covers 251,700 sq. m. Regina is the capital and the largest city. Others are Saskatoon, Moose Jaw and Prince Albert. It is the chief wheat growing province of Canada, and its live stock industries are of great importance. Other branches of agriculture flourish, and there are some manufactures. The province is governed by an executive council of 10 members under a premier, responsible to an elected legislature of 63 members. It was made a province in 1905. Pop. (1931) 826,738.

Saskatoon City of Saskatchewan. It is 480 m. W.N.W. of Winnipeg, on the S. Saskatchewan River. The industries include the manufacture of agricultural machinery, bricks and clothing; and the place is the centre for a large agricultural district. It is served by both transcontinental railways, the C.P.R. and C.N.R. There is a university and an agricultural college. Pop. (1931) 43,291.

Sassafras Deciduous tree (*S. officinale*) of the order *Lauraceae*. The wood is soft and yellow, and the racemes of yellow flowers are succeeded by dark purple berries. The bark has aromatic and tonic properties. Sassafras tea is made from the leaves, and the berries yield an oil used for flavouring, and in perfume, and for medical purposes.

Sassanid Name of a family that ruled in Persia from 226 to 651. It was founded by a chieftain called Ardashir, who conquered the Parthean rulers of the land, which his successors retained until 651.

Sassoon Jewish family of bankers and merchants. David Sassoon moved from Bagdad to Bombay early in the 18th century, and there his son, also David Sassoon, founded a trading business. This came under the control of the younger David's son, Jacob Elias Sassoon, who made it one of the greatest concerns of its kind in India. In 1909 Jacob Sassoon was made a baronet, and when he died, Oct. 24, 1916, this title passed to his brother, Edward Elias.

Edward Albert Sassoon, a member of another branch of the family, settled in England where he was one of the intimates of King Edward VII. In 1896 he succeeded to his father's baronetcy, and from 1899 to 1912—when he died—he was M.P. for the Hythe division of Kent. His son, **Sir Philip A. G. D. Sassoon,** has represented the same division since 1912. He was Under-Secretary for Air from 1924 to 1929, and returned to that post in 1931, and after the General Election of 1935.

Siegfried Sassoon is a modern poet and writer. His *Memoirs of a Fox-Hunting Man,* published in 1928, followed by *Memoirs of an Infantry Officer,* form an autobiography of

his war service. He was awarded the Hawthornden Prize in 1929.

Satellite In astronomy a term applied to a companion body to a planet round which it revolves. A satellite is regarded as having been thrown off from the planet when in a semi-molten state. All the planets with the exception of Venus and Mercury, have satellites—the earth having one, the moon; Mars, two; Jupiter and Saturn nine each; Uranus, four; and Neptune one. The satellites of Uranus and Neptune, also one each of Jupiter and Saturn, are retrograde in motion.

Satinwood Close-grained, hard, yellow wood used for veneers and cabinet work, derived from an Indian tree, *Chloroxylon swietenia*. W. Indian satinwood is the product of another genus, *Zanthoxylum*.

Satire (Lat., *satura*, a medley). Destructive and censorious form of literary criticism, which operates by ridiculing its object. It may be prose or poetry; a long treatise or a terse sentence. There were satiric poets among the Greeks, notably Aristophanes (*q.v.*). Among the Romans satire flourished as the works of Martial, Lucian, Juvenal and other poets prove. The revival of learning brought about the revival of satire, Erasmus and Revellin being in a sense satirists, but in England its greatest exponents came later.

In verse Pope and Dryden were remarkably clever as satirists, and in prose their equal was Jonathan Swift. France has produced many notable satirists, Voltaire being perhaps the greatest. The *Don Quixote* of Cervantes is a great satire.

Satsuma Ware Variety of Japanese pottery originally made at Satsuma by a colony of Korean potters in the 16th century. It was made of a soft paste with a creamy yellow body and clear crackled glaze of various colours. Later forms of Satsuma ware were made of harder paste with richly coloured enamels.

Saturn Planet next beyond Jupiter and the most remote known to the ancients. Saturn's equatorial diameter is 73,713 m., and its mean distance from the sun is 886,779,000 m., its year being equal to 29.46 of our years. It has nine satellites, and is remarkable for its meteoric ring system.

Satyr To the Greeks a mythological woodland deity. He was half-man and half-goat, with horned head, pointed ears and a tail. Persons representing satyrs attended the god Bacchus at the feasts held in his honour.

Sauerkraut Popular German dish. It consists of cabbage finely shredded and placed in a cask with alternate layers of salt, juniper berries, caraway seeds and other condiments. When full the contents are heavily weighted and left till fermented, when the sauerkraut is ready for use.

Saul First King of Israel. A member of the tribe of Benjamin, he was a son of Kish, and at first fought with great success against the Philistines. Later, after consulting the witch of Endor, he met the Philistines in a last battle at Mount Gilboa, where his sons were killed and he himself committed suicide. The chief interest of his reign lies in his relations with David, his successor and the close friend of his son Jonathan.

Sault Sainte Marie Name of a rapid in St. Mary's River, between Lakes Superior and Huron. It gives its name to two ship canals and two towns. The canals were cut, one in Canada and the other in the United States, to avoid the rapids. Each is about a mile long, and has 20½ ft. of navigable water. The American Canal was opened in 1855 and the Canadian in 1895; the latter has one lock 900 ft. long and 60 ft. wide. The towns face each other across the river and are connected by railway, forming an important link between the railways of the U.S.A. and Canada. The Canadian town has some manufactures, while trade comes from the shipping on the canal. Pop. (1931) 23,682. The American town is in the State of Michigan. Pop. (1930) 13,755.

Sauterne District of France. It is S. of Bordeaux and gives its name to a famous white wine made from vines grown in the region.

Savanna Land covered with natural grass. It is found in tropical countries, and on it the vegetation grows very rapidly in the rainy season. The lands are called llanos in Venezuela, downs in Australia and campos in Brazil.

Savannah City and seaport of Georgia, United States. It is on the Savannah River, 18 m. from its mouth, and is served by several railway lines. It is a prosperous seaport from which much cotton is exported, and has a good harbour with large docks. Other industries are railway shops and manufactures of various kinds. It is also a station of the United States navy. Pop. (1930) 85,024.

The **Savannah River** rises on the borders of Georgia and S. Carolina, and falls into the Atlantic below the city which is named after it. It is 450 m. long and small vessels can navigate most of its course.

Savernake Forest in Wiltshire. It is just outside Marlborough, and covers about 20 sq. m. It is beautifully wooded, the trees being chiefly oaks and beeches. Part of it belongs to the Marquess of Ailesbury, who has a residence here. The village of Savernake is on the G.W. Rly.

Savings Bank Bank where money can be deposited, but which does not undertake other banking business. The **Post Office Savings Bank**, run by the Government, takes any sum up to £500, and allows interest at the rate of 2½ per cent per annum. **Trustee savings banks** are conducted by private persons, but their accounts are inspected by state officials. There are municipal savings banks in Birmingham and other places, and some of the great joint stock banks have savings bank departments, from which they issue home safes.

In 1934 there were 9,100,000 deposit accounts in the Post Office Savings Bank. The amount due to depositors on Jan. 1, 1935, was £354,831,000. In the trustee savings banks, which have 494 offices in Great Britain and Ireland, nearly £227,000,000 was deposited. There is a Trustee Savings Bank Association at 10 Gray's Inn Square, London, W.C.1.

Savings Certificate Document signifying the investment of money in funds guaranteed by the state. **War Savings Certificates** were introduced during the Great War and sold for 15s. 6d., £1 being repayable at the end of five years, or a proportionate amount earlier.

At present a Savings Certificate costs 15s. and £1 is repaid for it at the end of ten years. The interest is not liable to income tax, but no person can acquire more than 500 certificates. The certificates can be redeemed at any time before the end of the ten years, with proportionate interest.

To encourage the sale of these certificates, a National Savings Committee was set up at Sanctuary House, Westminster, S.W.1, and a similar organisation for Scotland, at 122 George Street, Edinburgh. Altogether from 1916 to Aug., 1935, 1,235,589,002 certificates were sold. In 1935 the amount invested in this way was about £500,000,000.

Savonarola Girolamo. Italian religious and political reformer. Born at Ferrara on Sept. 21, 1452, he became a Dominican monk and preached on the sinfulness and vanity of his generation. After the death of Lorenzo the Magnificent, in 1492, he led his party in the new republic, and ruled Florence as a Christian commonwealth sternly putting down all luxury and frivolity. An attempt to reform the Roman court and put an end to the irregularities of the clergy brought him into conflict with the Church. He was accused of heresy by Rome, and excommunicated. The new system in Florence failed, and the Medici party returned to power. Florence turned against him completely, and he was burned on May 23, 1498.

Savory Genus of herbs. There are two main kinds, summer savory (*Satureia hortensis*) and winter savory (*Satureia montana*). Both grow in the warmer parts of Europe and bear lilac and purple flowers. With a pleasing aromatic flavour, they are used as potherbs.

Savoy Name of the family of which the King of Italy is the head. In 1034 a certain Humbert became Count of Savoy, and his descendants added from time to time to their inheritance. In 1416 one of them called Amadeus was made a duke. Later dukes were prominent in the affairs of Europe, and in 1720 one of them, Victor Amadeus, became King of Sardinia. Savoy itself was ceded to France in 1860, but the king was more than compensated when, in 1870, he became King of Italy.

Savoy District of France. It lies between the Alps, the Rhône and the Lake of Geneva, and is divided into two departments of Savoie and Haute Savoie. In 1034 it became a county and then a duchy, and it was ruled by its counts and dukes until 1860, by which time they had become kings of Sardinia. Chambéry was its capital. It was French from 1792 to 1816. In 1860, in return for the assistance given by Napoleon III. to Italy, Savoy was ceded to France, but Italian influences are still strong therein.

Savoy District of London. It lies between the Strand and the Thames, and is named after Peter of Savoy, who was given the land by Henry III. A royal palace built here was destroyed by the rebels about 1381, and later a hospital was built on the site. The chapel in Savoy Street still stands. The place was a sanctuary for criminals. It was made a chapel royal by George III., restored in 1864, and closed on account of structural defects in 1932. It has some fine stained glass, and in it some notable persons are buried.

The name is also borne by an hotel which was opened in 1889 and afterwards enlarged, and a theatre. The theatre, opened in 1881, was made famous because the Gilbert and Sullivan operas were produced here.

Savoy Cabbage Hardy variety of cabbage with a dark-green wrinkled leaf. It is ready to cut in autumn and winter when other greens are scarce. Both dwarf and large varieties are to be had.

Sawbridgeworth Urban district of Hertfordshire. A market gardening centre, it is 27 m. from London by the L.N.E. Rly. Pop. (1931) 2604.

Saw Fly Insect of the order *Hymenoptera*. The female is provided with a short serrated ovipositor with which cuts are made in leaves for the reception of the eggs. Many of them are very destructive to plants, especially the rose, pine and turnip saw flies.

Saxhorn Brass wind instrument. Of winding tubular form, it is used for orchestras and military bands. Like the cornet it has a bell-shaped opening and the pitch can be lowered by the use of pistons.

Saxifrage Genus of herbs of the natural order *saxifragaceae*. There are over 150 recognised species. Many of the Alpine varieties are cultivated for use in rock gardens. They are of low compact habit, the rosettes of tiny leaves forming a cushion-like growth, bearing delicate white or rosy flowers on slender stems. Yellow and purple varieties are also obtainable. London Pride (*S. umbrosa*), a British variety, is very popular for edgings in the flower garden.

Saxmundham Urban district and market town of Suffolk. It is 20 m. from Ipswich and is a junction on the L.N.E. Rly. There is an agricultural trade. Pop. (1931) 1255.

Saxons Teutonic race or group of races. They lived in the modern Slesvig-Holstein, and about A.D. 300 appeared as pirates. Later they spread into what are now France and Germany, and crossed to England, where many of them settled. The extent of their influence on the development of England was undoubtedly considerable, both in race and language. The Saxons also spread over a good part of Germany, and gave their name to the various districts called Saxony. They made themselves into a great federation, and carried on a long war with Charlemagne. In the end they were beaten and forced to become Christians.

Saxony Republic of Germany. It is in the centre of the country, bounded by Czecho-Slovakia, Prussia and Bavaria, and covers 5787 sq. m. Much of it is a busy industrial area, but it contains, districts of great beauty especially in the S.W. where is the Saxon Switzerland, as it is called. Dresden is the capital, but Leipzig is somewhat larger. Chemnitz and Plauen are manufacturing towns. Freiberg is a mining centre. The chief river is the Elbe; others are the Mulde, the Elster and the Spree. Wheat and other cereals are grown and mining is an important industry. The people are chiefly Protestants. The government is in the hands of a premier and a council of ministers responsible to an elected diet. The Germans call Saxony Sachsen, and the French call it Saxe. Pop. (1933) 5,196,652.

The original Saxony was a district in the N. of Germany inhabited by the Saxons. It was one of the great German Duchies and in

919 Duke Henry was chosen German King. In 1180 the duchy was broken up, but its name was kept by a small district on the Elbe, around Wittenberg. The ruler of this became an elector, and several of his successors were important persons in German history. This was seen at the time of the Reformation, which took its rise in Saxony, and in the Thirty Years' War. With other German States Saxony was divided more than once, the most important partition being that of 1485.

During the war of Napoleon's time the Saxons were usually on the side of France. The elector was made a king for these services, but in 1814 when peace was arranged, a good deal of his land was given to Prussia. He kept, however, his kingly title. In 1866 Saxony took the side of Austria against Prussia, but in 1871 it joined the new German Empire. In Nov., 1918, it was declared a republic, and a constitution was given to it in 1920. From 1934, however, the rights of the Federal States, including Saxony, were greatly restricted.

Saxophone Musical wind instrument. It is of brass, with 20 finger keys, and rather resembles the clarionet. It is fitted with a single-reed, and is made in various sizes and keys. The instrument is named after its inventor, Adolphe Saxe.

Sayers **Tom.** English pugilist. He was born in Pimlico on May 25, 1826, and was at first a bricklayer. He had his first fight in 1849, and was only beaten once in his professional career. His last fight was in 1860, against Heenan, in which neither won, and Sayers was given a purse of £3000. He died on Nov. 8, 1865.

Scabious Annual and perennial herb of the genus *Scabiosa*, known also as pin-cushion flower from the shape of the flower-heads. The colours range from blue, through shades of red, to white. The garden scabious has been developed from S. European varieties. Wild English examples are the devil's bit and the field scabious.

Scafell Mountain of Cumberland, at the E. end of Wastwater. Scafell Pike, 3210 ft., is the highest peak in England. The summit was presented to the National Trust by Lord Leconfield in 1919.

Scaffold Platform or stage erected for display of a spectacle, *e.g.*, in former times, a public execution. The term now refers to a temporary framework for supporting a building during its erection or alteration and forming as well platforms for the use of the workmen. Ordinary scaffolding consists of a framework of poles or steel tubing lashed together with strong tarred hemp cord or with galvanised flexible steel wire. Putlogs or cross-pieces, with their inner ends fitting into holes in a wall, are also used, also platforms of planks.

Scalby Urban district and seaside resort of Yorkshire (N.R.). Standing on the North Sea, it is picturesquely placed 3 m. to the N. of Scarborough. It is 232 m. from London, on the L.N.E. Rly. Pop. (1931) 2771.

Scale Graduated measure, the divisions of which are related to a given unit, and used for reducing or enlarging maps, plans or drawings in proportion to their natural dimensions. Thus a scale of one inch to the mile may be used. Boxwood and ivory rules are made with various scales in common use marked upon them.

Scale Name given in music to the series of sounds, of varying pitch, which goes to make up the octave. It is thus the key to all harmonic music. The Greeks recognised three kinds of scale, which they called diatonic, chromatic and enharmonic; of these the enharmonic is believed to be the oldest.

Scale Flat, hard, horny or bony structures present on the skin of various animals. In most fishes bony scales are developed from the dermis; in reptiles and birds horny epidermal scales occur, and among mammals on the armadillo and pangolin, also on the tails of rats, mice, beavers and some marsupials.

Scaliger **Joseph Justus,** 1540-1609. The greatest scholar of the Middle Ages. Born at Agen in 1540, the tenth child of Julius Caesar Scaliger, he was sent to the College of Guienne at Bordeaux, and afterwards became his father's amanuensis, attaining a knowledge of Latin unequalled by any of his contemporaries.

He spent four years from 1558 at the University of Paris, when he became a Protestant; and later travelled in Italy, England and Scotland with Louis Chastaigner de la Roche Pozay.

Settling in France in 1574, he founded a new school of classical criticism and revolutionised the study of ancient chronology. In 1593 he was appointed professor at Leyden, where he remained, the literary dictator of Europe, till his death, Jan. 21, 1609.

Scaliger **Julius Caesar.** French physician, soldier, scholar and writer. Born about 1484 at La Rocca on the Lake of Garda, about 1525, he became physician to the Bishop of Agen, remaining in that city till his death. A past master of Latin verse, he wrote many commentaries on scientific subjects, and gained notoriety by an unusually venomous attack on Erasmus. His fame is overshadowed by that of his son, Joseph Justus. He died Oct. 21, 1558.

Scalp Outer covering of the cranium. The scalp is formed of several layers, the outermost being the skin bearing sweat and sebaceous glands and hair follicles, next the superficial fascia, a fibrous layer connecting the skin to the underlying occipitofrontal muscle and its aponeurosis, which covers in turn a layer of loose areolar tissue.

Scalping Custom of removing the skin of the skull with hair attached, as proof of a warrior's prowess. Practised from very early times, *e.g.*, among the Scythians and the early Celts and Teutons, it is chiefly associated with the N. American Indians, among whom it was attended with elaborate ritual.

Scandinavia Collective name for the peninsulas of N. Europe consisting of Norway and Sweden, and Denmark. The term comes from Scandia, which was an old name for S. Sweden. Scandinavia is very rich in antiquities, especially of the Viking period, including bronze, gold and silver work of high artistic excellence. For the first 400 years of the Christian era Scandinavian art was strongly influenced by that of Rome. The later silver filigree work shows Irish influence.

Scapa Flow Harbour of the Orkney Islands. Almost entirely landlocked, and studded with numerous

islets, it is about 15 m. long and from 8 to 12 m. wide. For some time during the Great War it was the chief base of the British Grand Fleet. It was in Scapa Flow that the German Fleet was interned after its surrender in Nov., 1918. Many of the German ships were scuttled on June 21, 1919, but later several were salved.

Scapegoat Term used among the early Hebrews for one of the two goats brought to the Temple on the Day of Atonement (Lev. xvi.). One of these was sacrificed : the other was the scapegoat. Over its head the high priest confessed the sins of the people, and then it was driven into the wilderness to carry its burden to the evil spirit, Azazel.

Scapula Anatomical name for the shoulder blade, a triangular bone placed at the upper part and back of the shoulder. It is held in position by powerful muscles to the arm, thorax and back.

Scarab General name for an Egyptian amulet representing the sacred beetle, *Scarabæus sacer*, the symbol of Khepe-Ra, a creative form of the sun-god. Scarabs were made in many materials such as various stones, glazed faïence and, rarely, of metal or ivory. There are many varieties of scarabs, some perforated for signet rings or for stringing on a necklace, others with names, designs or inscriptions engraved on the base. Funereal scarabs, often of large size, were inscribed with portions of the Book of the Dead.

Scarborough Borough and watering place of Yorkshire (N.R.), 42 m. from York, on a bay divided into North and South Bays by a peninsula, the Scaur. There is a tidal harbour, used by coasting and fishing vessels. St. Mary's church dates from the 13th century, and there are ruins of a Norman castle. The town has two mineral springs. A Roman station, Scarborough was early important. It was burnt by Harold Hardrada (*q.v.*) in 1066, and by the Scots in 1318, and was twice besieged in the Civil War. During the Great War it was shelled by the Germans. Pop. (1931) 41,791.

The title, **Earl of Scarborough**, has been held by the family of Lumley since 1690.

Scarlatti **Alessandro.** Italian composer. Born in Sicily in 1659, he was only twenty years of age when his opera, *L'Errore Innocente*, was produced in Rome. Five years later he was made master of the court music at Naples, and henceforth he divided his time between Naples and Rome. His works include over 100 operas and upwards of 500 chamber cantatas. His most important work in church music is the St. Cecilia Mass. He died Oct. 24, 1725.

Scarlet Bright red colour obtained from various pigments and dyestuffs. The scarlet dye formerly used for dyeing cloth or for preparing a scarlet pigment for painting was made from the cochineal insect, but now more permanent dyestuffs are made from coal tar derivatives.

Scarlet Fever Infectious disease characterised by high fever, sore throat, and a red rash. After infection the symptoms take from one to seven days to appear. The rash, which often starts on the second day, spreads very quickly, and at its height covers the whole body. The fever dies down as the rash disappears, and the upper surface of the skin flakes off. The patient should be isolated.

Scaup Kind of wild duck. It visits Great Britain in winter. It is common on estuaries and seashores where mussels abound. The head of the male is glossy black and green, neck and back black, wings and tail brown, with underparts white. The female has a white face, and is less brilliantly coloured than the male.

Scent Odour or perfume produced by essential or volatile oils in plants and by certain secretions in animals. In plants oil glands may occur in leaves, glandular hairs, or the petals of flowers, the scent serving as a protection against insects or in flowers for the attraction of insects in pollination. **Scent glands** occur in many animals and serve as a defence against enemies, a means of recognition of their own species, or for sex attraction. *See* PERFUME.

Scepticism Term used to describe the philosophical theory of those who deny (1) current or customary beliefs, or (2) the possibility of knowing reality. Pyrrho of Elis (*c.* 300 B.C.) was a notable sceptic among ancient philosophers. In modern times Pascal is a representative of a scepticism which depreciates the value of scientific knowledge, while on the other hand Hume's scepticism is based on a thoroughgoing sensationalism which takes its stand on physical science.

Sceptre Staff or rod borne by kings as an emblem of authority and royal power. It is usually adorned with some symbolic emblem. Both in Egypt and Greece gods as well as kings had sceptres, and among the Romans the sceptre was originally a spear. In the English regalia three forms of sceptre are used in the coronation ceremony.

Scheldt Important waterway of western Europe. Rising in France, it flows through Belgium and the Netherlands, and near Doel, divides into the W. Scheldt, or Hond, which flows into the North Sea at Flushing, and the E. Scheldt, which reaches the sea farther north. The passage of Sloe joins these two streams. Cambrai, Valenciennes, Tournai, Ghent and Antwerp are among the towns on its banks. The river, which is highly canalised and easily navigable, is 250 m. long. Its navigation has long been a fruitful source of dispute between Belgium and Holland. Its Flemish name is Schelde ; French, Escaut.

Schenectady City of New York State, U.S.A. It is the county seat of Schenectady County, about 18 m. N.W. of Albany. Finely situated on the Mohawk River and the New York State Barge Canal, it is the seat of Union University, and an important manufacturing centre, the products including electrical apparatus and motor cars. It has two broadcasting stations (31.48 M., 40 kW. and 19.56 M., 20 kW.). Pop. (1930) 95,692.

Scherzo Name given to a piece of music of a humorous or sprightly nature. Usually a scherzo forms part of a symphony, sonata, or kindred work. Beethoven's wild and breathless scherzos form a striking contrast to the quiet, almost prim minuets of the earlier symphonies, and to the delicate examples of Mendelssohn.

Scheveningen Town and watering place of the Netherlands, on the North Sea, 3 m. N.W. of The Hague. It is the chief bathing resort of the country and has an important herring fishery.

Here De Ruyter defeated the combined English and French fleets in 1673. Pop. 27,000.

Schiehallion Mountain of Perthshire, 11 m. W.N.W. of Aberfeldy. It is 3547 ft. high. Here Nevil Maskelyne carried out his famous experiment for determining the earth's density in 1774.

Schiller Johann Christoph Friedrich. German poet. Born in Marbach, Württemberg, Nov. 10, 1759, he received a good classical education and was trained, first, for the law, then for medicine, and was appointed military surgeon. His first play, *Die Räuber*, appeared in 1782 and created a tremendous sensation by its revolutionary sentiments. After a year's work at the theatre at Mannheim, he left for Weimar, later for Leipzig and Dresden. *Don Carlos*, his first mature play, appeared 1787. In 1788 he was made Professor of History at Jena, where he married. His chief plays were *Wallenstein*, *Die Jungfrau von Orleans*, *Maria Stuart* and *Wilhelm Tell*, and he wrote many beautiful poems. He was a great friend of Goethe, next to whom he ranks among Germany's greatest poets. He died May 9, 1805.

Schipperke Small dog. Bred originally in Flanders, it is black with short hair, which at the neck forms a bristling frill. It has brown eyes, small sharp ears, but only a rudimentary tail. It makes a good watch dog and excellent companion. The average weight is about 12 lb.

Schism Term meaning a rift, used chiefly for the breaking away of a part of a church or for the separation of one church into two. The **Great Schism** between the East and the West, which divided the Roman Catholic Church and the Orthodox Eastern Church, dates from 1054. The **Great Schism of the West**, during which the leadership of the Catholic Church was in dispute, lasted from 1378 to 1417.

Schist Geological term for a fine grained foliated rock of metamorphic origin occurring in areas where great earth movements have taken place. Schists are named after the chief constituent minerals, as in **mica schist**, consisting of quartz layers alternating with thin plates of mica, or **hornblende schist**, an aggregate of hornblende and felspar.

Schliemann Heinrich. German archaeologist. Born Jan. 6, 1822, in Buckow, Mecklenburg-Schwerin, he spent his youth in struggle, serving as grocer's apprentice, cabin-boy and book-keeper. He had a passion for the Homeric story, and learnt ancient and modern Greek. He made a fortune in St. Petersburg during the Crimean War and travelled widely, visiting in 1868 the Homeric sites. He excavated the Mycenaean Troy at Hissarlik, mistaking it for the Homeric one, and unearthed five shaft graves at Mycenae. He wrote several monographs, including *Troy and its Remains* (1875). He died in Naples, Dec. 25, 1890.

Schnitzler Arthur. Austrian dramatist and novelist. Born May 15, 1862, the son of a Viennese physician, he at first studied and practised medicine, but later turned to writing, his first work, *Anatol*, being published in 1893. He wrote many brilliant plays and novels, exposing the gay and frivolous Vienna of that day. The plays include *Liebelei* and *Freiwild*, and the novels *Casanova's Homecoming* and *Fräulein Else*. Several of his works have been translated into English. He died Oct. 21, 1931.

Scholasticism Term used for the teaching of the scholastics or schoolmen, the teachers of the Middle Ages, who examined the doctrines of the Church in the light of philosophic ideas. The name is derived from the schools established by Charlemagne. Scholasticism took on a new form when the writings of Aristotle came to be studied. Shaken by the dissensions of the Scotists and the Thomists and, still more, by the increasing interest in science, scholasticism gradually fell into decay.

School Primarily a place of instruction; also used for persons holding the same opinions, *e.g.*, the Manchester school. Every civilised nation has had its schools for the education of the young, although the idea that all should be taught therein only dates from the 19th century.

The schools of Europe in the middle ages were controlled by the priests and were adjuncts to the monasteries. Then in England came the **grammar schools**, a product of the Reformation, and similar schools in Scotland, Germany and other protestant countries. The **public schools** grew out of the grammar schools and in the 19th century public schools for girls were founded on the same lines. For elementary education schools were provided by the Church of England and Roman Catholics, and in 1871, when education was made compulsory, schools were built out of public funds and conducted on undenominational lines. Further developments are the **secondary schools** and the **continuation schools.**

School Board Committee of men and women in Gt. Britain, elected by the ratepayers, to provide and control elementary education. Instituted under the Elementary Education Act of 1870, these bodies were superseded in 1902 by the county and borough councils. In Scotland the school boards came to an end in 1918.

School of Art Institution where pupils receive training in drawing, painting, and other fine arts. In the early days of the Renaissance Italy had schools of art, but it was not until 1711, when Sir Godfrey Kneller opened his school of design, that a similar institution appeared in England. Nowadays both the fine arts and the industrial arts are fostered in this way.

Schooner Name applied to a particular type of sailing vessel. It usually has two masts fore-and-aft rigged or with square topsails on the foremast. Some schooners have three or four masts fore-and-aft rigged or the mainmast may have square topsails. Some types of yachts also are schooner rigged.

Schopenhauer Arthur. German philosopher and exponent of systematic pessimism. Born at Danzig, Feb. 22, 1788, he received a thorough classical education in schools at Gotha and Weimar, and the universities of Gottingen and Jena. His principal work, *The World as Will and Idea*, published in 1819, teaches a pantheism of the will. Other works are *Will in Nature* and *Freedom of the Will*. His whole life was one of internal discord, the subjective and objective —feeling and reason—being continually at war. He died Sept. 21, 1860.

Schreckhorn Peak of the Bernese Oberland. It is S.E. of the Grindelwald, and has an altitude of 13,386 ft. The **Klein Schreckhorn, to the N.W., is** 11,474 ft. high.

Schreiner **Olive.** South African novelist. Born in Basutoland in 1862, she was the daughter of a German missionary. Under the pen-name of Ralph Iron she published her first novel, *The Story of an African Farm*, which had an immediate and enormous success. Later writings include *Dreams*, *Woman and Labour* and *An English South African's View of the Situation* (1899). She died Dec. 12, 1920.

Schubert **Franz Peter.** Austrian composer. Born in Vienna, Jan. 31, 1797, one of the most precocious musicians of all time, at the age of 16 he wrote a symphony, at 18 a mass and *The Erl King*. He was unsurpassed in his facility for putting words to music. He would read a poem and even while he was reading it, he had the music for it in his brain. He left behind him no fewer than 500 songs, as well as 10 symphonies (among them the matchless *Unfinished Symphony*), 6 masses, many sonatas and other works for the piano, string quartets, operas, cantatas, and overtures. He died Nov. 19, 1828.

Schumann **Robert.** German composer. Born in Saxony, June 8, 1810, he studied law first, and after much travelling in foreign countries, studied music in Leipzig under Wieck, his future father-in-law. He was a most prolific composer of works for the piano, symphonies, concertos, quartets, songs, and much chamber music. His last years were clouded by insanity. His wife, Clara Wieck, was a splendid exponent of his piano works. He died July 29, 1856.

Sciatica Form of neuralgia of the sciatic nerve. Though not dangerous, it is often very painful. Gout and rheumatism, as well as exposure to damp and cold, are predisposing causes, and the affection occurs chiefly in adult males. Sometimes the pain spreads from the back of the thigh, where it is usually localised, right down to the foot.

Science Term denoting organised and systematised knowledge of the known facts of Nature. In the first place this consists of noticing the resemblances and differences between things seen, and the arrangement of the knowledge thus gained under general truths and principles.

The term is also applied to all forms of systematised knowledge. Science is concerned with the methods of classification, correlation and sequence of facts and phenomena, and the discovery of laws governing these. The different departments of science have been divided into abstract and concrete, the former represented by mathematics and logic, the latter by astronomy, biology, chemistry and physics. The abstract sciences are linked to the concrete by applied mathematics, and similar links occur between the chemical, biological and physical sciences.

Scilly Isles Group of islands off the S. coast of Cornwall, about 25 m. from Land's End. They are included in the county of Cornwall, but have their own county council. Identified by some with the Cassiterides and associated with the Lyonnesse of legend, they comprise 6 large and some 30 small islands, with many islets. The climate is very mild and the vegetation semi-tropical. Flowers and vegetables are raised for the English market. The capital is Hugh Town, on St. Mary's. Pop. 2097.

Scimitar Name given to a short curved sword used in the East, especially by the Turks and Persians. The blade is broader at the end and has one cutting edge which comes to a point, the back being thicker and shorter. In some types of Turkish scimitars the blade, though curved, does not widen out at the end.

Scintillation Term in astronomy applied to the twinkling appearance of the stars, an optical effect due to variations in the atmosphere through which they are viewed. It is most apparent when a star is near the horizon at its rising or setting. The planet Mercury shares with the fixed stars the phenomenon of scintillation.

Scipio **Publius Cornelius,** surnamed *Africanus Major*. Born in 237 B.C., after suffering three disastrous defeats by Hannibal (at the Ticinus and Trebia in 218, and at Cannae in 216) he overcame Hasdrubal and his brother, Mago, at Baecula, thus gaining the whole of Spain. His decisive victory over Hannibal at Zania, 202, ended the second Punic war. He died 183 B.C.

Scipio Aemilianus **Publius Cornelius,** surnamed *Africanus Minor*. Born in 185 B.C. he took part in the third Punic war, and was in supreme command at the siege of Carthage. In 147 he took it by storm and, by order of the Senate, levelled it to the ground. Like many others, he was the victim of the fickleness of the people, and was killed in his bed, 129 B.C.

Sclerosis Term used in pathology for the hardening of a tissue, especially in the central nervous system. In organs such a condition is called fibrosis or cirrhosis.

Scone Burgh of Perthshire, Scotland, on the Tay, 2 m. north of Perth. It consists of the original town of **Old Scone** and the modern village of **New Scone.** In the 8th century Scone became the capital of Pictavia, and here, down to 1488, the Scottish kings were crowned on the Stone of Destiny, which is now beneath the Coronation Chair in Westminster Abbey. The old abbey was burned down in 1559. Pop. (1931) 2936.

Score Name given to the copy of a piece of music, in which all the parts, for instruments and voices, are so arranged that it is possible to appreciate the whole piece at a glance.

Scorpion Arachnid animal of warm countries, with claws resembling a lobster's and a jointed flexible abdomen terminating in a sting. The usual length is from one to three inches, but species as long as ten inches are found. In the act of stinging the tail is usually bent quickly over the back. The poison of the smaller species is generally more virulent than that of the larger kinds. Though often causing intense pain, the sting is seldom fatal to man.

Scorpion Fly Insect of the family *Panorpidae*, so named from the fact that the last few segments of the body can be bent over the back like a scorpion's tail. The head has a conspicuous beak.

Scot and Lot Old term for a sort of parish rate for local expenditure. The word scot comes from an Anglo-Saxon word meaning a payment, and lot means a portion or share. Before the Reform Act of 1832 anybody subject to scot and lot was entitled to vote for members of Parliament.

Scoter Genus of duck (*Oedemia*). Often called black duck, it is a great lover of the sea. It rarely visits land except

for breeding. The three British species comprise the common scoter (*O. Americana*), the velvet scoter (*O. fusca*), and the surf scoter (*O. perspicillata*).

Scotch Terrier Small rough-haired terrier. It is very hardy, highly intelligent, a first-rate companion, and a splendid ratter. For its size the teeth are remarkably large. Formerly it was in request for fox-hunting in the wilder parts of the Scottish Highlands, where its gameness made it more useful than the ordinary foxhound.

Scotland Country of Great Britain. It occupies the northern part of the island, being divided from England by the Tweed and other streams. Covering 29,796 sq. m., it is divided into 33 counties. It has a very irregular coastline, especially on the west, where are a number of islands. The chief groups are the Orkneys, Shetlands and Hebrides; 186 islands are enumerated.

Edinburgh is the capital, but Glasgow is much the largest city. Dundee, Aberdeen, Paisley and Greenock come next. Inverness is the capital of the Highlands. The population in 1931 was 4,842,534, a decrease of 40,000 since 1921. Nearly half live in the Glasgow area which includes a considerable Irish element. The people are mainly Presbyterians but there are many Roman Catholics. The country has four universities, Edinburgh, Glasgow, St. Andrews and Aberdeen, and an excellent system of local schools.

Scotland is a mountainous country and much of its soil is very poor. In the south, however, there are valleys that are extremely fertile. It is divided traditionally by the Grampians into the Highlands and the Lowlands, and there are still distinct social and other differences between the inhabitants of the two. The scenery is remarkably beautiful, the combination of mountain, loch and river making some exquisite landscapes, and the land is much visited by tourists.

In some respects Scotland remains apart from England. Its laws are different and it has its own judicial system, which consists of a High Court of Justiciary for criminal cases and a Court of Sessions for civil ones. The sheriff in Scotland is a paid judicial officer, not, as in England, an honorary one. The local government system has been made very like that of England, but the towns are burghs, not boroughs, and the chairman of the county council is the convener (*q.v.*). Scottish affairs are controlled by a Secretary of State and for certain purposes there are special government departments of Scotland. The king has his own household in Scotland.

In early days Scotland was divided into two distinct parts. The Highlands were inhabited by Gaelic tribes living in clans under their own chiefs and the Lowlands were populated by people not unlike those living in the north of England. About 900 a king of the Scots arose. Governing at first only a small district in the south, and at times a vassal of the king of England, he gradually extended his power until there was a kingdom of Scotland covering the whole of the country. Edward I. conquered Scotland and made its king subject to him, but, after the Battle of Bannockburn, it regained its independence, which it retained under its own kings, who were often at war with England, until 1603, when James VI. became James I. of Great Britain. In 1707 the parliaments of the two countries were united and gradually the union became closer. Of late there has been a Home Rule or National movement in Scotland, but it has never attained serious proportions.

Scotland Church of. Established church of Scotland. It is Presbyterian in doctrine and government, and has, with intervals in the 17th century, been the established church since 1560. Since 1929 it has included the United Free Church of Scotland, itself an amalgamation of two unestablished presbyterian churches. The church has 1,280,000 members in 2720 congregations. The controlling body is the general assembly which meets in Edinburgh every May, the king being represented by a high commissioner.

Scotland Secretary of State for. Official responsible to Parliament for the public business of Scotland. The office was created in 1885 and carries with it a salary of £2000 a year. The offices are at Dover House, Whitehall, London, S.W.1, with another at 9 Parliament Square, Edinburgh.

Scotland Yard Headquarters of the Metropolitan Police. It occupies the site of a palace which belonged to the kings of Scotland between Whitehall and the Thames. In the 19th century the police made their headquarters in a building here, and later **New Scotland Yard** on the Thames Embankment was built for their administrative work. Here are the offices of the commissioner and detective staff, and a museum.

The Lost Property Office formerly at New Scotland Yard has been removed to a new building in Lambeth.

Scots Greys Cavalry regiment, known officially as the 2nd Dragoons. It traces its origin to certain mounted troops added to the Scottish Establishment in 1678, which, after serving under Graham of Claverhouse, were regimented as the Royal Scots Dragoons. Its battle honours include, in addition to Marlborough's four great victories, Dettingen, Waterloo, Balaclava and Sevastopol. Napoleon made a famous allusion to them as "*ces terribles chevaux gris*," and their eagle badge represents an "eagle" and colours of a gallant French regiment captured by a sergeant of the Greys in a charge on June 18, 1815.

Scots Guards Regiment of foot guards. Originally formed in Scotland under the Earl of Linlithgow in Nov., 1660, they became the 3rd Foot Guards in 1713, and the Scots Fusilier Guards under William IV. The ancient title of Scots Guards was restored to the regiment by Queen Victoria in 1877. Battle honours include, among other campaigns, Dettingen, the Peninsular War, Waterloo, the Crimea, and Tel-el-Kebir. The Scots Guards also served with splendid distinction in the Great War.

Scott Charles Prestwich. English journalist. Born at Bath, Oct. 26, 1846, he was a son of Russell Scott. He went to Corpus Christi College, Oxford, and on taking his degree joined the staff of the *Manchester Guardian*. In 1872 he was made editor of that paper. He retired from the editorship in 1929, but remained governing director until his death, Dec. 31, 1931.

Scott was one of the greatest editors of his day and under his direction the *Manchester Guardian* became one of the world's great newspapers. From 1895 to 1906 Scott was Liberal M.P. for the Leigh division of Lancashire.

Scott Michael. Scottish wizard or magician. He was born about 1200,

and drew much of his wisdom from the Arabic. He entered the service of the Emperor Frederick II. Tradition credits him with miraculous powers.

A later **Michael Scott,** born in 1789, was a Scottish novelist who wrote *Tom Cringle's Log,* still a classic of sea-going life. The only other work of his which survives is *The Cruise of the Midge.* He wrote anonymously, and his identity was not revealed until after his death, which took place in 1835.

Scott **George Gilbert.** English architect. Born at Gawcott, Bucks, in 1811, he had a great love for drawing and for medieval churches, and was consequently articled to a London architect. After 1840 he threw himself into the Gothic revival, and built or restored 26 cathedrals, over 500 churches, numerous monuments, public and private buildings, such as new government offices in London, the Albert Memorial and the Midland Railway terminus in London. He was elected R.A. in 1861 and knighted 1872. He died March 27, 1878.

Scott **Sir Giles Gilbert.** British architect. Born Nov. 9, 1880, grandson of Sir George Gilbert Scott, architect, his design for the new Liverpool Cathedral, embodying his dream of a Gothic revival, was accepted in 1903, one year after he began to practise. His work is chiefly ecclesiastical, including St. Maughold's, Ramsay, I.O.M., and the new buildings at Clare College, Cambridge. He was made an R.A. in 1922, and was knighted after the consecration of Liverpool Cathedral in 1924. In 1933 he became President of the R.I.B.A.

Scott **Robert Falcon.** English explorer. Born at Devonport, June 6, 1868, he entered H.M.S. *Britannia* in 1880. From 1900 to 1904 he was in command of the *Discovery,* exploring the Antarctic regions. Assisted by both British and Dominion Governments, he sailed for the South Pole in June, 1910, reaching it with four companions in Jan., 1912.

The return journey ended in tragedy, owing to cold, blizzards and insufficient food. Evans succumbed in Feb., and in March Capt. Oates deliberately sacrificed himself by walking out into the blizzard. The weather made it impossible for the others to proceed, and the bodies of Scott, Wilson and Bowers, as well as Scott's records and diaries, were found by a search party in Nov., 1912. The diaries showed that they survived Oates by only a few days.

Scott **Sir Walter.** Scottish poet and novelist. Born at Edinburgh, Aug. 15, 1771, of gentle blood, his early education was interrupted by delicate health, coupled with lameness, but he attended the High School and University. At about 15 he entered the office of his father, who was a Writer to the Signet, and later held several public offices, such as Sheriff of Selkirkshire.

In 1802 he began the first of his long poems, *The Lay of the Last Minstrel*; it was published in 1805, and attracted immediate and widespread attention. *Marmion, The Lady of the Lake* and *Rokeby* followed in rapid succession. *Waverley* appeared anonymously in 1811, taking the world by storm. The complete list of his novels is too long to give in full, but we may mention *Guy Mannering, Rob Roy, The Heart of Midlothian, The Bride of Lammermoor, Ivanhoe, The Monastery,* as well as *Lives* of Dryden, Swift and Napoleon.

Scott's unfortunate secret partnership in the publishing house of Ballantyne's led to his financial undoing and early death. After the crash, he toiled incessantly to pay his debts; they were cleared, but not until after he died.

As a man, Scott has been called one of the most generous, one of the most friendly, one of the most honourable. As a writer he occupies the highest rank, and his influence on literature was immense. His works have been translated into many languages.

He married in 1797 Charlotte Margaret Carpenter, and died Sept. 21, 1832. His biography was written by his son-in-law, J. G. Lockhart.

Scouting Primarily a military term denoting observation of an enemy's movements, actual or intended, by individuals or parties, pushed out in advance of the main fighting force. Such service comes under the general heading of reconnaissance, and demands great intelligence and wariness on the part of those engaged in it. Ordinarily on land scouting duties are carried out by cavalry, a familiar example of good military scouting being the work of the Uhlans in the Franco-Prussian War. Nowadays scouting is chiefly done, wherever possible, from the air. *See* BOY SCOUTS.

Screen Apparatus used in printing. It consists of two pieces of glass fastened together, and placed in the camera between the plate and the lens. Each piece is ruled with fine lines. It is used in photographing pictures for reproduction as half-tone blocks and its work is to give the effects of light and shade, which it does by breaking up the photograph into a series of dots of various sizes which place the ink on the printing surface. The number of ruled lines varies from 60 to 400 to the inch, larger numbers being used for the better class of work.

Screen In church architecture, a partition dividing part of a church from the remainder, especially the chancel from the nave. Wood, stone, and iron figure among the materials used. The **rood screen,** so called from the rood, or crucifix, on a great wooden beam over it, was often very richly ornamented. There are fine examples of decorated screens in several of the English cathedrals, such as those at Canterbury, Durham and Lincoln, and in many parish churches.

Screw Propeller In ships a propulsive device consisting of two or more (usually three) blades set obliquely on a shaft turned by steam, or other motive power. In effect the propeller represents a section cut from a long screw. The blades each constitute a portion of the thread, the pitch being the distance the screw moves forward in a revolution. When turned in a forward direction the blades press against the water and the ship goes ahead. Since the water yields to some degree, there is a loss termed slip which reduces the actual forward motion to something less than the pitch of the screw.

Scriabin **Alexander Nicholaevich.** Russian composer. Born at Moscow, Dec. 25, 1871, after studying and teaching at the Moscow Conservatoire of Music, he toured for six years, settled in Brussels and returned to Moscow in 1910. He visited England in 1914, gave two piano recitals, and played the piano in his *Prometheus.* He developed an individual harmonic basis, which was symbolic in a musical way, with a definite spiritual foundation. His chief works were *Prometheus* (Poem of Fire), *Vers la Flamme* and *Divine Poem.* He died April 14, 1915.

Scriptorium Place where manuscripts were written or more often copied. The scriptorium was also the studio of the great monasteries, and here much beautiful illuminating and binding was done.

Scrivener One who draws up contracts. The **Scriveners' Company** is one of the livery companies of the city of London, with a charter dating back to 1617, though the records are of much earlier date.

Scrofula Form of tuberculosis also known as struma, in which the glands of the neck enlarge. In earlier days it was called the king's evil, and the reigning sovereign used to "touch" for it.

Scrooby Village of Nottinghamshire, about 2 m. from Bawtry, on the L.N.E. Rly. There are remains of a palace of the Archbishop of York. The manor house was the home of William Brewster (died 1644), one of the most prominent of the Pilgrim Fathers.

Scrub Term used for tracts of undergrowth, brushwood, or stunted trees, known in the Mediterranean area as *maquis*. In Australia characteristic forms are mallee scrub, in which a species of eucalyptus predominates, and the brigalow scrub, composed largely of a kind of acacia. Cacti are a feature of the scrub of E. Africa.

Scruple Unit of weight. It is found in apothecaries' measure where one scruple is composed of 20 grains or minims. 20 scruples make an ounce.

Scudo Old Italian silver coin worth about 4 shillings. The value varied in the different states. The word means "shield."

Scullin **James Henry.** Australian politician. Born Sept. 18, 1876, at Ballarat, he became a journalist, and was elected to the federal Parliament as a Labour member in 1910. Defeated in 1913, he remained out of parliament till 1922. He became leader of the federal Labour Party in 1928 and Premier in Oct., 1929. In the financial crisis of 1930-31 his party was defeated and he resigned, being succeeded by J. A. Lyons (*q.v.*). In 1935 he announced his retirement.

Sculling Art of propelling a boat with a pair of sculls shorter and lighter than rowing oars, and without a cox. For the world's professional sculling championship the Thames course is from Putney to Mortlake, a distance of 4¼ m., over which the **Wingfield Sculls,** the amateur Thames championship, also takes place. Another famous sculling event is the **Diamond Sculls** at Henley. Many world championships have been decided in New South Wales, on the Parramatta River.

Sculpture One of the oldest and most universal arts, it represents an object, real or imaginary, in material and three dimensional form. The symmetry and rhythm of sculpture have appealed to man through the ages, satisfying both his desire to imitate, in the reproduction of natural objects, and his will to create, offering as it does a medium of expression for his imaginary figures. The golden age of sculpture coincides with the period of Greek history, the Greeks having found in it the ideal expression of their love of nature and the beautiful. The commonest materials used are stone, clay, bronze, ivory, gold and silver.

Scunthorpe Urban district and market town of Lincolnshire. It is 12 m. south-east of Goole, and 180 from London by the L.N.E. Rly. An industrial centre, it has iron and steel works. It is officially known as Scunthorpe and Frodingham. Pop. (1931) 33,761.

Scurvy Disease marked by swelling of the gums and dry, rough skin. It is caused by the lack of vitamin C in the food. Formerly it was distressingly common among sailors and soldiers, who in the course of their duties were forced to live for long periods at a stretch on salt meat and without fresh vegetables. Since the cause has been known the disease has been rare. The drinking of lemon juice is an important feature of the cure and prevention.

Scutage Term used under the feudal system to denote the pecuniary commutation of the military services of a knight. Though generally held to date from the time of Henry II., the practice is found as early as the reign of Henry I. The name comes from the knight's shield (Latin *scutum*).

Scutari **(or Skodra).** Town of Albania. It lies S.E. of Lake Scutari, some 12 m. from the Adriatic coast. After having undergone a siege in the first Balkan War, it figured in the Great War, being occupied by the Austrians until Nov., 1918. There are woollen manufactures. Pop. (1930) 29,209.

Scutari **(or Uskudur).** Town of Asia Minor, opposite Istanbul (Constantinople). A hospital used during the Crimean War was the scene of Florence Nightingale's ministrations. A fire in 1921 caused serious damage. There are manufactures of silks and cottons. At Haidar Pasha is a terminus of the Anatolian Railway. The ancient name of the town was Chrysopolis. Pop. 124,555.

Scylla Rock in the Straits of Messina, opposite the whirlpool Charybdis. To the ancient Greeks Scylla was a six-headed sea monster which preyed upon sailors.

Scyros Small rocky island in the Aegean Sea, 24 m. N.E. of Euboea, belonging to Greece. In ancient Greek legend it was associated with Theseus. Pop. 4200.

Scythia Name used by the ancients for a region around the Black Sea, varying in extent at different periods. It received its name from the Scythians, a people from upper Asia who occupied it in the 7th century B.C. Originally of nomadic habits, the Scythians in course of time came under Greek influence, and became agriculturalists.

Sea Anemone Popular name of certain marine animals of the order *Anthozoa*, related to the corals. Sea anemones commonly occur in rock-pools and in form have a general flower-like appearance. The body consists of a soft fleshy contractile column attached at the base to a rock, and having at the free end a mouth surrounded by a ring of contractile tentacles and communicating with a simple sac-like stomach. The food consists of small crustaceous and other organisms.

Sea Bass Food fish (*Morone labrax*) related to the perch. It is found chiefly around S. and S.W. Europe, and occasionally off British shores. It weighs up to 15 lb. It has a blue-grey back, grey sides, and white under parts, and the first dorsal fin carries eight spines. About May the bass leaves the deep water for spawning, and the young fish prey upon smaller fish about the mouths of rivers. The flesh is somewhat coarse.

Seaford Watering place of Sussex, about 3 m. from Newhaven. It enjoys

a sheltered situation, and has excellent golf and bathing facilities. Seaford was a "limb" of the Cinque Ports, and had considerable trade as a port, being at one time at the mouth of the Ouse. At various periods it has suffered much from encroachments of the sea. **Seaford Head** became public property in 1928. Pop. 6991.

Seaforth Sea loch of Scotland, 14 m. long, on the east side of the island of Lewis.

The title of **Earl of Seaforth** was borne by the family of Mackenzie from 1623 to 1781. The last earl gave his name to the **Seaforth Highlanders**, a regiment which he raised on his estates in Ross-shire. The two battalions are the 72nd and 78th Foot and both have a fine record of service, including several theatres of the Great War. The depot is at Fort George.

Seaforth District of Lancashire. It is on the Mersey, 4 m. from Liverpool, and is a popular seaside resort. It is reached by an overhead electric railway, and by the L.M.S. line, and is part of the urban district of Waterloo and Seaforth. *See* WATERLOO-WITH-SEAFORTH.

Seaham Harbour Seaport and urban district of Durham, 5 m. from Sunderland, on the L.N.E. Rly. From a small village the place grew into a populous and thriving industrial district after the coal mines were opened. The harbour is a fine modern structure. Industrial activities include iron founding, chemical works, and blast furnaces. Pop. (1931) 19,394.

Sea Heath Perennial herb (*Frankenia laevis*). It grows on land that is impregnated with salt, and has a wide range, being found not only in Western Europe, but also in Asia and Africa. The flowers are small and rose-coloured, the leaves are oblong, and the stems are covered with down.

Sea Holly Perennial herb (*Eryngium maritimum*). It is found on sandy sea coasts. The leaves are rounded in shape, tough and of a leathery consistency, and are furnished with sharp spines. The flowers are bluish-white, and are grouped in a dense head.

Sea Horse Small fish (*Hippocampus*) allied to the pipe fishes. Sea horses range from two inches to a foot in length. They are found mostly in tropical seas, but one species, *H. antiquorum*, is common in the Mediterranean, and occasionally visits the southern shores of Britain. The exterior is bony, and the name is due to the shape of the fore part of the body, and the way in which the head is set on the trunk.

Sea Kale Perennial herb (*Crambe maritima*) of the natural order *Cruciferae*. It is common in the wild state on the coasts of Europe, and is widely cultivated in Britain as a vegetable.

Seal One of a group of carnivorous sea mammals, having long tapering bodies and short limbs equipped with paddles. The true seals, *Phocidae*, constitute with the walruses the suborder *Pinnipedia*. Seals are found chiefly in Arctic and Antarctic waters, but many species are visitors to and residents on British coasts. They are hunted for their skins and their blubber.

Seal Piece of some plastic substance impressed with a device and used to authenticate a document, or furnish proof of the integrity of a package, etc. Sealing wax, a mixture of shellac, turpentine, etc., or lead forms the matrix, and the die (also termed the seal) is made of hard stone, or of metal. Seals are used by corporate bodies and companies. Writs, and copies of documents to be used as evidence, must be sealed with the appropriate official seal. *See* GREAT SEAL.

Secret instructions contained in a sealed cover and hence called **sealed orders**, are sometimes issued to a naval commander, the envelope, etc., to be opened only after sailing.

Sea Lavender Genus of plants (*Limonium*) of the natural order *Plumbaginaceae*. The sea lavenders are common shore plants in temperate regions, and have bluish-purple flowers. The calyx is tough, and keeps its shape for a considerable time after the seeds have dispersed, and the plants are often dried and used for winter decoration.

Sea Lion Another name for the fur seal. Sea lions differ from the true seals in having a more pointed muzzle, and the hind limbs separate from the tail, and in other respects. They spend more time out of the water than the true seals. The Labrador sea lion is the principal source of the seal skin of commerce. The kind usually seen in circuses is the black Californian sea lion.

Seaman **Sir Owen.** Born in 1861, he was educated at Shrewsbury and Cambridge, and became assistant master at Rassal, 1884; Professor of Literature, Durham College of Science, Newcastle, 1890; and barrister of the Inner Temple, 1897. He joined the staff of *Punch*, 1897, and was made editor in 1906. He was knighted 1914, and made a baronet in 1933. He was a skilful versifier and brilliant parodist, and was the author of a number of topical articles and books, notable among them being *Made in England* (1916), and *From the Home Front* (1918), stirring verses written during the Great War. *Interludes of an Editor* appeared in 1929. He resigned the editorship of *Punch* in 1933, and died on Feb. 2, 1936.

Sea Mouse Name commonly applied to a worm (*Aphrodite aculeata*) of the order *Polychaeta*. It is often found cast up by the sea along the coasts of Britain. It rarely exceeds 5 inches in length, and has a fat oval segmented body set with bristles.

Sea Otter Carnivorous mammal (*Lutax*) allied to but larger and more massive than the true otter. The skin is remarkably loose, and the beautiful brown fur is very valuable. Unlike the true otter, the sea otter feeds on molluscs, crustaceans, and sea urchins, not on fish. The chief habitats are the Aleutian Islands and Alaska.

Sea Perch Fish (*Serranus cabrilla*) allied to the sea bass, also known as the comber. About 10 in. long, it is sometimes found off the southern coasts of England, a visitor from the Atlantic. It also occurs in the Mediterranean and the Red Sea. The body is red with wavy blue or white lines on the sides. The lower jaw is underhung.

Seaplane Type of heavier-than-air craft so constructed as to be able to land on or arise from the water. Seaplanes may be divided into three classes: (*a*) Amphibians, those able to alight or take off from land or water; (*b*) Float Planes, fitted with floats; (*c*) Flying boats whose landing gear consists of boats. Of these three types the float planes have accomplished the world's speed records, the flying-boats being most suited to ocean travel.

Sea Power Term used for naval strength. Some historians consider that command of the sea has been

the decisive factor in the world's great wars. Superior sea power made possible the defeat of the Persians by the Greeks and of the Carthaginians by the Romans. It was the dominance of Great Britain at sea that made possible her victories of the 18th and early 19th centuries and the creation of her overseas empire. Finally, the strength of the British Navy made certain the victory of the Allies over Germany in the Great War. The great work on the subject is A. T. Mahan's book, *The Influence of Sea Power upon History.*

Sea power thus depends upon the strength of a navy. Before the Great War Britain had much the strongest navy in the world, and for long it was a cardinal principle of her policy that her navy should be as strong as those of the next two strongest powers combined. The Great War changed the position entirely. The United States claimed naval parity with Great Britain and in the opinion of some the development of aircraft has seriously affected naval action and importance. *See* NAVY.

Searchlight A powerful lamp usually behind some form of louver shutter, the light from which is reflected from a parabolic mirror, this ensuring the emission of a beam of parallel light.

Searchlights are used in naval and military warfare for signalling and for finding a desired target, and for the illuminating at night of dangerous channels for merchant ships. In favourable weather ships can signal with searchlights for more than 50 m., that is for more than horizon distance, and their speed of transmission is limited only by the defects of the human eye.

Sea Serpent Snake-like marine monster claimed to have been seen in various seas. Legend is rich in tales of sea serpents, and many circumstantial accounts exist of their appearance in modern times. Although it is just within the bounds of possibility that such animals exist, such appearances can usually be explained in other ways. Thus a school of porpoises, or even a flight of sea birds, in certain conditions may present an appearance not unlike that of a single snake-like creature.

Sea-sickness Indisposition caused by the pitching and rolling of a boat at sea, characterised by loss of appetite, giddiness, nausea, and often actual sickness.

Treatment.—The remedies prescribed vary with the severity of the trouble and the idiosyncrasy of the patient. Milk and soda water, and iced champagne are among effervescing beverages that may have a beneficial effect, but very moderate amounts of alcohol should be used. Except in very serious cases drugs are not advisable.

Sea Snake Family of tropical aquatic reptiles (*Hydrophiinae*) of the Indian and Pacific Oceans. Ranging from three to eight feet in length, they are marked with bands of contrasting and usually bright colours. They move with difficulty on land, but are very active in the water, in which they can remain for long periods. Their bite is very poisonous. One species in the Philippines lives in fresh water. All the sea snakes are viviparous.

Sea Squirt Name used for the ascidians, marine animals of the order *Tunicata.* They have the form of a two-necked bottle, and are found clinging to rocks along the coast.

Seaton Pleasure resort and urban district of Devonshire. It is on the Axe, 7 m. from Axminster and 148 from London, on the S. Rly. There is a golf course and good bathing. Pop. (1931) 2351.

Seaton Delaval Urban district of Northumberland. It is 6 m. from North Shields, on the L.N.E. Rly. It is a coal mining centre. Near is **Seaton Delaval Hall,** the seat of Lord Hastings. Pop. (1931) 7377.

Sea Trout Another name for the salmon trout. It was long regarded as a separate specimen, but in accordance with the modern tendency it is now treated simply as a migratory form. Like the salmon, it feeds in the sea, but ascends the rivers for spawning.

Seattle City and seaport of the state of Washington, U.S.A., between Lake Washington and Elliot Bay. It is a very important Pacific seaport, trading largely with Alaska. Lumbering and shipbuilding are among the most prominent industries, and there are manufactures of furniture, lumber products, leather goods, and flour. In 1889 almost the entire business quarter was destroyed by fire. The city is the seat of Washington University. Pop. (1930) 365,583.

Sea Urchin (*Echinus*). Sea animal with tough, leathery, prickly skin, belonging to the order *Echinoidea.* The common sea urchin (*E. esculentus*), valued as food in the Mediterranean, is not uncommon off Britain. The stony case enclosing its body is studded with long spines in which are embedded organs with which this animal snaps at its prey.

Seaweed General name for a large number of the spore-bearing plants known as algae, which grow on the sea bottom at distances ranging from high-water mark to a depth of some 600 ft. There are no roots, every part of the plant body having the power of taking in nutriment.

Sebastian Saint and martyr. He was an officer in the Praetorian Guard, and became an ardent Christian. In 288 Diocletian ordered him to be put to death; though pierced with arrows, he managed to recover, but was then clubbed to death. His martyrdom is the subject of numerous paintings.

Second Advent Term for the expected second coming of Christ on earth. Among the early Christians, as among certain modern sects known as Adventists, the Second Advent was regarded as being close at hand.

Secondary Official of the corporation of the city of London. His duty is to prepare the list of the liverymen entitled to vote at elections for members of Parliament.

Second Ballot Plan used at certain elections. It is used when it is necessary for a candidate to receive an absolute majority of the votes cast, in order to secure election. If no candidate secures this majority at the first ballot, a second one is taken, with the candidates lowest on the list left out. In elections for the President of the German Republic, a second ballot is taken a month after the first if no candidate receives the votes of half the electors, this being necessary to secure election. On the second ballot a bare majority is sufficient for election.

Second Chamber Term used for one of the houses of a legislature, the members of which are not as a rule elected directly by the people. It is

usually called the upper house. In the British second chamber, the House of Lords, the basis of membership is heredity. In the United States, Canada, and other federal countries, its members are chosen by the separate states: in the United States each state sends the same number (two) whether it is densely or sparsely populated. In some second chambers, the members, or a proportion of them, are nominated by the king or president, or by the government.

A second chamber is regarded as necessary in order to act as a check on the first, or elected house, but there is a tendency to limit its powers, as with the House of Lords, and in one or two cases the second chamber has been abolished.

Second Empire Name applied to a period in the history of France extending from Dec. 2, 1852, when Louis Napoleon, after overthrowing the Second Republic, became emperor as Napoleon III., to Sept. 4, 1870, three days after the Battle of Sedan, when the Third Republic was set up.

Second Lieutenant Officer in the British army. This is the lowest rank of commissioned officer, and cadets enter the service as second lieutenants. One star is worn as a sign of the rank.

Secretary Term used for a person who attends to the correspondence, records, and general business of a company or other business concern, society, or individual, and also for a minister in charge of a government department. The interests of secretaries are looked after by the **Chartered Institute of Secretaries**, which was established in 1891 and incorporated by Royal charter in 1902. This body not only holds examinations in secretarial duties, but also provides instruction by means of lectures.

SECRETARIAL WORK AS A CAREER. The term "secretarial work" is generally used to designate the higher paid and more confidential branches of the profession, but we may consider here under that general heading all kinds of office and clerical work.

In this class of work women are gradually gaining an almost complete monopoly. Some of the earliest openings for women occurred in office work. Commencing as clerks, typists, and book-keepers, women have worked their way up and through all grades and kinds of office work, and except in some old-fashioned firms and "close" occupations, they appear to be practically ousting men from this particular field.

Training for the lower paid grades of office work is supplied by the numerous business and commercial colleges throughout the country and to a growing extent by commercial courses in secondary schools. The subjects required are good elementary English and arithmetic, shorthand, typing, book-keeping, filing and indexing. A foreign language, either French or Spanish, is an advantage.

The number of young shorthand typists, clerks, and book-keepers seeking employment is greatly in excess of the vacancies for them, and special qualifications are necessary if remunerative work is to be easily found. But of no other profession can it be so truly said that "there is plenty of room at the top of the ladder," for there is undoubtedly a large unsatisfied demand for just the right kind of capable woman office-assistant.

A **Private Secretary**, in addition to being an expert shorthand-typist, must be able to conduct correspondence on her own initiative. She is usually required to keep books, as she often has control of her employer's private business. Successful fulfilment of the post is largely a matter of character, for every well-qualified woman will not make a good secretary. The essential characteristics of a good private secretary are adaptability, willingness, tact, discretion and initiative.

Secretary Bird (*Serpentarius secretarius*). Long-legged, long-tailed African bird allied to the vultures. In appearance resembling the heron, it feeds chiefly on snakes. The plumage is grey, black, and white. It takes its name from the tufts at the back of its head, which look not unlike quill pens stuck behind the ear.

Secretary of State Title given to the officials in charge of various important British government departments. The name was first used in the reign of Elizabeth for two officials who assisted the sovereign. After the accession of William III. one secretary of state was put in charge of northern affairs and the other of southern. About a century later, one looked after home affairs and the other after foreign.

Nowadays the secretaries of state comprise the Home Secretary, and the secretaries for foreign affairs, for colonial affairs, for war, for air, for Scotland, for India, and for the Dominions. They are all in the Cabinet.

Secret Service Intelligence department of a State which procures information about military, naval, political, and other matters. In connection therewith is usually a system of secret agents in other lands, who furnish intelligence as required by their employer. In war time this work becomes of enhanced importance, and the domiciled agents are supplemented by men and women detailed for espionage and secret service in enemy or neutral countries. During the Great War aeroplanes were used to convey agents into enemy terrain.

Secret Society Association of people whose common object and activities are known only to initiates. The aims of such societies are very various; some are political, others religious, others are formed for mutual help. In antiquity they take such form as the famous mysteries of Greece. Among secret societies of modern times may be mentioned such diverse associations as the Freemasons, the Italian Camorra, the Ku Klux Klan of America, and the Boxers in China.

Secularism System that rejects all belief in God, religion, and a future life. It was founded in England by G. J. Holyoake, and took up an attitude of opposition to all religion. Its foremost advocate was Charles Bradlaugh, and to forward the ideas the **National Secular Society** was founded. By this society a good deal of literature has been issued.

Secunderabad British military station in the state of Hyderabad, 6 m. from the capital and 390 from Madras, 1850 ft. above sea level. It is the headquarters of a brigade of infantry, and near by is the headquarters of a cavalry brigade.

Security Freedom from fear; protection or certainty. The word was much used in the years following the Great War, when one of the cardinal points of French policy was the demand that her eastern

frontier should be secured to her from invasion. The proposal that Great Britain and the United States should give a joint guarantee of security broke down, but some measure of security was given by the Pact of Locarno signed in Oct., 1925. *See* LOCARNO.

Sedan Town of France. In the dept. of Ardennes, on the Meuse, 164 m. N.E. from Paris, it is a centre for textile manufacture. Here, on Sept. 1, 1870, Napoleon III. surrendered to the Germans, with 86,000 of the French Army. During the Great War the town was in German hands, and was taken by French and American forces late in 1918. Pop. 18,235.

Sedan Chair Covered chair used largely in the 18th century. It was carried by bearers by means of poles, and was the usual means of transport in towns for ladies of quality.

Sedbergh Market town of Yorkshire (W.R.), 28 m. S.S.E. of Penrith, on the L.M.S. Rly. **Sedbergh School** was founded in 1528 by Roger Lupton, Provost of Eton, suppressed by Henry VIII., and refounded in 1551. Formerly a grammar school, it was opened as a public school in 1874. Pop. (1931) 3570.

Sedd-el-Bahr Village on the peninsula of Gallipoli. Situated on the N. side of the entrances to the Dardanelles, its position possesses great strategic significance. Its fortifications, which date from the 17th century, were reconditioned by the Allies in the Great War, in which the place figured conspicuously.

Seddon **Richard John.** New Zealand statesman. Born at Eccleston, Lancs. in 1845, at the age of 18 he went to Australia, and in 1866 joined his brother in a mining venture in New Zealand. He entered the legislature there in 1879, becoming Minister for Public Works, Defence, and Mines in 1891. He was Premier from 1893 till his death, June 10, 1906.

Sedge Plant of the genus *Carex* occurring in many temperate, Alpine and Arctic areas. The common bullrush is an example. Some can exist in dry places, *e.g.*, *C. arenaria*, useful as a sand-binding plant, but they are mostly swamp plants, dying out when the land is drained.

Sedgefield Town of Durham. It is 9 m. from Stockton-on-Tees, on the L.N.E. Rly. Cattle markets are held here.

Sedgeley Urban district of Staffordshire. It is 3 m. from Wolverhampton, on the L.M.S. Rly. The chief industry is the manufacture of hardware, while around it are coal mines. Pop. (1931) 19,261.

Sedgemoor **Battle of.** Conflict between the forces of James II. and the Duke of Monmouth, fought July 6, 1685, on the marshy tract of that name in Somerset, 5 m. from Bridgwater. In number the opposing forces were about equal, each side having about 4000 or 5000 soldiers. But James's men were well trained and armed, while the forces of Monmouth consisted chiefly of clumsy and ill-equipped peasants, and the battle resulted in the rout of Monmouth's army.

Sedition Any words or acts directed against authority, which may have the effect of bringing the sovereign or the government into contempt or hatred, or, generally, which may disturb the tranquillity of the State.

Sedley **Sir Charles.** English wit and dramatist. Born in 1639, the son of Sir John Sedley, Aylesford, Kent, he was educated at Oxford. A great patron of literature during the Restoration period, his best known song is "Phyllis is My Only Joy," his best known comedies, *The Mulberry Garden* and *Bellamira*, and tragedies *Anthony and Cleopatra*, and *The Tyrant of Crete*. For some time he was M.P. for New Romney, Kent. He died Aug. 20, 1701.

Seduction Literally enticing from virtue, but used especially of the act of depriving an unmarried woman of her chastity. The English law on the subject is that this is a wrong, not so much against the woman herself, as against her parent or employer, who can sue the seducer for damages because he has deprived him of the woman's services. In Scotland the woman herself can bring an action for damages against her seducer.

Seed Term for the part of higher plants from which a new individual arises. It consists of an embryo and a supply of food, developed during the life of the parent plant and subsequently becoming detached, when it is capable of germinating to form a new plant. The seed is provided with a protective covering and means whereby its dispersal from the neighbourhood of the parent plant is assured.

Seeley **Sir John Robert.** English historian. Born Sept. 10, 1834, he became Professor of Latin at University College, London, in 1863, and Regius Professor of Modern History at Cambridge in 1869. His *Ecce Homo*, issued anonymously in 1865, caused immense controversy in religious circles. For his famous essay, *The Expansion of England* (1883), he gained the K.C.M.G. He died Jan. 13, 1895.

Seely **John Edward Bernard.** British politician. Born May 31, 1868, he was educated at Harrow and Cambridge, and was called to the Bar in 1897. He served with distinction in the S. African War. Entering politics, he was M.P. for the Isle of Wight, 1900-06 and 1923-24; for the Abercromby division of Liverpool, 1906-10; and for the Ilkeston division of Derby, 1910-22. He was appointed Under-Secretary for the Colonies, 1908-10; Under-Secretary for War, 1911; Secretary of State for War, 1912-14; Under-Secretary for Air, 1919. In 1933 he was made a baron, and took the title of Lord Mottistone of Mottistone. He is Chairman of the National Savings Committee.

Sefton **Earl of.** Irish title borne by the family of Molyneux. In 1628 Sir Richard Molyneux was made a viscount, and in 1771 the 9th viscount was made an Irish earl. The earl's seat is Croxteth Hall, near Liverpool, and his eldest son is called Viscount Molyneux. A residential district in Liverpool, of which the land is the property of the earl, is called **Sefton Park.**

Seine River of France. It rises near Dijon, and flows in a north-westerly direction, entering the English Channel by an estuary at Havre. Commercially the most important river of France, it flows past Paris, Rouen and Troyes, among other places. Its tributaries include the Marne, the Oise, the Aube, and the Yonne. It is connected by canals with the cities of Belgium, the Loire, and the Rhine. Its total length is 480 m.

Seine Net Type of net used for catching large numbers of fish such as mackerel, herring, pilchards, bass, etc. The

extended net is kept vertical by means of cork floats secured at the top and leads attached to the bottom, the two ends finally being drawn together, either on a beach or into a boat.

Seipel **Ignaz.** Austrian priest and statesman. Born in Vienna, July 19, 1876, he was a professor at Salzburg and Vienna Universities. The Austro-Hungarian monarchy fell in October, 1918, and Seipel became leader of the Conservative element. He became Chancellor, May 31, 1922, reconstructing the nation, mainly by sound financial measures. He resigned in 1924, but took office in 1926, at the head of a Christian-Socialist-Pan-German coalition, which favoured co-operation with Germany, with maintenance of all treaties. He died Aug. 2, 1932.

Seismometer Instrument also known as a seismograph used for detecting and registering vibrations of the earth's crust, and especially those of earthquakes. The apparatus is very delicate and elaborate, and consists essentially of a revolving drum with a smoked surface upon which pens connected with suspended weights mark in zigzag lines both horizontal and vertical earth tremors. In some seismometers the direction of the horizontal movements, whether east and west or north and south, also are recorded.

Selangor State of the Federated Malay States. It is between Perak and Negri Sembilan, and has a coastline on the Strait of Malacca. Kuala Lumpur is the capital, and the chief river is the Klang. The state is governed by a sultan who is under British protection and who lives at Klang. The area is 3150 sq. m. Pop. (1931) 533,197.

Selborne Village of Hampshire, 5 m. from Alton and 52 from London, on the S. Rly. There was an abbey here and the place was once a market town. It is chiefly known as the home of Gilbert White, the author of *The Natural History of Selborne*. His house still stands. In 1932 the grove here, known as the **Selborne Beeches**, was presented to the nation by Magdalen College, Oxford.

The **Selborne Society** exists to preserve bird and plant life from destruction. It was founded in 1885.

Selby Urban district and market town of Yorkshire (W.R.). It is on the Ouse, 14 m. from York, and is served by the L.N.E. Rly. and a canal. It is an agricultural centre, and has one or two industries as well as a little shipping, as from here the Ouse is navigable. Selby is chiefly famous for its abbey church, a cathedral in size and magnificence, which though damaged by fire in 1906, has since been repaired, the central tower having been rebuilt in 1912. The abbey, to which it belonged, was a Benedictine house founded in 1069. Pop. (1931) 10,064.

Selden **John.** English jurist. Born in 1584, at 22 he brought out his first work, dealing with Britain's civil government before the Conquest, and followed it with a long line of treatises on legal and other topics. He was a member of Parliament for several years, and took an active part in public affairs till his death. He suffered imprisonment twice, once for his share in the drafting of the Petition of Right. He died Nov. 30, 1654.

Selection Term used by biologists, chiefly in connection with the evolution of man and the lower animals. **Natural selection** is the process by which nature provides that the better males shall mate with the best females, the weaker being killed. Combat plays a large part in this process, and so the qualities of strength and courage are perpetuated at the expense of weakness and cowardice. **Artificial selection** is adopted in the breeding of animals, for instance, racehorses, where only the best of each sex are used for breeding purposes. *See* EVOLUTION.

Selene In Greek legend the goddess of the moon. She was a daughter of Hyperion, the sister of Helios and Eos, Sun and Dawn. She loved Endymion. The goddess travelled across the sky in a chariot drawn by two white horses. In later days she was identified with Artemis.

Selenium Chemical element having the symbol Se and atomic weight 79·2. Selenium was discovered by Berzelius in 1817 in the waste from the manufacture of sulphuric acid. It resembles sulphur in its chemical relations, and in having several allotropic forms. Selenium increases its electrical conductivity by exposure to light, and therefore is used in such instruments as the optophone, and in types of talking film projection.

Seleucia Two cities of the ancient world. One was on the Tigris, and was important at the opening of the Christian era. The other was the port of Antioch. Both were built in 300 B.C. by Seleucus I., King of Syria, a general of Alexander the Great, who was the founder of a dynasty that ruled over Syria and adjacent parts of Asia Minor from 312 to 65 B.C., when Syria was conquered by the Romans.

Self-Determination Term meaning the right of a nation to decide on its own form of government. It was much used during the rearrangement of territory in Europe that took place after the Great War.

Selfridge **Henry Gordon.** American business man. Born in Wisconsin, Jan. 11, 1864, from 1890 to 1903 he was a partner in the great firm of Marshall, Field & Co., in Chicago, and in 1909 settled in London, where he founded a store in Oxford Street. This became one of the largest concerns of its kind, and acquired branches in many parts of London. He wrote *The Romance of Commerce*.

Seljuk Founder of a Turkish dynasty. He was leader of his tribe in Asia about A.D. 1000, and his descendants became powerful in Asia, but, after ruling over a great empire which was at the height of its power in the 12th century, the Seljuks gradually lost their lands, and disappeared about 1300.

Selkirk Burgh and county town of Selkirkshire, 40 m. from Edinburgh, by the L.N.E. Rly. The manufacture of woollen goods is the chief industry, and the burgh has a racecourse. Pop. (1931) 5067.

Selkirk Range of mountains in British Columbia, in the S.E. of the state. Dawson (11,000 ft.) is the highest peak, and there are others over 10,000 ft. high. Roger's Pass in the mountains is crossed by the C.P. Rly.

Selkirk **Alexander.** Scottish sailor. He was born at Largo in 1676 and went to sea as a boy. In 1703 he went to the South Seas under William Dampier, but for insubordination was put ashore at Juan Fernandez. He was there for over four years, and from his stay Defoe obtained the idea for

Robinson Crusoe. After he had been taken off the island Selkirk returned to the sea, and he died at sea, Dec. 12, 1721.

Selkirkshire County of S.E. Scotland. It covers 267 sq. m. Selkirk is the county town, but Galashiels is larger. It is a hilly district famed for its beauty, and was once covered by the forest of Ettrick. The rivers are the Tweed and the Yarrow, and among the lochs is the picturesque St. Mary's. It has many historic buildings and was the scene of much border warfare, some of it immortalised by Scott. Sheep rearing is the chief industry. Pop. (1931) 22,608.

Selle River of France which rises near Le Cateau and flows N. into the Schelde. The **Battle of the Selle** was fought in the Great War, Oct. 17 to 25, 1918, between the British-American forces and the Germans, and resulted in a victory for the Allies, remarkable for the number of guns captured.

Selous **Frederick Courtney.** British explorer and big-game hunter. Born in London, Dec. 31, 1851, he was educated at Rugby and in Germany. He began his explorations in 1871, hunting over large tracts of practically unknown territory in Southern Africa. In 1890 he acted as guide to a British South Africa Company's expedition to Mashonaland, his travels being described in *Twenty Years in Zambesia*, and he took part in and wrote an account of the first Matabele War (1893). He was killed in the East African campaign, Jan. 4, 1917. His extensive collection of trophies is in the National History Museum, London.

Selsey Watering place of Sussex. It is 8 m. from Chichester and 77 from London, and is reached by railway or motor coach from there. It is now a popular centre for holiday makers. Selsey Bill is at the end of the peninsula. The older Selsey, now under the sea, was the seat of the Bishop of the South Saxons until 1075.

Selston Town of Nottinghamshire. It is 9 m. from Mansfield and has stations on the L.N.E. and L.M.S. Rlys. The staple industry is coal mining.

Semaphore Signalling apparatus used chiefly on warships and consisting of an upright post with two arms turned on pivots by means of levers or cords. The different positions of the arms indicate different letters of the alphabet. The signals on railways are also a form of semaphore adapted to railway signalling.

Semiramis Legendary founder, with her husband Ninus, of the Assyrian Empire of Nineveh. She is sometimes regarded as another manifestation of the goddess Astarte, deity of fertility, and the whole story has an Eastern flavour. Her reign lasted forty-two years, and eventually she abdicated in favour of her son, herself flying up to heaven as a dove.

Semite Name given originally to any descendant of Shem, Noah's son. The anthropological classification is made more by language than by race, and includes Arabs and Jews, of modern races, and Phœnicians and Sabæans of ancient races. The Jewish nose, generally regarded as typically Semitic, is not really so, since the Jews are of mixed race. The true Semitic nose is straight or aquiline.

Semolina Cereal food made from the coarse particles of wheat produced during grinding. It has considerable nutritive value, and is used in the manufacture of paste foods such as macaroni.

Sen Japanese coin. It is the 100th part of a yen, and is worth about a farthing. It is coined in 10, 20, and 50 sen pieces.

Senate Governing body of Rome, which originally comprised one hundred members, all patricians. As time passed this number grew until it reached 900, and was then fixed by Augustus at 600. Members who were considered unfit for their office could be deprived of it by the Censor.

In the modern world the name Senate has been adopted by various states for the upper houses of their legislatures. In the United States the Senate is the second chamber, and has existed since the foundation of the republic. The French Senate, also the second chamber, dates from 1799. South Africa and Australia have Senates formed by a given number of representatives from each state.

The word is also used to designate the governing body of a university or other learned institution.

Seneca **Lucius Annaeus.** Statesman and philosopher. He was born in Cordova *c.* 4 B.C., and studied philosophy and rhetoric in Rome. Entrusted with the education of Nero by Agrippina, his mother, he exercised for five years an excellent influence over his pupil, but unfortunately this did not last, and, as emperor, Nero tried to poison him. Later, found guilty of conspiracy, he was condemned to death, A.D. 65. Seneca was one of the noblest characters of his times. He was the author of several tragedies, *Oedipus*, *Medea*, etc., and many philosophical dissertations.

Senegal French colony in W. Africa. It covers 74,112 sq. m. The capital is St. Louis, and Dakar and Rufisque are important towns. Agriculture is the principal source of wealth. The main export is ground nuts, with hides and rubber secondary. The colony is administered by a lieutenant governor, and sends a deputy to the Chamber of Deputies in Paris. Pop. (1931) 1,584,273.

Senegambia Name no longer in use, formerly applied to a region in West Africa lying between the Senegal and Gambia rivers. The area is now divided into French Guinea, Senegal and Upper Senegal and Niger.

Senna Medicinal shrubs and herbs of the natural order *Leguminosae*. The drug, useful as a purgative, is made from the dried leaves. The plants grow mainly in tropical climates, and of the several different varieties *Cahassia acutifolia*, or Alexandrian senna, provides the best quality. The seed pods are used as a laxative.

Sennacherib King of Assyria. He reigned about 702-681 B.C. Events during his reign are somewhat obscure, but we know that he conquered Phœnicia, ravaged Judæa and unsuccessfully besieged Jerusalem. He was responsible for great public works, such as an embankment along the Tigris, the building of many canals, and the erection of an enormous palace at Nineveh. He was murdered by his two sons.

Sennar District of Sudan, lying N.W. of Abyssinia, below Khartum. The capital is Singa. Sennar is another important town. Here there is a great dam, opened in 1926, to control the irrigation of that part of the country over an area of some 3,000,000 miles. 9925 ft. long, it is known also as the Makwar dam.

Sensitive Plant Tropical American herbaceous perennial (*Mimosa*) of the order *Leguminosae*. It is sensitive to contact, and the leaflets into which the leaves are divided fold together at the slightest touch, the stalk drooping. Mimosa is cultivated as a hot-house plant.

Senussi Moslem sect, whose original headquarters were at Alexandria. It was founded in 1835 by Sidi Mahomed ben Ali es Senussi, who died in 1859. Its tenets are an attempt to return to the simple doctrines of the Koran. The sect has been in collision with the French authorities from 1902 onwards. During the Great War there was a rising which was finally put down in 1916 by British and Italian troops.

Sepal Botanical term for the individual leaves of the calyx or outer whorl of a flower. Usually the sepals are green and serve to protect the young flower in the bud. In some cases the calyx may be coloured like the petals, or may persist as a silky pappus of hairs for seed dispersal.

Separation In law a separation of husband and wife. They may agree to live apart from each other, a deed of separation thereupon being drawn up. A judicial separation is a decree of the high court, granted on proof of cruelty or adultery; or of desertion for two years or more; or upon failure to obey a decree of the court for restitution of conjugal rights. A magistrate's separation order may be granted to a married woman if her husband is convicted of assault upon her, or is guilty of persistent cruelty or wilful neglect to provide for her or her children, or if he has deserted her. An order may be made for the payment of a weekly sum for maintenance. Habitual drunkenness on the part of either husband or wife is a ground for a separation order against the offending partner.

A **separation allowance** is money paid to the wife or other dependents of a soldier or sailor on active service.

Sepia Generic name of the cuttle-fishes, a group of cephalopodous molluscs allied to the octopus. The calcareous internal shell or "bone" has various economic uses, and the ink-bag was the original source of the transparent brown pigment known as sepia. This pigment, however, is now made usually from the juice of walnuts.

Sepoy Indian soldiers in regiments commanded by British officers. The word comes from the Persian *sipahi* (army), and is allied to the French *spahi*. Sepoy regiments were first employed in Europe during the Great War in 1914. Among the best-known are the Gurkhas, the Sikhs, and the Pathans.

Sepsis Infection of a wound or other bodily surface by pus-forming organisms, a condition ranging from a gathering to general septicaemia.

Septic Adjective applied to a condition where sepsis (*q.v.*) is present. **Antiseptics** are remedies against already existent sepsis. Asepsis is the elimination of all possible bacteria before an operation, *i.e.*, surgical cleanliness.

Septuagesima Word derived from a Latin word meaning seventieth. Septuagesima Sunday is the third Sunday before Ash Wednesday.

Septuagint Greek translation of the Old Testament (known by the symbol LXX). It is traditionally ascribed to 70 or 72 scholars working under the patronage of Ptolemy Philadelphus at Alexandria in the first half of the third century B.C. There is no reason to doubt this tradition so far as it applies to the Pentateuch. The remaining books were translated at various unknown periods during the next 150 years.

Sequestration Depriving a person of property by legal means. It is used in Scots law for taking possession of the property of a bankrupt. In the ecclesiastical law of England, if the incumbent of a living owes money a writ of sequestration can be obtained—this enables the bishop to take possession of the income of the living and to pay the debts.

Sequoia Genus of the *Coniferae*, found on the west coast of N. America comprising the red-wood of California (*S. sempervirens*) and the "big trees" of the Sierra Nevada (*S. gigantea*). They grow to 300 ft. or over, the latter having an enormous trunk. Some trees are estimated to have been over 3000 years old when felled.

Serajevo Now more usually spelt Sarajevo or Sarayevo, a city of Yugoslavia. It is situated on the Miljacka and is connected by rail with Belgrade, 122 m. away. The principal industries are silk-weaving, dyeing, and pottery. Here the Archduke Francis Ferdinand of Austria and his wife were assassinated in 1914, an event which precipitated the Great War. Pop. (1931) 78,182.

Seraphim Angelic beings, in constant attendance upon Jehovah. Isaiah, in the vision told of in chapter vi of his book, describes them as having three pairs of wings each. The same word in the Hebrew is sometimes translated as serpent. It is therefore possible that the original conception of seraphim may have been connected with serpent worship.

Serapis Graeco-Egyptian deity. The centre of worship was at Alexandria. He seems to have been the Greek manifestation of the Egyptian god Apis assimilated to Osiris and to have symbolised fertility. He was generally represented as a bearded figure with a basket on his head.

Serbia Name formerly given to a kingdom which now forms the eastern part of Yugoslavia. It is 36,937 sq. m. in area. An empire of considerable extent in the Middle Ages, Serbia fell under Turkish domination after the battle of Kossovo (1389). Nineteenth century nationalism led to a movement for independence, ultimately successful in 1878, and the kingdom was considerably enlarged after the Balkan Wars of 1912-13. Serbia took part in the Great War on the Allied side, was defeated and overrun. On the conclusion of peace in 1918 the reconstituted kingdom was united with Montenegro and became the principal part of Yugoslavia (*q.v.*).

Sergeant Non-commissioned officer of the British Army. The **sergeant-major** is the senior regimental non-commissioned officer. In the police force sergeant is the rank between constable and inspector.

Serjeant-at-Arms Officer of the Houses of Parliament. He is usually the mace-bearer and his duty is to precede certain dignitaries. Thus a serjeant-at-arms precedes the Lord Chancellor, bearing the mace, and another precedes the Speaker. He is also charged with the enforcement of order and discipline.

Serjeant-at-Law Until 1880 the highest class of barrister. Serjeants' Inn in Fleet St., London, was the property of the Serjeants-at-Law until 1877. They had the monopoly in the court of common pleas until 1845 and wore a kind of skull cap as distinctive badge.

Serjeanty Form of land-holding under the feudal system. Service was rendered to the overlord in return for tenure. This was not knight-service, but consisted of some kind of household service. Such tenure was midway between the tenure by knight-service and that of socage. It was divided into grand and petty serjeanty according to the type of duty performed.

Serjeants' Inn Two former Inns of Court in London. Old Serjeants' Inn stood at the corner of Chancery Lane, near Clifford's Inn. The other, whose name still remains, though since 1877 no longer an inn, is a court off Fleet Street, now occupied by insurance companies and other offices.

Serpent Name applied to the reptiles of the order *Ophidia*, comprising the snakes. Popularly, it denotes the larger species.

The serpent cult is found in many countries, and is very ancient. It was prominent among Semitic peoples and the Greeks had the cult of Aesculapius, the deity of healing, in whose temples was a living serpent. The **brazen serpent** of Moses was a healing medium, and the symbolic association of the serpent with healing has persisted to modern times, the badge of the R.A.M.C., for example, being Aesculapius' symbol, the staff entwined by a serpent.

Serpentine Name of a mineral consisting of magnesium silicate, and regarded as a decomposition product of igneous rocks rich in ferro-magnesian silicates. Serpentine occurs in massive form, often as rock-masses, and varies in colour from green to black, usually with veins or spots of red, blue, green, etc. It is soft, easily worked, and from early times has been used for ornamental purposes, a well-known example being the serpentine from the Lizard, Cornwall.

Serpentine **The.** Artificial stretch of water in Hyde Park and Kensington Gardens. It was made by the order of Queen Caroline in 1730, the Westbourne river, or stream, forming a series of ponds here, which were connected to form the Serpentine. In 1834 the Westbourne having greatly decreased in volume, the supply of water had to be supplemented from the Thames, as it is to this day.

Serum Term given to the plasma or watery fluid portion of the blood that separates out as the result of coagulation. The plasma holds, in solution, mineral salts, albumins, globulins, and extractives, as well as fibrinogen upon which depends coagulation of the blood. Various anti-toxic serums are prepared for use in the treatment of diseases.

Servant Person who works for another for payment, often called an employee. The relations between master and servant, or employer and employed, are regulated partly by law and partly by custom. A servant must be insured against ill-health and, in some cases, against unemployment.

Sesame Annual herbaceous plant of the genus *Sesamum*, being the most important species (*S. indicum*). It is cultivated in India and in eastern countries generally, on a very large scale. The oil expressed from the seeds is not so liable as some oils to become rancid, and is therefore popular for cooking purposes. It is also used for soap-making, lubrication, and illumination.

Session Literally, a sitting. It is applied to the sittings of the Parliament of Great Britain, and to those of other legislatures. A parliament consists of a number of sessions, each opened by the King or his representative and terminated by a prorogation. It is finally ended by a dissolution.

The **kirk session** is the term used in the Church of Scotland and other Presbyterian churches for the meetings of the minister and elders of an individual church.

Session **Court of.** In Scotland, the supreme court of law. It deals with civil cases only and sits in Parliament Square, Edinburgh. Its judges are senators of the college of justice, and are given the title of lord. They sit in two houses, inner and outer, the inner being a court of appeal from the outer. The inner house sits in two divisions, presided over by the lord president and the lord justice clerk respectively, there being four judges in each. The remaining five judges form the outer house.

Sessions In England, sittings of the lower courts of law. The judges are the magistrates, except that the recorder presides over quarter sessions in the towns. **Petty sessions** are held by two or more magistrates for dealing with minor offences; **quarter sessions** are held in the counties and in certain cities and towns for hearing more serious cases. There are also special sessions for licensing and other matters.

Sesterce Ancient Roman coin. Worth about 2½d. It was used as the unit for stating sums of money. The name means "two and a half."

Setter Large type of dog, used as a gun dog. There were originally two species, the pure white English setter and the chestnut brown Irish setter. From these was evolved a black-and-tan setter, first known as the Gordon setter, from the Duke of Gordon who bred it, but now officially designated the Black-and-Tan setter. Two other breeds are recognised, though uncommon—the Russian setter, with a thick, woolly coat, and the Welsh setter, with a curly coat.

Settle Market town of Yorkshire (W.R.). It is situated on the Ribble and served by the L.M.S. Rly. It is a good centre for people wanting to tour the neighbouring hill and caves, and has some small industries. Pop. 2389.

Settle Piece of furniture consisting of a long wooden bench with a high back, seen commonly in old inns and country houses. It was usually made of oak, and in some early examples was carved elaborately.

Settlement Disposal of property in trust by deed or will so that different persons are entitled to enjoy it in succession. An example is a marriage settlement, which creates a trust for the benefit (*a*) of the husband and wife during their joint lives, and the life of the survivor; (*b*) gives the income then to the issue of the marriage; and (*c*) directs the further disposal of the property thereafter. Property must not be tied up for an unlimited series of successions, and the law provides that the settlement must give possession absolutely to someone

within a period comprising a life-in-being and a further period of 21 years.

Settlement Act of. Measure enacted by Parliament in 1701. It settled the crown on Sophia, wife of the Elector of Hanover, and the heirs of her body, being Protestants. She was a grand-daughter of James I., and her son George, Elector of Hanover, became George I. of Gt. Britain in 1714. Other clauses declared judges irremovable as long as they did their duty and made the consent of Parliament necessary for the declaration of war in defence of territories not belonging to the crown of England.

Sevastopol (or **Sebastopol**). Seaport of Russia. It is built on the ruins of the old Sevastopol, destroyed during the siege (1854-55), which formed one of the chief episodes of the Crimean War (*q.v.*). To-day it is a popular watering place and also a grain port. It has a good harbour, and the principal industries are shipbuilding and wine-making. There is a broadcasting station (476 M., 1.2 kW.). Pop. 74,703.

Seven Dials District of London, so-called because seven streets meet here. It lies between St. Martin's Lane and New Oxford Street, and had at one time an unpleasant reputation. Modern improvements, street widening, etc., have altered the character of the region, which now contains theatres, restaurants and picture houses.

Seven Kings District of Essex, 8¼ m. from Liverpool Street station, by the L.N.E. Rly. It is mainly a residential neighbourhood and forms part of Great Ilford. The population is 10,000.

Sevenoaks Urban district and market town of Kent. A residential centre, 22 m. from London, by the S. Rly, it has a grammar school, founded in 1432, and a fine church with some interesting monuments. There is a famous cricket ground, the Vine, believed to be the oldest in England. Pop. (1931) 10,482.

Seven Weeks' War War fought in 1866 between Prussia (in alliance with Italy) against Austria. It resulted in the foundation under Prussian leadership of a new Germany, from which Austria was excluded, and the cession of Venetia to Italy. Prior to the war the diplomacy of Bismarck had isolated Austria, while Moltke and Roon had perfected the Prussian army. The decisive defeat of the Austrians under Benedek took place at Sadowa (or Koniggrätz) on July 2.

Seven Wonders of the World. In the ancient world seven works of man held to be supremely marvellous. They were: the Colossus of Rhodes, the hanging gardens of Babylon, the Pharos at Alexandria, the Pyramids of Egypt, Pheidias' statue of Jupiter at Olympus, the temple of Diana at Ephesus, and the mausoleum at Halicarnassus.

Seven Years' War War fought from 1756 to 1763 by an alliance of Austria, France and Russia against England and Prussia (under Frederick the Great). It had two aspects: (1) colonial, arising out of Anglo-French rivalry for colonies and trade-areas in America and India; (2) continental, due to the struggle between Austria and Prussia for Silesia. Both Britain and Austria suffered reverses at first, but under the energetic leadership of Pitt, the former soon began to gain the upper hand, and 1759 was a year of many victories, including the capture of Quebec by Wolfe. The war resulted in the ceding of Silesia to Prussia, and of Canada to Britain, the foundation of the British Indian Empire and the establishment of her naval supremacy.

Severn River of Britain. Rising on the slopes of Plinlimmon, Montgomeryshire, it flows into the Bristol Channel with a course of 210 m. A tidal bore prevents navigation for some miles from the mouth. Cities on its banks are Gloucester and Worcester, and its principal tributaries are the Wye, the Avon, and the Teme, on the second of which Bristol is situated. Fine salmon are caught in the river, the Roman name for which was Sabrina. The **Severn tunnel**, between Bristol and Cardiff, is over 4 m. long.

Severus Alexander. Roman emperor. Born A.D. 205, he was cousin of the infamous Heliogabalus, whom he succeeded in 222. Brought up by a wise mother, he was virtuous in an age when vice reigned almost supreme, and although a pagan, he respected the doctrines of Christianity. He was successful in an expedition against the Persians, but when he marched to Germany to defend the Roman frontier against the incursions of the Germans, both he and his mother were murdered during an insurrection among his troops in A.D. 235.

Severus Lucius Septimius. Roman emperor. Born in Africa, A.D. 146, he was made Roman praetor in 178, and after the murder of Pertinax (193) was proclaimed emperor, ruthlessly crushing opposition. He conducted a long and successful campaign in the east, which included the 3 years' siege and capture of Byzantium; he then overcame the Parthians, plundering their capital, Ctesiphon. Going to Britain in 208 to crush a rebellion, he repaired and added to Hadrian's wall, and died at Eboracum (York) in 211.

Sévigné Marie de Rabutin Chantal. Marquise de. French letter-writer. Born in Paris, Feb. 5, 1626, she was one of the most distinguished characters of her century, best known for her wonderful *Letters* to her daughter, the Countess of Grignon. She married in 1644 the Marquis Henri de Sévigné, a typical reprobate of his age, and was widowed after seven years. Beautiful in appearance, fascinating in manner, she was a central figure in society, and it is said of her that she remained pure in an age when purity was rare. She died April 17, 1696.

Seville City and province of Spain. The city stands on the Guadalquivir, and is one of the most important and interesting in Spain. Much of the original Moorish city remains, and it has wonderful buildings and monuments. The cathedral with its famous Giralda tower is Gothic and stands on the site of a Moorish mosque. Here also is the old Moorish palace, the Alcazar, and a notable university. The history of Seville dates back to Phoenician times, and the place is still prosperous, though Cadiz has now superseded it as a port. Manufactures include chocolate, soap, perfumes, and silks, while wine and oil are largely exported. There is a broadcasting station (368.1 M., 1.5 kW.). Pop. 231,049.

Sèvres Town of France, situated on the Seine in the department of Seine-et-Oise. It is mainly noted for its famous porcelain factory established in 1756. Pop. 7240.

Sewage House refuse carried by sewers. In urban areas sewage is carried by drains to the sewer system, and thence to a disposal works, where it is treated and purified, and the effluent rendered fit for discharge into a river or the sea, or for use as a fertiliser. Methods of achieving this include chemical or bacterial treatment, by which the solids are precipitated or the sewage decomposed, and a system in which the more heavy portions settle by gravitation. In the absence of a sewer system the sewage is treated in septic (bacterial) tanks, or collected in cesspools. A process of decomposition goes on in the latter, so that the solids are gradually liquefied.

Sewing Machine Machine devised for sewing and stitching cloth, leather and other materials by mechanical power. In 1846, Elias Howe invented the lock-stitch sewing machine, and further improvements upon this type were introduced later by Wilson and Singer. In the ordinary sewing machine the material placed upon a steel plate moves forward automatically as each stitch is made by an eye-pointed needle, the latter forming a loop as it passes through the material. Special types of machines are used for stitching leather and other tough material. Sewing machines can now be worked by electricity.

Sex Term expressing the male and female qualities exhibited in most organisms, both plant and animal. The germ cells of the two sexes differ in character. In the male they are spermatozoa in animals, antherozoids in the lower plants; and in the female ova or egg-cells. In most animals there are further differences in the form and size of the body, functional and mental qualities, and in the minute structure of the germ cells themselves. In many of the lower animals, both male and female germ cells are present in the same individual (hermaphrodite). In others, as in the aphis, parthenogenesis, or development of an individual from an unfertilised egg, occurs.

Sexagesima Church festival. The name is derived from the Latin for sixty, Sexagesima Sunday is the second before Lent, *i.e.*, about sixty days before Easter.

Sextant Optical instrument used in navigation for measuring angular distances between objects at a distance, particularly the altitude of the sun at noon for calculating the ship's latitude. It consists of a graduated arc representing a sixth of a circle, a telescope for sighting a distant object, a mirror at the centre of the circle and attached to a movable arm bearing at its end an index which moves over the graduated scale, and also a fixed half-silvered mirror.

Seychelles Group of islands in the Indian Ocean, belonging to Great Britain since 1794. Having a total area estimated at 156 sq. m. there are 101 islands and islets, Mahé being the principal. The main product is coconuts, while cinnamon and certain essential oils are also important. Victoria, the capital, has a good harbour. Some of the islands have phosphates deposits. In 1931 the population was estimated at 27,786.

Seymour English family, whose present representatives are the Duke of Somerset and the Marquess of Hertford. The name was originally St. Maur, and continued so until the time of the father of Lord Protector Somerset, the first Duke of Somerset of the new creation, whose sister was the third wife of Henry VIII., and the mother of Edward VI. He himself was Earl of Hertford before he became Duke of Somerset, and a descendant received the title Marquess of Hertford in 1793.

Sgraffito Term applied to a form of mural decoration in which a coat of coloured plaster is covered by one of white, the design being made by cutting or scratching through the top layer, showing the coloured coat underneath. A similar process is followed in certain forms of pottery with clays of different colour.

Shackleton Sir Ernest Henry. English explorer. Born in Kilkee, Ireland, Feb. 15, 1874, and educated at Dulwich College, he entered the mercantile marine. He accompanied Scott in his Antarctic expedition of 1901-04. In 1908 he sailed from New Zealand in the *Nimrod*, in command of an expedition which reached within 100 m. of the South Pole, being knighted on his return. In 1914-16 he made an unsuccessful attempt to cross the Antarctic continent, and in 1921 he again set out in the *Quest*, but died of heart disease in South Georgia, Jan. 5, 1922. He wrote *The Heart of the Antarctic* and *South*.

Shad Name of three food fishes, all belonging to the genus *Clupea*. The American shad is found in the seas and some of the rivers of N. America. The allice and the twaite shad are found in the waters of Great Britain and other parts of Europe, also in the Nile.

Shaddock Large, thick-skinned fruit, more usually known as grape fruit (*q.v.*). The botanical name is *Citrus decumana*.

Shadow Dark area on a surface formed by a shadow cone when an opaque body is placed so as to intercept the light from a luminous point. When the body is spherical and the source of light is a luminous body, then a cone of total shadow or umbra is formed, surrounded by another cone of partial shadow or penumbra, as seen in the partial and complete shadows cast by the earth upon the moon.

Shadwell District of East London. It is a dock district, part of the borough of Stepney. There is a tunnel under the Thames from here to Rotherhithe, opened in 1908. The East London Hospital for Children is in Shadwell.

Shaft In mechanics a means of transmitting power. It consists usually of a cylindrical bar of steel or wrought iron, provided with wheels, pulleys, levers, etc. In architecture the term is applied to the part of a column between the capital and base. In mining a shaft is the well-like excavation communicating with the underground workings of a mine. In prospecting one or more trial shafts are sunk to obtain the direction of the lode, followed by a permanent shaft which is vertical except where the lode is much inclined. From the main shaft cross-cuts or levels are cut to intersect the lode.

Shaftesbury Market town of Dorset, 19 m. W.S.W. of Salisbury, and 28 from Dorchester. The station is Semley, on the S. Rly, but coaches for Plymouth call here. Said to have been founded by King Alfred, it is an agricultural centre. Pop. (1931) 2366.

Shaftesbury Earl of. English statesman. Anthony Ashley Cooper was born at Wimborne, St. Giles, Dorset, July 22, 1621, son of Sir John Cooper.

He entered the Short Parliament in 1640, and was appointed a member of Cromwell's Council of State, 1654. Later he rejoined the Royalists, and was appointed Chancellor of the Exchequer, in 1661, and Lord Chancellor in 1672, when he was also created Earl of Shaftesbury. He died on Jan. 21, 1683.

Anthony Ashley Cooper, the 3rd earl, was born in London, Feb. 26, 1671. He was educated under the philosopher Locke (*q.v.*) and at Winchester, and travelled abroad from 1686-89. From 1695-98 he sat in parliament and in 1699 succeeded his father as earl. Poor health keeping him out of politics, he devoted himself to philosophy. As a moral philosopher he stressed the value of beauty and harmony in both private and social life. *The Moralists* is his most important work. He died Feb. 4, 1713.

Anthony Ashley Cooper, the 7th earl, was born April 28, 1801, and educated at Harrow and Oxford. Entering parliament in 1826, he devoted himself to improving the conditions of the working classes, and was largely responsible for much factory legislation, including the Ten Hours' Act of 1847. Legislation on coal mines also occupied him, and he investigated slum conditions in London, and helped to establish the ragged schools, of whose union he was president for 40 years. He helped to found reformatory and refuge unions, young men's Christian associations and workmen's institutes, and was interested in foreign missions. He died Oct. 1, 1885.

Shagreen Name given to a kind of untanned leather having a granular surface, which in the case of horse and ass skins is produced by the pressure of seeds on the moist skin. When made from shark or ray skins, the nodules are natural. Shagreen is used for covering small articles, and particularly sword hilts.

Shakers Religious sect. Founded by Ann Lee, they migrated to America in 1772, and settled at New Lebanon, New York. They were derived from the Quakers, their full style being the Milennial Church, or the United Society of Believers. They exalt celibacy, practise auricular confession, and use dancing as a form of worship, the contortions they use in this exercise having given rise to the name of Shakers.

Shakespeare William. The world's greatest poet and dramatist. He was born at Stratford-on-Avon on or about April 23, 1564, and at the age of 18 married Anne Hathaway, some eight years his senior. There were three children of the marriage, the son, Hamnet, died in childhood, while Susanne and Judith, the two daughters, survived their parents.

Shakespeare went to London about 1587, leaving his wife and family in Stratford, and was attracted to the theatre. From holding the heads of playgoers' horses, he graduated through the posts of actor and patcher of old scripts to the position of playwright, poet and part-owner of the Globe Theatre at Bankside, Southwark.

He was a contemporary and friend of Ben Jonson, and also met Greene, Marlowe, Drayton and other literary men of the time. In skill and power of writing, he excelled not only his contemporaries, but all previous poets and dramatists of this or any other nation. His vocabulary was wider than that of any other writer, and his power of language, his theatrical technique and his knowledge of essential human nature have made him, in Ben Jonson's words, "not of an age, but for all time." Emerson describes him as "master of the revels to mankind."

His collected works, as published to-day, contain 37 plays, 2 long poems, and 154 sonnets, as well as other items of verse. The plays are divided into 17 comedies, 10 histories and 10 tragedies. The long poems are *Venus and Adonis* (1593) and *The Rape of Lucrece* (1594); while of the sonnets, the first 126 are indited to a beautiful young man—some say, the Earl of Pembroke,—and the rest to a certain "dark lady," identified by many as Mary Fitton, Maid of Honour to Queen Elizabeth.

As Shakespeare's plays did not appear complete in print until the folio edition of 1623, it is not possible to fix, without question, the dates of the individual plays. The following list—though not accepted by all—shows the order in which the plays probably appeared:

Love's Labour's Lost	1590
King Henry VI. Part I.	
Do. do. II.	1590-92
Do. do. III.	
The Comedy of Errors	1591
Romeo and Juliet	1592
Two Gentlemen of Verona	1593
A Midsummer Night's Dream	1594
King Richard II.	
Do. III.	1593-94
King John	1594-95
The Taming of the Shrew	1595-96
The Merchant of Venice	1596
King Henry IV. Part I.	
Do. do. II.	1596-98
King Henry V.	1598-99
The Merry Wives of Windsor	1598
Much Ado About Nothing	1598-99
As You Like It	1599
Twelfth Night	1600
Julius Caesar	1600-01
All's Well That Ends Well	1601-02
Hamlet	1602
Troilus and Cressida	1603
Othello	1604
Measure for Measure	1604
King Lear	1605-06
Macbeth	1605-06
Pericles	1607-08
Timon of Athens	1607-08
Antony and Cleopatra	1608
Coriolanus	1609
Cymbeline	1609-10
A Winter's Tale	1610-11
King Henry VIII	1611-12
The Tempest	1611

Titus Andronicus was written either in collaboration with others or entirely by some other hand.

Shakespeare's histories give a clear picture of three hundred years of our island story; his comedies range from broad farce through fairy revels to delicate and subtle comedies of manners, while his tragedies culminate in the most powerful dramatic works of the world's literature, in *Hamlet, Othello, Macbeth* and *King Lear.*

Shakespeare's knowledge was all-embracing, his sympathy profound, and his understanding of human nature in all its moods uncanny in its accuracy. He basked in the favour of Queen Elizabeth and her successor, King James I., and after 1611 or 1612 ceased to write, retiring to his house, New Place, Stratford, where he lived the life of a country gentleman until S. George's Day, April 23, 1616, when he passed away. He is buried in Stratford-on-Avon church.

The new Shakespeare Memorial Theatre at Stratford-on-Avon, built with funds subscribed by English-speaking people all over the world, was opened by H.R.H. the Prince of Wales, on April 23, 1932.

Shale Laminated rock. Shales vary greatly in character, some approximating to clays, others to sandstones, limestones or

slates. Bituminous shales are worked for oil, alum shales for alum and copperas, and clay shales for firebricks.

Shallot Plant of the onion family, *Allium ascalonicum*. The small edible bulbs are rather lighter in colour and less strongly flavoured than ordinary onions. They are largely used for pickling.

Shangani River of Rhodesia, a tributary of the Gwai, which is itself a tributary of the Zambezi. It was the scene of a British defeat on Dec. 3, 1893, when a small force under Major Allen Wilson was destroyed by a Matabele force.

Shanghai Seaport of China, on the Wu-sung River in the province of Kiang-Su; the most important of the Treaty ports. It has an immense export trade, principally in silk and tea, followed in order by cotton, sugar, hides, and wool. There are also shipyards and docks in Pootung, a suburb across the river. The native city was captured by the Red army in 1927. The European quarter covers more than 9 sq. m. and is the commercial centre, with a fine harbour. Pop. 3,259,114.

Shanklin Urban district and watering place of the Isle of Wight. Beautifully situated on the S.E. coast, on a hillside, and with the downs at the back, Shanklin has been a popular resort since the middle of the 19th century. On the S. Rly. the crossing is made from Portsmouth to Ryde. There is a famous chine here, and also medicinal springs and baths. Pop. (1931) 5071.

Shannon River of Ireland, dividing Connaught from Leinster and Munster. It is 254 m. long and flows into the Atlantic at Loophead, and is navigable for fair-sized vessels up to Limerick, while smaller craft can go as far as Athlone. The waters have been harnessed to work a powerful hydro-electric plant which supplies nearly the whole of the Irish Free State.

Shannon **Sir James Jebusa.** Anglo-American painter. Born at Auburn, N.Y., in 1862, he came to England in 1878, studying in the South Kensington Art School. He made his name with the portrait of Hon. Horatia Stopford in 1881, and became A.R.A. in 1907 and R.A. in 1909. He painted some 400 portraits before he died, March 6, 1923.

Shap Urban district and market town of Westmorland, 270 m. from London, and 12 from Penrith, on the L.N.E. Rly. There are granite quarries in the neighbourhood. **Shap Wells**, 4 m. away, has saline springs. Pop. (1931) 1227.

Shark Large carnivorous sea-water fish allied to the dog-fish. The larger sharks inhabit warm seas, where they are common and generally lie near the surface. The lower jaw is exceedingly powerful, the mouth being large and provided with rows of sharp teeth which are replaced as they wear out. Being powerful swimmers and voracious feeders, they are a serious danger to bathers, or to shipwrecked persons. The man-eater approaches 40 ft. in length, while the blue and the white sharks span up to 18 ft. Shagreen (*q.v.*) is the prepared skin, and oil is obtained from the liver.

Sharon City of Pennsylvania, U.S.A., on the Shenango River, in Mercer Co. It was settled in 1795, and incorporated in 1841. It has iron and steel industries and a considerable trade in coal. Pop. 25,908.

Sharp In music, a natural note raised by a semitone. The sign to indicate the change is ♯

Shaw Market town of Lancashire, on the Beal, 3 m. from Oldham. It is a cotton manufacturing town. Pop. 5000.

Shaw **George Bernard.** Irish dramatist. Born in Dublin, July 26, 1856, he worked for a time with a Dublin land agent and came in 1876 to London, where he struggled with little success as a journalist for nine years. Between 1879 and 1883 he wrote five novels, including *Love Among the Artists*, *Cashel Byron's Profession* and *An Unsocial Socialist*, none of which were accepted for publication. He had become a socialist in 1882 and he now began work as a musical, literary and art critic for the *Star*, *Pall Mall Gazette* and *The World*, and later as dramatic critic of the *Saturday Review*. Meanwhile he acted as a propagandist for socialism, having joined, in 1884, the Fabian Society, for whom he wrote tracts, and he became known as a brilliant debater, but not as an author, though he had already written *The Perfect Wagnerite*, *The Quintessence of Ibsenism* and four plays.

Shaw now began to publish his plays, with their famous prefaces on social, religious and biological topics. Of his early plays *Mrs. Warren's Profession* (1893) was banned until 1902, while *Candida* (1894) won success in Germany. His first stage success was with *Man and Superman* (1903), followed by *John Bull's Other Island*, *The Doctor's Dilemma*, *Getting Married*, *Androcles and the Lion*, *Pygmalion*, *Fanny's First Play* and others. His three greatest plays, *Heartbreak House*, *Back to Methuselah* and *Saint Joan*, were all written after he was sixty. *The Apple Cart* was produced in 1929 and *Too True to be Good* in 1932. In 1936 *The Millionairess* was produced in Vienna. Shaw also wrote *The Intelligent Woman's Guide to Socialism and Capitalism*.

The plays, which are brilliant in dialogue, have qualities of wit, epigram and hyperbole which have come to be known as "Shavian." They expose social wrongs and discuss philosophical and religious problems. The greatest pamphleteer and propagandist of his age, Shaw is a critical and stimulating rather than a constructive thinker. He was awarded a Nobel Prize for literature in 1926.

Shaw **Thomas.** British politician. He was born at Colne, Lancashire, April 9, 1872, and received an elementary school education. He entered Parliament in Dec., 1918, as member for Preston, became Minister of Labour in 1924, and was Secretary for War from 1929-1931, when he resigned with his colleagues in the national crisis. He was joint secretary of the Labour and Socialist International, 1923-1925, and became a Privy Councillor in 1927.

Shawm Obsolete wind instrument. It was something akin to the oboe, having a double reed, and was popular in England from the 12th century onwards. It was made in different sizes, each with a compass of an octave and a half. The familiar use of the word in the Psalms is a mistranslation for shofar, the ritual trumpet of the Hebrews.

Shear Term in engineering for the strain or stress where compression of a piece of material is met by elongation at right angles. A shearing stress occurs when

forces acting upon a material tend to cause one portion to slide past the other, and another form of the stress occurs when a similar sliding action is caused by twisting or torsion.

Sheathbill Bird, *Chionis alba*, found in South America. It is about the size of a pigeon, the plumage is white and the bill yellow or pink in colour. The legs are bluish grey. A horny sheath encloses the bill. A smaller species, *C. minor*, has a black bill and dark legs.

Sheba Ancient kingdom of Arabia, believed by some authorities to be the modern Yemen. The story of the Queen of Sheba's visit to Solomon's court is told in 1 Kings x., and the original Menelek, King of Abyssinia, is said to have been her son by Solomon. Sheba produced the finest spices, and was famous for its gold and gems.

Shechem Town of Ephraim, now called Nablus. A battle was fought here in Sept., 1918, in which the British, under Lord Allenby, defeated the Turks and as a result completed the conquest of Palestine.

Shee **Sir Martin Archer.** Irish painter. Born in Dublin, Dec., 1769, at 16 he became famous as a portrait painter. Settling in London in 1788, he became A.R.A. in 1798, R.A. in 1800, and succeeded Lawrence as President of the Royal Academy in 1830, in which year he was knighted. He died Aug. 13, 1850.

Sheen **East.** Village of Surrey, near Richmond. It is in a residential district, surrounded by the open country of Richmond Park, Palewell Common, and Sheen Common. Its proximity to the Thames forms an added attraction.

Sheep Ungulate mammal of the genus *Ovis*, family *Bovidae*, a ruminant. Wild sheep are found in Europe, Asia, Africa, and North America, but one species only in each of the last two continents. The domesticated breeds are grouped according to the type of wool yielded. Long-wool breeds include Cotswold, Devon, Kentish, Leicester, Lincoln, Roscommon, and Wensleydale: short-wool the Clun Forest, Dorset, Hampshire, Oxford, Ryeland, Shropshire, Southdown, and Suffolk breeds. Mountain breeds include Black-face, Cheviot, Exmoor, Herdwick, Limestone, Lonk, and Welsh. They are horned, as are also the Dorset short-wool sheep, but the others mentioned are ordinarily devoid of horns. Ewes bear the first lambs at 2 years old, in Britain during winter, from October to April, according to the variety. *See* MOUFFLON.

Sheep-dog Breed of dog. It refers to the bob-tailed Old English sheep-dog. It is also a useful breed for gun work, and good in the water, while as a pet its affectionate, docile disposition is to be commended, though its long, thick coat needs a great deal of attention. The bearded Scotch sheep-dog is equally satisfactory. For the actual work of rounding up sheep many other breeds are suitable, the Scotch collie in particular.

Sheepshead Marine food fish (*Sargusovis*) of the family, *Sparidae*. Caught in Atlantic waters off the coast of N. America, it attains a weight of 7 to 15 lbs., and is esteemed for the table.

Sheerness Urban district and seaport of Kent in the Isle of Sheppey, at the mouth of the Medway, on the S. Rly. It is an important naval station with a dockyard. Sheerness-on-Sea is the modern part of the town, where visitors are catered for. There is a steamer service to London, Southend, and other places. Pop (1931) 16,721.

Sheet Term applied to any thin piece of material, but having many special applications, such as **sheet glass**, made from a cylinder of glass which is cut and spread out into a thin plate; or **sheet metal**, copper, lead, tin, iron, etc., rolled into thin sheets. Sheeting is a special linen or cotton material made in wide sheets for bed linen. As applied to paper, a quire consists of twenty-four sheets, which vary in size and weight.

Sheffield City of Yorkshire (W.R.). It is at the junction of the Don and the Sheaf, and is served by the L.M.S. and L.N.E. Rlys. Iron was smelted here in early times and steel manufacture is the chief industry to-day. Other industries are tanning, glass, bicycle, paper and instrument manufactures, chemicals, gramophones, etc. The city has a university with special facilities for technical research. Since 1915 Sheffield has been the seat of a bishopric, with the fine cruciform church of S. Peter and S. Paul as pro-cathedral. Pop. (1931) 511,742.

Sheffield has two famous association football clubs. *Wednesday* won the F.A. cup in 1896, 1907 and 1935, and was champion of the league in 1903, 1904, 1929, and 1930. *United* won the cup in 1899, 1902, 1915, and 1925, and in 1898 the championship of the league.

Sheffield Plate Name applied to plated articles made of copper plated with silver either by fusion or soldering. The manufacture of Sheffield plate was begun about 1743 by Thomas Boulsover, who first introduced the method of fusing silver to copper. At the present time silver is deposited on a base metal such as copper or Britannia metal by an electro-chemical process.

Shefford **Great.** Village of Berkshire, 61 m. from London on the G.W. Rly. Another **Shefford** is a market town of Bedfordshire, with a station (Arlesey and Shefford Road) on the L.N.E. Rly. It is on the Ivel, 37 m. from London and 9 from Bedford. Pop. 849.

Sheikh Arab chief. The word means "old man," and may be used as a title of respect to elders, headmen, and religious leaders.

Shekel Jewish coin. In silver, worth about 2s. 8d., and in gold about £2. It was also a weight, equivalent to about 10 dwts. Troy. The word is Hebrew for a weight.

Shelburne **William Petty Fitzmaurice, Earl of.** English politician. Born in 1737, he was made President of the Board of Trade in 1763, and three years later became one of Chatham's Secretaries of State. In 1782 George III. invited him to form a ministry, but he did not accept until 1783, when he made William Pitt, then only 23, his Chancellor of the Exchequer. He resigned a few months later, on the question of the independence of the American colonies, and was made Marquis of Landsdowne (*q.v.*) in 1784. He died May 7, 1805.

Sheldon **Gilbert.** Archbishop of Canterbury. Born at Stanton, Staffordshire, on July 19, 1598, he was educated in Oxford. In 1644 he was elected warden of All Souls College, Oxford, but four years later his royalist activities lost him his position. He was consecrated Bishop of London in 1660, and Archbishop of Canterbury in 1663. He built and endowed the **Sheldonian Theatre,**

Oxford, in 1669. He was made Chancellor of the University in 1677, the year of his death.

Sheldrake (or **Shelduck**). Sea duck (*Tadorna cornuta*). It is found on sandy shores of Britain in winter, and often nests in a rabbit burrow on the dunes. About 25 in. long, its head and neck are a glossy green, the wings and body black and white, a chestnut band on breast and back, and a brown or black line on the white under part. The bill is crimson and the feet pink.

Shell In zoology the name given to the exoskeleton of certain animals such as the molluscs, crustaceans, etc., also to the hard outer covering of eggs, and the carapace of the turtle and tortoise. Shells of certain molluscs and the horny covering of tortoiseshell are of economic value.

The term **Shell** is also applied to a hollow projectile used in military and naval warfare and discharged from guns, howitzers, or mortars. A shell contains some form of explosive or chemical compound according to the use of the projectile, for, apart from their general destructive purpose, some are used for illuminating an area. At first spherical and charged with gunpowder, the modern common shell is cylindrical and pointed and provided with a percussion cap or time fuse, gunpowder being replaced by high explosives.

Shellac Refined resin obtained by melting and purifying crude lac, an exudation from the branches of *Ficus religiosa* and other trees of the same genus in India.

Shelley **Mary Wollstonecraft.** English author. A daughter of William Godwin and Mary Wollstonecraft, she was born Aug. 30, 1797, and married the poet Shelley, as his second wife, in Dec. 1816. Byron, at his villa on Lake Geneva, suggested that four of the company—he, Shelley, Mary, and Dr. Polidori—should each write a ghost story. Mary's creation was *Frankenstein*, which was published in 1818. Her later writings included romances, books of travel, biographies, etc. She died Feb. 21, 1851.

Shelley **Percy Bysshe.** English poet. Born Aug. 4, 1792, at Field Place, Sussex, he went to Eton and later to Oxford whence, together with his friend and fellow-student Hogg, he was expelled for being the author of a pamphlet entitled *The Necessity of Atheism*. In August, 1811, he married Harriet Westbrook, but was separated from her in July, 1814. She drowned herself in the Serpentine in December, 1816, and three weeks later he married Mary Godwin. In company with a friend, Captain Williams, Shelley was accidentally drowned off Leghorn, July 8, 1822. The elegy, *Adonais*, inspired by Keats's death, *Epipsychidion*, and *Prometheus Unbound*, have been considered Shelley's finest pieces of writing. He also wrote *The Cenci*, a tragedy, *The Revolt of Islam*, *To a Skylark*, *Ode to the West Wind*, *Oedipus Tyrannus*, *A Defence of Poetry*, numerous other poems, and some pamphlets.

Shell-fish Generic name used for various types of bivalves and other mollusca good for food. These include oysters, cockles, and the like, as well as lobsters, crabs, shrimps, etc.

Shell Shock Name given to the symptoms resulting from exposure to bombardment or other violent concussion. These may be purely physical, but are more often nervous, and so varied that the name has been applied to almost any psychic effect due to active service. They include sleeplessness, claustrophobia, loss of memory or of speech, and so on. The treatment is psychotherapy in some form.

Shenstone **William.** English poet. Born at Leasowes, Shropshire, in 1714, he was educated in Oxford. In 1742 appeared *The Schoolmistress*, one of the few works by which he is remembered as a poet. His skill in landscape gardening brought him more fame. When his father died in 1745 he devoted his life so successfully to beautifying the estate at Leasowes that he attracted visitors from far and near. He died Feb. 11, 1763.

Shepherd's Bush District of W. London, in the borough of Hammersmith. It is largely residential, but the White City, built here in 1908, used for various important exhibitions, and, during the Great War, as a centre for the Royal Naval Division, has brought certain industries to the neighbourhood. The stadium is now used for dog-racing.

Sheppard **Jack.** English robber and highwayman. Born in Dec., 1702, he started life as a carpenter, and worked steadily for six years, then fell among evil company, and committed many robberies. He was caught and imprisoned four times, but repeatedly managed to escape. The fifth time his luck failed him, and he was hanged, Nov. 16, 1724, in the presence of 200,000 spectators.

Shepperton Village of Middlesex. It is 19 m. from London with a station on the S. Rly. It lies on the north bank of the Thames, and is a good place for fishing.

Sheppey Island off the coast of Kent. It lies at the mouth of the Thames, separated from the coast by the Swale, and is 9 m. long and 5 wide. Its most important towns are Sheerness and Queenborough. There is some agriculture, but the chief industry, apart from the dockyard business of Sheerness, is sheep-rearing. There is a light railway across the island.

Shepshed Urban district of Leicestershire, 4 m. W. of Loughborough and 120 m. from London by the L.M.S. Rly. Here are quarries, and glove and hosiery manufactures. Pop. (1931) 5759.

Shepton Mallet Urban district and market town of Somerset, on the Sheppey, 115 m. from London and 22 from Bath, by the G.W. Rly. It has a 16th century market cross, and the market dates from the 14th century. Industries include the manufacture of silk and velvet, pottery, and brewing. Pop. (1931) 4108.

Sheraton **Thomas.** English furniture designer. He was born at Stockton-on-Tees in 1751 and came to London as a young man. He excelled as a draughtsman and designer, and left a number of works containing furniture designs. His style may be described as one in which ornamentation was generally subordinated to utility, although many of his published designs are ruined by too much ornament. His chief work was *The Cabinetmaker and Upholsterer's Drawing Book*. He died Oct. 22, 1806.

Sherbet Beverage consisting of fruit juices sweetened and diluted with water. It is freely used in Moslem countries where alcohol is forbidden. The word is derived from the Arabic *sharbat*, a drink.

Sherborne Urban district and market town of Dorset, 118 m. from London, and 13 from Dorchester on the S. Rly. It is famous for its abbey, which once belonged to a Benedictine monastery. The town is an agricultural centre and has some small industries. Pop. (1931) 6542.

Sherborne School dates from the time of the monastery and received its charter as a grammar school in 1550. It has accommodation for rather more than 400 boys. There is also a girls' school founded in 1908, with about 250 pupils.

Sherbrooke City of Quebec, Canada. It lies at the confluence of the St. Francis and Magog rivers, and has woollen and cotton manufactures. Mining is carried on in the neighbourhood. It is the seat of a Roman Catholic bishop. Pop. 28,933.

Sherburn Market town of Yorkshire (W.R.), 182 m. from London and 13 from York, by the L.N.E. Rly. In former years the Archbishop of York had a palace here. Pop. 1735.

Sherburn Colliery, in Durham, is 251 m. from London on the L.N.E. Rly. It is a mining district, and has some interesting ruins of a 13th century hospital. Pop. 2977.

Sheridan Richard Brinsley Butler. Irish dramatist and politician. Born in Dublin, Oct. 30, 1751, of literary parents, he was educated at Harrow. The family settled in Bath in 1771, where Sheridan married Elizabeth Linley, the daughter of the composer, in 1773. Coming to London, he produced *The Rivals* in Covent Garden, which, after a short delay, proved a wonderful success. Acquiring Drury Lane, he produced *The School for Scandal*, and this also met with instant and enthusiastic approval. Sheridan then turned to politics. Elected for Stafford in 1780, he became Foreign Secretary in 1782, and his part in the impeachment of Warren Hastings made his parliamentary reputation. Theatrical affairs met with disaster, and he died in poverty, July 7, 1816. He was buried in Westminster Abbey.

Sheriff Public official, the descendant of the reeve, or governor, of the shire, an office which existed in England before the Conquest. In modern times the county official is known as the high sheriff and is nominated on Nov. 12 every year. His duties are mainly social, and it is his function to receive the judges when they are on circuit. He is chosen by the Crown. There are also sheriffs in London and in some ancient cities and boroughs such as Norwich, Bristol, Oxford, Canterbury and York.

In Scotland the sheriff has legal duties and is himself a lawyer.

Sheriffmuir Battlefield on the slopes of the Ochils, Perthshire. It was the scene of an indecisive battle between the Jacobites under the Earl of Mar, and the Hanoverians under the Duke of Argyll, in 1715. Both sides claimed the victory, the casualties being equal.

Sheringham Urban district and watering place of Norfolk, 142 m. from London and 4 from Cromer, by the L.N.E. Rly. With good air and beautiful country its main industry is catering for visitors, though there is also some fishing. Pop. (1931) 4141.

Sherry Name of certain Spanish white wines made in the neighbourhood of Xeres near Cadiz. Various types of sherry are made, the pale dry wines being represented by the Manzanilla sherries, and the browner sweet kinds by the Amontillado. Other varieties are the Vino Fino, Olorosa, and Montilla. The best wines are used largely in Cadiz for improving the quality of inferior wines, and the exported sherries are usually strengthened by the addition of alcohol.

Sherwood Forest Woodland district of Nottinghamshire. Very little of it remains to-day, but some of the large estates in the Dukeries (*q.v.*) have vestiges of it. It was primarily associated with Robin Hood and his merry men, and the name lingers as one of the suburbs of Nottingham city. Originally it covered more than 200 sq. m., and was Crown property.

Shetland Islands Group of islands off the N. coast of Scotland, 50 m. N.E. of the Orkneys, with an area of 551 sq. m. There are about 100 in the group, but only 30 are inhabited, including Mainland, Unst, and Yell. Lerwick is the capital. Sheep-rearing is the main industry, with the production of the famous Shetland wool and the articles knitted from it. There is some agriculture and fishing. Pop. 21,410. They form a county of Scotland and unite with the Orkneys to send a member to Parliament.

Shetland Pony Small breed of pony from the Shetland Isles. Also known as the shelty, it is the smallest breed of British horse, with a thick shaggy coat, mane, and forelock, and great strength and endurance.

Shibboleth Test word. The term has come into general use from the Bible story told in Judges xii. 6. Jephthah used the word to sort out his own followers from the Ephraimites as they passed Jordan. The latter pronounced it Sibboleth, without the h, thus betraying their origin.

Shiel Scottish lake. It lies between Inverness-shire and Argyllshire, of which counties it forms part boundary, and is 17 m. long and 1 m. wide. Glenfinnan stands at the head of the loch. Here Charles Edward Stuart raised his standard in 1745.

Shield In heraldry the escutcheon or field on which coats of arms are placed or blazoned. It was really the shield used by knights in warfare, painted in order to distinguish one from another.

In engineering a shield is a mechanical device used in tunnelling operations in loose or soft materials. Brunel in building the Thames Tunnel between 1825 and 1843 was the first to use a shield which, lowered down the shaft, was moved forward as the tunnel was dug out by the men. Various improvements were made, and the modern type consists of a steel cylinder with a cutting edge, the shield being forced forward slowly by means of hydraulic rams.

Shields North. Market town and seaport of Northumberland, at the mouth of the Tyne, part of the borough of Tynemouth, 275 m. from London and 8 m. from Newcastle, on the L.N.E. Rly. It has docks and shipbuilding industries, and coal is exported.

Shields South. County borough and seaport of Durham, on the S. bank of the Tyne, 270 m. from London and 8 m. from Newcastle, by the L.N.E. Rly. It is a centre of the coal export trade, and has a fine harbour, with good docks and shipbuilding yards, also manufactures of chemicals, glass,

etc. There is a steam ferry connecting it with N. Shields. Pop. (1931) 113,452.

Shifnal Market town of Shropshire, 136 m. from London and 17 from Shrewsbury, by the G.W. Rly. It is an old and picturesque place, situated in a mining district, with iron foundries and blast furnaces as its principal industries. Pop. 3303.

Shiites Mohammedan sect. Their special tenet is additional reverence for Ali, cousin of Mahomet, and the solemn observance of the anniversary of his assassination.

Shildon Urban district and market town of Durham, 241 m. from London and 9 from Darlington, by the L.N.E. Rly. There are railway works here, while iron-founding and coal mining are important, and there are stone quarries in the neighbourhood. Pop. (1931) 12,690.

Shilling British silver coin, with a nominal value of 12 pence. It is the 20th of a pound sterling, and in its present style dates from the reign of Henry VII. There was a coin of the name in Saxon times, which was raised to the value of 12 pence after the Conquest. The milled edge was added in the reign of Charles II. in order to prevent debasement by paring the edge of the coin.

Shingle Shore deposit consisting of pebbles formed by wave action upon the base of a cliff. Shingle, at first coarse, gradually passes into finer material, and finally into sand.

The term shingle is applied also to thin pieces of wood, either sawn or split, and used for roofing houses instead of tiles.

The word also means to cut the hair closely to the head, a fashion adopted by women in Great Britain after the Great War.

Shingles (*Herpes.*) Acute skin inflammation characterised by a rash occurring over areas of the face and body, usually preceded by stinging, neuralgic pains. At first the spots are full of clear fluid; later they become turbid, and in a few days dry and clear up.

Treatment. A soft, sterilised gauze dressing should be applied to the spots, and the area kept dry by the use of dusting powder. If the pain is severe, a sedative such as aspirin should be given. Ultra-violet ray treatment is helpful in clearing up the condition.

Shintoism State religion of Japan. The name is derived from the Chinese, meaning "the way of the gods," and in practice it is a form of animism, the divinities consisting of natural powers, abstract qualities, and deified men. The goddess of the sun is called Amaterasu, and is the chief deity. The book of Shintoism is the Kojiki (A.D. 712).

Buddhism and Confucianism have influenced the teaching, and some of its practices are derived from them. There are pilgrimages, purification ceremonies, and a form of ancestor worship. The after world is known as Yomi.

Shinty Form of hockey, played in Ireland and the Highlands of Scotland. Each side has twelve players, and the stick, called the caman or club, has a triangular head. The ball is made of cork covered with leather. The goals are 12 ft. wide and 10 ft. high, and are called hails. There are resemblances between shinty and hurling.

Ship Large vessel used for navigation on the sea, and very varied in type. In ancient times the Egyptians were great shipbuilders, their vessels, propelled by oars and sails, navigating both the Mediterranean and the Red Sea. The Chinese and Hindus also used ships for their widespread commerce with other countries. Ship design underwent many changes from the 16th century onward, and with the introduction of steam in the 19th century wooden sailing ships were replaced largely by iron and steel steam vessels. These, at first, were of the paddle-wheel type, but later the screw-propeller was found to be a more efficient device.

Shipbuilding Business of designing and building ships. The work is done from drawings and plans made usually by members of the Society of Naval Architects. It comprises a great variety of operations, many being done in the shipbuilding yards where the hull of the vessel is laid, but others, such as the building of the engines, usually elsewhere.

Shipbuilding may be divided into two classes, the building of warships and the building of cargo and passenger vessels. Much of the former is done in the government yards, but some is given out to private firms who have yards in the great ports. For long Great Britain had almost a monopoly of the world's shipbuilding, but after the Great War this supremacy was to some extent lost. Apart from naval shipbuilding at Portsmouth and Plymouth, the great centres are the ports on the Clyde, Tyne, and Tees.

In 1929 and subsequently the prospects were so unsatisfactory that an association of shipbuilders called the **National Shipbuilders' Security** was formed to buy up redundant yards, and a number were closed down. In 1931 it was reported that of 200,400 insured workers in the industry, more than half were unemployed. The employers have their organisations, and the men a powerful trade union called the **Federation of Engineering and Shipbuilding Trades.**

Ship Canal Waterway for sea-going ships. Among the most famous are the **Suez Canal** and the **Panama Canal**, but there are others on a smaller scale, which have made inland places into seaports. Of these the **Manchester Ship Canal**, completed in 1893, is a good example.

Shipley Market town in Yorkshire (W.R.). It is virtually a suburb of Bradford, and is 206 m. from London, by the L.M.S. Rly. It is one of the woollen towns. Pop. (1931) 30,243.

Ship Money Tax for the upkeep of the navy and coastal defences. It developed from the prerogative of the Crown to require maritime towns and counties to furnish ships in time of war, a liability which was often commuted for a money payment. The writs issued by Charles I. in 1634 and 1635 levying ship money in time of peace and on inland as well as maritime counties and towns aroused the opposition of John Hampden. It became one of the chief issues between King and Parliament, and was expressly declared illegal in 1641.

Shipping Business of conveying goods and passengers across the sea. There are special laws for the regulation of shipping, and a department of the Board of Trade exists to see that they are enforced.

In Great Britain these laws, chiefly contained in measures passed in 1894 and 1906, deal with the engagement, wages, and conditions of work of seamen, the sale and purchase of ships and the loads allowed. They forbid the employment of unseaworthy ships, and deal with the relations of shipowners, brokers and others concerned.

The greatest shipping nations of the world are, according to the figures of July, 1935, as follows :

	Tons		Tons.
British Empire	20,510,921	Germany ..	3,703,692
United States	12,852,250	France.. ..	3,025,136
Japan ..	4,085,650	Italy	2,884,406
Norway ..	3,967,972	Netherlands ..	2,558,383

There are many organisations in connection with the industry. The employers, who include such great companies as the Peninsular and Oriental (P. & O.), Cunard, Royal Mail, Furness, and others, are organised in the Chamber of Shipping. The employees have a National Union of Seamen. Shipbrokers, men who arrange for the conveyance of goods, have their Chartered Institute of Shipbrokers at 57 St. Mary Axe, London, E.C.3. During the Great War shipping was placed under government control and a Ministry of Shipping was established. This lasted from 1917 to 1921. *See* MERCANTILE MARINE.

Shipton Mother. English prophetess, probably mythical. According to tradition she lived in the 16th century, and is said to have prophesied the death of certain eminent persons. One anonymous writer relates that she was born at Knaresborough, and that her maiden name was Ursula Southill. Another, Richard Head, announced her to be the Devil's daughter. Her prophecies have been quoted until quite recent times, including the famous statement that carriages would go without horses, *i.e.*, trains and motors.

Shiraz City of Persia (Iran), 130 m. from Bushire. Here the poets Sa'di and Hafiz were born. It was a stronghold of the Zoroastrians and was founded in 697. Besides the wine industry, there is trade in cotton, spices, and perfumes, especially attar of roses. Pop. 50,000.

Shire Territorial division of England, the equivalent of county. At one time these were under the jurisdiction of an earl who in his turn delegated the administration to a reeve, hence the term sheriff, *i.e.*, shire reeve. *See* COUNTY.

Shirebrook Town of Derbyshire, 143 m. from London and 5 from Mansfield, on the L.M.S. Rly. A small stream, the Shirebrook, separates Derbyshire from Nottinghamshire at this point. It is in a coal mining district.

Shirehampton District of Gloucestershire. It is situated 125 m. from London on the River Avon, being virtually a suburb of Bristol, on the G.W. Rly. *See* BRISTOL.

Shire Horse Heaviest breed of horse used for farm and traction work. It is probably the lineal descendant of the old English war horse.

Shittim Variety of acacia (*A. seyal*). It grows in Palestine, particularly in the neighbourhood of the Dead Sea, and its wood was used by the Jews for building and decorative work. The Ark of the Covenant was made of it, and much of the timber of the Tabernacle was shittim. It is hard and close-grained, and lends itself to skilful workmanship.

Shoal Shallow area in a river, lake or sea. A shoal often occurs where there is a sandbank, river bar or reef, and is therefore a danger to navigation. Oceanic shoals formed by submarine ridges rising to within a short distance from the surface occur in many parts of the world.

The term shoal also means a large number of fishes together, as herring shoals, mackerel shoals, etc.

Shock Depressed condition due to injury to the physical organism. Treatment for shock, from whatsoever cause, is fresh air and loosened clothing. The patient may collapse and become cold and blue, in which case he must be wrapped up warmly in blankets, with his head lower than his feet, and have hot water bottles at the feet and sides. If he can swallow, a teaspoonful of sal volatile is the best restorative, and hot tea or coffee containing sugar will restore heat and energy.

If breathing ceases, artificial respiration (*q.v.*) must be resorted to. (*See* DROWNING.) In cases of unconsciousness resulting from concussion, injury, or fits, beyond doing everything to keep the patient warm, attempt no treatment until the doctor arrives.

Shoddy Textile material of inferior quality made from waste wool obtained from old woollen fabrics and cloth clippings. These are cleansed, unpicked, sorted into various grades, and teased into fibres, which, after oiling, are re-spun into cloths, rugs, etc. The chief centres of the shoddy trade are Batley, Dewsbury and Leeds.

Shoeburyness Urban district of Essex, on the N. side of the Thames estuary, 39 m. from London and 3 from Southend, by the L.N.E. Rly. Here is a gunnery school. Pop. (1931) 6717.

Shooter's Hill District of London, part of the borough of Woolwich, 10½ m. from Charing Cross, with a station (Eltham Park) on the S. Rly. It is a residential district, and there are some woods that are now public property.

Shooting Star Common term used for the meteors which travel rapidly across the sky, often leaving a trail of light behind them, and seen at certain periods of the year.

Shop Steward Trade union official. The office may be held by any member of the union who has worked with a particular firm for a given time, and who is appointed by his fellows. He is responsible for the collection and forwarding of subscriptions, and the general organisation of the union in his own firm.

Shore Jane. Mistress of Edward IV. of England. The date of her birth is unknown, but her association with the king dates from about 1470. After his death she was charged with sorcery by Richard III., and made to do public penance. She died about 1527, completely destitute. Tradition derives the name of Shoreditch from the place of her death, but this is very doubtful.

Shoreditch Metropolitan borough of the county of London. To the N.E. of London, it includes Moorfields, Hoxton, Haggerston and Kingsland. It is the centre of the furniture and cabinet making trade of London. The first London theatre was built here by James Burbage, and the parish church is known as the actors' church because both the Burbages and Richard Tarleton are buried there. Pop. (1931) 97,038.

Shoreham Watering place of Sussex, 6 m. W. of Brighton and 55 m. from London, at the mouth of the Adur, on the S. Rly. Old Shoreham lies a little way up the river, and has a fine old church. New Shoreham caters for visitors. In mediaeval times Shoreham was a flourishing port. In the

harbour silted up and its prosperity decayed. From here Charles II. escaped after the Battle of Worcester in 1651. Pop. (1931) 8757.

Shoring In building and engineering, the act of supporting a building or other structure by means of wooden props, usually as a temporary measure. In docks, a vessel while being built or repaired is kept steady by shoring with timbers. In mines, the entrance, walls, and roof of an adit or a working level are supported by pit-props and baulks of timber, or in many cases a more permanent support is secured by masonry.

Shorncliffe District of Kent, 70 m. from London and 2 from Folkestone, by the S. Rly. An important military camp here dates from 1855.

Shorter Catechism Presbyterian confession of faith. It was drawn up in 1647 for the use of the churches of Scotland, the larger catechism being considered too profound and difficult for instructing simple people.

Shorthand System of abridged or condensed handwriting which can be set down as rapidly as words are spoken. There are two main schemes upon which all systems are based, the phonetic or sound scheme, and the orthographic or writing scheme. In addition to these there is a geometric type.

Pitman's Shorthand is phonetic, while the lightness or heaviness of the signs show whether the sound indicated is light or heavy, as P or B. Further effects are obtained by the position of the signs above, below, or on the line, and there are innumerable grammalogues or condensed signs which represent a whole word or a whole phrase. The more modern systems tend to become simplified and less arbitrary, making less demand on the memory. **Gregg** and **Sloan-Duployan** are such systems. Speedwriting is one system which is based entirely on words as they are spelt in English, condensed until great speed in writing can be acquired.

Shorthorn Breed of cattle. It is a utility type, noted both for its beef producing quality and high milk yield. White, red, or roan in colour, the body is symmetrical and bulky, though small in bony framework. The horns are short and curved. *See* CATTLE.

Shorthouse **Joseph Henry.** English novelist. He was born in Birmingham of Quaker parentage on Sept. 9, 1834, and educated privately. In 1880 he printed for private circulation 100 copies of *John Inglesant*. One of these fell into the hands of W. E. Gladstone, and was so highly praised by him that, when the book was published the following year, it became the most widely read and the most discussed book of the day. He subsequently wrote other books, but none of these had any outstanding success. He died March 4, 1903.

Shotley Village of Suffolk. It stands on a point where the Orwell and the Stour flow into the sea, 10 m. from Ipswich and 2 from Harwich. There are naval barracks here and a school for naval cadets.

Shottery Village of Warwickshire. Its chief claim to fame is Anne Hathaway's cottage, where Shakespeare's wife lived when he was courting her. Stratford-on-Avon is 1 m. away. The cottage was acquired by the Shakespeare Birthday Trust in 1892.

Shotts Town of Lanarkshire, Scotland. It lies 394 m. from London and 6 from Glasgow, on the L.N.E. Rly. It is a mining centre, and bricks and tiles are manufactured. Pop. 20,582.

Shoulder Ball and socket joint by which the arm is joined to the body. The head of the humerus fits into a socket in the shoulder blade, and is surrounded by ligaments and muscles all of which allow free movement. The most common injury to the shoulder is a dislocation, but the shoulder blade may be fractured by direct violence.

Shovel **Sir Cloudesley.** English sailor. Born in Norfolk, Nov., 1650, of poor parents, he went to sea, and commanded a ship at the battle in Bantry Bay, 1689, being knighted for his services. In 1690 he was rear-admiral of the blue, serving at the battle of Beachy Head. As rear-admiral he assisted in the capture of Barcelona, but attacked Toulon unsuccessfully. On October 22, 1707, his ship, the *Association*, foundered in a fog off the Scilly Islands with a loss of all on board.

Shoveller Species of duck (*Spatula clypeata*). It is a native of Europe, Asia, N. Africa, and N. America, and a winter visitant to Britain, breeding in our Eastern counties, in Ireland, and in parts of Scotland. The bill is broad and spatulate. The male plumage is head and neck, green; back, brown; wings, white and brown; breast, chestnut; shoulders, light blue; underparts, chestnut. The bill is black and the legs orange.

Shrapnel Type of ammunition. It was invented by Col. Henry Shrapnel (1761-1842) and consists of a shell enclosing many bullets. When the shell bursts these are propelled forward at great speed. Shrapnel was taken into use by the British Army in 1803.

Shrew Small, mouselike, insectivorous mammal. The family (*Soricidae*) is widely distributed. A long snout, small, rounded ears, and the specialised teeth appropriate to their diet are characteristics. The common British shrew is nearly 3 ins. long with a shorter tail, the fur being brownish to reddish-grey above and lighter beneath. Besides insects, it eats worms and snails. Another British species, the pigmy shrew, is just over 2 ins. long, the fur being a reddish brown.

Shrewsbury Municipal borough and county town of Shropshire. It is situated on the Severn, 153 m. from London and 43 m. from Birmingham, on the G.W. and L.M.S. Rlys. It was important from early times as a border town, and grew rapidly under the Tudors, many fine 16th century buildings surviving. The principal buildings are the castle, St. Mary's and the Abbey church, and the old market house. There are steam-waggon works and other industries. Pop. (1931) 32,370.

Shrewsbury School, founded by Edward VI. in 1552, has some 500 boys, and includes as one-time scholars Sir Philip Sidney and Judge Jeffreys.

The **Battle of Shrewsbury** was fought on July 21, 1403. Here Henry IV. defeated an allied force consisting of the Percy family, the Welsh under Owen Glendower, and other malcontents.

Shrewsbury **Duke of.** Born July 24, 1660, and succeeding to the Earldom of Shrewsbury while still a child, Charles Talbot was created duke in 1694. One of the seven who in 1688 invited William, Prince of Orange, to come to England to replace James II., he was Secretary of State under William and Mary from 1688-1690, and again

1694-1700. During this latter period he was accused of treason, there being a strong suspicion that he was corresponding with the exiled James. William allowed him to resign, and he retired to the Continent till 1707, when he returned to England and became Lord High Treasurer, Lord Chamberlain, and Lord Lieutenant of Ireland. He died Feb. 1. 1713.

Shrewsbury Earl of. English title. One of the oldest earldoms in the peerage, it was first granted to Roger de Montgomery in 1071. His son, Robert, was deprived of his titles in 1102. The earldom was revived in 1442 for John, 5th baron Talbot, whose descendants bear the title to-day. Talbot, who fought in the French wars, was one of the foremost English leaders, defeating the Burgundians at Crotoy in 1437 and taking Harfleur in 1440. He also served in Ireland and died fighting in France in July, 1453. *See* TALBOT.

Shrike Bird of the family *Laniidae*. Four of the shrikes, including the woodchat (*L. rutilus*), visit Britain in winter, but only one species, the red-backed shrike (*L. collurio*), or butcher bird, breeds there.

Shrimp Name applied generally to small salt-water crustaceans of the order *Macrura*, and in particular to the so-called edible brown shrimp (*Crangon vulgaris*). When alive the brown shrimp is greyish-green spotted with brown; it turns pinky-brown when cooked. The shrimps are near allies of the prawns, which are larger and have nippers on the walking feet. The common shrimp is abundant in shallow water off the British Isles, and shrimp fishing is a considerable industry.

Shropshire (or **Salop**). County of England on the Welsh border. The western part of the county is hilly and the greater part south of the Severn upland. In the north is the Wrekin (1335 ft.), and the county also contains the famous Clee Hills, Wenlock Edge and Clun Forest. Mainly agricultural, Shropshire produces barley, oats, beets, etc., and is noted for its sheep and cattle. From its clays, bricks, tiles, pottery and earthenware are made, and there are important coal-fields and iron-founding industries. Shrewsbury is the county town; other important towns are Bishop's Castle, Bridgnorth, Ludlow, Oswestry and Wenlock. Area, 861,800 acres. Pop. (1931) 244,162.

Shropshire is rich in ancient remains, including the Roman Uriconium (Wroxeter), Offa's Dyke (*q.v.*) and 32 Norman castles. Till the 16th century the county suffered much from incursions by the Welsh, but after the union of England and Wales, Welsh immigrants settled in large numbers. Great prosperity was brought by the cloth and wool trade, and fine houses, a feature of the county, were built of half-timber and brick. The fisheries and the trade of the Severn were another source of wealth.

Shrove Tuesday Name for the day before Ash Wednesday. It was so called from the fact that in former times it was customary for people to be shriven, that is, to make their confessions, on that day, in preparation for Lent. The eating of pancakes is a feature of the old Shrove Tuesday feasting that has survived.

Shrub General term for a perennial woody plant with branches growing either from the roots or from the level of the ground. The word has no scientific significance, but is used in order to distinguish between a shrub and a tree. The latter is understood as having a single trunk with the boughs beginning a considerable height from the ground. A feature of modern horticulture is the cultivation of flowering shrubs.

Shrub is also the name of an alcoholic drink made from various ingredients.

Shuttle In weaving, the term for the instrument used for carrying the thread of the weft between the threads of the warp. It consists of a wooden block pointed at the ends and hollowed out in the middle to hold the yarn, the thread passing out from an eye in the side.

Siam Kingdom of S.E. Asia extending southwards into the Malay Peninsula, bounded on W. and N. by Burma, and on N.E. and E. by French Indo-China. Its area is 200,234 sq. m. The capital is Bangkok at the mouth of the Menam River. It is chiefly lowland with the valley of the Menam on the west, and the valleys of the Mekong and its tributaries on the east. Upper Siam is mountainous.

In 1932 a Constitution Act greatly reduced the King's power, which hitherto was almost absolute; but in 1933 there was serious trouble between the liberal party and the reactionaries. In 1935 King Prajadhipok abdicated and Amanda Mahidol was proclaimed King. Rice and teak are the principal products, and among minerals tin, rubies and sapphires are important. Bangkok, the capital, has a university, and there is a good educational system. Pop. (1930) 11,684,000.

Siamang Gibbon ape of Sumatra and the Malay archipelago. It is the largest species of the genus, standing about 3 ft. high with very long arms and hind limbs. It is classified as *Syndactyla hylobates*, from the fact that its distinguishing characteristic is the skin which unites the middle and index toes for half their length.

Siamese Twins Two children born of Chinese parents in Siam in 1811, having their bodies united by a band of flesh stretching from one breast to the other. They were exhibited in America and Europe about 1829, and again in 1869 after a period of retirement, during which they married two sisters and had offspring. They died in 1874. The name is applied to other freaks of the same kind.

Sibelius **Johan Julius.** Finnish composer. He was born at Tavastehus, Dec. 8. 1865, and studied music at Helsingfors, Berlin and Vienna. Since 1893 he has been professor at Helsingfors. His best-known works are *Finlandia* (a symphonic poem) and *Valse Triste*. His work is characterised by great technical power as well as imaginative quality. His compositions include eight symphonies, ten symphonic poems and several works for both choir and orchestra.

Siberia Asiatic territory of the Soviet Union of Russia, comprising 12 provinces with an area of 4,863,100 sq. m. The chief towns are Irkutsk in the south and Tomsk in the west. Siberia is traversed by great rivers, of which the Yenisei and Amur are the most important; nearly all are ice-bound for many months in the year. The country comprises alternations of great mountain ranges with zones of steppes or level table-land and belts of virgin forest. There are immense mineral resources, at present only partially developed, the mines being chiefly worked by convicts, while the population consists largely of descendants of former

convicts and exiles. A feature of Siberia is its immense lakes, Lake Baikal being one of the largest freshwater lakes in the world. The Trans-Siberian Railway, running from Moscow to Vladivostok and skirting Lake Baikal, is the main artery of communication, with a total length of 5431 m. Pop. (1931) 11,335,609.

Sibyl Name given by the Romans to prophetesses, generally reckoned to be ten in number and supposed to be inspired by Apollo. The most famous was the Cumaean Sibyl, said by Livy to have offered Tarquinius Superbus nine books of oracles concerning the religion of Rome. He refused to give her her price, whereupon she burnt three books and offered the remaining six without abating her demand. After a second refusal, she burnt three more, and Tarquin, struck by her pertinacity, bought the remainder at the price of the original nine. Housed for reference in the temple of Jupiter on the Capitol, the Sibylline Books were destroyed by fire in 83 B.C.

Sicily Largest island in the Mediterranean. Separated from Italy by the Strait of Messina, it has an area of 9935 sq. m. The capital is Palermo (*q.v.*). Other important towns are Catania and Messina. The island is largely a plateau from 500 to 1000 ft. above sea-level, traversed through the northern half by a continuation of the Apennines. Mount Etna (*q.v.*) rises out of the Plain of Catania. The climate is usually warm and equable, but subject in spring and early autumn to visitations of the sirocco. The soil is fertile, and fruit and cereals are freely grown. The island has a considerable mining industry, and is the world's chief source of sulphur.

Sicily has had a very chequered history. The Phoenicians and Greeks planted it with colonies; it was then dominated successively by Romans, Goths, Saracens and Normans. In later times it was ruled by Angevin, Hapsburg, and Bourbon dynasties until it was freed by Garibaldi, when it became, in 1861, a part of united Italy. Pop. (1931) 3,972,379.

Sickert **Walter.** English painter and etcher. Born May 31, 1860, at Munich, he studied under Whistler at Chelsea, was made A.R.A. in 1924, and in 1928 was President of the Royal Society of British Artists. His pictures include "The Camden Town Murder" (1906), "Supper at the Casino" (1920), "Raising of Lazarus" (1932), and his architectural paintings, "Hotel Royal" (1900), and "Pulteney Bridge" (1918).

Sidcup Urban district of Kent, 12m. from London, on the S. Rly. It is a popular residential district. Pop. (1931) 12,360.

Siddons **Sarah.** English actress. Born at Brecon on July 5, 1755, daughter of Roger Kemble, she was considered by many to be England's greatest tragic actress. She married the actor, William Siddons, and made her London début in Drury Lane, as Portia, but was a failure. She then toured England for six years, her reputation growing daily, and returned to Drury Lane to make an immediate success. From this time her career was one long triumph. Joining her brother, John Kemble, at Covent Garden in 1803, she acted there until her formal farewell, as Lady Macbeth, in 1812. She is now best remembered by Gainsborough's portrait of her. She died on June 8, 1831.

Siderite Alternative name for the mineral chalybite, the native carbonate of iron. It varies in colour from pale yellow to brownish black, and occurs either massive and granular, or as rhombohedral crystals. In its impure form as clay ironstone it forms one of the most valuable ores of iron in England.

Sidgwick **Henry.** English philosopher. Born May 31, 1838, he took an active part in the provision of higher education for women, Newnham College being the outcome of his efforts. Though not orthodox in his beliefs, he regarded Christianity as "indispensable and irreplaceable, looking at it from a sociological point of view." His principal writings are, *The Principles of Political Economy* (1883), *Outlines of the History of Ethics* (1886), and *The Elements of Politics* (1891). He was one of the founders of the Society for Psychical Research. He died on Aug. 28, 1900.

Sidlaw Hills Low mountain range in Perthshire and Angus, Scotland. The chief summits are Craigowl (1493 ft.), Auchterhouse Hill (1399 ft.), and Dunsinane (1012 ft.), which has remains of an ancient fort known as Macbeth's Castle.

Sidmouth Urban district and watering place of Devon. It is 14 m. by road E.S.E. of Exeter, and lies in a narrow valley between the red sandstone cliffs of High Peak on the west and Salcombe Hill on the east. The observatory built here by Sir Norman Lockyer (*q.v.*) has recently been enlarged. Formerly a prosperous port, in the time of Edward III. it sent two ships to the Siege of Calais, but lost its importance owing to the silting up of the harbour. Pop. (1931) 6126.

Sidney **(or Sydney) Algernon.** English politician. Born in 1622, grandson of the second Earl of Leicester, he fought at Marston Moor against the Royalists. At the Restoration he went to the Continent, but returned under a pardon in 1677. He drew up a constitution for Pennsylvania for his friend, William Penn. Accused of high treason at the time of the Rye House Plot, he was attainted and sentenced to death by the notorious Judge Jeffreys, and executed on Dec. 7, 1683. The attainder was cancelled 1689.

Sidney **Sir Philip.** English statesman and author. Born at Penshurst, Kent, on Nov. 30, 1554, of noble descent, he was educated at Shrewsbury and Oxford. By turns in and out of favour with Queen Elizabeth, he was sent, in 1577, as ambassador to the Emperor Rudolf II., and later to William, Prince of Orange. He was knighted in 1583. In 1585 he had arranged to accompany Drake on one of his buccaneering expeditions to America, but was prevented from sailing by Drake's machinations. Instead, he was ordered to go under Leicester to the support of the Netherlanders in their struggle against Spain, and he was killed at Zutphen on October 17, 1586.

His contemporary and friend, Edmund Spenser, said that he was "the president of noblesse and chivalry." His poetry, all published after his death, bears close relationship to the romance of his life, and his sonnets have been said to offer the most complete and powerful pictures of passionate love in the English language. His chief works are, *Arcadia*, a romance, the *Astrophel and Stella* sonnets, and the *Apologie for Poetrie*.

Sidon Ancient name of the modern Syrian seaport, Saida, situated on the east coast of the Mediterranean, halfway between Tyre and Beirut. An important Phoenician city, colonies were sent out from it to nearly all parts of the ancient world, and it was famous for its manufactures of glass and linen, purple dye and perfumes.

It passed from Phoenician to Assyrian, Babylonian and Persian domination, and submitted without resistance to Alexander the Great. It fell later into Syrian, Egyptian, and Roman hands. It had a chequered history during the Crusades, being held sometimes by the Saracens and sometimes by the Christians. It was stormed by the Allies under Napier in 1840, and occupied by British troops in 1918.

Siegfried Hero of Teutonic legend, and principal character of the *Nibelungenlied*. The legend of the Nibelungs took root in Germany after its birth among the Franks on the Rhine, and from Germany found its way in a slightly altered form to Scandinavia. In the *Nibelungenlied* Siegfried slays the dragon, Fafnir, and wins the hoard of the Nibelungs. Making himself invulnerable but for one spot, upon which a leaf alighted, by bathing in the dragon's blood, he helped Gunther to win Brunhild in Iceland, but Gunther's sister, Kriemhild, brings about his death. For the Norse variations, *see* SIGURD.

Siemens **Sir William.** German scientist and inventor. Born in Hanover, April, 1823, he settled in England in 1844, being naturalised in 1859, and knighted in 1883. He was President of the British Association in 1882. He and his brother, Werner, founded the firm of Siemens Bros., building overland telegraphs, and laying cables, designing the steamship *Faraday* for this purpose. Siemens's regenerative furnace, which produced steel directly from the ore, practically revolutionised the methods of steel production; he was also a pioneer in electric tramways. He died on Nov. 19, 1883.

Siena Province and town of central Italy. The province has an area of 1471 sq. m., and produces wheat, olive oil, silk and Chianti wine. The town is situated on three hills, and is surrounded by ancient walls. It has a Gothic cathedral dating from 1243 and containing Donatello's statue of John the Baptist. There are also many fine palaces and a university founded in 1203. It was annexed to Florence in 1557. Pop. (1931) province, 260,891; town, 47,688.

Sierra Name applied in Spain and America to ranges of mountains with jagged peaks. It is usually derived from the Latin *serra*, a saw, but is believed by some to have the same origin as Sahara, namely, the Arabic *sehrah*, a desert place. There is a **Sierra Nevada** in both Spain and California, and a **Sierra Madre** in Mexico.

Sierra Leone British Crown Colony on the W. coast of Africa, ceded to Great Britain in 1787. A Protectorate over the Hinterland was declared in 1896. The estimated area of the colony is 4000 sq. m. The capital is Freetown with (1931) 55,359 inhabitants, and the principal exports are palm kernels, kola nuts, and palm oil. Freetown has the best harbour in West Africa, and from here there is a railway inland for 227 m., with a branch line 104 m. in length. The colony is administered by a Governor advised by an Executive Council. Pop. 85,163, including 1161 resident Europeans.

Sight Name given to the visual sense, having as its special organ the eye. Under sight is included the perception of light, form, and colour. External impressions are received on the retina of the eye, the impulses being conveyed by the optic nerve to the nerve centres of sight in the brain.

Sight In gunnery a mechanism on the gun for enabling one to direct accurately. Formerly a line of metal scored along the top, the sight has now become complex owing to constant improvement; its efficiency depends on its being graduated to allow for forces acting on a projectile during flight which cause it to drop with accelerating velocity. On naval guns the director sight, invented by Sir P. Scott, is used.

Sigismund Holy Roman Emperor. Born on Feb. 15, 1368, he inherited Brandenburg from his father, the Emperor Charles IV., and succeeded to the Kingdom of Hungary through his wife, Mary. In 1410 he was elected Emperor. He is chiefly remembered in connection with the Council of Constance, called in 1414 by the Pope for the purpose of combating the schisms in the church. John Huss, one of the early reformers, was cited to appear. He was convicted of heresy and burned at the stake in spite of the safe-conduct given him by Sigismund. The Emperor died on Dec. 9, 1437.

Signalling Term applied to the system of transmitting signals to a greater or less distance. The signals may be of the nature of flags, lamps, heliographs, smoke, sound signals such as bells and sirens, semaphores, as on railways and warships, and also telegraphy and telephony. Signalling is used for military and naval purposes, and on ships generally as a means of inter-communications, also on coasts as a warning of danger to shipping. The Morse code and its modifications are commonly used in signalling. On railways semaphores are supplemented by night signals of red and green lights. Coloured lights are also used for road traffic signals.

Signet Personal seal of the sovereign, formerly used to authenticate documents of a private character, *e.g.*, a royal letter, or as a warrant in the case of public documents, *e.g.*, commissions and letters patent, for the Chancery officials to affix the Privy Seal or the Great Seal. It was also used to authenticate the sign-manual (*q.v.*). Since the Great Seal Act of 1884 there has been no use for the signet.

Signet **Writer to the.** Member of the principal class of solicitors in Scotland. They are so called because they were originally clerks in the office of the king's secretary, their duty being to prepare all warrants or charters for sealing with the king's signet. Writers to the Signet now form a society presided over by the Keeper of the Signet, who is appointed by the Crown.

Sign Manual Autograph signature of the Sovereign which, countersigned by one of the principal Secretaries of State or by the Lords of the Treasury, must be affixed to all writs or warrants which have to pass the Great Seal. In certain cases of executive documents it may take the place of the latter.

Sigurd Hero of the Völsunga Saga, and Norse equivalent of the Siegfried (*q.v.*) of Teutonic legend. In the Saga, Sigurd is the son of Sigmund the Völsung, and, like Siegfried, he slays the dragon, Fafnir. He then plights his troth to the Valkyrie Brunhild, but abandons her for Gudrun, the sister of Gunnar, whom he marries. Brunhild incites Gunnar's brother, Gunthorm, to kill Sigurd, and then kills herself on the latter's funeral pyre.

Sikh Member of a great Indian community. The bulk are distributed throughout

the Punjab province and the Punjab states of Patiala, Nabha and Jind. Sikhism was founded in the 15th century by a Guru or teacher named Nanak, on the basis of a religious brotherhood to embrace both Hindus and Mohammedans. Under Govind Singh in the 17th century the Sikh community became the Khalsa or "property of God," and began to cherish military ambitions which were fostered later by Ranjit Singh (1780-1839), and led to the formation of a formidable army. The death of Ranjit Singh was followed by two Sikh wars with Great Britain and the annexation of the Punjab. In the Mutiny the Sikhs remained loyal, and many fine Sikh units are included in the present Indian Army.

Silchester Village of Hampshire, famous for the remains of the Romano-British town of Calleva Atrebatum, called by the West Saxons, Silceastre. Excavations, begun in 1890, have revealed the existence of walls, 2760 yards in length, enclosing the foundations of a basilica, a forum, a temple, baths, shops and private residences. The remains of an amphitheatre capable of seating 10,000 spectators, and of a church, probably 4th century, said to be the first undisputed Christian edifice in Great Britain have also been found. Numerous objects of interest excavated at Silchester are preserved in the Reading Museum.

Silenus Woodland deity of Greek mythology, the son, according to some stories, of Hermes, according to others of Pan. He was companion of Dionysus, and is represented as a little, corpulent old man, always drunk and carrying a skin of wine. Chief of the Sileni or older Satyrs, he is sometimes shown propped up by them owing to his own inability to stand upright.

Silesia District of eastern Europe. A province of Prussia from 1742, Silesia was partitioned after the Great War between Prussia, Poland and Czecho-Slovakia. The greater part, which remains within the German Republic, is divided into Upper and Lower Silesia, which have a combined area of about 14,000 sq. m. Upper Silesia is rich in coal and also produces iron and zinc. Agriculture is the staple industry of Lower Silesia. Pop. 4,686,769. Breslau (*q.v.*) is the capital.

Polish Silesia, also a great coal-mining centre, has an area of 1632 sq. m. and population 1,298,352.

Coal-mining is also the staple industry of the Czecho-Slovakian province of Silesia, which produces, in addition, lead, iron ore, marble and slate. There are extensive engineering and metallurgical industries. Area 1,708 sq. m; population 735,532.

Silhouette Profile or shadow-outline filled in with black or other dark colour. The simplest method of producing it is to cut a profile out of black paper and paste it on a white background. Before the invention of photography silhouette portraits were popular, and some very skilful ones of famous people have been preserved. Silhouettes are now sometimes produced by photographic means. The name is derived from a French Minister of Finance, Etienne de Silhouette (1709-67), who, according to Littré, amused himself in retirement by making shadow pictures.

Silicon Non-metallic element, the symbol of which is Si and the atomic weight 28.3. Amorphous silicon is never found in nature except in combination with oxygen, but may be separated as a dull brown powder. It was first isolated by Berzelius in 1823. Graphitoid and crystallised silicon are obtained from the amorphous form. Graphitoid silicon, unlike the amorphous, resists the action of hydrofluoric acid. The chief compound of silicon is the oxide silica, the purest form of which, occurring naturally, is rock crystal. Silica, which derives its name from the Latin *silex* (flint), and is largely employed in the manufacture of glass, china, and porcelain.

Silk Fabric originally manufactured solely from the filament spun into cocoons by silkworms (*q.v.*). Silk is known to have been made in China many centuries before the Christian era. The first silk weaving factory in Europe was established in the middle of the 6th century, A.D., at Constantinople, whence the manufacture spread to the West. Nearly half the commercial supply of raw silk now comes from Japan, the chief European centres of manufacture being Lyons, Milan, Turin, Zürich, Basel and Crefeld. Since 1863 the manufacture of artificial silk from nitrocellulose has progressed steadily, and has now become a very important industry.

Silkworm Name given to silk-spinning caterpillars. The most common form is *Bombyx mori*, a native of N. China, about 3 in. long, and of a yellowish-grey colour. It spins a yellow or white cocoon round itself, then turns into a chrysalis, which again turns into an egg-laying moth. From the eggs tiny silkworms emerge which, if fed on mulberry or lettuce leaves, rapidly attain maturity and start spinning in due course.

Silloth Seaport and watering place of Cumberland. It is on the Solway Firth, 22 m. from Carlisle, on the L.N.E. Rly. It is the port for Carlisle, and there are docks for the shipping. Good bathing and golf attract summer visitors.

Silo Pit in which green fodder is stored under pressure to prevent putrefactive fermentation. The process of storing is termed ensilage (*q.v.*).

Siloam Rock-cut pool on the S.E. of Jerusalem. It has a second or lower reservoir connected with it by an aqueduct, and is evidently the pool mentioned in 2 Kings xx, 20 as having been made by Hezekiah (700 B.C.) together with a conduit by which water was brought into the city. See also Nehemiah iii, 15. The conduit was explored by Conder and found to be 1706 ft. long and 2 ft. wide, with a height varying from 1½ to 14½ ft. An interesting Hebrew inscription discovered in 1880 mentions that when the tunnelling parties, working from either end, were 3 cubits apart voices guided them in completing the work.

Silures People inhabiting the area now covered by the Welsh and English counties of Glamorgan, Brecknock, Monmouth, Radnor and Hereford. They were a dark and curly-haired race, probably of non-Aryan origin, and they offered a fierce resistance to the Romans until finally subdued about A.D. 80. Their principal town was the Roman Venta Silurum, now Caerwent, near Chepstow.

Silurian System Geological formation consisting of the rocks lying between the Ordovician system below and the Devonian above. The system is represented in many parts of the world, including America, Europe and Australia. In Britain it occurs in North Wales and the

adjoining English counties, in the Lake District and in Scotland. The strata are usually highly folded and consist largely of shales.

Silvanus A god of woods and gardens in Roman mythology. The name is derived from the Latin *silva*, a wood. As pointed out by Frazer in *The Golden Bough*, he was also the god of cattle and was often associated with Diana in dedications.

Silver Metallic element, chemical symbol Ag, atomic weight 107·88, specific gravity 10·57, melting point 1761° F. It is the best known conductor of heat and electricity. The chief sources of supply are U.S.A., Mexico, Ontario and Canada. Extracted from the ores by either amalgamation, solution or smelting methods, silver is the principal basis of coinage in many countries and is very largely used in the manufacture of plate, ornaments and utensils of various kinds (*see* BIMETALLISM). Compounds of silver are numerous and important. **Nitrate of silver** when fused forms a caustic used in medicine, and with **chloride, bromide** and **iodide of silver** is freely employed in photography, the three being sensitive to light and constituting, chloride and bromide of silver more particularly, the basis of most photographic plates and papers.

Silver Fir Tall evergreen tree (*Abies pectinata*). Growing to a height of 150 ft. or more with a diameter of over 6 ft., it is a native of Central and Southern Europe. It derives its name from patches of white wan on the lower sides of its needles. The cones, which are about 6 in. long, are erect and cylindrical, the timber strong, but too soft to stand exposure. The tree is the source of Strasbourg turpentine.

Silversmith Worker in silver. The trade was practised in the very earliest times, and there are many references to the silversmith's trade in the Bible and in Homer. The Renaissance period in Western Europe produced many skilful silversmiths, among them the great artist Benvenuto Cellini. In England the quality of silver plate has been guaranteed by assay since 1300, and about 1425 marking with the silversmith's initials was enforced by law. Old silver, with recognisable marks, now fetches very high prices.

Simcoe Lake and town in Ontario, Canada. The lake is situated between Georgian Bay and Lake Ontario and is 30 m. long and 18 m. broad. In the vicinity war was waged between the Iroquois and Huron Indians, the former nearly exterminating the latter. The town is the capital of Norfolk County and has a population of (1931) 5,226.

Simeon **Charles.** English divine. Born at Reading, Sept. 24, 1759, he was ordained in 1782 and appointed Perpetual Curate of Trinity Church, Cambridge, a position he held until his death. One of the founders of the Church Missionary Society, his preaching was characterised by an impassioned evangelicalism, and his influence was felt all over England. His "conversation circles" at Cambridge were famous. He died Nov. 13, 1836.

Simla Town, in the district of the same name, of the Punjab, India. A popular hill station and summer residence of the Viceroy, Governor of the Punjab, and other high officials, it is situated on a spur of the Himalayas at an average altitude of 7000 ft., and is dominated by Jakko, a peak of 8048 ft. At a lower elevation is a race course. There is a railway connection through Kalka with Amballa. The distance from Delhi is 170 m. The permanent population is about 15,000, but is nearly doubled in the summer.

Simnel **Lambert.** English impostor. An Oxford youth, he was the Earl of Lincoln's tool in a Yorkist rebellion against Henry VII. He was born about 1475. Following false rumours that the Earl of Warwick had escaped from the Tower, Simnel was taken to Ireland and persuaded to impersonate Warwick. He gained a large following, and was crowned as Edward VI. Landing in England at Furness in 1487, he marched to Stoke, where Henry defeated him and appointed him a scullion in the royal kitchen. He died in 1535.

Simnel Cake Rich cake, surmounted by almond paste and usually decorated. It is associated with the observance of "Mothering" or "Refreshment" Sunday, the 4th Sunday in Lent.

Simon **Sir John Allsebrook.** English lawyer and statesman. Born Feb. 28, 1873, in Bath, and educated in Edinburgh and Oxford, he was called to the Bar in 1899 and rose rapidly in the profession. Elected Liberal M.P. for Walthamstow in 1906, he became Solicitor-General in 1910, being knighted the same year. He became Attorney-General in 1913, and Home Secretary in 1915, but resigned through his opposition to conscription. He lost his seat in 1918, but was returned for Spen Valley in 1922, which constituency he continues to represent. He was appointed Foreign Secretary in the National Government formed in Nov., 1931. At the reconstruction of the Cabinet in June, 1935, he became Home Secretary, a post he retained after the General Election of Nov., 1935.

Sir John Simon has been chairman of several Royal Commissions, the most important being the Indian Statutory Commission, 1927-1930, which issued the comprehensive "Simon Report" embodying recommendations for the future government of India.

Simonides Greek poet. Born in the Island of Ceos in 556 B.C., he went to Athens on the invitation of Hipparchus. When the Persians invaded Greece he wrote elegies, epigrams and dirges to celebrate the battles fought in that struggle. In a competition for an elegy commemorating the heroes of Marathon, he defeated Aeschylus. In poetical contests he won no fewer than fifty-six times. His last ten years were spent at the court of Hiero of Syracuse, where he died in 468 B.C.

Simonstown Naval port of South Africa. On the west coast of the Cape of Good Hope, it is 22 m. by rail from Cape Town and situated in Simon's Bay on the eastern side of the Cape Peninsula. The Admiralty docks, opened in 1900, were extended in 1910, and can now accommodate the largest warships. Here are a Government arsenal and important harbour works. European population (1931) 2171.

Simony Crime of buying or selling a presentation to a benefice. Derived from Simon Magus, who thought to purchase the gift of the Holy Spirit with money, it has been contrary to English law since the time of Elizabeth. A clergyman presented to a living by a patron may undertake to resign it at a specified period.

Simoom Name given to the hot desert sandstorms of North Africa and Arabia. The word is derived from the Arabic *samm*, "poisoning." Essentially the same as a

cyclone, a central tract of calm surrounded by swirls of hot air, the entire system moves slowly forward, generally from south to north or from east to west, and often carries with it whirling columns of sand.

Simplon Mountain in Switzerland. It is 11,695 ft., and the pass is 6582 ft. from Dromo d'Ossola, in Italy, to Brieg, in Switzerland. It is a military road formed by Napoleon in 1800-05, 42 m. long, 25-30 ft. broad. The **Simplon railway tunnel** leads from Visp on the Swiss side to Iselle in the valley of the Po. It was first opened in 1906 and in 1921 the second tunnel was completed.

Simpson **Sir James Young.** Scottish doctor. Born at Bathgate, Linlithgowshire, June 7, 1811, and educated at Edinburgh University, where he graduated in medicine in 1832, he was president of the Royal Medical Society, 1835. He specialised in obstetrics and in 1847 introduced the benefits of chloroform to the world. He published books and papers on obstetrics, anaesthesia, homoeopathy, leprosy, cholera, etc. He was made a baronet in 1866 and died May 6, 1870.

Sims **George Robert.** English journalist and dramatist. Born in London, Sept. 2, 1847, he entered journalism in 1874 as one of the staff of *Fun* (now defunct). He wrote for *The Referee*, from its birth in 1877, a long series of articles entitled *Mustard and Cress*, using the pseudonym Dagonet. Among his plays are *The Lights of London*, *Harbour Lights*, *Faust Up-to-Date*, and among his books, *How the Poor Live*, *The Dagonet Ballads* and *My Life* (1917). He died Sept. 4, 1922.

Sin Guilt before God or the gods. Some doctrine of sin and of escaping its penalties forms part of most religions, ancient and modern. It is not defined in the Scriptures, but appears as the element in man which puts him at enmity with God and requires the work of a Redeemer for its atonement.

The Christian Church has always held that sins may be divided into "mortal" and "venial" sins. The seven "mortal" or "deadly" sins are anger, lust, gluttony, sloth, pride, envy and avarice. "Original sin" is the Christian doctrine that all mankind fell with Adam's first sin, but that the whole world was redeemed by the sacrifice of Jesus Christ. Most Christian Churches, notably Roman, Greek and Anglican, believe that the taint is washed away from the individual in baptism.

Sinai Peninsula of Egypt. At the head of the Red Sea, lying between the Gulfs of Suez and Akaba, it possesses an area of 11,055 sq. m., mainly desert. The **Mount Sinai** of the Bible is generally identified with Jebel Catherina in the south of the Peninsula (8550 ft.), which has two peaks, Mount Horeb and Jebel Musa, or the Mountain of Moses, the latter supposed to be that on which Moses was given the tables of the Law. The Peninsula, which belongs politically to Egypt, is inhabited by Bedawin nomads. In the Great War it was occupied by the Turks against whom Sir A. Murray advanced in 1916 after the construction of pipe and railway lines across the desert. Defeating them in the battles of Romani and Magdhaba, he finally cleared them out of the Peninsula by his victory at Rafa on Jan. 9, 1917.

Sinclair **Sir Archibald Henry MacDonald.** British politician. Born Oct. 22, 1890, he was educated at Eton and Sandhurst and entered the army in 1910. In 1912 he became a baronet, and he served in the Great War with the Life Guards. M.P. for Caithness and Sutherland since 1922, he is a prominent member of the small group of Liberals in the House of Commons. For a time he acted as chief Whip of the party and in 1931 he joined the National Government as Secretary of State for Scotland, resigning in Sept., 1932.

Sind Province of India in the north of the Bombay presidency. Formerly part of the Mogul empire, it was ruled by local dynasties at the coming of the British. The E. India Company established a factory at Tatta in 1758, but it was not till the 1830's that the British secured a real foothold, annexing the province in 1842.

Primarily agricultural, Sind produces rice, cotton and wheat, and exports, besides these, wool, flour and hides. There are cotton mills, mainly at Hyderabad, and famous pottery, leather and carpet industries. Karachi (*q.v.*) is the capital. The area under cultivation has been vastly increased by the construction of the Lloyd Barrage at Sukkur (*q.v.*) with its vast irrigation scheme. Area 46,986 sq. m. Pop. (1931) 3,885,308.

Singapore Island and seaport of the Straits Settlements. A British possession, with an area of 225 sq. m. and a population of (1932) 588,172, it is a coaling station and one of the chief ports of the east. There are fine docks and some industries, including the world's largest tin-smelting works. The city is modern and up-to-date. The island was formally included in the British Empire in 1824, the city having been founded five years previously by Sir Stamford Raffles (*q.v.*). Raffles College and Raffles Museum are among its important buildings. In 1923 it was decided to make Singapore a naval base. A floating dock was sent out in 1928. There is a broadcasting station (41.7 M.).

Singer **Isaac Merritt.** American inventor. Born at Oswego, N.Y., Oct. 27, 1811, after many years' experimenting, he evolved, in 1851, the first practical single-thread chainstitch sewing machine, much superior to Elias Howe's crude model produced in 1846. He established a factory in Elizabethtown, N.J. and now the Singer Company owns 9 factories in different countries. He retired wealthy, and died in Torquay, July 23, 1875.

Singlestick Method of fencing, being the successor of the old time cudgel play. The weapons used are ash sticks with hilts of basket work which protect the hand, and the exercise is used to aid the practice of light sabre play. The movements are simple, consisting of six cuts only.

Single Tax Economic system by which all revenue is raised by a tax on land. It implies universal free trade, and is based on the assumption that all men are entitled to equal use of the land. As this is impossible in practice, the single tax would be collected by appropriating the economic rent of land and leaving to landowners the value of their own improvements. The theory was developed by Henry George.

Sing Sing State prison of the U.S.A. It was built in 1825 and is situated 30 m. from New York, the name is derived from the Sin Sinck Indians. The village of Ossining in Co. Winchester was formerly known as Sing Sing.

Sinking Fund Term meaning a sum of money devoted to

repaying a loan. In Great Britain the first was established in 1786, when a sum of £1,000,000 a year was set aside to reduce the National Debt. Loans raised by local authorities and other bodies are also repaid by means of a sinking fund.

As regards the national debt of Great Britain the principle is now to devote an annual sum for the service of the debt. Part of this goes in interest and the balance is devoted to repayment. Thus the amount devoted to repayment increases as the amount required for interest decreases. The Sinking Fund is used for the purchase of stock in the open market.

Sinn Fein Gaelic words meaning "Ourselves alone" adopted by the Irish Nationalist movement at the beginning of the 20th century. Originally it confined itself to the revival of the Irish language and literature, but later it grew into a determination to throw off the British yoke. This culminated in the Easter rebellion of 1916 after which some prominent Sinn Feiners were shot and many others imprisoned. At the election of Dec., 1918, the party was returned with a large majority, and a period of guerilla warfare and terrorism ensued. *See* IRISH FREE STATE.

Sinope Turkish town of Asia Minor situated on the Black Sea. It was the most important of all the Greek colonies and after 632 B.C. became the greatest commercial city on the Euxine. It was captured by the Turks in 1470, and was bombarded by the Russians in 1915. It is a large port with considerable trade. Pop. 9260.

Sinus Medical term for any cavity filled with blood or air; in surgery especially a cavity containing pus. The cavities of the nose are liable to infection, giving rise to discharges and other disorders often referred to as "sinus trouble." Medical treatment is essential.

Sioux American Indian tribe of the North. Calling themselves Dakotas, they included the Assiniboins and several other tribes.

Sirdar Official title for the commander-in-chief of the Egyptian army. The name is derived from the Hindu. Lord Kitchener (*q.v.*) was a notable holder of the title.

Siren Sea nymphs of classical mythology whose sweet singing lured listeners to their doom. Odysseus circumvented their magic by filling his sailors' ears with wax as they approached the island and binding himself to the mast. Their end was due to Orpheus, whose singing surpassed their own, so that they threw themselves into the sea and were turned into rocks.

Sirhowy District of Monmouthshire. Situated in the coal mining area, its main industry is ironworking. It is served by the L.M.S. Rly. The river of the same name, on which the town stands, is a tributary of the Ebbw.

Sirius Star known as the dog star. The brightest star in the sky, its light is more than 30 times as powerful as that of the sun. Its distance from us is nearly nine light years.

Sirocco Hot, dry wind from the south. The term is used chiefly on the northern shores of the Mediterranean. It has a disastrous effect on vegetation and can ruin fruit trees when they are in bloom.

Sisterhood Name given to a community of women living under a rule, to be distinguished from enclosed nuns. Their aims are usually charitable and include nursing the sick, teaching, and ministering to the poor. The first sisterhood, known as the Daughters of Charity, was established by S. Vincent de Paul in 1633. Among the most familiar in existence to-day are the Sisters of S. John the Baptist, generally known as the Clewer Sisters, and the Wantage Sisterhood in Berkshire.

Sistine Chapel Pope's private chapel in the Vatican. One of the artistic gems of the world, it was built by Sixtus IV. in 1480, and is decorated with frescoes by Michelangelo and other famous artists. Raphael designed the tapestries, some of which are now in the Victoria and Albert Museum, London. The **Sistine Choir**—which sings in the Sistine Chapel—is one of the most famous choirs in the world.

Sisyphus In Greek legend, son of Aeolus, and King of Corinth. His life was so wicked that in the lower world he was given the endless task of rolling a great marble block up a hill. As soon as he reached the top it rolled down again and he had to begin once more.

Sittingbourne Urban district and market town of Kent. Situated on Milton Creek, it is 45 m. from London on the S. Rly. and not far from Canterbury. It has brick works and manufactures paper. There is also some shipping, for the Swale, of which Milton Creek is an arm, connects it with the Medway and the Thames. The urban district is Sittingbourne and Milton. Pop. (1931) 20,175.

Siva (or **Shiva**). One of the chief triad of gods in Hindu mythology. He is symbolical both of death and of reproduction, and his worship is a type of phallicism. His representations show him with four hands and three eyes, garlanded with skulls, and armed with weapons of destruction. Sometimes he is shown dancing on a prostrate body, but more often in contemplation. Kali is his wife.

Sixth In music, an interval of six notes of the scale. It may be a major sixth, a minor sixth, or an augmented sixth.

Sixtus Name of five popes. The two best known are Sixtus IV. and Sixtus V. **Sixtus IV.**, originally Francesco della Rovere, was born in 1414. The son of a fisherman, he entered the Franciscan order, rose to be its general, and gained wide fame as a preacher. He was elected pope in 1471. A warm patron of art, he furthered education and did much for the beautifying of Rome. He built the bridge over the Tiber and a chapel in the Vatican, both called Sistine after him. He died in 1484.

Sixtus V. was one of the ablest and most vigorous of all the popes. Born in 1521 his original name was Felice Peretti. Entering the Franciscan order early, he became its Vicar-General. He was elected cardinal in 1570, and pope in 1585. His first care was the suppression of lawlessness in the Papal States and in Rome itself. He made many improvements in the city and used every means to extend the power of the Roman Catholic church over the world. He published new editions of the Septuagint and the Vulgate. He died in 1590.

Sizar Student either of Cambridge or Dublin Universities whose fees are reduced because he holds a sizarship, *i.e.* is

entitled to certain benefactions. In old days this meant an allowance of food and drink, and was called "size," in return for which he performed certain services. The equivalent at Oxford is a servitor.

Size Glutinous materials. Many of them are preparations of glue or flour used for glazing the surfaces of paper, plaster, etc. The size used by painters is a glue which contains too much water to become hard. Size is also used to strengthen the threads of textile fabrics, such as linen. To make this, starch, with oil or tallow added, is used, an antiseptic being introduced to prevent mildew. Starches made from sago, tapioca, etc., are sometimes used.

Skagway Seaport of Alaska, the terminus of the railway to the Yukon. A small place, it yet has some importance as the centre for the distribution of supplies to the Klondike. It owed its settlement in 1898 to the discovery of gold there in 1896. Pop. 1000.

Skald Scandinavian or Icelandic musician and poet, the equivalent of the Scottish bard. His rôle was to sing the exploits of national heroes at feasts or assemblies, usually accompanying himself upon the harp.

Skate Food fish (*Raia*) of the class *Elasmobranchii*. One of the cartilaginous fishes, its body is flattened in the dorso-ventral plane, and there is a long tail. The snout is triangular, the mouth and nostrils being on the ventral side. There are several British species, the commonest being *Raia batis*, up to 4 ft. long.

Skating Form of locomotion on ice. Skating may be traced back to the times of the early Norsemen, who used bone-runners on their shoes for crossing ice. Nowadays, skating has become a popular, world-wide sport, both with metal-runners on the shoe, or rollers. Speed-skating and figure-skating championships are held, and these have usually been won by fensmen, who live where ice is plentiful. A great vogue for skating has recently spread over England, popularising such sports as dancing upon ice, and ice-hockey. Figure-skating has become popular among women; the woman world-champion is Miss Sonja Henie, of Norway.

Skeleton Biological term for the hard part of plants and animals supporting the soft tissues. In the lower animals, it is mainly an outer covering, as in insects. In higher animals the bones are covered by the soft tissues, and are formed largely of deposits of calcium phosphate.

Skegby Town of Nottinghamshire, on the L.N.E. Rly., 18 m. from Nottingham and 142 m. from London. It is in the middle of a coal mining district.

Skegness Urban district and watering place on the coast of Lincolnshire. It is served by the L.N.E. Rly. and is 24 m. from Boston. In the Middle Ages there was a flourishing port here, but it was engulfed by the sea in the fifteenth century. There are fine sands. Pop. (1931) 9121.

Skelmersdale Urban district of Lancashire, near Ormskirk and 200 m. from London, on the L.M.S. Rly. It is an industrial centre with coal mining and brick making industries. Pop. (1931) 6177.

Skelton District of Yorkshire, forming part of an urban district known as Skelton and Brotton, served by the L.N.E. Rly. It is the centre of an ironstone mining district. Pop. (1931) 13,654.

Skerries Seaport of Ireland, in Co. Dublin, 18 m. from Dublin City. Stone is quarried in the neighbourhood, and there is good fishing. Pop. 1800.

The name is also given to a group of small islands off the coast of Dublin.

Skewen District of Glamorganshire. It is situated on Swansea Bay, 193 m. from London, on the G.W. Rly. There are coal mines in the neighbourhood. The chief industries are the refining of oil and the smelting of copper.

Skiagraph X-ray photograph. The word is derived from two Greek words meaning shadow and write. The modern term for it is radiograph.

Skibbereen Market and seaport town of Co. Cork, Irish Free State. It has some small shipping trade, also fishing and trades in corn and livestock. It is served by the Gt. S. Rlys. Pop. 3640.

Skiddaw Mountain of Cumberland. It is just outside Keswick and reaches a height of 3054 ft.

Ski-ing Popular winter sport. The word is derived from the Norwegian snow shoes or "ski." This method of travelling is a necessity in snow covered countries, as in polar expeditions. The ski are long strips of wood curved in front and strapped to the foot. Poles with a circular piece of metal at the end to prevent them from sinking into the snow are carried for steering and braking. Racing and jumping competitions are held in Norway, Switzerland and other countries.

Skin Tissue covering the flesh of the body. This has two layers, the top one being the epidermis, known as the cuticle or scarf skin, and the dermis, or true skin. The latter is richly supplied with blood vessels. Besides its protective work, the skin acts as an organ of excretion by means of the sweat glands, and thus helps to regulate the temperature of the body. *See* PERSPIRATION.

Skin Disease. There are various kinds of skin disease to which children, particularly, are subject. Skin trouble is difficult to cure, and a doctor should always be consulted. The sores should be cleansed with olive oil and not washed with ordinary soap, and children must be prevented from scratching them.

Skin Soreness. The tender skin of a baby is liable to become sore from the napkin unless very soft muslin is used. Sore places should be smeared with white vaseline or olive oil and not washed. Some babies get rashes and spots from too much acid in the blood caused by excess of sugar in the diet. Treat as for soreness and remedy the cause.

Skinner Dealer or worker in skins. As distinct from a tanner who is concerned only with the hide, a skinner deals with furred skins. The **Skinners Company** was incorporated in 1327, and has done much in the cause of education. Tonbridge School is one of their foundations.

Skipton Urban district and market town of Yorkshire (W.R.). It stands on the Aire, and is served by the L.M.S. Rly. It has cotton and woollen mills, and some trade in corn. There is a 16th century grammar school and the ruins of a Norman castle, partly restored. Pop. (1931) 12,434.

Skittles Game resembling ninepins. It consists in flinging a bowl at

four skittles, set up in a diamond pattern, with the object of knocking them all over. The bowl weighs about 10 lb. and is shaped like a cheese. The skittles are also large and heavy. The throw is made from a distance of 21 ft.

Skua Genus of birds (*Stercorarius*) allied to the gulls. Some species follow gulls or other birds and cause them to disgorge food they have swallowed, which the skua then consumes. Two species breed in N. Britain, the **great skua** (rarely) and **Richardson's skua**. The former is 22 in. long, with mottled dark brown plumage; the latter, slightly smaller, is a dusky brown.

Skull The skeleton of the head of the higher animals. In man, it consists of the 8 bones of the cranium enclosing the brain, and the 14 bones of the face. The cranial bones are specially developed to protect the brain.

Skunk (*Mephitis*). Genus of small carnivorous animals. They project a malodorous secretion from two glands situated near the tail when attacked or angered. *M. mephitica*, common in Central and N. America, is about the size of a domestic cat. The fur is thick and soft and handsomely marked in black and white, the tail being thick and bushy. The pelts are commercially valuable.

Skye Largest island of the Inner Hebrides. It is part of the county of Inverness. Possessing an area of 643 sq. m. and a population of 14,780, it has only one town, Portree (*q.v.*). The inhabitants are occupied in farming and fishing. The island is wild and beautiful, the Coolins rising to over 3300 ft. There is steamer communication from Portree with Glasgow, Oban and other ports.

Skye Terrier Sporting dog. In favour as a house dog and pet, it was originally bred in the island of Skye where it was used for hunting. It has a long, silky coat of a silvery blue-grey, and is built with short legs and a long, low body. There are two types, the lop-eared and the prick-eared. The former has straight hair. The prick-eared should have a thicker, rougher coat.

Skylark Passerine bird (*Alalauda arvensis*), native of Europe and Asia. It makes its nest of dry grass in a shallow depression on grass land. The plumage is warm brown above, with black streakings; yellowish-white beneath, the chin and breast being buff with darker streaks. The length is 7 in. The lark is noted for its pleasing song, uttered on the wing as it hovers high in the air.

Skyscraper Type of building designed with many storeys in order to save ground space in large cities. The idea originated in America and has been adopted, with modifications, by other countries. The world's greatest skyscrapers are in New York and Chicago, where there are several that are 800 and 900 ft. high. The Empire State building in New York is 1248 feet high.

Slade **Felix.** English collector. Born in London in 1790, he was very successful in business and retired with a large fortune. This he devoted to purchasing works of art, and in time his collection of glass, pottery, manuscripts and engravings became one of the finest in the country. He died March 29, 1868.

Slade left money to found professorships of fine arts at the Universities of Oxford, Cambridge and London. The **Slade School**, a branch of University College, London, also owes its existence to him. It was opened in 1871 and is one of the chief centres for the teaching of art, having courses in all branches of drawing, painting and sculpture.

Slaithwaite Market town and urban district of Yorkshire. It is 4 m. from Huddersfield, on the L.M.S. Rly. A canal also serves the town, which is on the River Colne. The making of woollens is the main industry. Here are baths, the waters of which are suitable for skin complaints. The regional broadcasting station for the North of England is on Slaithwaite Moor. Pop. (1931) 5081.

Slander Malicious and untrue statements. It differs from libel in being spoken and not written. A person who is slandered can bring an action for damages, but slander is usually very difficult to prove. The words must have been spoken in the presence of a third party and must have injured the slandered person financially, or in some other way, by soiling his personal reputation, or his reputation as a public official. A woman can bring an action for slander if any one makes a reflection on her chastity.

Slaney River of the Irish Free State. Rising in the mountains of Wicklow, it flows through counties Carlow, and Wexford into the harbour at Wexford, which stands at its mouth. Its tributaries include the Derry, Bann and others. Salmon are found in the river. It is 60 m. in length.

Slang Colloquial language. It probably originated in the thieves' jargon of the 14th-15th centuries. Its vitality and expressiveness have brought it into use even among educated people, and slang expressions often become standard English through literary use. The first known use of the word is in a work of 1756.

Slate Hard kind of shale rock. Split into thin sheets, it is used mostly for roofing purposes. A piece of slate enclosed in a wooden frame also forms a tablet for writing.

A **slate club** is one whose members pay weekly contributions into a common fund as an insurance against sickness or unemployment, or to provide a lump sum. The name is derived from the fact that originally these payments were chalked up on a slate. Slate clubs are conducted by tradesmen, clubs and charitable organisations.

Slaughter House Place where cattle are slaughtered for food. Owing to the insanitary nature of many of them, laws have been passed regulating them and, especially in the towns, numbers of them have been closed. Their place has been taken by abattoirs. *See* ABATTOIR.

Slav Peoples of Eastern Europe. The classification of the group is by language rather than by racial characteristics. It includes such peoples as Russians, Poles, Czechs, Slovaks, Yugoslavs, all of whom speak dialects of the Slavonic sub-family of Indo-European languages. In the pre-Christian era they were mostly nomadic peoples, existing by fishing and hunting, and using primitive weapons in war. They came originally from the country N. of the Carpathians. In addition to the Slavs of Europe, America has some 8,000,000 in her population.

Slave River of Canada, connecting Lake Athabaska and the Great Slave Lake. Its length is 306 m., of which 190 are navigable.

The Slave Coast is a portion of the Guinea

Coast in W. Africa, bordering the Bight of Benin. Its name is derived from the fact that this region was the haunt of the slave traders until the trade was abolished. It is divided between Great Britain and France.

Slavery Condition of bondage. In this condition human creatures are bought and sold and forced to work without payment. It has existed from the very earliest times, and still exists in some countries, though most civilised states have abolished it. It was abolished in the British Empire in 1833, and in the U.S.A. in 1865.

Slaves were frequently prisoners of war. Other sources of supply were debtors and felons, or children sold by their parents. The negro slaves of the U.S.A. were originally kidnapped from their native country by slavers and sold at a high price. In Greece and Rome the slave class was very large and was, on the whole, treated with humanity. Slaves could purchase their freedom by a certain term of work or by some special service to their owners, as well as by payment.

Sleaford Market town and urban district of Lincolnshire. It stands on the little River Slea, 112 m. from London and 21 from Lincoln, and is a junction on the L.N.E. Rly. It is the chief town of the division of Kesteven. Sleaford is an agricultural centre, with brewing and malting industries. There was a castle at one time. Pop. (1931) 7024.

Sledmere Village of Yorkshire (E.R.). It is 8 m. from Driffield, and has a station (Sledmere and Fimber), on the L.N.E. Rly. **Sledmere Park,** long the seat of the Sykes family, is famous for its stud of horses established by Sir Tatton Sykes (1772-1863).

Sleep Period of unconsciousness. During this period the body rests and the brain ceases working except in dreams. A certain minimum of sleep is essential for the maintenance of life and health, in order that the body tissues may be renewed. The amount required varies in individual cases.

SLEEPLESSNESS. *Treatment.*—A hot bath, or even a hot foot bath, will often induce sleep, and the bed should be warm and comfortable and the room airy. Cold feet are a frequent cause of sleeplessness, so a hot bottle should be used. Stimulating drinks such as tea, coffee or alcohol should, of course, be avoided, but hot milk, sipped after retiring, has a sedative effect. Drugs should *never* be taken except by the doctor's orders. *See* INSOMNIA.

Sleeping Sickness Disease prevalent in tropical Africa. Especially frequent in Uganda and the Congo, it is now known to be due to a blood parasite called the trypanosome, and to be carried by the tsetse fly. It is characterised by great wasting and weakness, culminating in the lethargy and somnolence which have given the disease its name. Recent research has discovered one drug, Bayer 205, which produces good results and a fair percentage of cures, but the disease is at all times a grave one. Much depends upon early treatment.

Sleepy Sickness Disease of the brain (*Encephalitis lethargica*) accompanied by marked physical and mental inactivity. The causative virus is unknown. It occurred on the continent of Europe in 1916-1917, and in England in 1918, and at times since, with fatal results in many cases. In the early stages mild attacks may bear some resemblance to influenza. Lethargy and coma are subsequent developments, while dementia may be exhibited in acute attacks. Attacks may recur after a considerable time. At present no specific remedy is known.

Slesvig District of S. Denmark, called Schleswig by the Germans. With the neighbouring Duchy of Holstein it was taken by Prussia and Austria after a short war in 1864, with the King of Denmark, Frederick VII. Two years later, in 1866, there was a war between Austria and Prussia and the duchies were made a province of Prussia as Schleswig-Holstein. The province covered 5800 sq. m., and remained in the German Empire until 1919, when, after a plebiscite, the northern part was returned to Denmark. This area covers 1500 sq. m. The little town of Schleswig, which was the capital of the province, is in the small part of Schleswig which remained German.

Slieve Bloom Range of hills between the counties of Offaly and Leix, Irish Free State. The highest point is 1733 ft.

Slieve Donard Mountain of County Down, Northern Ireland. It has an altitude of 2796 ft., and is the highest point in the Mourne Range.

Sligo Seaport and market town of Co. Sligo, Irish Free State; it is also the county town. It stands where the River Garrogue falls into Sligo Bay, 134 m. from Dublin, on the Gt. S. Rlys. It has a good harbour, from which a large supply of produce is exported to Liverpool, Glasgow and elsewhere. Other industries are flour milling and fishing. Pop. (1926) 11,437.

Sligo County of the Irish Free State. In the west of the country, it has a coastline on the Atlantic Ocean where are Sligo and other bays. The interior is hilly and the soil poor. It contains the rivers Moy, Owenmore, Easky and others. In the county are Loughs Arrow and Gill. Sligo is the county town; other places of importance being Tobercurry, Ballymote and Collooney. Its area is 707 sq. m. and it includes Coney, Inishmurray and other islands. The chief industries are cattle rearing, potato growing and fishing. The county is served by the G.S. Rlys. Pop. 71,388.

The title of **Marquess of Sligo** has been held by the family of Browne since 1800. The marquess is also Earl of Clanricarde and Earl of Altamount, a title given to John Browne in 1771. His eldest son is called the Earl of Altamount.

Sloane **Sir Hans.** Irish physician, naturalist, collector. He was born in Ireland on April 16, 1660, and studied medicine in London, subsequently travelling and collecting plants, books, and miscellaneous curiosities. He occupied the position of physician to Christ's Hospital, President of the Royal College of Physicians, President of the Royal Society and other important posts, and was made a baronet in 1716. His memory is kept alive by his marvellous collection which, bought by the nation after his death for £20,000, proved the beginning of the British Museum. His name is perpetuated in **Sloane Square** and **Sloane Street.** He died on Jan. 11, 1753.

Sloe Another name of the blackthorn, *Prunus spinoca*, and its fruit. The fruit resembles a miniature plum and when ripe is a rich black with a silvery bloom giving it a purplish appearance. It is harsh and acrid to the palate, and unsuitable for culinary uses.

It is utilised, however, in the preparation of sloe gin.

Sloop Fore-and-aft rigged, one-masted vessel. Carrying a jib, fore-staysail, mainsail and gaff-topsail, in the navy a sloop is a small, light vessel used for special duty, *e.g.*, surveying.

Sloth Arboreal mammals of S. America, of the family *Edentate*. There are two species, *Bradypus* and *Choloepus*, the former with three toes and the latter with two, both found in the forest regions, where they feed on leaves, fruit and young shoots. The limbs have hook-like toes with long curved claws, adapted to the animal's habit of hanging inverted from branches. The coarse long hair is covered with algae which impart to it a greenish hue.

Slough Urban district and market town of Buckinghamshire. Situated 2 m. from Windsor, and 18½ from London, on the G.W. Rly., it is a residential district, but has numerous industries, the principal one being engineering. Pop. (1931) 33,530.

Slovak People of Slav race found chiefly in Czecho-Slovakia. They number about 2,500,000. One of the provinces of Czecho-Slovakia is called Slovakia. Before the foundation of the new republic in 1919 the Slovaks were under Hungarian rule. *See* CZECHO-SLOVAKIA.

Slovene People of Slav origin found in Yugoslavia. They number something over 1,000,000 and are chiefly Roman Catholics. After having been in the empire of Austria-Hungary they united with others and formed Yugoslavia, which is properly the kingdom of the Serbs, Croats and Slovenes. *See* YUGOSLAVIA.

Slow-worm (*Anguis fragilis*). Small legless lizard, also known, from its tiny eyes, as the blind worm. It is brownish-black in colour and is common in Britain.

Slug Snail-like land mollusc. Usually without a visible shell, in some slugs there is a small internal shell, and in one carnivorous species the tail carries a tiny shell. Many slugs feed on lichens and fungi. During the winter they rest under stones or in the ground.

Sluys **Battle of.** Naval battle. It was fought between England and France on June 24, 1340, at the mouth of the river Sluys in the Netherlands, after the French had done serious damage in S.E. England. Edward III., with a fleet of some 250 sail, attacked the French fleet, numbered about 190 sail. The fight resulted in a crushing defeat for the French fleet, of which only 24 ships were able to escape.

Small Arms Term used to denote such weapons of war as can be used and transported by a single man. It is applied nowadays to rifles, revolvers, and other light portable firearms, as distinct from heavy artillery, and also to swords, lances, bayonets, and other thrusting, cutting or stabbing weapons, and even to machine-guns, as using small-arm ammunition.

Small Holding Piece of land used for agricultural purposes. By English law a small holding is defined as a plot not more than 50 acres in extent and rented and cultivated by an agricultural worker. It is thus midway in size between a farm and an allotment. County councils have power to acquire land for small holdings. In 1932 there were 390,469 small holdings in England and in 1931 there were 75,850 in Scotland. *See* ALLOTMENT.

Smallpox Highly contagious disease. It is characterised by fever and the appearance of small spots leaving scars in the form of pits. Native races are far more susceptible to it than are Europeans. The symptoms include chill, headache, and backache. The spots appear about the fourth day. There are several varieties of the disease, such as confluent smallpox, in which the symptoms are very severe, the spots appearing in continuous patches, and haemorrhagic smallpox, in which bleeding into the pustules occurs.

Smartweed (*Polygonum hydropiper*). Annual herb. Belonging to the order *Polygonaceae*, also known as water pepper, the plant contains highly acrid juices, and is employed in medicine as a diuretic. It is found in the north temperate hemisphere. The flower sprays are a rosy-green in colour.

Smell Quality possessed by many substances that affects the olfactory nerves of animals. The sense organs of smell are located in the mucous membrane of the nose, over part of the nasal septum and upper turbinal bone, and consist of special nerve cells, which by means of the olfactory nerves, convey the stimulus to the olfactory lobe of the brain. In the lower animals and man in a savage state the sense of smell is more acute than in civilised mankind.

Smelt (*Osmerus*). Genus of small sea fish. Belonging to the salmon family, the best known species, and the only one found in European waters, is the common smelt (*O. eperlanus*), which is abundant in the seas and brackish waters of Britain. Silvery grey in colour, with a greenish back, it has a delicate flavour.

Smelting Process by which metals are extracted from their ore. This is done by fusion in special furnaces. Smelting is carried out by the aid of some reducing agent such as carbon or carbon monoxide, but the process varies in character according to the metal and the nature of the ore.

Smethwick County borough of Staffordshire. It is in the Birmingham area, and is 115 m. from London, on the L.M.S. and G.W. Rlys. There are engine works, and other industries. Pop. (1931) 84,354.

Smiles **Samuel.** Scottish author and biographer. Born on Dec. 23, 1812, he graduated in medicine at Edinburgh University at the age of twenty. Practising first in his native town, Haddington, and then in Leeds, he later abandoned medicine for literature, his first post being the editorship of the *Leeds Times*. He wrote biographies of George Stephenson and many others, but was best known as a writer of a series of books on character-building, the first of which, *Self-Help*, had an enormous circulation. It was followed by *Character* and *Thrift*. He died on April 16, 1904.

Smillie **Robert.** Labour leader. Born on March 17, 1859, in Belfast of Scottish parentage, he began working at eleven in a factory, later in a Clyde shipyard, and subsequently in Lanarkshire coal mines. President of the Scottish Miners' Federation from 1921, M.P. for Morpeth 1923-1929, he has since retired from public life. He was the leader in the great coal strike of 1912. He is the author of *My Life for Labour*.

Smirke **Sir Robert.** English architect. Born in London in 1780, he be-

came an R.A. in 1811, and was knighted in 1831. Many important buildings in London are of his creation, such as the British Museum, the Royal Mint, the Royal College of Physicians, the Carlton Club, and Covent Garden Theatre. He restored York Minster after the fire in 1829. He died at Cheltenham, April 18, 1867.

Smith **Adam.** British economist. Born at Kirkcaldy, June 5, 1723, he was educated at Glasgow and Balliol College, Oxford. A friend of David Hume, he became Professor of Moral Philosophy at Glasgow in 1751 and published his *Theory of the Moral Sentiments* in 1759. Turning to economics, he published in 1776 *The Wealth of Nations*, which, as the first scientific exposition of the principles of political economy, had a far-reaching influence, and has been translated into many languages. Running counter to the prevailing economic theory, it postulated freedom of trade and circulation of gold as the bases of national prosperity, and influenced Pitt and subsequent English statesmen in their policy of modifying tariffs and making commercial treaties between England and other nations. He died July 17, 1790.

Smith **Alfred Emanuel.** American politician. Born in New York, Dec. 30, 1873, of Irish parentage, he entered politics in 1895. Elected to the N.Y. State Assembly, as a Democrat, in 1903, he became Speaker in 1913, Sheriff of New York in 1915, and in 1918 he was elected Governor of N.Y. State, an office he held four times. In 1928 he secured the Democratic nomination for the Presidency, but was defeated by the largest majority ever recorded in a Presidential election.

Smith **Sir George Adam.** Scottish theologian and divine. Born in Calcutta, Oct. 19, 1856, he was educated in Edinburgh, Tuhingen and Leipzig, and became a minister of the Free Church of Scotland in 1880. He travelled widely in the Near East and in America, and lectured at the universities of Johns Hopkins, Yale, Chicago, and Berkeley. He was elected Moderator of the General Assembly of the United Free Church of Scotland for 1916-17. From 1909 to 1935 he was Principal and Vice-Chancellor of Aberdeen University, receiving the honorary degree of D.D. in 1931. He has written many books on Old Testament exegesis and other religious subjects.

Smith **John.** British settler. Born in Lincolnshire, 1579, of good parentage, he led a most adventurous life as one of the early settlers of Virginia. He co-operated with a number of leading Englishmen, incorporated as the London Company, in the establishment of a settlement in Jamestown. His most famous adventure was his rescue from death by Pocahontas, a girl of about 13, and his subsequent adoption by the tribe. He died in June, 1631.

Smith **Sydney.** English journalist and divine. Born on June 3, 1771, he was educated at Winchester and Oxford, and ordained in 1794. He was engaged in clerical work in Edinburgh, 1798-1803. In 1802, in conjunction with three others he founded the *Edinburgh Review*, which continued until 1930. For 20 years he was Vicar of Foston, Yorks., and in 1831 he was appointed Canon of St. Paul's Cathedral. In addition to his contributions to the *Edinburgh Review* he wrote many articles, both serious and humorous. He was famous for his wit and reforming zeal. He died on Feb. 22, 1845.

Smith **William Henry.** English politician and newsagent. Born in London on June 24, 1825, he was the son of W. H. Smith, founder of the well-known distributing firm, in which he became a partner, and which, under his guidance, became the largest British agency for the distribution of newspapers and magazines. He was M.P. for Westminster 1868, Secretary to the Treasury 1874, First Lord of the Admiralty 1877, and under Lord Salisbury in 1886, First Lord of the Treasury. He died on Oct. 6, 1891. A peerage in her own right was conferred on his widow, with the title of Viscountess Hambledon.

Smith **Sir William Sidney.** British sailor. He was born July 21, 1764. Entering the navy at eleven he was captain at 18. He was knighted for his services to Sweden in her war against Russia, 1790-92. In 1799, after capturing the French ships, he compelled Napoleon Bonaparte to raise the siege of Acre (Northern Palestine), and subsequently served in Egypt, Sicily, Naples, etc. He was made an admiral in 1821. He died May 26, 1840.

Smith-Dorrien **Sir Horace Lockwood.** British general. Born May 26, 1858, he entered the army in 1876, and served in Egypt, the Sudan, S. Africa and India. In Aug., 1914, he was in charge of the 2nd Army Corps, bearing the brunt of the enemy's attack at Mons. Later he commanded his corps on the Marne and on the Aisne, and in Flanders. In April, 1915, he was in charge of the Home Defence armies. From 1918-23 he was commander-in-chief at Gibraltar. He died Aug. 12, 1930.

Smithfield District in London. South of Farringdon Street Station, it is famous for its meat and other markets. The site has a varied history. Originally it was used for tournaments and fairs, and later for executions and as a place for burning heretics. The **Smithfield Club** dates from 1798. The famous Smithfield fat stock show was held at Smithfield from 1799 until 1862, when the venue was changed to the Agricultural Hall, Islington.

Smithsonian Institution

American scientific institution. Founded in Washington, D.C., under the will of James Macie Smithson (1765-1829), it was established by Act of Congress in 1846. The Smithsonian has an increasingly wide range of scientific activities to its credit. These include the buildings and research work of the Weather Bureau, the National Museum, the Bureau of Ethnology, the National Zoological Park, the Langley Aerodynamical Laboratory, and the Aerophysical Laboratory. Funds have been added to the original bequest.

Smoke Volatile matter formed by the imperfect combustion of wood, coal or other fuels, and consisting largely of particles of carbon and hydrocarbons along with various gaseous products. Bituminous coals, having a high percentage of volatile matter, are productive of considerable smoke when burnt in ordinary fire grates; but the use of proper stoves and furnaces, especially with steam coals and anthracite as fuel, practically eliminates smoke. The need for the abatement of smoke has brought about legislation in the form of regulations under the Public Health Act, 1875, and a special Act relating to London in particular.

Smollett **George Tobias.** British author. Born in 1721, he was educated as a doctor, but being unsuccessful in practice,

he embarked upon a literary career by which he made himself famous. His writings were many and varied, the most important being *Roderick Random* (in which he describes some of his adventures as a ship's surgeon), *The Adventures of Peregrine Pickle, The Expedition of Humphrey Clinker*, and *Matthew Bramble*. He died on Sept. 17, 1771.

Smuggling Breach of the revenue laws. Whether by importing or exporting prohibited goods, or by evading customs duties, the practice flourishes chiefly where high duties make it worth while to run risks. Among the commodities smuggled, brandy, wines, tobacco, and tea have figured prominently. In former times the coves round the coasts of Devon and Cornwall were infested by smugglers. The **Smugglers' Act** of 1736 made smuggling a felony, and the practice was further dealt with under the Customs Consolidation Act of 1876, and subsequent Acts. The reduction of duties and the improvement of communications have been powerful contributory causes to the diminution of smuggling.

Smut Disease of corn. It affects other cereals and various herbs and grasses. It is also the name of the fungi that cause it. The fungi which produces this condition comprise the genus *Ustilago*. The disease appears in the form of myriads of minute brown spores which have the appearance of soot. Smut is highly infectious, and calls for drastic remedies, such as steeping in chemical solutions.

Smuts **Jan Christiaan.** S. African statesman. Born May 24, 1870, in Cape Colony, after a brilliant career at Cambridge he practised at the bar in Cape Town and Johannesburg, and during the Boer War had supreme command of the Boer forces in Cape Colony. He took a prominent part in promoting the union of the S. African colonies, which was culminated in 1910. He commanded in E. Africa in the Great War, and visited London in March, 1917, being given a seat in the War Cabinet. His memorandum on the League of Nations, drawn up after the Armistice, became in substance the Covenant of the League. He was Prime Minister of the Union of S. Africa, 1919-1924, Rhodes Memorial Lecturer at Oxford, 1929-30, and president of the British Association in 1931. In 1933 he became Deputy Prime Minister and Minister of Justice in a Coalition Government. A keen botanist and a profound philosopher, he is the author of an important philosophical work, *Holism and Evolution*.

Smyrna (or Izmir). City of Turkey. Situated on the Gulf of Smyrna, on the W. coast of Asia Minor, it is a very important commercial centre. Figs, tobacco and raisins are exported. Smyrna was one of the Seven Churches of Asia. It was captured by the Turks in 1424. As a result of the Great War the city was administered by Greece for some time, but in 1922 the Turks drove the Greeks out. Pop. 153,845.

Smyth **Dame Ethel Mary.** Foremost English woman composer. Born April 23, 1858, she received her musical education chiefly in Berlin and Leipzig, and is a Mus. Doc. of Durham and Oxford. She has written many orchestral works and operas, which have been heard both in England and abroad. Her chief compositions are the *Mass in D, The Wreckers, The Boatswain's Mate, Entente Cordiale*. She was a militant suffragette. She was made D.B.E. in 1922.

Snaefell Mountain in the Isle of Man. It is 5 m. S.W. of Ramsay, and is 2034 ft. above sea-level, being the highest point in the island. It commands extensive views.

Snail Various gastropods. They have an external shell. Some live in fresh or salt water, others on land. One of the best known sea snails is the periwinkle. The land snail is known specifically as the edible snail (*Helix pomatia*), and is widely eaten on the Continent. Although some of the land snails cause damage in gardens, most of them feed on fungi and mosses. Like slugs, snails are most active at and after dusk.

Snake Limbless reptile. With a long cylindrical body furnished with overlapping scales, it belongs to the order *Squamata*. Sea snakes are clad entirely with scales, whereas land snakes have broad plates on the ribs. Snakes slough their skins from time to time, the transparent fixed eye-covers being shed with the skin. The poison is secreted in a modified saliva gland. Snakes are very widely distributed. The only poisonous kind in Britain is the adder. A snake bite, though very painful, and accompanied by distressing symptoms, is rarely fatal to man. **Snake charming**, still common in India and Egypt, does not depend on occult powers, but on skill in handling the reptiles.

Snake-root Plants used as an antidote for snake bite. The term is specially applied to the mongoose plant (*Ophiorrhiza mungos*) of the E. Indies. Others include Viriginia snake-root (*Aristolochia serpentaria*), button snake-root (*Liatris spicata* and *Eryngium aquaticum*), and white snake-root (*Eupatorium altissimum*).

Snake Wood Ornamental wood. Obtained from the W. Indies, it consists of the heart wood of the bread nut tree in Jamaica, and of an allied plant in Trinidad. The wood is figured and deep brown in colour, and is valuable for panelling, inlaying and veneering.

Snapdragon (*Antirrhinum majus*). Perennial herb. Of the natural order *Scrophulariaceae*, the bag-shaped flower can be made to open by squeezing sideways. Snapdragons are increasingly popular garden plants, and can be obtained in a variety of striking colours. They range from large plants to dwarf kinds. One species, *A. orontium*, is found wild in Britain.

Snaresbrook District of Essex. On the edge of Epping Forest, it was once a separate hamlet, but is now part of the urban district of Wanstead. It is served by a station (Snaresbrook and Wanstead) on the L.N.E. and L.M.S. Rlys.

Sneezewort Perennial herb (*Achillea ptarmica*). Belonging to the natural order *Compositae*, it is found in Europe and Asia Minor and also in Siberia. The plant has a strong pungent smell. The root-stock is long and creeping, and when dried and powdered it may be used as a substitute for snuff.

Snell **Hannah.** Known as the "female soldier," she was born at Worcester, April 23, 1723, the daughter of a hosier. She married a wastrel, who deserted her, and in order to find him she disguised herself and enlisted in the Duke of Guise's army. She deserted, and being shipped on board the *Swallow*, she took part in the siege of Pondicherry, and served before the mast in other vessels. Her adventures, published in 1750, were widely read. She died Feb. 8, 1792.

Snipe Wading bird (*Capella gallinago*). Allied to the plover, it is a marsh frequenting, long-beaked bird. The best known as the British snipe; the common snipe (*G. coelestis*), is about ten inches long, and is mottled brown and black. The other British species are the jack snipe (*G. gallinula*), which is slightly smaller than the common snipe, and the solitary or great snipe (*G. major*), which reaches one foot in length. Owing to its darting flight the snipe is a very difficult bird to shoot, but affords a very popular sport for the expert.

Snooker Pool Form of billiards. It is played by two or more players, and each plays in the following order, with a different coloured ball: white, red, yellow, green, brown, blue, pink, spot-white, spot-red, spot-yellow, spot-green, and spot-brown. Each player in the pool tries to pocket his opponent's ball, and the one who is so "potted" loses a life, which has sometimes a monetary value.

Snow Frozen water-vapour. It is precipitated in soft white flakes. The **snow-line** is the height above which snow always lies. It varies with latitude and elevation. In the Himalayas the limit of perpetual snow is about 16,000 ft., in Norway it is about 3000 ft., and in Greenland it occurs at sea-level.

For clearing snow from railway lines and roads a **snow plough** is used. In its simplest form this is a wedge-shaped arrangement of planks. Where the snowfall is very heavy a rotary snow plough is used. For travelling on foot over snow, **snowshoes** of various forms are used. *See* SKI-ING.

Snowberry N. American shrub (*Symphoricarpus racemosus*) bearing spikes of delicate rosepink flowers. These are succeeded by large white berries of a smooth waxy appearance.

Snow Bunting Song bird (*Plectrophenax nivalis*) of Northern Europe and Siberia. It visits the North of Britain in the winter. It is believed to breed occasionally in Scotland at very high altitudes. The wings are noticeably pointed, and the hind claws are very long. The bird has black and white plumage, which becomes tinged with a brownish-red in the winter.

Snowden Viscount. British statesman. Philip Snowden was born at Cowling, Yorkshire, July 18, 1864, and entered the Civil Service in 1886, retiring in 1893. He joined the Independent Labour Party in 1893, becoming chairman in 1903. He was Labour Member for Blackburn, 1906-18; and for Colne Valley 1922-32. An authority on financial matters, he became Chancellor of the Exchequer in the Labour ministry of 1924, and again in 1929, winning great popularity for his sturdy defence of British interests at the Hague conference on reparations in that year. In the critical days of the autumn of 1931 he incurred much abuse from the majority of the Labour Party by putting the national interest before that of his party and joining the National Government, in which he was Chancellor of the Exchequer and responsible for the abandonment of the gold standard. Soon after the reconstruction of the Cabinet, Nov. 5, 1931, he was transferred to the House of Lords as Viscount Snowden, becoming Lord Privy Seal. He resigned from the Cabinet in 1932. Most of his life has been spent in the furtherance of Socialism, and he is the author of several works on social subjects. An *Autobiography* appeared in 1934. Lord Snowden is an effective speaker, an able administrator, and a man of inflexible will.

Snowdon Mountain of Wales. In Caernarvonshire, 10 m. S.E. of the town of Caernarvon, it is divided into five peaks, of which Y Wyddfa, the highest, is 3560 ft. above sea-level. Snowdonia, as the surrounding district is called, was a royal forest under Edward I. It contains many lakes, and the passes which mark it off from the encircling hills are famous for their grand scenery. The summit is reached by a railway from Llanberis.

Snowdrop (*Galanthus nivalis*). Perennial herb. Belonging to the natural order *Amaryllidaceae*, it grows wild in Europe and Asia; and, though sometimes found in the wild state in Britain, is probably not native to it. The plant grows from a bulb, has two tapering leaves, and one pendent white flower on a tall stem. It is often seen in the snow, and flourishes in Britain during the early spring.

Snuff Powder prepared from tobacco. Used for inhaling up the nose, it is sometimes made from the residues of ordinary tobacco, but the best snuff is obtained from the central stem of the leaf. It is variously scented and flavoured. The practice of taking snuff, which was very common in England in the 17th and 18th centuries, is far less common now. Artistic skill was lavished on the making and decoration of snuff-boxes.

Soane Sir John. English architect. Born at Reading on Sept. 10, 1753, of humble parentage, after early training in an architect's office he gained a Royal Academy travelling scholarship, and spent three years in Italy. On his return home he secured appointments as architect to the Bank of England and St. James's Palace, designed other important buildings, and in 1806 was elected Professor of Architecture at the Royal Academy. He died on Jan. 20, 1837, and bequeathed his house in Lincoln's Inn Fields, containing numerous art treasures, to the nation.

Soap Cleansing compound. Composed of oils and fats with an alkali, it is regarded as the alkali salt of the acids present in animal and vegetable fats. The hard soaps are composed of sodium salts, and soft soaps of potassium compounds. From the spent lyes of soap-boiling, glycerine is obtained, although in the cold process the glycerine is retained in the soap. Soft soap, made with potash, is usually very alkaline, but for toilet purposes hard soaps require to be neutral.

Soapstone Mineral steatite in its massive structureless form. It consists of magnesium silicate and is soft, white or greenish coloured.

Soapwort (*Saponaria officinalis*). Perennial herb. Belonging to the natural order *Caryophyllaceae*, it is also known as fuller's herb. The rootstock is white and creeping, the leaves are lance-shaped, and the flowers, which are either lilac or white, grow in fragrant clusters. The name is derived from the fact that the leaves make a lather in water.

Soar River of England. A tributary of the Trent, it rises on the Warwickshire border, and is navigable as far as Leicester. It is 40 m. long.

Sobieski John. King of Poland, known as John III. Born in 1624, he became a soldier, and in 1668 was made commander-in-chief. Utterly unscrupulous, however, he conspired against the king, who was

consequently forced in 1672 to cede the Ukraine to the Turks. Sobieski, however, himself defeated the Turks in five battles and, the king having died in 1673, secured his own election as king in 1674. By 1676 he had recovered two-thirds of the Ukraine, and now attempted to establish an absolute monarchy in Poland. He signed a treaty with the Emperor Leopold against the Turks in 1683, in which year he relieved Vienna and freed Hungary from the Turks. His last twelve years were troubled by internal dissension and the ingratitude of his allies. His last campaign in 1690 was a failure. He died June 17, 1696.

Social Contract Idea that society originated in a voluntary association for mutual benefit and protection. Denying a divine or inherent right in kings or governments it implies that rulers rule and laws are made and observed solely by the sanction of the community. Though held by Hobbes, Locke and Rousseau (*Du Contrat Social*) the theory is not supported by history or anthropology.

Socialism Political and economic theory of social reorganisation. It aims at the state control of economic activities so that competition shall be replaced by co-operation and the opportunities of life and the rewards of labour be apportioned equitably.

Within this general definition of its aims the most varied interpretations are given to the term, these ranging from a somewhat advanced form of liberalism to something very like communism. Its antithesis is individualism which was a powerful force in Victorian liberalism, but to many it stands for an opposition to capitalism. It has had many advocates and exponents, among whom Karl Marx, Robert Owen and George Bernard Shaw may be mentioned.

Whatever definition of socialism is accepted, it is certain that in the 19th and 20th centuries it made great advances almost all over the world. This took the form of greater state control over conditions of labour, state provision for old age and sickness, state ownership of public utilities and state interference with unrestricted competition in scores of ways. In Great Britain the movement was inspired by the Fabian Society which preached the inevitability of gradualness. A more academic but hardly less powerful influence was the philosophy of T. H. Green.

In the political sphere socialism became very strong in the 20th century. In Great Britain and Australia, calling itself the Labour Party, it became responsible for the government of the country. It was less powerful in the United States and Canada, but attained enormous strength in Germany and France. After the Great War some of the republics that arose were definitely named socialist, and in almost all socialist ideas were dominant. Spain, in 1931, became a socialist republic and in 1932 Chile adopted a socialist constitution. Of other countries, the Irish Free State and Finland have gone far in putting socialist principles into operation. The system in force in Russia is in theory an extreme form of socialism. Political socialism has brought out active opposition which has found its fullest expression in the Fascist movement in Italy and the Nazi organisation of Germany, although on the economic side these are as socialistic as their opponents.

Society Islands Archipelago in the South Seas. Belonging to France, about 600 sq. m. in area, the islands are for the most part of volcanic origin. Vegetation is luxuriant, copra, vanilla, bananas and sugar being grown. Phosphates are plentiful. The principal island is Tahiti. The group was annexed by France in 1880. Pop. 9,720.

Society of Friends Small Christian body. Also known as the Quakers, it was formed in the middle of the 17th century under the leadership of George Fox. It possesses no professional ministry, and, save in America, no set services. At their meetings any one who is moved by the Spirit leads the prayer or preaches.

The Friends do not take the oath in courts of law, and they are averse to military service. They are noted for their philanthropy.

In Britain the Society of Friends numbers about 30,000. Its headquarters are Euston Road. Their early meeting place, Jordans, in Buckinghamshire, is still preserved.

Socinus Name of heresiarchs of Italian origin. **Lelius Socinus** (1525-82), and **Faustus Socinus** (1539-1604), were uncle and nephew respectively. Their Italian names were Lelio Sozzini and Fausto Sozzini. Lelius had been destined for the law, but was early attracted by theology. His legal mind was unwilling to concede anything unreasonable, or anything incapable of proof, and his teachings approximated closely to modern Unitarianism. Persecuted, he fled to France, England, Holland, Germany and Poland, dying in Zurich. After his death his nephew, after an interval of some years, vigorously resumed the work, undaunted by persecution. A new sect, the **Socinians**, was the outcome of their combined teachings.

Sociology Science of the development, nature and laws of human society. In the 19th century it became a subject of study, its increased importance being due to the fact that men were living more closely together and their activities were more dependent one upon the other than ever before. Sociology aims at studying the causes and effects of social relations and at drawing from this study some conclusions for the guidance of the legislator. Birth, marriage and death rates, housing, hours of labour, and the use of leisure are a few of the many that fall within its scope. Oxford, London, Birmingham, Bristol, Leeds, Liverpool, St. Andrews, Edinburgh, Glasgow and other universities give courses in social study.

Socrates Greek philosopher. Regarded as one of the wisest men of history, he was born *c.* 469 B.C., and in early life took part in three military campaigns, where he showed entire indifference to every hardship. He devoted his later life to the pursuit of philosophy, and gathered around him a number of pupils, the two most famous being Xenophon and Plato. He taught that self-knowledge is more important than speculation about the universe; that truth (or knowledge) and virtue are inextricably connected, and that vice arises from ignorance. Accused, chiefly by the Sophists, of corrupting the youth of Athens, he was condemned to death by drinking hemlock in 399 B.C. He forms the central figure of the Dialogues of Plato. Tradition says his wife, Xantippe, was a typical shrew.

Soda Sodium carbonate. This is known also as soda ash, washing soda, or soda crystal. It occurs naturally as deposits

and as brine in certain lakes in California, British Columbia and Kenya Colony; but is manufactured on a large scale from common salt. **Baking soda** is sodium bicarbonate obtained by the action of carbon dioxide upon the carbonate and is used for baking powders, and as an antacid in medicine.

Soda Water Aerated water. Prepared by charging ordinary water with carbon dioxide gas under pressure, the liquid, which usually contains little or no soda, is either bottled by special machinery and corked or enclosed in the more convenient form of siphons for use as an effervescent drink.

Sodium Metallic alkaline element. Having the symbol Na and atomic weight 23, it is not found in the metallic state, but its compounds are widely distributed in nature, occurring as common salt or **sodium chloride** in sea water, brines and rock salt; as a carbonate in soda lakes; as a nitrate in surface incrustations and as a borate in borax deposits.

Sodium when isolated from its oxide is a soft silvery-white metal lighter than water and with a strong affinity for oxygen. It decomposes water forming the hydroxide or caustic soda and setting free hydrogen which bursts into flame.

Sodom Former city of Palestine in the vicinity of the Dead Sea. Sodom and Gomorrah were known, together with Admah, Zeboiim and Zoar, as the "cities of the plain." They were proverbial for their wickedness, for which they paid the penalty by being destroyed by "fire and brimstone" (Gen. xix). The site of the cities has not been determined, and the exact nature of the catastrophe they suffered is still a matter of speculation.

Sodor and Man Name of the Anglican diocese of the Isle of Man. The diocese of Sodor (Norse *Sudr-eyjar*, southern isles), formed in 1154, was included in the province of Trondhjem, in Norway; it comprised, besides the Isle of Man, several islands W. of Scotland. This Norwegian connection came to an end in 1266, but the name Sodor remained. The diocese has its own special convocation, but for most purposes is included in the province of York.

Sofia Capital of Bulgaria. The city lies at the base of the Rhodopa Mts., some 100 m. N.W. of Istanbul (Constantinople), on the trans-European Orient Express route to the Bosporus. It is the seat of a university and the see of a Greek metropolitan, the cathedral of St. Alexander being a notable building. Sofia is an important trade centre and has a broadcasting station (319 M., 1 kW.). It was in the hands of the Turks from 1382 until 1878, when it passed to Russia. Pop. (1926) 213,000.

Soft Wood Class of woods. Mainly derived from coniferous trees such as the pines, firs, spruce and larch, these woods are lighter in weight and looser in texture than the hard woods such as oak, teak and mahogany, and they are used for building, box making, pit-props and wood pulp.

Soham Urban district and town of Cambridgeshire, 5 m. S.E. of Ely. It is served by a station on the L.N.E. Rly. The name **Soham Mere** marks the site of a great sheet of water now drained. S. Andrew's church has many interesting features and the grammar school dates from the 17th century. Fruit growing and market gardening are carried on in the district. Pop. (1931) 4737.

Soho District in the west end of London. It is bounded by Regent Street, Shaftesbury Avenue, Charing Cross Road and Oxford Street, and includes also part of the Tottenham Court Road area. There are many foreign restaurants and a large foreign colony, and the district is a stronghold of the moving picture industry. St. Anne's church is noted for its music.

Soho is also a district name in Birmingham; James Watt and Matthew Boulton had their foundry in Soho.

Soil Surface layer of mould or earth. Supplying nourishment for the growth of plants, a soil is formed by the weathering of rocks or may result from transport of disintegrated material by rivers or glaciers. The character of the soil depends upon the nature of the rock basis, the agencies of transport, and the character of disintegration. The mineral constituent may be either sand, clay or calcium carbonate, with various carbonates, sulphates, phosphates and nitrates. In addition to these, humus or decayed organic matter is present in large or small quantities. Loam is a sandy or clayey soil rich in humus, while marl is one that is calcareous.

Soissons City of N.W. France. It is identified with the Noviodunum of the Romans. Seized by the Franks, it was incorporated in the kingdom of Paris in the 7th century. Thomas à Becket spent some time here, and the city was a great monastic centre. Beyond the cathedral there is now little of note in the city which suffered badly in the War. There are iron and copper foundries and manufactures of agricultural implements, rubber goods and glass. Pop. (1931) 18,705. In the Great War, Soissons, with Rheims, was the centre of the great German advance of 1918. The Germans took many prisoners and guns and would have stretched their lines further had it not been for the successful intervention of American troops.

Sokotra (or **Socotra**). Island in the Arabian Sea. Situated at the entrance to the Gulf of Aden, it is about 130 m. E.N.E. of Cape Guardafui. It consists of high plateau land and low plains, with the Haghier Mts. rising to over 4500 ft. in the centre. Myrrh and frankincense are grown in the valleys that channel the plateau, and incense is a considerable export. The island is a British protectorate. It has an area of 1382 sq. m. Pop. 12,000.

Solar Cycle Chronological term. It is used to denote a recurrent period of twenty-eight years. During this period the days of the week recur on the same days of the month in any corresponding year.

Solarium Establishment for sun bathing. Equipment may also be provided for treatment by artificial sunlight in the winter season. One was opened at Poole in 1932.

Solar System Group of planetary bodies which move around the sun. They include the planets and their moons, the asteroids, meteoric swarms and the periodic comets. The planets all circulate around the sun in the same direction in oval orbits and at varying distances, while a comet moves in either direction and has the sun at one focus of an elongated elliptical orbit. All these bodies derive their light and heat

from the sun, except the comets whose light is largely their own.

Soldo Obsolete Italian coin. Of the nominal value of a halfpenny, equivalent to the French sou, the name comes from the Latin *solidus*, a Roman coin.

Sole (*Solea*). Genus of flat-fish. Much valued for food, there are several species. The common or Dover sole (*S. vulgaris*) sometimes exceeds 2 ft. in length, but about one foot is the average length. Young soles are known as slips. The so-called lemon sole is a kind of dab.

Solent Strait in the English Channel. Between Hampshire and the Isle of Wight, it forms the W. entrance to Southampton Water. It stretches from the Needles as far as West Cowes, a distance of about 16 m., with an average width of about 3 m. It is the venue of many yacht races.

Solicitor In England a name used by a member of the lower branch of the legal profession. They are members of the supreme court of justice and their business is to conduct legal business on behalf of their clients. They can appear in person in the lower courts, such as those held by magistrates and the county courts, but not in the higher ones, where they must brief, or engage, a barrister. The fees charged by a solicitor are according to a scale and a solicitor's bill can be taxed in order to see that the charges are not excessive. In 1932 an act was passed, dealing with the status of solicitors. *See* TAXATION.

Apart from litigation solicitors do a great deal of business for their clients. Some of them specialise in a certain branch of the law, ecclesiastical law or conveyancing, for example.

To become a solicitor one must serve articles to a solicitor for three or five years, pass certain examinations, and pay certain stamp duties and other fees. The controlling society is the Law Society in Chancery Lane, London, W.C., which deals with cases of discipline. For serious offences the punishment is to be struck off the rolls, which means that the solicitor cannot practise again. Most solicitors are in business for themselves, but a number are in the employment of town, county and other councils, and a few are engaged by private firms.

Solicitor-General In England and elsewhere a law officer. He is usually a member of the House of Commons and of the Government of the day and assists in the conduct of all legal business. His superior is the attorney-general. He receives a salary of £2000 a year and fees, and is knighted on appointment. Scotland, Canada and other parts of the Empire possess solicitors-general with similar duties.

Solid Three-dimensional substance projected in space. One of the three states of matter, in which the atoms are aggregated closely together so as to prevent individual free movement, solids also have a definite shape and size, but by the action of heat or other agency may pass over into the liquid state, the force of cohesion being partially overcome. Solids when deposited from solution or state of fusion may assume the form of crystals having a definite geometrical character, or may be amorphous, possessing no definite form.

Solihull Market town of Warwickshire. It is 6 m. S.E. of Birmingham and 104 m. from London by the G.W. Rly. There is an old grammar school. Pop. (1931) 11,552.

Sollum Port and gulf in the N.W. corner of Egypt. It is about 80 m. from the coast town of Mersa Matruh, which is connected by railway with Alexandria. Of little value commercially, Sollum is important as a base for controlling the Mohammedan Senussi.

Solomon King of Israel. A son of David and Bathsheba, he succeeded his father about 974 B.C. and reigned for nearly 40 years. His reign was peaceful, due to alliances with Egypt and Tyre, and the most prosperous of any king of Israel, with an extensive foreign commerce. An able ruler and a sincere follower of Yahweh, Solomon built the first temple at Jerusalem, though he departed from orthodoxy in establishing heathen shrines for his foreign wives. His reputation for wisdom is probably exaggerated by tradition. He died about 937 B.C.

The Old Testament book known as the **Song of Solomon** is now considered a secular poem, falsely attributed to him.

Solomon **Solomon Joseph.** British painter. Born in London, Sept. 16, 1860, he studied art in R.A. schools, in Munich and in Paris. He was the originator of camouflage during the Great War, when he was Lt.-Col. in the Royal Engineers. His chief paintings are "Cassandra," "The Judgment of Paris," "Echo and Narcissus," "The Birth of Love" and portraits of Mrs. Patrick Campbell and Israel Zangwill. He did mural paintings in the Royal Exchange and Houses of Parliament. He died July 27, 1927.

Solomon Islands Group of British islands in the Western Pacific, E. of the Bismarck Archipelago. Bougainville, Choiseul, New Georgia and Ysabel are the principal islands. Ebony, sandalwood, pearl shell and copra are exported. Earthquakes are frequent, and there are hot springs. Formerly shared between Britain and Germany, the whole of the islands became British in 1914. Part are administered by Australia under mandate. The area of the archipelago is about 14,800 sq. m. Pop. 200,000.

Solomon's Seal Perennial herb (*Polygonatum multiflorum*) belonging to the natural order *Liliaceae*. The plant has arching stems and drooping greenish-white flowers. It gets its name from the seal-like scars which are left on the rhizomes of last year's stems.

Solon Athenian lawgiver. Born about 639, he was of ancient royal lineage. In 594, at a time of acute economic distress, Solon was made first archon (chief magistrate), and entrusted with the writing of a new constitution and the compilation of a legal code. He divided the population into four classes, according to their means, each class having definite duties. Tradition says he then left Athens for ten years, to see how the constitution would work, travelling in Egypt and Asia Minor. He died in 559 B.C. and ranks as one of the "Seven Sages."

Solstice Astronomical term for that point in the ecliptic at which the sun is at its greatest distance from the equator and consequently at the turning point in its apparent path. The summer solstice occurs about June 21, when the Tropic of Cancer is reached, and the winter solstice about Dec. 21, on reaching the Tropic of Capricorn.

Solution In chemistry a form of homogeneous mixture of two or more substances. It may be solid, liquid or gaseous. Liquid solutions are the best known, and the degree of solubility of liquids in other liquids is either limited or unlimited; thus alcohol and water form a solution in any proportion, but ether has only a limited solubility in water. Gases also dissolve in liquids following definite laws, and solid solutions are formed by the solution of solids or gases in other solids.

Solway Firth Inlet of the Irish Sea, between England and Scotland. The Scottish counties bordering on the Firth are Kirkcudbrightshire and Dumfriesshire, and the English coast is in Cumberland. The Firth is about 40 m. in length, and has a greatest width of 22 m. Scottish rivers flowing into it include the Annan, Nith and Dee; and on the English shore it receives the waters of the Esk, Derwent, Eden and Ellen. There is a tidal bore.

Solyman (or **Suleiman**). Turkish sultan, known as "the Magnificent." Born in 1496 he began his reign by making extensive reforms which earned him in Turkey the name of "the Lawgiver." Invading Hungary, he took Belgrade in 1521. In 1523 he took Rhodes from the Knights of St. John, and in 1526 crushingly defeated the Hungarians at Mohacs. Armenia and the cities of Tabriz and Bagdad were taken from Persia in 1534; in 1537 he conquered Croatia and in 1541 he imposed an annual tribute on Austria. In 1560 he defeated a combined Christian navy at Djerbeh, but was himself repulsed from Malta in 1565. Perhaps the greatest of the sultans, he died Sept. 5, 1566.

Somaliland Region of E. Africa. It consists of three adjoining districts, British Somaliland, French Somaliland and Italian Somaliland, of which the last stretches along the Indian Ocean from the horn of Africa down to Kenya. The area of British Somaliland is 68,000 sq. m., and the population, 344,000; French Somaliland covers 8880 sq. m., with a population of (1931) 68,965; and Italian Somaliland is some 45,754 sq. m. in area, and its population is 621,776. British Somaliland is administered by the Colonial Office. Hides, skins, cattle, salt, coffee, gum, resins and ivory are exported.

Somersby Village of Lincolnshire. It is 7 m. from Horncastle and is chiefly known as the birthplace of Alfred Tennyson. There is a memorial to him in the parish church. The churchyard has an old cross.

Somerset S.W. county of England. It lies to the N. of Devon and Dorset, with a coastline along the Bristol Channel and the Severn Estuary. It consists broadly of a wide plain, bordered by two hilly areas, including the Mendips and the Quantocks. Dunkery Beacon on Exmoor rises to 1707 ft.

The Vale of Taunton is very fertile. Crops include wheat, barley and cider apples; and cattle and sheep are raised. Cheddar cheese is extensively produced. The county is served by the G.W. and the S. Rlys. Besides Bath (city and parliamentary), there are six parliamentary divisions. The county town is Taunton. The area is 1621 sq. m. Pop. (1931) 406,319.

Somerset **Duke of.** English title borne by the family of Seymour and earlier by that of Beaufort. In 1387 **John Beaufort** was made Duke of Somerset., Edmund Beaufort, the 2nd duke, was killed in 1455, and a little later, Henry, the 3rd duke, lost the title.

In 1547 the title was given to **Edward Seymour**, known as the Protector Somerset, but it ceased to exist when he was executed in 1552. The next duke was his descendant, William Seymour, to whom it was given in 1660. Since then it has been held by the Seymours and ranks as the second oldest dukedom in the peerage of England, as precedency counts from 1547. The duke has estates in Somerset and Devon, and his eldest son is called Lord Seymour.

Somerset **Duke of.** Protector of England. Born about 1506, Edward Seymour served in France as soldier and diplomat. In 1536 Henry VIII. married Jane, his sister, and Seymour became Viscount Beauchamp, being created Earl of Hertford on the birth of Edward VI. On the death of Henry in 1547 Hertford, now Duke of Somerset, was chosen as protector. Failing in his efforts to conciliate the Scots, he defeated them at the Battle of Pinkie (*q.v.*) in 1547. In 1549 by the Act of Uniformity he sought to enforce the use of the first Book of Common Prayer. Too mild and tolerant in his methods, however, he disagreed with the council and was sent to the Tower in 1549. Released in 1550, he was again imprisoned in 1551 on an unproven charge of treason, but was condemned on a technical charge and executed, Jan. 22, 1552.

Somerset House British Government building between the Victoria Embankment and the Strand. It takes its name from the Protector Somerset, on the site of whose palace it was built. The architect of the main building, dating from 1776, was Sir William Chambers; that of the east wing (housing King's College), Sir Robert Smirke; while the west wing was from the designs of Sir James Pennethorne.

Among the Government offices in Somerset House are those of the commissioners of inland revenue, the registrars of wills and probate, and that of the Registrar-General of births, marriages and deaths for England and Wales.

Somers Town District of London. In the borough of St. Pancras, it lies to the N.W. of the city. The land was owned by the Somers family, one of whom was among the counsel for the Seven Bishops (1688), and ultimately became Lord Chancellor to William III.

Somerville College College for women at Oxford University. It was founded in memory of the scientific writer, Mrs Mary Somerville (1780-1872), who made her name by her *Mechanism of the Heavens*, a translation of Laplace's *Mécanique Céleste*. The building was opened in 1879 as Somerville Hall, and after various additions the name was altered to Somerville College.

Somme River of France. It rises near St. Quentin, and is 150 m. long. It is used for navigation and is connected with other waterways by canals. Amiens is the largest place on its banks, and it falls into the English Channel near St. Valery. There was much fighting about here in the Great War.

Somme **Battles of the.** Series of engagements on the W. front during

the Great War. The first battle began with an Allied offensive on July 1st, 1916, on a 25 m. front, N. and S. of the Somme River. The British forces in the N. part of the line were only able to make a little headway after intense fighting, but the French in the S. were more successful, taking 6000 prisoners. On July 14, the attack was renewed, followed by more severe fighting, which resulted in small advances by the Allies, but it took two months to secure points planned to be captured during the first days of the battle. The third stage of the campaign began on Sept. 14 (when tanks were used for the first time, with devastating effect on the Germans), and it continued with heavy cost to both sides to the end of November, when the fighting subsided into trench warfare.

In the great German offensive of Spring, 1918 (March 21-28), nearly all the ground gained by the Allies during these battles was lost again, and the Germans reached positions which they had not held since 1914, but they failed to obtain their objective of breaking through the Allied line. The final allied advance over the Somme area was carried out during the month of August, 1918.

Somnus In Roman mythology, the personification of sleep. He was regarded as the son of Night and the twin brother of Death, with whom he dwelt in the darkness of Hades.

Sonata Originally signified a piece of music played, in opposition to a cantata, which was sung. The sonata is for one or two instruments only, and consists of a group of movements (often four), separate one from the other but related in key and style. Early sonatas were written by Scarlatti and Paradies, and Bach, Haydn, Schumann, Mozart, Beethoven and Brahms have continued the tradition. The idea of sonatas has been reproduced in the modern "symphonic poem."

Song Vocal melody. Until the 16th century, the only considerable form of song was the folk-song (*q.v.*), from which mediaeval minstrels gained their inspiration. Madrigals (*q.v.*), written by trained musicians, were widespread in the 16th century; solo singing developed when all the parts except one were taken by instruments, and the popularity of the lute brought about the invention of songs for a single voice accompanied by a single instrument. William Byrd was one of the leading English writers of madrigals, Dowland of songs for the lute.

Song writing has occupied the attention of musicians in all countries. Among the great German song writers are Schubert, Mendelssohn, Schumann and Brahms, and Gounod is one of the best-known among French musicians. In England, Purcell in the 17th century and Handel in the 18th century are pre-eminent. Among modern English song writers the names of Parry, Stanford, Elgar, Vaughan Williams, Holst, Quilter, Delius and Bax are familiar. Cecil Sharpe's work in reviving old folk-songs has brought about a renewal of their popularity, and Sir Richard Terry's collection of sea shanties has given these a place in modern singing.

Song of Songs Another name for the Old Testament book, Canticles, also known as the Song of Solomon. The Hebrew title of the book is "The Song of Songs, which is Solomon's."

Song Thrush British bird, (*Turdus musicus*) also known as the mavis. This thrush is familiar to all by its spotted breast of an olive-brown colour, and is one of the most melodious of European song-birds. The nest, in the form of a deep cup, is plastered quite smooth inside. Though doing much damage to fruit, the mavis is a great destroyer of snails.

Sonnet Form of poem. It consists of 14 lines, divided into two parts, eight lines and six lines. The first is again divided into two quatrains (four lines), and the second into two tercets (three lines). The rhymes are *abba abba cde cde*.

The sonnet originated in the 16th century in Italy, and Petrarch was a great writer of sonnets. In the 16th century it was taken up in England, but its form was changed somewhat to suit the new language. Shakespeare wrote sonnets, which consisted of three quatrains and a final couplet. The rhymes were *abab cdcd efef gg*. Milton wrote sonnets on the Italian model. Of later writers, the finest writers of sonnets in English are Wordsworth, Keats and Mrs Browning.

Soot Finely divided deposit of carbon formed as the result of the incomplete combustion of coal, wood and other carbonaceous substances. In addition to carbon particles there are present various hydrocarbons derived from the volatile matter in the fuel. Lamp-black is a form of soot from the combustion of resins, tars, oils, etc.

Sophia Electress of Hanover. Born Oct. 14, 1630, Sophia was the youngest child of Elizabeth, the daughter of James I., who married Frederick V., Elector Palatine, for a time King of Bohemia. In 1658 Sophia married Duke Ernest Augustus of Brunswick, who later became Elector of Hanover. Their son, George Lewis (George I.), succeeded to the throne of England in 1714, soon after the death of his mother. She died June 8, 1714.

Sophist Name used in Greece for a wise man. As a class the sophists became prominent in the 5th century B.C., when they set out to teach wisdom. They claimed to prepare their pupils for civil life.

Sophister Term applied in some universities to certain senior undergraduates. It is often abbreviated to soph. At Trinity College, Cambridge, an undergraduate in his third year is called a senior soph, and one in his second year a junior soph. The word is also used at Trinity College, Dublin.

Sophocles Athenian dramatist. He was born about 496 B.C., and showed his talent early in direct competition with Aeschylus who, though many years his senior, was later influenced by the younger man. He was employed as ambassador, and, in the Samian War of 440, as general in conjunction with Pericles. This choice was reputedly owing to the success of the *Antigone*, one of his earliest plays. We have only seven (out of over 100)—*Ajax Antigone, Electra, Oepidus Tyrannus, Trachinioe, Oedipus Colonnus, Philoctetes*—the subjects being all drawn from Hellenic legends. The last named was written when he was 87. Three years later, in 405 B.C., he died.

Soprano or Treble, the highest range of the human voice, ranging from the C below the treble staff to A, sometimes even to the F. A mezzo-soprano is about a

third lower—from A to F. As well as female voices, boy sopranos are very popular for church work, while men sopranos, as in the "castrati" of papal choirs, are known.

Sopwith **Thomas Octave Murdoch.** Born in 1888, he was educated at Cottesmore and the Seafield Engineering College. In 1910 he won the Baron de Forest Prize of £4000 for a flight from Eastchurch, Kent, to Beaumont, Belgium, covering the 190 m. in 3½ hours, a record for that time. He thereupon founded the **Sopwith Aviation Co., Ltd.**, Kingston-on-Thames. During the World War he designed and built a number of aeroplanes and seaplanes for the British Government. He was made C.B.E. in 1918. In 1934 his yacht *Endeavour* competed unsuccessfully in the race for the America's Cup.

Sorbonne Educational centre in Paris, now part of the university. It was founded in 1252 by Robert de Sorbonne as a house for poor students. It became famed as a centre of learning, especially in theology; the decrees of its professors were taken as final, and by their orders many persons were persecuted for heresy. Early in the 17th century Richelieu erected new buildings for the society, but these have been replaced by a fine group built since 1885. In 1896 the Sorbonne was included in the university of Paris. Its buildings are in the Latin quarter.

Sorel City and river port of Quebec. It stands where the River Richelieu falls into the St. Lawrence, 51 m. from Montreal, and is reached by the C.P. Rly., while another line and also steamers connect it with Montreal and Quebec. There is some shipping and a trade in lumber, for which there are sawmills. Pop. (1931) 10,320.

Sorghum Important genus of grasses. The species, *S. vulgare*, with its many varieties is cultivated as a cereal and forage plant in many parts of the world under the names of Kaffir corn, dhurra, Guinea corn and Indian millet.

Sorites In logic a series of syllogisms. In it the predicate of each proposition is the subject of the following one.

Sorrel Name of a genus of plants of the natural order *Polygonaceae*. Several of them will grow in Great Britain, especially the sheep's sorrel and the common sorrel (*Rumex acetosa*). The later bears greenish red flowers. It is sometimes grown in the garden as its leaves make a pleasant addition to a salad. It is also used for making a soup and a purée.

Sotheby's Short name for the firm of Sotheby, Wilkinson and Hodge, the principal auctioneers of books in England. The firm was founded in 1744, by Samuel Baker in York St., Covent Garden, London, and later passed to his nephew, John Sotheby. Most of the important sales of books are held in its premises in New Bond Street, London, where coins and other objects of art are also sold.

Sou French coin now used for the five centime piece. Anything of little value is called a sou.

Souchez Village of France. It is about 4 m. from Lens and was the scene of fierce fighting during the Great War, especially in May, June and July, 1915, and again during the battle of Loos later in that year. It was destroyed, but has been rebuilt assistance being given by Kensington, which adopted the village.

Soufflé Very light dish made of eggs or other materials such as cheese or chocolate. The essential thing about a soufflé is that it is puffed up, usually by the whites of eggs which are whipped to the other ingredients. If adding and mixing are properly done the dish will rise as soon as the heat penetrates it. Soufflés may be baked or steamed. They can be made of oysters and also of chicken, fish and game. A soufflé must be served immediately.

Soul Immaterial part of man. Pre-Socratic thought made no clear distinction between mind (or soul) and matter. Heraclitus, for instance, conceived of the soul as composed of fire, the element by which he sought to explain all phenomena. It was Plato who first established an immaterial principle as distinct from the sensible world. Christian doctrine emphasises the moral character of personality and its survival after death.

Soult **Nicolas Jean De Dieu.** French soldier. Born March 29, 1769, he entered the army in 1785, serving first in the ranks. He soon became an officer, and his abilities were so marked that in 1804 he was made a marshal. He held a command at Austerlitz, and took part in other of Napoleon's victories. In 1808 he was sent to Spain where, except for a short period, he remained in command of the French forces until 1813. He won some successes, but in the end he was beaten by Wellington. He was exiled after the defeat of Napoleon at Waterloo, but was allowed to return to France in 1819.

Under Louis Philippe, Soult, who had been Duke of Dalmatia since 1807, was a prominent politician. He was Prime Minister, 1832-34, and again 1839-47; was Minister for War, 1830-34, and 1840-44; and Minister for Foreign Affairs, 1839-40. He attended the coronation of Queen Victoria. He was made Marshal-General of France in 1847, and died Nov. 26, 1851, leaving his *Mémoires*.

Sound Term applied to the sensation upon the organ of hearing caused by the vibrations due to the alternate compression and rarefaction of the air. The vibrations of sound can pass through many solid, liquid and gaseous substances, but not through a vacuum; the speed at which they travel is about 1100 ft. per sec. in air at ordinary temperatures, and considerably greater in liquids and solids.

Upon the wave-length of the vibration depends the pitch of the sound, and upon the amplitude or height of the wave whether the sound is soft or loud. Rapidly vibrating waves of short length and slowly vibrating ones of great length do not affect the ear, although the range of hearing varies greatly in different persons.

Sound **The.** Strait between Sweden and Denmark. It leads from the Baltic Sea to the Kattegat and is 30 m. long. Its breadth varies, being in one place only 3 m. Copenhagen stands on the Sound.

Sousa **John Philip.** American conductor and composer. Born at Washington, D.C., Nov. 6, 1854, he became in 1880 bandmaster of the U.S. Marine Corps band, afterwards organising his own concert band and travelling widely. His works consist of military marches, some universally played, light operas, waltzes, songs and symphonies. He died March 6, 1932.

South Africa Self-governing dominion of the British Empire. It was created in 1910 and consists of four provinces—Cape of Good Hope, Natal, Transvaal and Orange Free State. It covers 471,917 sq. m. and had in 1931 a European population of 1,827,166. The native population in 1932 was estimated at 8,250,900, chiefly Bantus. The capitals are Capetown and Pretoria. The legislature meets at Capetown, but the executive works from Pretoria.

The union is under a Governor-General representing the king, and a legislature of two houses, senate and house of assembly. The senate consists of 40 members, eight from each of the provinces and eight nominated by the Governor-General. The house of assembly consists of 148 members elected by the votes of all white men and women. There is a ministry responsible to the legislature. The chief political parties in the legislature were the Nationalists and the S. African party. Before 1924 the latter, under J. C. Smuts, held office, but in 1924 they were replaced by the Nationalists under J. B. M. Hertzog. This represented the Dutch element in the population, and laid more stress on complete independence than did the followers of General Smuts. In May, 1933, the Nationalists were again victorious, and in Dec., 1934, the two parties joined forces as the United Party of South Africa.

The Union is a member of the League of Nations. Its law is Roman Dutch, but English law prevails in business matters. There is a permanent defence force, with a citizen force and other auxiliaries. Every male citizen must be trained either with the active citizen force, or in a rifle association. There is a small air force and a small naval force. The coinage is the same as that of Great Britain. The cental of 100 lb. is the measure of weight, but both the British and the metric systems are in use. The chief products of the Union are gold and diamonds. Maize and oats are grown and sheep are reared for their wool. The warm climate enables fruit, tobacco, cane sugar and cotton to be raised.

The University of S. Africa was founded in 1918, to replace the University of the Cape of Good Hope. It has constituent colleges at Bloemfontein, Wellington, Grahamstown, Pietermaritzburg and Potchefstroom.

Southall Urban district of Middlesex. It is 12 m. to the W. of London, on the G.W. Rly. It includes Norwood. Being on the main line to the W. and also on the Grand Union Canal, Southall has become a great industrial centre. Margarine, jam, gramophones and other articles are made here. At Southall is a bridge built by Brunel, which carries the canal over the railway line, and the road over the canal. Pop. (1931) 38,932.

South America One of the world's great continents. It stretches for about 4500 m. from Cape Galinas in Colombia to Cape Horn. Its greatest breadth is about 3200 m., and it covers about 7,000,000 sq. m. Its borders are the Atlantic and the Pacific Oceans; its only land frontier being the few miles that connect it with C. America. The equator passes through it, and much of it is in the tropics. The continent is very fertile, but much of it is still covered with forests and is unexplored. It has a great mountain range, the Andes, and in it are the Amazon and other great rivers.

Great Britain, France and the Netherlands have possessions in S. America, where Guiana is divided between them, but the rest of the continent is covered with republics once under Spanish or Portuguese rule. The largest is Brazil and the next Argentina. The others are Bolivia, Chile, Peru, Colombia, Venezuela, Ecuador, Uruguay and Paraguay.

Southampton County borough and seaport of Hampshire. Situated on Southampton Water, it occupies a tongue of land lying between the estuaries of the Test and the Itchen, and is 80 m. distant from London, on the S. railway. It is the third most important port in the kingdom. The harbour is large and well-equipped, affording ample accommodation for shipping, the docks covering nearly 300 acres. The Norman Bargate is a striking relic of the ancient fortifications, and the old guildhall is interesting. The Hospital of God's House dates from the 12th century. St. Michael's church and Tudor House are of interest. The borough is the seat of a bishop, who is suffragan to the bishop of Winchester. Pop. (1931) 176,025.

Southampton Earl of. English title now extinct. The 1st earldom was created in 1537 for Sir William Fitzwilliam; but five years later he died and it became extinct. In 1547 **Thomas Wriothesley** was made earl, and the title was held by his descendants until the death of the 4th earl in 1697. **Henry**, the 3rd earl, born Oct. 6, 1573, is the nobleman to whom Shakespeare dedicated *Venus and Adonis* and *Lucrece*. He died when on active service, Nov. 10, 1624. The earls had property around what is now Southampton Row, W.C. The title of **Baron Southampton**, held by the Fitzroy family, exists. It dates from 1780.

Southampton Water Arm of the English Channel. It is 10 m. long and about 2 m. across, and makes a very fine harbour, with the Isle of Wight to protect it from the open sea. The Itchen, Test and Hamble flow into it, and at its head is the port of Southampton.

South Australia State of the Commonwealth of Australia, occupying the S. coast between Victoria and W. Australia. Settlement began in 1836. Administration is by a governor, a legislative council of 18 members and an assembly of 46. The climate is excellent and the country principally agricultural and pastoral. Wheat and wool are the chief products, but wine production and fruit, fresh and dried, for which large areas are well suited, sometimes under irrigation, are important and expanding industries. Railways are well developed, connecting with the systems of Victoria and W. Australia and extending into New South Wales. Steamers use the Murray River, and there are thousands of miles of roads. Adelaide, the capital, is one of several modern towns and there are fine harbours. Area, 380,070 sq. m. Pop. (1931) 582,928.

South Bend City of Indiana, U.S.A. It stands on the St. Joseph River, 86 m. from Chicago, and is well served by railways. There are a number of manufacturing and other industries. The buildings include the University of Notre Dame. Pop. (1930) 104,193.

Southborough Urban district of Kent. It is 33 m. from London and 2 from Tunbridge Wells, on the S. Rly. There is a large common. Pop. (1931) 7352.

The title of Baron Southborough was taken in 1917 by Sir Francis John Stephens Hopwood. Born Dec. 2, 1860, he held several important posts in the civil service, which he entered in 1885. From 1901-07 he was Permanent Secretary to the Board of Trade, and from 1907 Permanent Under Secretary for the Colonies. From 1912-17 he was an additional Civil Lord of the Admiralty, and in 1917-18 Secretary of the Irish Convention.

Southcott Joanna. English religious fanatic. Born at Gittisham in Devonshire in April, 1750, she became a domestic servant. An ardent Methodist, she began to prophesy, and in 1802 she moved to London where she began to seal the elect, 144,000 in number, as stated in the book of *Revelation*. She also stated that she was to become the mother of the second Jesus Christ. She died of brain fever on Dec. 27, 1814.

Many of Joanna's prophesies were published, and others were enclosed in a sealed box. Nothing very sensational was found when it was opened in 1927.

Southend-on-Sea County borough and pleasure resort of Essex. It stands on the estuary of the Thames, 36 m. from London, and has stations on the L.M.S. and L.N.E. Rlys. It is also reached by steamship services in the summer and by motor coaches. An arterial road connects it with London. The borough includes Prittlewell, Southend proper, Thorpe Bay, Westcliff and Leigh, giving it a sea front of about 5 m. The air is bracing and there are attractions for visitors. The church at Prittlewell is an old building, and near it are the ruins of the priory. A yachting week is held in July. The pier is perhaps the longest in England. Pop. (1931) 120,093.

Southernwood (*Artemisia abrotanum*). Perennial garden plant. Of a shrubby nature, it is grown principally for the fragrance of its delicate feathery leaves. Old country names for it are lad's love and old man. It is of a hardy nature and will thrive in any soil.

Southey Robert. English writer. Born at Bristol, Aug. 12, 1774, he passed much of his childhood with an aunt, with whom he saw many plays, read much poetry and wrote many verses. Educated at Westminster, Bedford and Oxford, he tried medicine first, but was disgusted with it. Married in 1795, he immediately went to Lisbon, where began his love of Peninsular history and literature. He settled, after many vicissitudes, at Keswick, devoting himself to literature. His *Life of Nelson* is his best-known work. He was made poet laureate in 1813. He died March 21, 1843.

Southgate Borough of Middlesex. It is 7 m. from London, its station being New Southgate on the L.N.E. Rly. The name is due to the fact that here was the south gate of Enfield Chase. A Royal Charter was granted to the borough in 1933. Pop. (1931) 55,570.

South Georgia Island in the S. Atlantic Ocean. It is 800 m. to the S.E. of the Falkland Islands, and belongs, like them, to Great Britain. It covers 1000 sq. m., is mountainous and on it is a whaling settlement. It was discovered in 1675; in 1775 Capt. James Cook took possession of it. Here Sir Ernest Shackleton was buried in 1922. Pop. 1895.

South Island One of the two principal islands of New Zealand. It covers 58,100 sq. m. and its chief cities are Christchurch and Dunedin. It contains the Canterbury plains that are famous for their wheat. In it is a mountain range called the Alps.

Southminster Town of Essex. It is 45 m. from London, on the L.N.E. Rly. The church of S. Leonard is a large building with some curious features.

South Orkney Group of islands in the S. Atlantic Ocean. They are 780 m. to the S.E. of the Falkland Islands and like them are a British possession. They cover 800 sq. m., the largest being Coronation Island. On Laurie Island the government of Argentina has a meteorological station. The islands are otherwise uninhabited.

Southport County borough, watering place and market town of Lancashire. It stands on the estuary of the Ribble, 18 m. from Liverpool, and has stations on the L.M.S. and Cheshire Lines Rlys. The sea has receded a good deal and a marine park with a large lake has been made on the front. Open spaces are Hesketh Park and Kew gardens; there is a zoological park and botanical gardens. Southport developed greatly during the 19th century until it became one of the most popular watering places in the country. The borough, created in 1867, was extended in 1912. Pop. (1931) 78,927.

Southsea Watering place of Hampshire and part of Portsmouth. It is 73 m. from London, and is reached by the S. Rly. It has a fine front facing the sea on Spithead. There is some yachting and a lake for model yachts. The castle dates from the 16th century and there is a large common. Southsea lies to the S.E. of the city proper.

South Sea Bubble Popular name of a speculative scheme which resulted in one of the greatest financial disasters in English history. The South Sea Company was incorporated by Act of Parliament in 1710 and given a monopoly of trade in the Pacific Ocean. Parliament, despite the warnings of Sir Robert Walpole, allowed it to take over the national debt in 1720. The stock of the company appreciated from 128 at the beginning of the year to 1000 in July. Its success led to the flotation of other companies, some of a bogus nature, and a wild orgy of speculation seized the country, followed by the inevitable crash. National credit was to some extent restored by Walpole.

South Shetlands Group of islands in the Antarctic Ocean. They are 500 m. to the S. of Cape Horn. The chief islands are Deception, Clarence, Elephant and Smith, and they cover 880 sq. m. All are mountainous. They are a centre of the seal fisheries, but are otherwise uninhabited except by sea-fowl. The islands, declared a British possession in 1908, are governed from the Falkland Islands.

Southwark Metropolitan borough of London. It is on the south side of the river, just opposite the city, and is known as the Borough. Bermondsey and Lambeth are to the east and west respectively and the borough includes Walworth and the district around the Elephant and Castle. It is reached by London, Southwark and Blackfriars Bridges. The chief building is

the cathedral of S. Saviour, the mother church of the diocese of Southwark. It has many interesting features, one being the Harvard Chapel. In the borough are Guy's Hospital and London Bridge Station. Plans for a new town hall have been passed. The grounds of Bethlem Hospital are a public recreation ground.

The industries include printing works and associated industries, and manufactures of various kinds. There is a market for fruit and vegetables and the Hop Exchange is here. The area along the river is the Bankside of Shakespeare's day. Pop. (1931) 171,657.

Southwell City of Nottinghamshire. It is 16 m. from Nottingham, on the L.M.S. Rly. The cathedral, or minster, is a magnificent building dating from the 12th century. Its nave and chapter house are particularly fine. In 1884 Southwell was made the seat of a bishop, whose diocese was the counties of Nottingham and Derby. In 1927 it was divided, and Derby was made the centre of a new see. Bishop's Manor, near the ruins of the palace of the Archbishops of York, is the residence of the Bishop.

South West Africa Mandated territory under the League of Nations. It is bounded on the N. by Angola, on the S. by the Cape of Good Hope, on the E. by Bechuanaland, and on the W. by the Atlantic. Cattle, sheep and goats are raised; wheat and tobacco are among the crops grown; and copper and diamonds are mined. The capital is Windhoek. Originally belonging to Germany, it was annexed by South Africa in 1915, and four years later was placed under the mandate of the Union. It was granted a constitution in 1925. It has an area of 322,394 sq. m. Pop. (1930) 269,233.

Southwick Watering place and urban district of Sussex. It is 4 m. from Brighton, on the S. Rly. The church has a Norman tower. The main industry is catering for visitors. Pop. (1931) 6138.

Southwold Borough and seaport of Suffolk. It is at the mouth of the little River Blythe and has a station on the L.N.E. Rly. It is 41 m. from Ipswich and 110 from London. St. Edmund's Church is a fine old edifice. There is a large common and a good harbour, but as a seaport it is less prosperous than it was in the Middle Ages. The chief industry to-day is catering for the visitors, but there is some fishing. On May 28, 1672, the Dutch and the English fleets fought a battle in its bay, but without decisive results. Pop. (1931) 2753.

Sovereign Word used for a ruler. (*See* SOVEREIGNTY). The British gold coin called a sovereign is the standard unit of currency, though since the Great War is has not been much used. It dates from the time of Henry VIII., but was only made the standard coin in 1817. It is divided into 20 shillings. It weighs 123.27447 grains and is of 22 carat gold with an alloy of copper. In 1933, owing to the high price of gold, because the country had gone off the gold standard, sovereigns were sold for 31*s.* 3*d.* each. Half sovereigns were also in general use and coins of two and five sovereigns have been issued on special occasions. *See* STERLING.

Sovereignty Supreme power or dominion. It is used chiefly in connection with states which are sometimes classified as sovereign and non-sovereign. The most famous definition of sovereignty is by John Austin in his *Lectures on Jurisprudence*. It is said to exist when "the bulk of the given society are in a habit of obedience or submission to a determinate and common superior," and that superior "is not in a habit of obedience to a determinate human superior." This definition has, however, been criticised by Sir Henry Maine and others who do not think sovereignty can be so precisely defined. The modern view on sovereignty is divided. Theoretically, in western countries at least, it rests with the people, but it is by them delegated to kings, ministers and legislatures, who share it between them in varying proportions. Sovereign states are those which are subject to no external control. The League of Nations cannot be said to exercise sufficient control to impair state sovereignty, but its action and existence are not without a bearing on the conceptions of sovereignty.

Soviet System of government obtaining in Russia. The word is Russian and means "council." The Soviet system of government is based fundamentally on the small soviet in workshop, factory, village or town. These basal units themselves elect delegates to similar congresses covering larger areas, the system culminating in the All-Russian Congress of Soviets which delegates its powers to a Central Executive Committee. The supreme executive is the Council of People's Commissaries, drawn from this committee, and its chairman is the titular head of the state.

On this theory government is from below, while executive decrees are transmitted from the central authority downwards, until they reach the executive or chairman of the village Soviet, by whom they are carried out. *See* RUSSIA.

Sowerby Urban district of Yorkshire (W.R.). It stands on the Calder, 3 m. from Halifax and at Sowerby Bridge there is a station on the L.M.S. Rly. Woollen and worsted goods are manufactured, and there are engineering and chemical works. Pop. (1931) 14,667.

Soya Bean Herb grown for its food value. It belongs to the order *leguminosae*, and is native to Asia. The leaves, which grow on erect hairy stems, are divided into three leaflets. It bears small flowers, violet or purple in colour. The beans are in pods.

The bean is grown on a vast scale in Manchuria, from where it is exported. From it an oil is obtained which is much used in the making of margarine, and other substances. The seeds are used to prepare a feeding stuff given to cattle, especially to dairy cows.

Soyer **Alexis Benoit.** French cook. He was born in 1809 at Meaux, and worked for a time in Paris, where his cooking soon made him famous. In 1830 he escaped to England, and settled in London, where, from 1837 to 1850, he was head cook at the Reform Club. In 1848 he was sent to Dublin to manage the food kitchens and in 1855 to the Crimea to look after the food supplies. He died in London, Aug. 8, 1858. Soyer wrote books on cookery and some of his dishes are still famous.

Soyland Urban district of Yorkshire. A centre of the woollen industry, it is 4 m. from Halifax. It has also cotton and silk manufactures. Pop. (1931) 3057.

Spa Town and health resort of Belgium. It is 21 m. from Liège, with which it is connected by railway. It is visited by persons who wish to drink its medicinal waters, which are also bottled for table use. The town has a kursaal and other attraction for visitors, one being the racecourse. In July, 1920, the Supreme Council of the Allies met at Spa.

Spa Word used for a place where there are mineral springs, the waters of which are suitable for various complaints. There are spas all over Europe, and some of them have a very high reputation. England has a number of spas, Bath, Buxton, Harrogate and others, and there is a federation for making known the virtues of their particular waters. The French and German spas, such as Aix-les-Bains, Contrexéville, Homburg and Wiesbaden, are also famous.

Space Concept in physics and philosophy of the property in virtue of which rigid bodies can occupy different positions. Attempts have been made to give it physical reality, as by the assumption of an all-pervading ether, and for local measurements and experiences Euclid's geometry in three directions at right angles to one another has been sufficient to decide position from any fixed point.

Einstein has shown, however, that this three-dimensional geometry ignores the independent velocity of light and its effect upon measurement when the observers are in relative motion. Time must be added as a fourth dimension, and the resulting space-time continuum involves the idea of a finite yet unbounded universe—a straight line ultimately returning to its starting point.

Spaghetti Cord-like form of Italian wheaten paste, intermediate in size between vermicelli and macaroni, and prepared from the hard wheats which are rich in gluten. Spaghetti along with other kinds of paste is manufactured around Genoa, Italy, and in France with Marseilles as a centre, also in the United States and Canada.

Spahi Word used for soldiers from North Africa in the French army. They are natives of Algeria and Tunis and are cavalry soldiers. Earlier the Spahis were in the service of the sultans of the district. The Spahi regiments have French officers.

Spain Republic of Europe. In the south-west of the continent, it covers 190,500 sq. m., and forms the greater part of the Iberian Peninsula. It has a long coastline on the Mediterranean Sea, and one only a little shorter on the bay of Biscay and the Atlantic. Its land frontiers are the Pyrenees, which divide it from France, and an artificial line separating it from Portugal. The republic includes the Canary and Balearic Islands and colonies in Africa, covering 800,000 sq. m.; the chief of these are Morocco and Guinea. Pop. (1930) 23,560,975.

The country has the Pyrenees in the north and the Sierra Nevada and other ranges in the south. Most of the interior is a great plateau in the midst of which stands the capital, Madrid. It is watered by six great rivers and their tributaries, Guadiana, Tagus, Druro, Minho, Ebro and Guadalquivir. After Madrid the largest cities are Barcelona (the greatest seaport), Valencia, Seville, Malaga, Saragossa, Murcia, Bilbao (the second port), Granada and Cartagena.

Spain is an agricultural rather than an industrial country, although there are valuable iron, copper, coal and lead mines, the export of which amounts to a considerable sum. Wheat, barley, oats and rye are extensively grown and large areas are covered with vineyards. Oranges, lemons, olives, almonds and other fruits are cultivated. Fishing is an important industry.

Since 1931 Spain has been a democratic republic. The parliament, or cortes, consists of a single chamber, the chamber of deputies, elected by all adults, for four years. The president of the state is elected by the cortes and an equal number of other persons and he holds office for six years. He selects the prime minister and approves the appointment of the other ministers. The people are mainly Roman Catholics, but the church has been disestablished. There is an army raised by compulsory service and a small navy. The country has a system of old age pensions. The unit of currency is the peseta. The metric system of weights and measures is in use. The flag of the republic is red, yellow and purple.

HISTORY. There are considerable remains of early man in Spain, but its recorded history only begins with the settlements of the Phoenicians along its coasts. Later the Greeks and the Carthaginians arrived and, having crushed the latter people, the Romans made it part of their empire. For about 200 years, 530 to 730, the Visigoths had a kingdom in Spain, but much more important was the Moorish one that followed it. With its capital at Cordova this covered the south of Spain. In the north, somewhere about 1000, little Christian kingdoms emerged, the chief of them being Castile, Aragon, Leon and Navarre. Now and again two or more were united under the same ruler and the process of union culminated in 1479 when Ferdinand of Aragon married Isabella of Castile. Two great events marked this joint reign. Columbus discovered America and founded there a great Spanish empire, and the kingdom of the Moors was destroyed.

During the 16th century Spain, fed by the wealth of South America, was the greatest country in Europe. Its ruler from 1516 to 1565 was the Emperor Charles V., then came his son, Philip II., under whom it began to decline, although for a time this was hardly evident. In 1580 the king united Portugal with Spain, which meant adding the rich American colonies of that country to his own. In 1700 the last Hapsburg king died and in 1714 after the War of the Spanish Succession, a Bourbon, Philip V., was recognised as king. Although less powerful than formerly, Spain played a considerable part in European politics in the 18th century until dominated by Napoleon, who made his brother Joseph its king.

Early in the 19th century the countries in South America made themselves independent of Spain, and at the end of the century the Cuban and the Philippine Islands were lost after a war with the United States. In 1833 and again in 1868 there was civil war between those who wanted a queen and those who wanted a king. Finally the queen, Isabella, a daughter of Ferdinard VII., secured the throne and her opponents, called Carlists, were defeated. In 1886 Alphonso XIII. became king and he reigned until 1931. His reign, especially after the Great War, was marked by considerable unrest, especially in Catalonia where Barcelona was the storm centre. In 1923 a dictatorship was established and this lasted until 1930. An attempt to restore the old order

failed, and in April, 1931, the desire for a republic was so clearly expressed that the king left the country. In June a general election was held to choose a cortes which drew up a constitution and elected a president. Spain in 1934 was the scene of serious strikes and riots, and in 1935 and 1936 attempts were made to set up an independent Republic of Catalonia. The elections of Feb., 1936, were again attended by serious rioting and resulted in a victory for the Left party.

Spalding Urban district and market town of Lincolnshire. It is on the Welland, 14 m. from Boston and 93 from London, on the L.N.E. Rly., and a joint line of the L.M.S. and L.N.E. Spalding is an agricultural centre and has breweries and flour mills. Around is the fenland famed for its bulbs and its potatoes. There is a trade along the river. Pop. (1931) 12,592.

Spandril Term in architecture for the three-sided space between the curve or extrados of an arch and the right angle formed by the horizontal line from the springing and the vertical line from the crown of the arch. The space is often filled with various forms of decoration carved in relief.

Spaniel Group of dogs used for retrieving game. There are also diminutive (toy) varieties. Spaniels are characterised by the broad skull with high forehead and large pendulous lobe-shaped ears. The long hair is silky, curled in some varieties. The gun dogs include field spaniel, clumber, cocker, springers, Sussex and water spaniels. Toy spaniels, which have not much in common with working spaniels, include King Charles, Blenheim and Japanese.

Spark Small ignited particle emitted from a burning substance, or in the case of an electric spark the luminous form of a discharge of electricity.

A **sparking plug** is an electrical device in an internal combustion engine used to ignite the explosive mixture of gases. It consists essentially of a brass plug enclosing electrodes between whose points is a minute air gap. A current passing through the electrodes causes a spark to pass across the air gap so igniting the gases.

Sparrow Common bird (*Passer domesticus*). Really a finch, it is found in most settled parts of the world. About 7 in. long, it has the short strong beak of the finch tribe. The male has a black throat and more dusky-brown plumage than his mate. There is a tree-living species (*Passer montanus*) smaller, more shy, and rarer. The head and upper parts are chestnut, wings banded with white, white cheeks with a black spot, greyish-white under parts. It is to some extent a migrant.

Sparrow Hawk Bird of prey (*Accipiter*). Of its 20 species the common sparrow hawk (*A. nissus*) is found in Europe and Asia. In England it lives in the woods and is very destructive to game. It varies in size and colour, the female being larger than the male. The plumage of the upper parts is bluish-grey in the male and brown in the female. The third toe is much elongated and the wings are short.

Sparta City of ancient Greece, also known as Lacedaemon. It stood on the banks of the Eurotas in the Peloponnese and was, traditionally, the home of Menelaus (*q.v.*). The Spartans of history were Dorian invaders. Under them Sparta became supreme in the Peloponnese, the original inhabitants of the district being enslaved. Sparta was ruled nominally by two kings, but in reality by officials known as ephors and a council of elders. The training of citizens was strictly military, all other considerations being subordinated to the ideal of service to the state.

Sparta played a leading part in the Graeco-Persian Wars but her greatest struggle took place against Athens in the Peloponnesian war (*q.v.*) in which she was finally victorious. Sparta was now supreme in Greece, but her repressive hegemony gave rise to reprisals, ending in her defeat by Thebes (*q.v.*), and her gradual decline as a power.

The modern town, built on the ancient site, is the capital of the prefecture of Lacedaemon. Pop. (1928) 5,799.

Spartacus Roman soldier. He was born, in Thrace and became a shepherd. Later he was taken by the Romans and trained as a gladiator, but he escaped from Capua and joined a band of discontented and desperate men, chiefly slaves. He soon became their leader and under his direction they started on a career of plunder, in which much of Italy was devastated, and armies sent against them were beaten. In 71 B.C., however, Crassus succeeded in crushing them and their leader was among the killed.

After the Great War the name of Spartacus was taken by the German leader, Karl Liebknecht, and his followers were known as **Spartacists.** They became very strong and in 1919 set up a workers' republic, but after some fierce fighting they were beaten and the movement collapsed.

Sparteine Colourless oily liquid with a bitter taste. It is an alkaloid and is obtained by extracting the tops of the brown plant with acidulated water and distilling the extract with caustic alkali. Its salts are used to alleviate heart disease.

Speaker President of the British House of Commons and of similar legislative bodies in other parts of the Empire, *i.e.*, the Dominion House of Commons at Ottawa, the House of Representatives in Belfast for Northern Ireland. The President of the House of Representatives at Washington is also called the Speaker. The first Speaker was Sir Thomas Hungerford in 1377 and the name is due to the fact that he and his successors spoke to the king on behalf of the members. The Speaker is elected by the members from among their number at the beginning of each Parliament and is paid a salary of £5000 a year. He is guardian of the privileges of the House and the judge of its rules and orders. He is generally addressed as "Mr. Speaker." He takes precedence of all other commoners on ceremonial occasions. He is usually made a viscount, and pensioned when he retires.

The tradition has grown up that the Speaker must not vote or express any opinion on controversial questions. Formerly this was not so. The Lord Chancellor, who is the Speaker of the House of Lords, remains a party politician.

Spear One of the oldest weapons used by man, It consists of a shaft and a head which in early times was of flint or other stone or bone. Later is was made of iron and then of steel. The spear was much used by the Greeks in the time of Homer and in the Middle Ages the spearmen were an

important branch of many armies. The Swiss spearmen were famous and there were spearmen at Flodden and other battles.

The weapon was very much used for hunting in England, France and elsewhere. To-day it is used by some primitive peoples for warfare and in certain sports, such as pig sticking and salmon fishing. The Red Indians use it for killing fish. From the spear several weapons have developed. Some, like the lance and spike, are used for fighting at close quarters: others, like the javelin, are thrown. Flint spearheads are very common remains of the palaeolithic age.

Spearmint (*Mentha viridis*). Perennial herb of the order *labiatae*. It is the common mint widely cultivated in kitchen gardens. The creeping root throws off numerous underground runners. The stems are square and erect, with opposite deep green aromatic leaves. The minute purple flowers are borne in numerous close whorls, forming a spike of bloom. It is extensively used as a flavouring for chewing-gum.

Special Constable Man sworn in to assist the police in times of emergency. By law every able-bodied man is bound to serve as a special constable if required. In England special constables were enrolled during the disturbances that took place in 1831 and 1848, and again during the general strike of 1926. During the Great War special constables undertook many of the duties performed by the police and certain others made necessary by the conditions of the time.

Special Reserve Former section of the British Army. It was created in 1907 to take the place of the militia which was then abolished. Each infantry regiment had its special reserve battalion, the men of which were trained for a certain period each year. During the Great War these battalions were used to supply men to the regular battalions in the field. The terms "special reserve" and "extra reserve battalions" were abolished in 1921.

Species Term in biology for a group of organisms, having certain definite characters in common and differing widely from other groups. Within a species are varieties or groups of individuals having small and variable characters, while a number of species resembling each other more or less closely constitute a genus.

Specific Gravity Term expressing the ratio of the density or weight of unit volume of substance to that of water or other standard substance. In the case of gases, air or hydrogen is taken as the standard, and pure water at 4°C. for liquids and solids. Specific gravity is determined in several ways: by one method a solid is weighed first in air then in water, the weight in air is divided by the loss of weight in water, the quotient giving the specific gravity.

Specific Heat Ratio of the amount of heat needed to raise the temperature of a unit weight of a substance by 1°C. to the amount of heat required to raise one gram of water through 1°C. The specific heat varies with the state and temperature of the substance; for all elementary substances the product of specific heat and atomic weight (the atomic heat) is approximately constant.

Spectator The. Series of Essays produced by Addison and Steele, which ran from Mar. 1, 1711, to Dec. 6, 1712. It was the successor of *The Tatler*. It was a non-political paper, which attempted to bring learning into the everyday life of clubs and homes. It had also a strong moral bias, standing for purity of life, thought and scholarship, in contrast to the life of the times, influenced as it still was by the Restoration.

Spectroheliograph Special form of spectrograph, or spectroscope in which a photographic plate takes the place of the eyepiece. It is used for photographing the sun by monochromatic light, that is, light of a definite colour, corresponding to a certain wave-length. By this means a permanent record is made of the distribution on the sun's disc of the element responsible for the particular colour band chosen.

Spectroscope Instrument devised for the study of the characteristics of light which is broken up into a spectrum consisting of the seven colours seen in the rainbow, red at one end, violet at the other. In a spectroscope light passes through a narrow slit, then by means of a lens is formed into a parallel beam which, passing through a glass prism, is resolved into a spectrum. A small viewing telescope is attached for enlargement or photography.

Spectroscopy Study of the spectra of light from various sources and their analysis by means of the spectroscope. Spectroscopy owes its inception to the discovery of dark lines in the solar spectrum by Wollaston and later by Fraunhofer, followed by their interpretation by Kirchhoff in 1859. These absorption lines form an absorption spectrum and indicate the presence of certain elements in a gaseous state. Bright lines also are formed by a gas under low pressure or by the glowing vapour of an element, and such a spectrum is known as an emission spectrum. By this means the constitution of the sun and stars has been ascertained.

Spectrum The continuous, coloured band formed by the passage of white light through a prism, thereby undergoing refraction. The seven colour regions are red, orange, yellow, green, blue, indigo and violet, each differing from each other in wavelength, intensity, etc. Beyond the red end of the spectrum are the infra-red rays, and beyond the violet end the ultra-violet rays.

Speech Faculty of uttering articulate sounds or words. It may take the form of a monologue or of conversation. The power of speech comes naturally to all, save a very few, but correct speech, the arrangement of words in their proper order and giving to each its proper pronunciation, is acquired by education. At the public schools the day on which prizes are presented and literary and dramatic exercises given is called the **speech day**.

Speech House Building in the Forest of Dean. It is 7 m. from Lydney near the station called Speech House Road on the G.W. Rly. It was built in 1680 and in it the verderers of the forest held their courts. It is now an hotel.

Speed Rate of motion. It is the test of motion in contests of various kinds, running, motoring, etc. In running the speed decreases in proportion as the length of the course increases: for instance a man can run 100 yds. at a far higher speed than he can run 3 m. With animals, birds and vehicles

this is less evident, although the principle must operate to some extent.

Various calculations have been made about the speed of animals and birds. The greyhound can travel at 40 or even more miles an hour, but the ostrich can do 60. The eagle can fly 140 miles an hour and it is said that this speed is exceeded by some smaller birds. In 1936 the following were officially the greatest recorded speeds :—

AIR—423.76 miles an hour. Warrant Officer Agello, Italian Air Force, April, 1933.
MOTOR CAR—301.12 miles an hour. Sir Malcolm Campbell at Salt Lake City, 3rd Sept., 1935.
MOTOR CYCLE—151.2 miles an hour. J. S Wright at Cork, Nov., 1930.
RAILWAY—82 miles an hour; Cheltenham Flyer on the Gt. Western Rly., Decr., 1935.
MOTOR BOAT—128.98 miles an hour. Gar Wood at Michigan Lake.

Speedometer Instrument which indicates the speed at which a vehicle is travelling. Speedometers are used on cars and on various types of motor engines, and are of different kinds. They are of the greatest importance to the driver, as the sense of speed is erratic and varies with the power of the engine concerned. Thus a low-powered car will appear to its occupants to be travelling at a great speed when it is doing between 20 and 30 m.p.h., while a high-powered car will appear to be travelling almost slowly until it gets above 40 m.p.h.

Speedway Track of cinders and dirt laid down for motor cycle racing. About 1928 speedway racing became popular in England, having been introduced from Australia, and there are now tracks for it at the Crystal Palace, Stamford Bridge, Wembley, West Ham, Lea Bridge, Harringay and Wimbledon in the London area, and at Nottingham, Birmingham, Leicester, Southampton and elsewhere. International matches now take place.

Speedwell Flowering herb. It belongs to the natural order *scrophulari aceae* and the genus *veronica*, and grows in Europe and Asia. Several varieties are found in the woods and hedgerows of Great Britain. They have two stamens and corollas shaped like wheels and bear bright blue flowers.

Speiss Word meaning amalgam and used for the impure arsenide of cobalt or nickel. It is obtained when smelting the arsenical ores of these metals with fluxes and is left at the bottom of the crucible.

Speke **John Hanning.** English explorer. Born at Jordans in Somerset, May 4, 1827, he became an officer in the Indian Army in 1844. He travelled extensively in Asia and in 1854, with Sir Richard Burton, he explored Somaliland and the region around Lake Tanganyika. He then made journeys into the unknown parts of Africa and discovered the source of the Nile in the Victoria Nyanza, on which he wrote a book. A dispute with Burton followed. On Sept. 15, 1864, Speke shot himself by accident while out partridge shooting.

Spelling Art of naming correctly the letters of words, also called orthography, or correct writing. It follows certain rules which are, in English especially, not very intelligible. From time to time these are altered, though not formally. Instances are the tendency to drop the diphthong æ as in the spelling "medieval," not "mediaeval"; in eliding the u from "labour," "honour," and other words, an American practice. There are differences, too, as to the presence or absence of the e in "judgment" and whether the s or the z is correct in "recognise" and "advertises." Dictionaries, which exist to give the spelling of the various words, give both forms in doubtful cases. There are societies for simplifying the spelling of English words, one being the **Simplified Spelling Society.**

Spelt Kind of wheat. It is of inferior quality and is grown in mountainous regions in the centre and south of Europe. It is also called German wheat. Its chief disadvantage compared with ordinary wheat is that it cannot be threshed properly.

Spenborough Urban district of Yorkshire (W.R.), formed in 1917 by the union of Cleckheaton, Liversedge and Gomersal. It is 9 m. from Leeds in the valley of the Spen and is a centre of the woollen industry. Pop. (1931) 30,962.

Spencer **Earl.** English title borne by the family of Spencer. **John Spencer,** the youngest son of the 3rd Earl of Sunderland and a descendant of the Duke of Marlborough, was made an earl in 1765. His successors have all played their part in public life. George John, the 2nd earl (1758-1834) was First Lord of the Admiralty and Secretary of State under Pitt. He died in 1834. **John Charles,** the 3rd earl, entered the House of Commons when Viscount Althorp in 1804. In 1830 he became leader of the Whigs, and was Chancellor of the Exchequer under Earl Grey when the Reform Bill and other important measures were passed. He died Oct. 1, 1845, and his brother, Frederick, became the 4th earl. He was Lord Chamberlain and Lord Steward and died Oct. 1, 1845.

Spencer **Earl.** English statesman. Only son of the 4th earl, John Poyntz Spencer was born in London, Oct. 27, 1835, and educated at Harrow and Trinity College, Cambridge. He became attached to the household of the Prince of Wales and was a prominent figure in the hunting world, where he was a master of the Pytchley. As a Liberal he was Lord Lieutenant of Ireland, 1868-74, and again between 1882-1885. From 1880-82 and again in 1886 he was Lord President of the Council. From 1892-1895 he was First Lord of the Admiralty and in 1894 was a possible prime minister. From 1902 to 1905 he was leader of the Liberals in the House of Lords. He sold his magnificent library to Mrs. Rylands and it is now in Manchester. He died Aug. 14, 1910.

Spencer's successor, as 6th Earl Spencer, was his half-brother, **Charles Robert Spencer,** who was Lord Chamberlain, 1905-1912. In 1905 he was made a viscount. He died in 1922, when his son became the 7th earl. The family seat is Althorp House, near Northampton, and the heir to the title is called Viscount Althorp.

Spencer **Herbert.** One of England's greatest philosophers. Born in Derby, April 27, 1820, the son of a schoolmaster, who was also secretary of the Philosophical Society, his philosophic bent came naturally. He began life as a railway engineer, in 1848 became Asst. Editor of *The Economist*, and thenceforward devoted himself to developing his system of philosophy, based upon the principle that "all organic development is a change from homogeneity to heterogeneity." He expounded his philosophy in five books, *First Principles*, *Principles of Biology*, *Principles of Psychology*, *Principles of Sociology*, and *Principles of Ethics*, as well as in many other shorter works. He died Dec. 8, 1903.

Spender **John Alfred.** English journalist. Born in Bath in 1862, he was educated in Bath and Oxford. From 1886 to 1890 he was Editor of the *Eastern Morning News*, Hull. He joined the *Pall Mall Gazette* in 1892, but left it when Mr. Astor became the owner, owing to a difference in political views. He was Editor of the *Westminster Gazette* from 1896 to 1922. A prolific writer on many subjects, critical, biographical, political, descriptive, he wrote the lives of Sir Henry Campbell-Bannerman (1923), Weetman Pearson, first Viscount Cowdray (1930); also (with Mr. Cyril Asquith) a life of Lord Oxford and Asquith; *Fifty Years of Europe* appeared in 1933. In 1935 he was a member of the Royal Commission on Traffic in Arms.

Spennymoor Urban district of Durham. It is 6 m. from Durham, on the L.N.E. Rly. The industries are coal mining and iron and steel working. Pop. (1931) 16,361.

Spenser **Edmund.** English poet. Born in London in 1552 of humble parentage, he was educated at Merchant Taylors' School and Cambridge. He published *The Shepheardes Calendar* in 1579. This was hailed with delight by his contemporaries, as marking a new epoch in English literature. It was dedicated to Sir Philip Sidney, who became his firm friend and patron, as did also the Earl of Leicester, Sir Philip's uncle. Through the earl's influence, Spenser was appointed Secretary to the Lord Deputy of Ireland and, apart from a few visits to England, spent the rest of his life in Ireland. Best remembered by his *Faerie Queene*, a national epic allegorical in character, he died in London, Jan. 16, 1599.

Sperm Alternative name for the cachalot whale which is toothed and remarkable for the large size of its head. It is hunted in the South Pacific for its blubber which yields a valuable oil, sperm oil, and spermaceti from the head cavities.

Spermaceti Wax-like solid obtained from the sperm oil present in the head cavities of the sperm whale (*physeter macrocephalys*). It is prepared from the oil by filtration and pressure, the product being purified by washing in water and potash lye. Spermaceti is a pearly-white, glistening, crystalline wax. It is used in pharmacy and for making candles.

Spermatozoa Name given to the motile male germ cell or microgameti produced in the testes. In the higher forms of animal life they are extremely minute structures, somewhat tadpole-like in form and consisting of a rounded head and a slender tapering portion ending in a whip-like tail, which acts as the organ of locomotion.

Spey River of Scotland. Rising in the mountains in the west of Inverness-shire, it flows through that county and Morayshire into the Moray Firth at Kingston, between Lossiemouth and Portknockie. It is 110 m. in length and is noted for its salmon.

Sphenodon Reptile (*Hatteria punctata*) found in New Zealand. It is the only remaining representative of the order *rhynchocephalia*, or snout-headed reptiles. It resembles the lizard, but there are certain differences. It is about 20 in. long, dark-olive in colour with yellow spots. There is a crest of small spines along the back and the tail.

Spheroid Kind of ellipsoid, varying according to the axis round which the ellipsoid is hypothetically made to revolve. If the axis be the major or longer one, the spheroid or curved outline which the ellipsoid describes in its revolution is a prolate one: if the axis is the minor or shorter an oblate spheroid, of which the earth is an example, is described.

Sphinx Name signifying strangler, applied by Greek travellers to Egyptian composite monsters resembling the Sphinx of Theban legend, which propounded riddles and strangled those who failed to solve them. The most famous Egyptian sphinx is that of Gizeh, about a quarter of a mile south-east of the Great Pyramid. It is sculptured out of a spur of rock with added masonry and represents a recumbent man-headed lion about 180 ft. long and 60 ft. high to the top of the head. Various other sphinxes, either single or in avenues, have been discovered in Egypt. Grecian sphinxes occur in reliefs on coins, and as a decoration of arms and furniture.

Spice Vegetable substance that is aromatic to smell and pungent to taste. It is obtained from certain plants, especially those that grow in hot countries, and is used for flavouring, etc. A few kinds only can be mentioned – pepper, ginger, nutmeg and cinnamon. Most of these come from the islands of the East Indies. In the Middle Ages the trade in spice was, comparatively speaking, far greater than it is to-day, as spices were used to a much greater extent to flavour food. *See* GINGER, PEPPER, etc.

Spicheren Village of Lorraine. It is 2 m. from Saarbrücken and is known for the battle fought here during the Franco-Prussian War. A French force was defending the heights when, on Aug. 6, 1870, it was attacked by the Germans. After a stern fight the troops stormed the defences on the hills, and the French withdrew.

Spider Insect of the order *Aranecidae* belonging to the class *arachnida*. The name is a corruption of *spinther*, or spinner. It is found everywhere. In some tropical countries it attains a length of over two inches and spins a net capable of capturing birds. The spider's spinnerets are contained in its abdomen, and the foot is provided with a comb which helps in drawing the silken thread out of the spinnerot. The thread is the result of the hardening of a viscid fluid which oozes out of the spinning sporls of the spinnerets, and is of astonishing delicacy and strength. The finest webs are of gossamer and cover whole fields with their filmy texture. Coarser ones in tropical forests are sometimes a serious obstacle to travellers.

Spiders are mostly terrestrial, but there is a water variety which inflates its sub-aquatic web with air brought from the surface and stored among the hairs of its body.

Spiderwort Perennial flowering herb. There are several kinds, the one most usually grown in Great Britain being the Virginian spiderwort, which bears purple-blue flowers. Other species are grown in greenhouses.

Spikenard Perennial herb, sometimes called nard. It is a native of the Himalayas, but will grow in ordinary soil in Great Britain. It has a thick root and bears reddish flowers in dense clusters in the autumn. The root is very fragrant and from it a perfume is prepared. It is used also in medicine as a stimulant. It belongs to the natural order *Valerianaceae*.

Spilsbury Sir Bernard Henry. English pathologist. Born in 1878, he was educated at Oxford and studied medicine in London. He became a lecturer at St. Bartholomew's Hospital, his subject being pathology, and on this he soon became a leading authority. He is employed by the Home Office to report on cases of poisoning and in all cases of this kind his opinion is regarded as of the highest value. In 1923 he was knighted.

Spilsby Market town of Lincolnshire. It is 18 m. from Boston, on the L.N.E. Rly. The parish church dates from the 14th century, and the chief industry is trading in agricultural produce. Sir John Franklin was born here, and the market place has a statue of him.

Spinach Edible herb of the natural order *Chenopodiaceae*. It was introduced into Great Britain in the 16th century and is now a popular table vegetable. It should be thoroughly cleaned and then chopped and boiled. It can be served on toast, as an entree, while spinach and eggs is a favourite dish.

Spindle Tree Tree found in woods and hedges in Great Britain. It bears glassy lance-shaped leaves and clusters of small, greenish flowers followed by crimson fruit. It is about 20 ft. high and has a smooth, grey bark. The wood, being hard and tough, is used for making skewers and the like. Its botanical name is *Euonymus europaeus*. It belongs to the order *Celastraceae*, and is also found in Europe and Africa.

Spine Most important part of the skeleton of the higher animals, supporting the skull and ribs and enabling the body to be maintained in an erect position. It is composed of a series of bones placed one above, or in front of, the other and called vertebrae. The arches attached to the vertebrae form a continuous canal in which the spinal cord is lodged and protected from injury.

Spinel Mineral composed chiefly of magnesia and alumina, and crystallising in octahedra. There are several kinds of spinel, red, black and green, the two last being known as pleonaste, picotite, gahnite and hercynite. The finest kind of red spinel is the genus known as ruby, found chiefly in Ceylon, Siam and Burma.

Spinet Musical instrument. It was very popular in the 16th, 17th and 18th centuries and there are some fine examples in existence. It was smaller than the harpsichord, but of the same type. The keys were plucked by means of quills. The smaller ones were placed on the table when in use, but larger ones had legs like a piano. The word in Italian means little thorn.

Spinning Art of twisting fibrous substances into strands of yarn fitted for weaving. Two operations are necessary. (1) Uniform quantities of fibre have to be drawn out continuously and (2) the drawn-out material has to be twisted to make it cohere and give it strength and toughness.

The earliest spinning apparatus was the distaff and spindle which were largely superseded by the spinning wheel still in use in Northern and Western Scotland for the local manufacture of worsted yarns. Mechanical spinning had its origin in an invention by Lewis Paul of Birmingham in 1738 for drawing out fibres by accelerated motion, a principle further developed by Arkwright in 1797. Meanwhile in 1764 James Hargreaves had produced his spinning jenny with which 8 threads, a number increased later almost indefinitely, could be spun at once. From 1774 Samuel Crompton of Bolton carried improvements further. Upon these early inventions are based the complex and delicate machinery employed to-day in Manchester and other great centres of the spinning industry.

Spinoza Benedict. Dutch philosopher. Born at Amsterdam, Nov. 24, 1632, he was by birth a Jew; later he left that faith. He lived chiefly at the Hague where he was employed in polishing lenses, and there he died Feb. 21, 1677.

Spinoza devoted his life to the study of philosophy and embodied his ideas in his *Ethica* and other works published after his death. He also wrote an explanation of the philosophy of the Descartes to which he owed much. His *Tractatus Theologico Politicus* is an expansion of the ideas of Descartes.

Spinoza's philosophy is a pantheistic one. There is only one substance—God, the absolutely infinite. This has infinite attributes, which together make up the universe, but man is only acquainted with two of them, thought and extension.

Spion Kop Hill in Natal. It overlooks the river Tugela and became known during the war in South Africa in 1900. It was held by the Boers, who were guarding the way to Ladysmith, when on Jan. 23, 1900, it was attacked by a force under Sir Charles Warren. It was taken during the night and held during the following day, but later, owing to a misunderstanding, it was abandoned. Later it appeared that the step was unnecessary.

Spiræa Genus of plants of the natural order *Rosaceae* and sub-order *Spiraeae*, containing many species of herbaceous plants and low deciduous shrubs, the latter frequently planted for ornament. Two of the herbaceous species, dropwort and meadow sweet, are natives of Britain. In Sweden the tubers of dropwort are ground and made into bread. An American species called hardhack is used as a tonic and astringent.

Spiral Term applied to a screw-like curve which continually recedes from a centre about which it revolves. In geometry a number of different forms of spirals are recognised such as the Archimedian, Logarithmic, Hyperbolic and the Ionic Volute, the latter being a characteristic feature of the Ionic Column in Greek architecture.

Spire In architecture a tall, sharply tapering structure rising from a tower or other foundation. It is a feature of Gothic architecture. Most of the Gothic cathedrals and churches possess spires, which are occasionally seen on secular buildings of the same style. It originated in the 10th or 11th century and is regarded as being a development of the pyramidal roof then seen in parts of France and Germany. The first spires were simply built upon towers; later spires and towers were united in a single structure with pinnacles, crochets and lights and no clear demarcation between the two. The loftiest spire in England (406 ft.) and perhaps the most beautiful, is the one on Salisbury Cathedral, another beautiful example is that of the church of S. Mary the Virgin, Oxford.

Spirit Word used for the soul of any unnatural substance; the part of

man that is not the body. It is also used for the angels, who are sometimes called spirits, and to give an idea of God, who is the Supreme Spirit. *See* SOUL.

Spirits Word used for certain alcoholic liquors and also for solutions prepared by chemists. Examples are brandy, whisky, gin and rum which are prepared for drinking, and methylated and other spirits that are used as sources of power. **Spirits of salts** (hydrochloric acid) is an example of a chemical preparation.

Spiritualism Name applied to the belief in the possibility of intercommunication between the living and the dead. The alleged intercourse is usually carried out with the help of mediums who submit to the direction of supposed "controls" or spirits acting as agents for the spirit world. Apart from exposures of imposture; seances, or gatherings, for the purpose of getting into touch with the departed, which have been held in the presence of scientific investigators, have revealed remarkable phenomena. These, with other manifestations, are carefully noted by the Society for Psychical Research, and have been made the subject of various statements by the late Sir Arthur Conan Doyle, Sir Oliver Lodge and others.

Spitalfields District of London. It is in the borough of Stepney and lies to the east of the city. At one time it was a centre of the silk industry; it is now noted for its market where fruit and vegetables are sold. This was enlarged in 1928 and is the property of the city corporation. Near is the London Fruit Exchange. At one time there was the Priory of St. Mary Spittal here; hence the name of the place.

Spithead Stretch of water between Hampshire and the Isle of Wight. It is 12 m. long and 4 m. wide and owing to its nearness to Portsmouth is frequently used by warships. It is continued by the Solent.

Spittal Watering place of Northumberland. It is opposite Berwick at the mouth of the Tweed. There is some fishing.

Spitzbergen Group of islands in the Arctic Ocean between Nova Zembla and Greenland. Their estimated area is about 25,000 sq. m. The principal island is known as West Spitzbergen (15,000 sq. m.). The sovereignty of Norway over the Spitzbergen Archipelago was recognised by the Great Powers in a treaty dated Feb. 3, 1820.

The islands are mostly mountainous, some peaks rising to over 5000 ft., and vegetation is scanty. The principal mineral is coal. Trappers and hunters visit the islands in search of seals, foxes and polar bears and there is a wintering population of about 1200, which is considerably increased in summer. The Norwegian Government maintains a high-power wireless station on West Spitzbergen. The climate is Arctic, tempered by the Gulf Stream.

Spleen An oblong, ductless organ situated in the left hypochondriac region. Capable of expansion and contraction, and liable in diseased conditions to enlargement up to several times its natural size, which is about 4 in. long by 2½ in. broad, it weighs from 6 to 8 oz. In a general way the spleen is a blood-modifying gland, both destroying blood corpuscles and forming new ones. It can be excised, but the operation is a serious one. In old times the spleen was supposed to be the seat of envy, malice and other unpleasing emotions—hence such terms as spleenful, splenetic, etc.

Spleenwort Any form of the genus *Asplenum* of the natural order *Polypodiaceae*. The commonest British form is *Ceterach officinarum*, or scaly spleenwort, which grows on rocks and masonry and is very suitable for cultivation in rock gardens. There are altogether about 300 species of *Asplenium* found in Europe, Western Asia and North and South Africa, nine of them being indigenous to Great Britain. The latter include maidenhair spleenwort (*A. trichomanes*), black spleenwort (*A. adiantum nigrum*) and sea spleenwort (*A. marinum*).

Spode Chinaware made by Josiah Spode. It was first made at Stoke in 1770, when Spode used crushed bone with his soft paste. The result was a very transparent ware which was beautifully decorated with flowers and gilt.

Spofforth **Frederick Robert.** Australian cricketer. Born at Balmain, New South Wales, Sept. 9, 1853, he soon began to play cricket for the state. In 1878 he was a member of the team that visited England and he belonged also to later Australian teams and played against England in Australia. He won fame as a bowler, being called the demon, and was certainly one of the greatest bowlers the world has seen. In test matches he took 94 wickets for 1731 runs, and many other remarkable feats stand to his credit, including on one occasion 11 wickets for 20 runs. Spofforth settled in London and was engaged in the tea trade until his death at Surbiton, Surrey, June 4, 1926.

Spohr **Ludwig.** German composer. Born at Brunswick, April 5, 1784, he soon played the violin with extraordinary skill and became a member of the orchestra kept by the Duke of Brunswick. He became Director of Music at Gotha in 1805 and from 1813-15 was at Vienna in a similar position. In 1822 he went to Cassel as Director of Music and there he remained until his death, Oct. 16, 1859.

Spohr is chiefly known as a composer and especially for his oratorio *The Last Judgment*. He also wrote other oratorios, operas, symphonies and concertos for the violin. His violin course is still authoritative. Spohr, who conducted concerts in London in 1820, wrote an *Autobiography*, which has been translated into English.

Sponge Lowly type of animal belonging to the *Phylum porifera*. In its simplest form consists of an individual organism, having a cylindrical or vase-shaped body, forming a three-layered sac, pierced by numerous pores through which water passes into the inner cavity, whose walls are lined with flagellate cells. The water finally is expelled by a terminal exhalant pore. The more complex colonial sponges assume a plant-like growth, and secrete minute siliceous or clacareous spicules, or have a horny skeleton like the common sponge.

Spoonbill Genus of bird. Allied to the ibis and more distantly to the stork, it is the only European species of of *Platalea leucorodia*. Formerly a resident in Great Britain but now only an occasional visitor, it is white in colour with a tinge of pink or buff, and has a remarkably long, flat bill much dilated in spoon-like form at the tip. It lives usually in marshes and always near water.

Sporades Islands in the Ægean Sea. They number 20 and formerly belonged to Turkey. During the Turco-Italian War of 1911 Italy occupied 13 of the islands and in the course of the Balkan War, which broke out in the following year, Greece annexed the others. As a result of the Great War the Sporades now belong to Greece.

Spore Non-sexual reproductive cell. It is met with in the flowerless plants and is capable of giving rise to a new plant which may or may not resemble the parent. In ferns the spore develops into a small leafy prothallus or sexual plant quite unlike the fern, and this bears the sexual gametes which produce the fern.

Sporozoa Class of parasitic protozoa. Its early stages are amoeboid or flagellate but it is without locomotor organs in the adult state, which is usually passed in an encysted state in the tissues of a host. Reproduction occurs by means of spores which divide up into small bodies or sporozoites These sporozoites become transferred ultimately to another host. Some disease germs belong to this class, such as the germs of malaria, tsetse fly disease, and Texas cattle disease. Others are parasitic in insects and crustacea or in the flesh of mammals.

Sprain Injury of the ligaments, etc., around a joint, such as the ankle. When small blood vessels are torn, there is much bruising and swelling.

Treatment.—Hot compresses should be applied. A bad sprain should always be attended to by a doctor, as special bandaging and sometimes a splint are necessary. On no account must the injured foot be used: it should be kept up on a chair or in bed. A sprained wrist can be put in a sling.

Sprat A small fish (*Clupea sprattus*). About 5 in. long, of the herring family, it is distinguished from the herring by having a serrated belly and no teeth on the vomer. It abounds along the British coasts and was formerly freely used for manure. A popular article of food, it has been known to figure in tins as a sardine. Young sprats are taken in estuaries and sold as whitebait.

Spree River of Germany. It rises in Saxony near the border of Bohemia and flows into Prussia until at Spandau it falls into the Havel. It is 226 m. long and passes through Berlin. Part of its course has been canalised, and by means of canals it is connected with the Oder and so with the Baltic Sea.

Spring Natural outflow of water from the earth. Water percolates through a permeable bed such as sandstone or limestone until it reaches one that is impermeable. Here it accumulates, ultimately finding its way by fissures or joint-planes until by pressure the water is forced up to the surface. **Mineral springs** are formed by water dissolving mineral matter in a porous stratum, and these may be saline, chalybeate, sulphurous. **Hot springs** occur where water rises from a great depth or in volcanic areas.

Springbok Kind of gazelle. It is found in South Africa, and is famed for its power of springing when running. It is about 30 in. high and has magnificent horns. In colour it is yellow.

Springfield Name of several cities in the United States. The largest is in Massachusetts, 100 m. from Boston. It is on the Connecticut river and is a manufacturing centre. Pop. (1930) 149,900.

Another is in Missouri and a third in Ohio. The best known Springfield is the chief town in Illinois. It is 186 m. from Chicago, and is famed for its connection with Abraham Lincoln, who facturing centre. Pop. (1930) 71,864.

Springhill Town of Nova Scotia. It is 121 m. from Halifax by railway, and is a coal mining centre. Pop. 6355.

Spring-Rice **Sir Cecil Arthur.** English diplomatist. Born Feb. 27, 1859, he was educated at Eton and Oxford and entered the Foreign Office in 1884. During the next 24 years he gained experience in various capitals, and in 1908, being then a knight, he was appointed Minister to Sweden. In 1913 he was transferred as ambassador to Washington, and was in the United States when the Great War broke out. He dealt with many difficult matters that arose while that country was neutral, and was still ambassador when she entered the War. In 1918 he resigned, and he died at Ottawa, Feb. 14, 1918.

Springtail Small wingless insects. Of the sub-order *Coblembola*, it is found under stones, bark, and flowerpots. There are some aquatic species and a member of the family, known as the glacier flea, occurs on the ice in the Alps. The name is derived from a forked organ under the abdomen which, on being released, acts as a spring and throws the insect into the air.

Sprinting Full-speed racing over short distances. Records are commonly applied to 100 yds., the world's professional record being held by J. Donaldson (Australia), who ran 100 yds. in 9¾ secs. in 1910. The amateur record for this distance is 9¾ secs., in which time it was run by F. Wykoff (U.S.A.) in 1930. The record time for women is 11¼ secs., made by G. Radideau (France) in 1926, and E. Robinson (U.S.A.) in 1929. In these sprint races the start is usually made from a crouching position with the fingers lightly touching the ground.

Sprocket Projection on the periphery of a wheel. It is also found on a capstan, and its purpose is always to engage a chain, thus a cog-wheel acting upon the links of a chain is termed a sprocket wheel.

In architecture it is a piece of wood attached to the end of a rafter to form projecting eaves to a roof.

Spruce Genus of the *coniferae* inhabiting cold and temperate regions of the northern hemisphere. *Picea excelsa* and *P. abies* (Norway spruce) are important timber trees in north Europe and Asia, giving cut timber, scaffold poles, ladders and pit props. In Norway wood-pulp is made from them.

Sprue Tropical disease. It is met with in Asia and Australia and characterised by acute diarrhœa and ulceration of the mouth. It is one of the complaints specially dealt with at the Hospital for Tropical Diseases, 25 Gordon Street, W.C.1.

Spurge Genus of plant. Of the natural order *Euphorbiaceae*, mostly herbaceous, but some woody, about 12 species are natives of Britain. All have a resinous milky juice and occur in most warm and temperate climates. Some are cultivated in hothouses, the best known being *Euphorbia pulcherrima*, called by gardeners poinsettia, which has yellow blossoms surrounded by brilliant red bracts.

Spurgeon **Charles Haddon.** Baptist preacher. Born at Kelvedon Essex, June 19, 1834, he began teaching in 1849, preaching in Cambridge at 18. He moved to London in 1854, where his eloquence and wit soon began to attract large congregations, people coming from all over the world to hear him. He published weekly sermons, which attained large circulations, and was the author of many religious books. He founded the Stockwell Orphanage in 1867, and died at Mentone, France, Jan. 31, 1892.

Spurn Head Headland of Yorkshire. It is an extension of the east coast that turns into the Humber. Its length is about 2½ m. and on it are two lighthouses.

Spurs **Battle of the.** Fought between the English and the French, Aug. 16, 1513. It was fought just outside Thérouanne, which the English were besieging. The French advanced to relieve the place, but when they appeared the defenders were ready for them, and after a sharp fight they were beaten back. This name was given to the skirmish because the knights used their spurs to hasten their escape.

Spy One who collects information in time of war. He assumes the role of a comrade or fellow countryman of an enemy. By international law a spy, if caught, may be shot. The organisation that controls spying, both in peace and war, is known as the secret service. During the Great War there were spies in all the belligerent countries as well as in the armies.

Squadron Military, naval or air force. In the British army a squadron is a division of a cavalry regiment, which usually possesses four, each under a major or captain. In the navy a squadron is a number of warships under an officer of flag rank; battleships and battle cruisers are usually grouped in squadrons of four. In the air service the squadron is the smallest number of machines under a single command. The rank of **squadron leader** in the air service is equivalent to that of major in the army and lieutenant-commander in the navy.

Square Root Quantity that, multiplied by itself, gives a specified number or formula. There is a regular method of finding the square root of a number, although in most cases this is not an exact figure, but runs to many places of decimals. The square root of 256 is 16, but the square root of 356 is 18 and a row of decimals. Square roots are also obtainable in algebra.

Squash Rackets Indoor ball game. It is played on a smaller court than in ordinary rackets and is limited to two players. The ball is of india-rubber and much larger than an ordinary racket ball, being of the same size as that used in fives. It is a slower game than ordinary rackets, but is extremely popular and an excellent test of accuracy in placing the ball.

Squatter One who settles on land that is unoccupied. In English law if such a person has not been disturbed in his possession for a period of years he becomes the owner of the land. In the United States the doctrine of **squatter sovereignty** is that squatters, or actual residents in a territory, have the right to make their own laws.

Squid Calamory or cuttle-fish. The name is more particularly applied to the small variety (*Loligo vulgaris*) found along the British and French coasts. Like some of the other cephalopods it carries a reservoir of inky fluid which it squirts out in order to baffle an enemy. Its skeleton is quite commonly found on some English beaches.

Squill Two different plants. One is of the natural order of *Liliaceae*, and is now more commonly known by its Latin name *scilla*, the other is the officinal squilla (*Urginea Scilla*) the dried bulb from which, in powdered form, is used medicinally as an emetic and expectorant.

Squinting (or **strabismus**). Want of parallelism in the visual axes of the eye. Causing the eyes to look in different directions when the intention is to direct both on the same object, it may be due to loss of power in one of the eye muscles with consequent over activity on the part of the other. Strabismus may be either convergent, when the squinting eye is directed inwards, divergent, when it is directed outwards, the former being much the more frequent.

Squire Variant of esquire. The first esquires were the youths who attended the knights in the field of battle and later became knights themselves.

Later the word was used in England for a landowner who was not a peer, usually one who owned a small estate, and was the chief man in his neighbourhood. These squires played a large part in the life of the country during the 18th and 19th centuries The changes of the 20th century have greatly reduced their numbers.

Squire **Sir John Collings.** English man of letters. Born at Plymouth in 1884, he became literary editor (later acting editor) of *The New Statesman*, and in 1919 founded *The London Mercury*, of which he was editor and chairman. His widely popular writings (*Apes and Parrots* and *Sunday Mornings* are recent titles) include essays, reviews, poems and parodies. He was knighted in 1933.

Squirrel Small rodent of the family *Sciuridae*. Mostly arboreal and found nearly everywhere except in Australia, the British variety (*Sciurus vulgaris*) measures 18 in. long, including an 8 in. tail, and weighs about half a pound. It nests in trees and eats berries, nuts, and fir-buds, collecting a store for winter, during which it hibernates awakening from time to time to feed. It is being rapidly displaced by the grey squirrel (*S. cinercus*), introduced from North America, which is multiplying so freely as to become a nuisance. Its extermination, owing to its predatory habits and its fondness for birds' eggs, is being organised in several countries.

Flying Squirrels are a group of squirrel-like rodents which, by means of a membranous extension of skin of the flanks between the limbs, can glide considerable distances through the air from tree to tree. Different species occur in N. America, India and Africa.

Stabiliser Term used in aeronautics. It denotes any appliance employed for the purpose of imparting stability to aircraft when in motion, and is frequently employed to denote the fixed horizontal portion of the tail of an aeroplane.

Stability Term used in aeronautics. It has reference to the power of an aeroplane when disturbed by air pockets, or other causes, to right itself on the control levers being placed in their normal position. Lateral stability preventing a rolling action,

is met by a slight inclination from the horizontal of the wings, and to give longitudinal stability the tail plane also is inclined. Stability in relation to varying wind currents is obtained by the action of the vertical fin and of the rudder.

Stabilization Action of making anything firm or stable. It is used chiefly in connection with money which, in order properly to fulfil its functions, must have a known value, fixed in relation to a standard commodity, which in most countries is gold. This was not the case during the financial derangement that followed the Great War, when the mark, the franc, and other currency units fluctuated violently in value. The evil was remedied by stabilising them, *i.e.*, giving them a new value in relation to gold. This new value is usually expressed in terms of exchange relation with either the £ or the dollar, *e.g.*, in 1924 Germany stabilised her currency at 20 reuter marks to the £. Italy followed suit in 1927 at 92 lire to the £ and France in 1928 at 125 francs to the £.

Stadium Enclosure used for sports and games. The original stadium was a Greek measure of length, about one-tenth of a mile. It was then applied to a race run over a course of this length and finally to the building or enclosure in which such races were held. There were stadia at Olympia, Athens, and in many other Greek cities.

In modern times the word has been revived. A stadium has been erected at Wembley, London, and there are many others in Europe and America, some containing accommodation for 100,000 persons. Those at Berlin and Alexandria and the one built at Los Angeles for the Olympic Games of 1932, are notable examples. There was one at the White City, Shepherd's Bush, London, built for the Olympic Games of 1908.

Stadtholder Name formerly used in the Netherlands for the highest official. The first stadtholders were representatives of the King of Spain, but in 1579, when they became independent the northern provinces elected stadtholders of their own. In Holland the office became practically hereditary in the family of Orange, and was held by William the Silent and subsequently by his great-grandson, William III. of England. The office ceased to exist when the Netherlands became a kingdom in 1815.

Staël **Anne Louise Germaine, Madame de.** Born in Paris, April 22, 1766. the daughter of Necker, the French banker and Minister of Finance, she achieved fame as a writer, a conversationalist, and a society woman. She married Baron de Stael-Holstein, Swedish ambassador in Paris, and wrote *Corinne*, *Delphine*, and *De L'Allemagne*, besides many other books. The first named brought her European fame, and she visited England, Germany, Austria and Italy. Her liberal tendencies greatly annoyed Napoleon, who persecuted her. Her second husband was Albert de Rocca. She died July 14, 1817.

Staffa Island of Scotland. One of the Hebrides, it is part of the county of Argyll, and is 6 m. north of Iona. It covers only 71 acres, but is famous on account of its caves, which are of basalt; the chief is Fingal's Cave, which is over 200 ft. long. The island is uninhabited.

Staff College Training college for army, naval and air force officers. Only a selected number of officers are admitted to the college, and the passing of the examinations is a great help to promotion. Every modern service has its staff college with a complement of professors and lecturers. In Great Britain the army staff college is at Camberley; the naval staff college at Greenwich, and the air force staff college at Andover.

Stafford Borough, market town and county town of Staffordshire It is on the river Sow, 133 m. from London and 23 from Birmingham, by the L.M.S. and L.N.E. Rlys. The buildings include the beautiful Church of S. Mary, once collegiate the restored Church of S. Chad, the shire hall and the town hall. There was a castle in Norman times; the present building is modern

There are brine baths and salt is prepared and the town's industries include boot factories and engineering works. Izaac Walton was born in the town. Pop. (1931) 29,485.

Stafford **Marquess of.** English title now borne by the eldest son of the Duke of Sutherland. **Ralf de Stafford,** who lived in the castle at Stafford, was created earl in 1351, and his descendant was Humphrey Stafford, Duke of Buckingham. The title became extinct in 1521, but in 1688 it was revived for **Henry Stafford Howard,** a descendant of the earlier Staffords. It became extinct for the second time in 1762.

In 1758, **Earl Gower,** the head of the family of Leveson Gower, was created Marquess of Stafford, and his son, the 2nd marquess, was made Duke of Sutherland in 1833, having married the heiress of the Earls of Sutherland The seat of the marquess was Trentham Hall in Staffordshire, now demolished.

Staffordshire Midland country of England. In area 1169 sq. m., it is hilly in the north, but for the most part gently undulating, with the low upland of Cannock Chase, now a coalfield, in the centre. The chief river is the Trent. In the north are the Potteries, embracing Hanley Burslem, Stoke-upon-Trent, etc. In the south is the Black Country, in which, at Wolverhampton and Walsall, iron in all its branches is manufactured. There are some 600 collieries and the breweries of Burton-on-Trent are world-renowned.

Stafford is the county town, but there are many other more populous centres. For parliamentary purposes Staffordshire is divided into seven divisions, each returning one member Among famous natives are Dr. Johnson Izaac Walton and Josiah Wedgwood. Pop (1931) 1,431,175.

Stag Male of the red deer. Stags in Scotland are stalked, and shot with a rifle. On Exmoor, in the New Forest, and in Ribblesdale, Yorkshire, wild red deer are hunted, the Exmoor season lasting from Mar. 25 to May 10, and again from Aug. 12 to Oct. 8. Elsewhere the practice is to carry a stag to the meet in a van and to set on the hounds a quarter of an hour after the carted stag has been released.

Stage Platform on which plays are performed. The term has come to be applied generally to the dramatic profession Greek and Roman theatres were provided with fixed stages, placed in the former case opposite the amphitheatre of seats and on a level with the lowest row. Considerable enlargement of the stage and the introduction of stage machinery characterised the Roman theatre Many early stages on which morality and

mystery plays were performed were natural or movable ones. The use of a revolving stage is a modern development.

THE STAGE AS A CAREER.—The lure of the stage is proverbial, but it is well that the aspirant to a career in the theatre should consider carefully various aspects of this exacting calling, which at the present time is woefully overcrowded.

What are the essential qualifications? The greatest actor and manager of the past half century laid it down that the actor must "first satisfy the eye and then please the ear," it being understood, of course, that he must also gratify the intelligence of his audience. Being assured of these abilities, there is no reason why he should not climb to the top of the tree.

For the technical part of his instruction there are admirable institutions, namely, The Royal Academy of Dramatic Art, The Academy of Music, The Guildhall School of Music, three chartered bodies which employ skilled actors to teach the beginner. But valuable as the theory may be, it is by practice alone in the presence of the public that the actor can acquire full command of the rudiments of his art, a process which it was once said, took a man ten years of steady application to master, and a woman five years. The best training a beginner can secure is by playing a series of parts, starting with the smallest, in a good class Repertory Theatre.

After a year's work in a recognised school of acting, the novice is eligible for election as a probationer, and after forty weeks employment in a theatre, as a full member, by the Stage Guild (Trafalgar House, 9 Newport Street, W.C.2).

Stage Coach Vehicle that formerly carried passengers and to some extent goods. It was drawn by two, four or even more horses, and had seats inside and outside with a boot for the luggage. It appeared in the 17th century, but its most prosperous period was the early 18th century, and just before it was superseded by railways. The horses were changed at the end of each stage, which was a public-house on the route.

Staggers Disease of horses, cattle and sheep. It has various causes, heart failure, brain disease and constipation being among them. It causes an imperfect co-ordination of the muscles and the affected animal trembles and often falls down. It is usually incurable.

Staghound Breed of dog used for hunting stags. The modern staghound is a large type of foxhound, different from the staghound of old which was a kind of bloodhound. There are several packs in England and Ireland.

Stained Glass Term used to describe glass coloured by fusing metallic oxides into it, or burning pigment into its surface. Among the earliest references to stained glass are the mention of a window given to the Abbey of Tegernsee, Bavaria, in A.D. 999, and the redecoration of Rheims Cathedral with windows by Bishop Adalbéron. There are many fine examples of the 13th and 14th centuries, *e.g.*, at Chartres Cathedral, Canterbury, York Minster, King's College, Cambridge and elsewhere.

Stainer **Sir John.** English composer. Born in London, June 6, 1840, he became a chorister in St. Paul's Cathedral. He then studied the organ and became, in 1859, organist at the university of Oxford. In 1872 he returned to London to become organist at St. Paul's, where he remained until 1888, when he was knighted. In 1889 he was elected Professor of Music at Oxford where he remained until his death, which occurred in Italy, March 31, 1901. Stainer composed several cantatas, notably, *The Daughter of Jairus* and *The Crucifixion*, and a number of oratorios.

Staines Urban district of Middlesex. It stands on the Thames, where it is joined by the Colne, 19 m. from London, and can be reached by the G.W. and S. Rlys. Brewing is an industry. A bridge crosses the Thames here. Pop. (1931) 21,209.

Stainland Urban district of Yorkshire (W.R.) It is 3 m. south of Halifax and 193 from London by the L.M.S. Rly. Here are textile mills and paper mills. Pop. (1931) 4246.

Stair **Earl of.** Scottish title held by the family of Dalrymple. **John Dalrymple**, the first earl, was a lawyer who was made a viscount in 1690 and an earl in 1703. He died in 1707. His son **John**, the 2nd earl (1673-1747), was a soldier who fought against the French between 1702 and 1714 and again in 1742. From 1715 to 1720 he was ambassador in Paris. He was also famous for the improvements he made on his estates. He died, May 9, 1747, when there was a dispute about the succession. This, however, was settled, and the title is still held by the Dalrymples. The earl's eldest son is called Viscount Dalrymple and his estates are in Wigtownshire and Midlothian.

Stalactite Calcareous figure. It is usually cylindrical or conical in shape and is formed by the steady dripping of water from the roof of caves. Each drop when it evaporates leaves behind it a tiny speck of carbonate of lime, which it has collected in passing through the roof of the cave. These in time form a stalactite, which is often of fantastic shape. Together the stalactites are a very remarkable, and sometimes, a beautiful sight. There are examples in England in the caves at Cheddar and the Peak cavern in Derbyshire; the finest being seen at Jenolan in New South Wales.

Stalagmites are of similar formation, but are found on the floor of the cave. They are built from the ground upwards usually where the water drops from the roof.

Stalbridge Town of Dorset. It is 6 m. from Sherborne, on the Gt. W. Rly. Here is a 14th century market cross. The title of **Baron Stalbridge** has been held by the family of Grosvenor since 1886. Pop (1931) 1222.

Stalin **Joseph Vissarionovitch.** Russian journalist and politician. The son of a cobbler, he was born in 1879 in Tiflis, and at 17 joined the Social Democrats in Russia and started a revolutionary agitation in Georgia. Between 1902 and 1912 his political activity led to frequent imprisonments, from each of which he escaped. He was one of the editors of *Pravda* in 1912-13, and directed the Bolshevik campaign of 1913 in the Duma, though not himself a member. He became general secretary of the central committee of the Russian Communist party in 1917, and on Lenin's death, in 1924, succeeded him as dictator. He has since held a leading place in Russian politics. He wrote *Leninism*, 1928. His real name is Dzhugashvili.

Stalybridge Borough of Cheshire and Lancashire. Situated on both banks of the boundary River Tame, on the L.M.S. and L.N.E. Rlys. it is 7¼ m. E. by N. of Manchester with which it is connected by tramway. It remained a small village until 1776 when a cotton mill was started there, and then it grew rapidly in importance until it had, as now, large cotton-spinning and calico-weaving factories, iron foundries and machine shops. It was created a municipal borough in 1857 and a Parliamentary borough in 1867. **Stalybridge and Hyde** now constitute a Parliamentary division of Cheshire returning one member. Pop. (1931) 24,823.

Stamboul Name formerly applied to part of the city of Constantinople (*q.v.*). Recently the name Stamboul, or Istanbul, has been applied by the Turks to the whole city.

Stamen Part of a flower. It is the individual part of the *androecium* or floral whorl next inside the corolla and surrounding the *gynaeceum* or pistil. A typical stamen consists of a filament, anther and connective. The anther, usually two-lobed, forming a case holding the pollen grains, is essential to reproduction, as each grain forms ultimately, by division, two male germ cells. The stamens are regarded as highly modified floral leaves, the filament representing the leaf-stalk while the anther corresponds to the leaf-blade.

Stamford Town and borough of Lincolnshire. A number of students from Oxford attempted unsuccessfully in 1333 to establish a university here. Burghley House, the seat of the Marquess of Exeter, contains a fine collection of pictures. The town is a trading and agricultural centre. Pop. (1931) 9946.

Stamford Bridge Village of Yorkshire. It is 9 m. north-east of York on the River Derwent, on the L.N.E. Rly, and is famous for the battle fought here, Sept. 25, 1066. The Norwegians under their king, Harald Hardraada and Tostig, brother of the English king, Harold, had landed in the Humber and marched to York. Harold collected an army in the south and hurried northwards. After a hard fight the English prevailed and the Norwegian king was killed.

Stamford Bridge Athletic ground in London. It is in the Fulham Road near a station on the District Railway, and is the headquarters of the London Athletic Club, which opened it in 1878. Here the Chelsea football club play their matches.

Stamfordham **Baron.** English courtier. Arthur John Bigge was born June 18, 1849, his father being Vicar of Stamfordham in Northumberland. He himself became an officer in the artillery and served against the Zulus in 1878-79. He then joined the royal household as private secretary to the queen, and in 1895 became her principal secretary. In 1901 he was appointed secretary to the Prince of Wales, afterwards King George V., and retained the post when the prince became king. He retired in 1930, and died on March 31, 1931. In 1911 he was created a peer, but the title became extinct at his death.

Stammering Infirmity of speech. It manifests itself either in an inability to pronounce certain words or in a tendency to stumble over some syllables and to repeat others. Its proximate cause is in the larynx and it may be either a defect of childhood or acquired later as the result of shock or nervous trouble. It is curable in all but extreme cases.

Stamp (1) Implement designed to make an impression; (2) Label bearing an impression and affixed to envelopes or documents for postal or revenue purposes (3) Machinery for crushing ores (*see* STAMP MILL). Its most common use is in respect to the second of these applications. *See* STAMP ACT, STAMP COLLECTING, STAMP DUTIES.

Stamp **Sir Charles Josiah.** British economist. Born June 21, 1880, and educated at London University, he entered the Inland Revenue department of the Civil Service in 1896, becoming assistant secretary to the Board in 1916. After resigning in 1919, he became secretary of Nobel Industries Ltd., director of Imperial Chemical Industries, 1927-28, and chairman of the L.M.S. Rly. An expert financier, he sat on the royal commission on income tax, 1919, the Northern Ireland finance arbitration committee, 1923-4, the committee on taxation and national debt, and the Dawes Committee, 1924. He was a member of the court of enquiry into the coal industry, 1925, and of the Young Committee on reparations, 1929. He was created C.B.E. in 1924, G.C.B. in 1935.

He has been awarded many academic honours, and has been president of the Royal Statistical Society and treasurer of the British Association. He is the author of many books on financial subjects, among which are *Wealth and Taxable Capacity*, *Studies in Current Problems in Government and Finance* and *The Financial Aftermath of War*.

Stamp Act Measure requiring all legal documents in the American colonies to bear a revenue stamp. Passed by Parliament in 1765, the act was violently opposed in America on the ground that Parliament had no right to impose taxation unless representation went hand-in-hand with it. In Jan., 1766, the protest of the colonists was vigorously upheld by Pitt in the House of Commons. The repeal of the Stamp Act was then proposed and carried on Feb. 21 of that year.

Stamp Collecting Collecting of postage stamps. Formerly regarded as a schoolboy hobby, this has now risen to the dignity of a quasi-scientific pursuit known as philately, for the encouragement of which numerous societies have been formed, and hundreds of dealers are in business in all parts of the world.

The Royal Philatelic Society and the Junior Philatelic Society have done notable work in detecting forgeries, and in the holding of congresses and exhibitions, their efforts being stimulated by the keen interest in philately of King George V. who himself possessed the most complete collection of British and British Empire stamps in existence. Its chief rarity was the blue Mauritius stamps of 1847 purchased in 1904 for £1450.

Stamp Duty Form of indirect taxation. Under it duties are collected by means of stamps, adhesive or impressed, affixed to legal and other documents by which property is transferred or other privileges are secured. Among documents requiring to be stamped are insurance policies bills of exchange, contract notes, patent

specifications. Stamp duties are administered by the Board of Inland Revenue and vary from the 2d. stamp on cheques and receipts for sums of £2 and over to much larger amounts, of which the £10 stamp duty on a grant of arms is an example. The stamp duties payable on the issue of capital by a public company or on the sale of a large estate may amount to thousands of pounds.

Stamp Mill Machine for crushing mineral ore. It consists of a rectangular iron box in the bottom of which are steel dies, and stamps raised by means of cams and falling by gravity. The ore is crushed between the dies and the stamps. The latter are usually five in number and consist of heavy stems with a steel shoe at the bottom. The rectangular box containing the steel dies is fitted with a screen in front and a feed slot at the back. Water flowing through the box carries the crushed ore through the screens, most of which may be varied according to the ore to be dealt with.

Standard That which stands. The term is used for : (1) an established rule or model ; (2) a grade of classification in elementary schools ; (3) a shrub or tree unsupported by a wall ; (4) a staff supporting a flag; also the flag itself. The term is specially applied to the **Royal Standard** of England and to the standards of certain cavalry regiments. The Royal Standard, hoisted only when the sovereign is present or by viceroys, governors and lieut-governors of colonies and territories, bears the royal arms and measures 15 ft. by 7½ ft. The standards of the Household Cavalry and Dragoon Guards are of crimson silk damask bearing the badge, devices and mottoes conferred for service in the field. The flag may not fly from a standard after dusk.

Standard **Battle of the.** Battle fought between the English and the Scots, Aug. 22, 1138. Stephen and Matilda were fighting for the throne of England, and David I., King of the Scots, invaded England to help Matilda. Thurstan, Archbishop of York and the northern barons gathered a force in which there was a great number of priests, and marched to meet the Scots. The two armies met at Northallerton, and the English were in a dense array around their standard, the banners of S. Peter of York, S. John of Beverley and S. Wilfred of Ripon. The Scots attacked but could make little headway against the solid mass opposed to them, and after suffering heavy losses they retreated, leaving a good deal of booty for the English.

Standardisation Method adopted to secure uniformity in quality and character of materials and products, also, in relation to manufacturing processes, to obtain efficiency and increased output with economy of expenditure.

In science, there are the standards of temperature in the well-known thermometric scales, and calories and other thermal units, also in electricity there are many standards of various kinds. Time, weights and measures are each standardised. In pharmacy, preparations of drugs are also standardised.

Standards Department Branch of the Board of Trade. It is responsible for seeing that all weights and measures in use are correct. The work was controlled by the exchequer until 1866 and the office of the **Warden of the Standards** existed until 1878. The chief official is now the Deputy Warden.

Standard Time Arrangement of time. This standardisation is uniform over a given area. By it the world is theoretically divided into belts and zones of 15°, each representing an hour. Within each zone time is uniform, but it changes one hour when the next zone is reached. It is used in many parts of the world instead of Greenwich time, which is the same everywhere. The United States and Canada have five zones of standard time.

Standerton Town of the Transvaal. It is 110 m. from Pretoria and 370 from Durban and has a railway junction. The Vaal River, here crossed by a bridge, flows past the town. It is an agricultural centre where the government owns an experimental farm. Pop. 3000.

Standing Order Rule of procedure. Standing orders are Resolutions passed by the House of Commons, the London County Council or other bodies of that kind, and are enforced by the Speaker or chairman.

Standish District of Lancashire. It is 3 m. from Wigan and is a coal mining centre, with a station on the L.M.S. Rly. Here is **Standish Hall**, the seat of the old family of Standish. It forms part of the urban district of Standish and Langtree. Pop. (1931) 7262.

Standish **Myles.** English colonist. Born at Duxbury about 1584 he served as a soldier in the Netherlands. Having joined the Puritans, he went to the new world in the *Mayflower*, and was one of the founders of the colony of Massachusetts. He was chosen leader of the settlers and led them in several fights with the Indians. He died at Duxbury, Massachusetts, Oct. 3, 1656. In *The Courtship of Miles Standish* Longfellow tells of an incident in his life.

Stane Street Roman road in Surrey and Sussex. It ran from Chichester to London and part of its course can be traced. Hilaire Belloc has written a book on it.

Stanford **Sir Charles Villiers.** British composer. Born in Dublin, Sept. 30, 1852, he was educated at Cambridge, and studied music in Leipzig and Berlin. Organist of Trinity College, Cambridge, and conductor of Cambridge University Musical Society, 1872-93, and of the Leeds Festival, 1901-10, he was appointed Professor of Music at Cambridge University, 1887. He produced several operas in Germany, and conducted concerts on the continent. He was the author of numerous songs, trios, quartets, sonatas, symphonies, oratorios, and a large amount of church music. He was knighted in 1902 and died March 29, 1924.

Stanhope Urban district of Durham. It is situated on the Wear, 25 m. from Darlington, on the L.N.E. Rly. The church is an old and interesting building and the living, one of the richest in England, has been held by several famous divines. Pop. (1931) 1746.

Stanhope **Lady Hester Lucy.** English traveller. A daughter of the 3rd Earl of Stanhope, she was born March 12, 1776. From 1803 to 1806 she lived with her uncle, William Pitt, and played an important part in political life chiefly through the influence she exercised over the great prime minister. In 1810, four years after his death, she went to Syria and made her home on Mt. Lebanon. There she lived the life of an

eastern potentate until her death, June 23, 1839. A woman of unusual ability, Lady Hester left some *Memoirs*.

Stanley Urban district of Durham. It is 8 m. north-west of Durham, and is a coal mining centre. Pop. (1931) 24,458.

There is also a village of Stanley in Derbyshire, the chief industry of which is coal mining.

Stanley Urban district of Yorkshire (W.R.). It is 3 m. from Wakefield, on the L.N.E. Rly. It is a coal mining centre. Pop. (1931) 14,570.

Stanley Port of Tasmania, situated on the north coast of the island, about 150 m. by rail from Launceston. Pop. 3000.

There is another **Stanley**, the chief town of the Falkland Islands. Pop. (1931) 1213.

Stanley English family. Its name is taken from Stanley in Staffordshire, but the family is now settled in Lancashire and Cheshire. In the 14th century Sir **John Stanley** became lord of the Isle of Man and his grandson, Thomas, was created a baron in 1456.

Thomas's son, **Thomas**, was made Earl of Derby in 1485 for assisting Henry VII. to secure the throne; this title is still held by the head of the Stanleys, while the barony of Stanley of Alderley was created in 1839 for Sir John Thomas Stanley, the descendant of Sir John Stanley, younger brother of Thomas, Earl of Derby.

Stanley **Arthur Penrhyn.** English ecclesiastic. A son of Edward Stanley, afterwards Bishop of Norwich, he was born Dec. 12, 1815, and was educated at Rugby and Balliol College, Oxford. He was ordained and for a few years was a tutor in Oxford. In 1851 he went to Canterbury as a canon, but in 1856 he returned to Oxford as Professor of Ecclesiastical History and canon of Christ Church. In 1864 he was appointed Dean of Westminster, where he remained until his death, July 18, 1881. He married Lady Augusta Bruce, a daughter of the Earl of Elgin.

Stanley was a churchman of liberal views, a close friend of Queen Victoria, and an ecclesiastical historian. His books include, *Lectures on the History of the Eastern Church*, *Memorials of Westminster Abbey*, and *Life and Correspondence of Thomas Arnold*.

Stanley **Sir Henry Morton.** African explorer. Originally named John Rowland, he was born in Wales, June 10, 1841. In 1867 he became special correspondent of the *New York Herald*, and in 1871-72, under the auspices of that paper and *The Daily Telegraph*, made his famous journey in search of David Livingstone. He found him near Lake Tanganyika. He returned to England, Aug., 1872, but made subsequent trips to Africa. He wrote *How I Found Livingstone*, *Through the Dark Continent*, *The Congo*, and *In Darkest Africa*, as well as other books. He died May 10, 1904.

Stanmore District of Middlesex. It is 13 m. to the north of London, on the L.M.S. Rly. Pop. (1931) 3364.

Stannaries Tin mines of Cornwall and Devon. This term includes the local laws and customs relating to them. In early times tin mines were the property of the sovereign, and various special usages and regulations were observed in connection with their working. There was a representative Stannaries Parliament which last met in 1752, and a Lord Warden of the Stannaries, and Stannaries Courts still exist.

Staple Place where goods were stored for sale, the goods themselves, and finally, the principal product of a district or country. In the Middle Ages the term was largely used in connection with what was then England's principal commodity, wool, and merchants were enjoined by royal command to carry their wool to certain towns designated **staple towns.** The growth of commerce broke down the system of staples and the word is now used almost exclusively to denote a chief industry or commodity. In a special sense it is applied to the thread of a textile fabric.

Staple Inn Building and courtyard in Holborn, London, E.C. For about 400 years, until 1884, it was an inn of chancery. The present hall, built in the 16th century, has a fine roof. It is occupied by the Institute of Actuaries and the remainder of the building is let out as offices.

Stapleford Town of Nottinghamshire. It is 6 m. from Nottingham, on the L.M.S. Rly. The River Erewash flows through it. The industries are the manufacture of lace and hosiery.

Star Heavenly body. Distinct from a planet (*q.v.*), an enormous number of stars have been charted, and fresh discoveries are constantly being made as the power of telescopes increases. The aspect of the heavens in regard to stars varies according to the annual motion of the sun, one half of the heavens being visible at midnight in June, and exactly another half at midnight in December. Some stars, called variables, undergo changes of brilliance, and have to be ranked at different times under different magnitudes. Stars also vary greatly in colour, the contrast between Sirius and Betelgeuse, for instance, being very marked. There are numerous double and binary stars, and in particular parts of the sky there are clusters, such as the Pleiades, Hyades, etc., which are quite distinct from nebulae (*q.v.*). The fixity of stars is of great value in regard to time-keeping and the measurement of latitude and longitude, the Pole star marking the N. and S. poles very nearly.

In heraldry (*q.v.*) stars represent orders of knighthood such as the Garter, the Bath and the Thistle. The **Star of India** is itself a separate order. War medals, again, are sometimes in the form of stars, the Mons star being a recent example.

Starch Product of photosynthesis. A carbohydrate occurring in the cells of plants, starch consists of various sized grains whose characters differ according to the type of plant. The grains form a reserve material when stored in seeds, tubers and roots. Starch is insoluble in cold water but on boiling gelatinises, forms a paste, and when boiled with diluted acids is changed into glucose, or by dry heat into dextrine or British gum.

Star Chamber English law court. It was set up in 1487 by Henry VII. to deal with the nobles who were too powerful to be punished by the ordinary courts. The chancellor, treasurer, the justiciar and other high officials were the judges, and it had very extensive powers. It was operative under the Tudors and Stuarts, and became very much hated in the time of James I. and Charles I., owing to its arbitrary and perhaps unjust procedure. It was abolished

in 1641. The name is due to the fact that the members met in a room the ceiling of which was decorated with stars.

Starfish Class of *echinoderms*. It is closely allied to the sea-urchins. In the Pacific it attains a great size, *Asteriae gigantea*, measuring 2 ft. in diameter, while *Pycnopodia helianthorides*, about a yard in diameter, has over 20 arms. The common starfish of our coasts (*A. rubens*) is found at low tide in shallow pools, but its regular haunts are at depths of ten fathoms. Suctorial tube-feet under each arm enable it to crawl along the sea-floor or up the sides of rocks.

Starling Genus of bird (*Sturnus*). Of the family, *Sturnidae*, of passerine birds, it is found in all parts of the world except the Australian mainland. The common starling (*S. vulgaris*) is abundant throughout Britain, migrating from district to district in search of food, breeding twice, sometimes thrice, in a season and laying from 4 to 7 pale blue eggs in a rudely built nest. In autumn starlings form flocks in which they fly about before roosting. They are handsome birds, brown-black with purple and green reflections, and buff-tipped feathers. In confinement they learn to whistle tunes, and even to articulate words.

Star of Bethlehem Genus of plant. Bulbous-rooted, of the order, *Liliaceae*, bearing from 6 to 9 large white and rather fragrant flowers, it is a native of France, Germany, Switzerland and other parts of Europe. The leaves are grass like with a white stripe. The common star of Bethlehem (*Ornithogallum umbellatum*) is a garden flower in England, but a yellow-flowered kind is occasionally found in woods and meadows.

Stars and Stripes National flag of the U.S.A. Its seven horizontal red and six horizontal white stripes, represent the original 13 seceding states. It has a blue canton emblazoned with 48 stars in 6 rows of 8, representing the 48 states of the union. The flag, as originally designed in 1777, had only 13 stars, but the present pattern has been in use since 1819.

State Body politic. The term is now applied to a body of people under one government, which acts as its agent and governs according to the constitution, which may be either written, *e.g.*, as in the U.S.A. or unwritten, as, *e.g.*, the British constitution. The state is not necessarily coincident with the nation since the latter may include sentimental, racial and other considerations with which the state as "the creature of legal enactment" does not concern itself.

Staten Island of New York. It is at the mouth of the Hudson River, being separated from Manhattan by the Narrows. Its area is 70 sq. m., and on it is Richmond, one of the boroughs in the city of New York, and several watering places and pleasure resorts, including New Brighton. Steamers connect it with New York proper and places in New Jersey.

State Rights *See* FEDERALISM.

States General Estates of the realm. The name was formerly used in France, Spain and other countries for the precursors of the modern legislatures. They consisted usually of three classes, clergy, nobility and commons, and were so called because each class was a state, or estate of the realm.

In France they were first called together to advise the king in 1302, the clergy and commons being representative bodies, but they never obtained much power. They met, however, from time to time until 1614. They were not called together again till 1789 when their meeting proved the prelude to the French Revolution.

The Dutch republic possessed a states general and this is the name of the legislature of the present kingdom of the Netherlands. It consists of two houses. One is composed of 50 members elected by the provinces and the other of 100 members elected by the people. Women are eligible for election.

Statics Branch of mechanics. It treats of bodies and forces at rest or in equilibrium, and is therefore the opposite of dynamics. The subject of strains and stresses, so important to the architect, the engineer and the builder, is a branch of statics.

Stationer One who deals in writing requisites. The **Stationers' Company** is one of the London livery companies. It has a hall in Stationers' Hall Court, Ludgate Hill, and maintains a school for boys at Harringay. The company had formerly a monopoly of printing in England and until the law of copyright was altered in 1911 every book published was entered, or registered, at **Stationers' Hall.**

Stationery Office Department of the British Government. It was set up in 1782, and supplies stationery to the various public departments. It also publishes and sells blue books and other official publications, among them reports of various kinds, and acts of parliament. The head offices are in Storey's Gate, London, S.W., and there are branches in Edinburgh, Cardiff and Belfast. The wholesale warehouse is Cornwall House, Stamford Street, London, S.E.1. There are retail establishments at Adastral House, Kingsway, London, W.C.2; 26 York Street, Manchester; 120 George Street, Edinburgh; 1 St. Andrew's Circuit, Cardiff, and 15 Donegal Square, West Belfast. The printing works are at Harrow.

Stations of the Cross

Form of devotion. Practised in the Roman Catholic Church, it takes place in Passiontide when 14 pictures of scenes from the passion of Jesus Christ, placed on the walls of the church, are used in worship. The worshippers pass from one to the other, kneeling and praying before each in turn.

Statistics Collection and arrangement of figures, bearing more particularly on the social, moral and material condition of peoples. Censuses were taken in ancient times, but statistics only became a regular branch of study in the 17th and 18th centuries. In this country statistics are mostly to be found in blue books, but a statistical section has been attached to the British Association since 1833 and a **Statistical Society** has existed since 1834.

Status Standing possessed by a person. It defines his or her position in the eyes of the law, *e.g.*, the status of an Englishman or the status of a magistrate.

Statute Law made by parliament and therefore binding on all subjects of the realm. This kind of law, as distinguished

from moral law, divine law, or common law, is called **statute law**, and is said to be placed on the **statute book**. Statutory rules and orders, made by administrative departments under delegated powers, have not the force of a statute unless it is specially given to them by the act of parliament authorising the delegation.

Stavanger Town and seaport of Norway. It is 105 m. from Bergen on the Stavanger Fiord. The industries include fishing and shipping and there are some manufactures. The town has a broadcasting station (240.6 M., 0.5 kW.). Pop. (1930) 46,780.

Stave Term used in music. It denotes a given five lines with intervening spaces upon which notes are placed to indicate their pitch. A clef or key is placed upon the stave in order to fix the alphabetical names of the lines and the absolute pitch of the notes In plain-song only four lines are used.

Staveley Urban district of Derbyshire. It is 4 m. from Chesterfield on the L.M.S. and L.N.E. Rlys. The industrial life centres round the coal mines and ironworks. Pop. (1931) 12,646.

Stawell Township of Victoria, Australia. 150 m. from Adelaide on the main line from Melbourne to Adelaide, it is a railway junction with gold mines and firestone quarries in the neighbourhood. Pop. 4400.

Stead **William Thomas.** English journalist. Born July 5, 1849, he became in 1880 assistant editor of the *Pall Mall Gazette*, under John Morley, and then editor, 1883-89. He created a tremendous sensation in 1885 by a series of articles entitled, *The Maiden Tribute of Modern Babylon*, fiercely attacking and exposing procuration. Arising out of his crusade he suffered three months imprisonment. In 1890 he founded the *Review of Reviews*. Another sensational book of his was, *If Christ came to Chicago*. He founded *Borderland* and devoted himself to spiritualism. He went down in the *Titanic*, April 15, 1912.

Steam Water in the form of vapour, especially the gas into which water is changed on boiling. Transparent when pure, it becomes visible when condensation begins, owing to the formation of minute particles of water. While still in contact with the water, steam is said to be saturated, when heated further after all the water has been turned into steam, it is super-heated. *See* BOILING POINT.

Steam is widely used as a source of power in the steam engine (*q.v.*), and also for heating purposes, as a disinfectant and as a fire-extinguisher.

Steam Engine Engine driven by steam. The expansive force of steam is used as the means of producing mechanical work. Hero of Alexandria (circa 100 B.C.) is credited with discovering the motive power of steam, but it was not until comparatively recent times that a practical engine was invented. In 1698 Savery patented a simple type of steam engine for use in pumping water. The invention of the piston and cylinder by Papin in 1690 led to improved engines by Newcomen and Cawley in 1705; but these, though more practical, were wasteful in action. Watt, in 1769, patented a separate condenser, making possible the double-acting engine, and these improvements were applied by Trevithick to a locomotive engine.

Steam Hammer Hammer driven by steam. It was designed by Nasmyth about 1842, but has since been modified and improved in its details. A number of different types are in use at the present day, but the general principle consists of a steam cylinder supported on cast iron standards and inverted over an anvil. The piston ends in a hammer head or trip, and steam is admitted below the piston to raise the hammer and above it to accelerate the fall.

Stearic Acid Fatty acid present in animal fats. Combined with glycerine in the form of a glyceride it occurs also in certain vegetable fats such as shea butter. Like the other fatty acids it forms alkali salts which are present in soap. Stearic acid also crystallises from an alcoholic solution in needles or laminae.

Stearin Glycerine of stearic acid. Occurring in animal fats it forms the substances of tallow, lard and suet along with glycerides of palmitic and oleic acids, refined suet being almost pure stearin. The term "stearin" must not be confused with *stearine*, a mixture of palmitic and stearic acids used in making stearine candles.

Steatite Massive form of talc. Known sometimes as soapstone, it is usually white, grey, or green in colour, and is greasy to the touch. It occurs associated with serpentine in Cornwall, Ireland, and North America. Steatite resists heat and therefore is used as a refractory material in furnaces and gas burners, etc.

Steel Compound of iron. Containing a variable amount of carbon and usually small amounts of manganese and other metals, it covers a wide range of materials.

The **carbon steels**, containing less than 2 per cent. of carbon, comprise the mild steels (0·1 to 1·5 per cent. carbon), and the tool steels (0·6 to 1·5 per cent. carbon). These steels are made by the Bessemer process or by the later open-hearth or Siemens-Marten process, and the metal produced is tough and greyish-white with great tenacity and tensile strength, these characters adapting it to constructional work.

Crucible steels, made by melting steel bars in crucibles, possess the highest cutting qualities and are used as tools, drills, and razors. The **alloy steels** contain minute quantities of such metals as manganese, nickel, tungsten or chromium, and thus increase the hardness and give special properties, as in the rustless steels which contain chromium and sometimes nickel.

Steel **Flora Annie.** English novelist. Born at Harrow, April 2, 1847, for some time she was school inspectress in the Punjab. In collaboration with Sir Richard Temple she wrote, in 1884, *Wide Awake Stories*; she also made a collection of Punjab folk-lore. Her best known books include *From the Five Rivers*, *The Potter's Thumb*, *Red Rowans*, *On the Face of the Waters*, *In the Permanent Way* and *India Through the Ages*. She died April 12, 1929.

Steel-Maitland **Sir Arthur Herbert Drummond Ramsay.** English politician. Born July 5, 1876, and educated at Rugby and Oxford, he was M.P. for E. Birmingham, 1910-18; Erdington, 1918-29; and was returned for Tamworth in 1929 and 1931. He was Under-Secretary for the Colonies, 1915-17, when he

was made a baronet; Joint Under-Secretary for Foreign Affairs and Secretary to the Board of Trade, 1917-19; and Minister of Labour 1924-29. He died on March 30, 1935.

Steele Sir Richard. English essayist and playwright. He was born in Dublin in 1672 and educated at Charterhouse and Oxford. In 1709 he founded the famous *Tatler*; it was followed by the *Spectator* and the *Guardian*, Addison co-operating in all. Steele filled several public offices, and was also in Parliament for a time. His best play is *The Conscious Lovers*. He died Sept. 1, 1729. With Addision he shared the credit of raising the moral tone of society in post Restoration London.

Steelyard Balance or weighing machine dating from Roman times. It consisted of a level with unequal arms, in using which a single weight or counterpoise moved along a graduated beam was employed. In a special sense the term was applied to an association of foreign merchants, mostly Germans, who settled in London in the 13th century under the protection, first of charters and later of the Hanseatic League, but were eventually ousted in 1598.

Steen Jan. Dutch painter. Born in Leiden in 1626 he brought a wonderful sympathy and sense of humour into his treatment of genre-pictures. His best-known works are "Doctor Visiting a Patient," "Domestic Life," "Tavern Company," "The Oyster Girl," "Work and Idleness" and "Bad Company." He died Feb. 3, 1679.

Steenbok S. African antelope (Dutch, stone buck). It is under 2 ft. high and of a stone colour, rendering it difficult to distinguish in the veldt. It has upright horns about 4 in. long, and is classified as either *Narotragus* or *Rhaphiceros campestris*.

Steeplechasing Horse racing over hedges, ditches and other obstacles set up on a regular course. The sport is said to have originated in a race ridden by moonlight in Ireland by a party of cavalry officers who agreed to go straight across country towards a distant steeple. The Liverpool Grand National, the great steeplechasing event of the year, was instituted in 1839. It is held at Aintree in March, the course being 4½ m., with 30 jumps.

Stefan's Law Law in physics. First laid down by J. Stefan at Vienna in 1879, it states that the total energy of a body which absorbs all the radiation falling upon it, is proportionate to the fourth power of the temperature of the radiator, assuming the radiator to be a perfect one.

Stefansson Vilhjalmur. Canadian explorer. He was born Nov. 3, 1879, in Manitoba, of Icelandic parentage. After graduating at the University of Iowa, he studied theology and anthropology at Harvard, where he became assistant instructor in anthropology. He began his explorations with a private archaeological journey to Iceland in 1904, undertaking another for Harvard in 1905. In an arctic exploration, 1908-12, he encountered tribes which had never seen a white man. In 1913-18 he commanded a Canadian arctic exploration; and in 1924 he penetrated to the centre of Australia. He is the author of *The Friendly Arctic* and *The Folk-Lore of the Eskimos*.

Stegosaur Prehistoric animal. One of the dinosaurs, it attained a length of 30 ft., and was covered with enormous bucklers and spines.

Stein Sir Mark Aurel. British archaeologist. Born at Budapest, Nov. 26, 1862, he was educated there and in Germany. He continued his studies in the languages and history of the East in England, and later became naturalised. From 1888 to 1899 he was head of the Oriental College at Lahore, and he filled other educational positions in India. He began his archaeological researches when at Lahore, and in 1900 led an expedition into Turkestan.

During the next 30 years his researches and excavations in C. Asia, Persia and Baluchistan produced magnificent results, revealing the existence in these regions of great civilisations, hitherto unknown, or almost so. Many of his finds are in the British Museum and the museum at Delhi. In 1912 he was knighted. His books include *Ancient Khotan*, *The Ruins of Desert Cathay* and the elaborate *Serindia*. In 1932 he was awarded the gold medal of the Royal Asiatic Society. While in Tibet he lost his toes by frost-bite.

Stella Name used by Sir Philip Sidney for Lady Penelope Rich and by Jonathan Swift for Esther Johnson. A steamer of this name was wrecked off the Casquet Rocks near Alderney on March 30, 1899, when 105 lives were lost.

Stellenbosch Town of Cape Province, S. Africa. It is 31 m. from Capetown and was one of the first Dutch settlements in Africa. Its university was founded in 1916. The town is named after an early governor and his wife. Pop. (Eur., 1931) 4,407.

In the war of 1899-1902 against the Boers, Stellenbosch was used by the British as a base. Officers deprived of their commands were sometimes sent there, and so the phrase to be stellenbosched came to be used for generals and others removed for incapacity.

Stem In botany that portion of the plant axis which bears leaves and flowers, and is a continuation of the root. In herbaceous plants the stem tissues are soft, but in perennial plants it becomes woody and increases in thickness.

Stencilling Method of printing. It consists of cutting out letters or designs on a thin plate, usually of metal, laying this stencil over the surface to be printed, and brushing colour into the cut-out spaces.

Stendhal Name taken by the French novelist, Marie Henri Beyle. He was born at Grenoble, Jan. 23, 1783, and became a soldier. He saw service in the wars of Napoleon, including the campaign of 1812. After 1815 he lived in Italy until 1821, and he was there as a consul from 1830-41. He died in Paris, March 23, 1842. Beyle wrote three novels and several other books including *De l'Amour*, *Racine et Shakespeare*, and one on Italian painting. His novels are *Armance*, *Le Rouge et le Noir* and *La Chartreuse de Parme* which contains an account of the Battle of Waterloo.

Stentor In ancient legend the herald of the Greeks during the war against Troy. His voice is said to have been as loud as that of 50 ordinary men.

Stephen Christian saint. He joined the church at Jerusalem after the death of Jesus Christ, and was one of the seven chosen to look after the poor. He was stoned by an angry crowd of his enemies (Acts vi.). His day is Dec. 26.

Stephen King of England. Born in 1104, he was the third son of Stephen, Count of Blois and Adela, daughter of William I. On the death of Henry I. in 1135, he usurped the crown, the rightful heiress being Henry's daughter Matilda (Maud). His reign was marked by frequent internal wars, during one of which Matilda took him prisoner. She was acknowledged as queen, but soon alienated the people and left England, Stephen agreeing to appoint her son Henry as his successor. He died in Oct., 1154.

Stephen King of Hungary. Son of a duke of Hungary, he was born in 977. In 997 he became a Christian and changed his name from Wajk to Stephen. Crowned as king by the pope in 1000 he married a princess from Bavaria and during his reign of 38 years did much to convert his people to Christianity. He died in 1038 and in 1083 was canonised. Stephen is regarded as the patron saint of Hungary.

Stephen Sir Leslie. English author. Born in London, March 3, 1829, he was educated at Eton, King's College, London, and Cambridge. Ordained in 1859, he renounced his orders in 1875. A great athlete and mountaineer, he wrote for the *Saturday Review*, helped to found the *Pall Mall Gazette* and was editor of *The Cornhill*, 1871-82, when he was made editor of the *Dictionary of National Biography*. He was author of *The Science of Ethics*, *An Agnostic's Apology*, *The English Utilitarians*, *Hours in a Library*, and several biographies in the English Men of Letters series. He was knighted in 1902 and died Feb. 22, 1904.

Stephenson George. English engineer. Born at Newcastle, June 9, 1781, as fireman at a colliery he studied the steam engine, and in 1817 built his first locomotive for colliery tram-roads. In 1821 he constructed the Stockton and Darlington Railway, and in 1829 a line from Liverpool to Manchester. His "Rocket" did 35 m. an hour; an inconceivable speed for those days. A network of railways followed. Stephenson died Aug. 12, 1848.

Stephenson Robert. English engineer. Son of George Stephenson, he was born near Newcastle, Oct. 16, 1803, and studied for a time at Edinburgh University. He assisted his father in the building of the Stockton and Darlington, Liverpool and Manchester, and London and Birmingham railways. He built the Britannia Bridge across the Menai Strait, the Victoria Bridge across the St. Lawrence at Montreal, two bridges across the Nile and many others. He was M.P. for Whitby, 1847; died Oct. 12, 1859, and was buried in Westminster Abbey.

Stepney Metropolitan borough of London. It is bounded N. by Bethnal Green, E. by Poplar, W. by the city and Shoreditch and S. by the Thames. There is a suffragan bishop of Stepney. Stepney includes Spitalfields, Whitechapel, Mile End, St. George's-in-the-East, Shadwell, Ratcliffe, Wapping and Limehouse; and contains the Tower, Mint and S. Katherine's, London and Regent's Canal Docks. Also the London Hospital and Dr. Barnardo's Homes. Pop. (1931) 225,203.

Steppe Vast grass-covered plains of Siberia and the adjacent parts of Asia, where the wandering tribes feed their stock. They resemble the pampas of S. America.

Stereoscope Optical instrument by means of which a drawing or picture is made to stand out in relief. It consists of two inclined lenses through which are viewed two pictures. The two separate images being blended have the appearance of solidity.

Stereotyping Printing process. It is used for reproducing on a metal plate an impression of type or relief blocks first made on a mould or matrix of plaster or papier-maché.

Sterility Barrenness in regard to reproduction of the species. It occurs in both animals and plants and may be due to organic defects, functional disorder, changed conditions of life or surgical treatment. Hybrids produced by the pairing of distinct species are usually sterile. Many plants which become fertile when pollinated from another of the same species, are sterile when self-pollinated; but there are many exceptions.

Sterilisation Making food, drink, surgical instruments and so on, innocuous by the destruction of bacteria or other micro-organisms. In the case of all surgical instruments, boiling in water, and the use of such disinfectants as iodine and carbolic acid, are the means usually employed. Milk can be sterilised in various ways, the most effective method being pasteurisation (*q.v.*).

The term sterilisation is also used in connection with methods for rendering the unfit incapable of reproducing their kind. It has been introduced by one or two states (*e.g.*, California in the U.S.A. and Alberta in Canada), and has been advocated in Great Britain.

Sterling Legal tender of the United Kingdom. Its origin is uncertain, but it may come from a silver penny called the sterling, because of the figures of starlings on it. The term was much used in 1931 when Great Britain abandoned the gold standard. The pound sterling, instead of the sovereign of gold, became the standard by which debts overseas were paid. Its value in gold was around 15s. 6d.

Sterne Laurence. English novelist. Born in Clonmel, Ireland, Nov. 24, 1713, of English parentage, he was educated at Halifax and Cambridge. Ordained in 1738, he became prebendary of York and later perpetual curator of Coxwold. In 1759 appeared the first two volumes of his novel, *Tristram Shandy*, giving the author immediate fame. Seven other volumes followed at intervals up to 1767. *The Sentimental Journey* appeared in 1768. Sterne died in London, March 18, 1768.

Stethoscope Instrument used in medical diagnosis for hearing sounds from the lungs, heart or other internal organs. In its original form as invented by Laennec, it consisted of a wood, vulcanite or metal tube with expanded ends, but in its modern form consists of two flexible rubber tubes ending in ear-pieces.

Stettin Seaport and capital of the Prussian province of Pomerania. It is situated on the Oder, 30 m. from the Baltic and 84 m. by rail from Berlin, of which it is the port. There are large shipbuilding yards, engineering works and sugar, cement and other factories. Stettin was the seat of a princely dynasty from 1107 to 1637, was ceded to Sweden in 1648 and to Prussia in 1720. Until

1874 Stettin was strongly fortified. The most notable buildings are the great churches of St. Peter and St. James, the former the oldest in Pomerania. The city has a broadcasting station (283 M., 0.5 kW.). Pop. (1933) 270,747.

Stevenage Urban district and market town of Hertfordshire. It is 28 m. from London, on the L.N.E. Rly. The chief building is the old parish church of St. Nicholas. Pop. (1931), 5476.

Stevenson **Robert.** Scottish engineer. Born in Glasgow, June 8, 1772, a son of a merchant, he was educated in his native city and at the University of Edinburgh. After his father's death his mother married a lighthouse engineer, Thomas Smith, who taught young Stevenson his business, and so enabled him to succeed to the position of engineer to the Scottish Lighthouse Board. Stevenson built several lighthouses, including one on the Bell Rock, and added to the power and efficiency of the lights. He died July 12, 1850.

Stevenson's work was carried on by his sons, **Thomas** and **David.** Many improvements were introduced by Thomas, who was the father of Robert Louis Stevenson. He died May 8, 1887, and is described in his son's *Memories and Portraits.*

Stevenson **Robert Louis.** Scottish novelist and man of letters. He was born in Edinburgh, Nov. 13, 1850. A delicate child, he was educated at Edinburgh Academy and Edinburgh University, studied law, and eight years later was called to the Bar. He started his literary career with articles in the *Cornhill Magazine* in 1874, and after travelling on the continent produced *An Inland Voyage* and *Travels with a Donkey in the Cevennes.* A spell of literary journalism followed, then travels in America; and marriage in 1880, with an American, Mrs. Osbourne.

Returning to Scotland, Stevenson in 1882 wrote *Treasure Island,* which instantly made his reputation as a writer of romance for the young, who also cherish his *Child's Garden of Verses.* Between 1884 and 1887 he produced several stories and plays. *Kidnapped* and *The Strange Case of Dr. Jekyll and Mr. Hyde* appeared in 1886. In 1887 he left England for America, and in 1889, after a yachting cruise in the Pacific, settled at Samoa on an estate which he called Vailima and from which he sent home *Catriona* and other fine stories. He died Dec. 4, 1894, while at work on *Weir of Hermiston.* His *Letters* were published in 1899.

Stevenston Town of Ayrshire. It is ½ m. inland from the Firth of Clyde and 28 m. S.W. of Glasgow, on the L.M.S. Rly. Formerly a cotton and silk-weaving centre it now largely depends on its coal and chemical industries. There are coal mines and ironworks in the neighbourhood, also a Nobel factory for explosives.

Steward Name now chiefly given to the manager of an estate, attendants on shipboard, managers of provision departments and officials at race-meetings. The Lord High Steward, one of the great officers of state, was anciently the first officer of the crown in England. The office now exists only for use on ceremonial occasions. The Lord Steward is an important officer in the Royal Household (*q.v.*).

Stewart Name of a great Scottish family, also spelt Stuart. About 1100 King David I. made a certain Walter steward of Scotland and his descendants held that office. One of them, a later Walter, married Marjorie, daughter of Robert Bruce, and their son, Robert, became King of Scotland in 1371. He was the first of the Stewart kings. The royal line became extinct on the male side in 1542 when James V. died, but his daughter, Mary, married Lord Darnley, who was also a Stuart, and their son, James VI., became King of Scotland and then of England. His male descendants ruled Scotland and England until James II. was deposed in 1688. After this the Stuarts maintained a claim to the throne until the death of the last male of the family, Henry Benedict, cardinal and Duke of York, July 13, 1807. In the female line the Stewarts are still represented by the family that, until 1918, ruled in Bavaria. *See* CHARLES I., JACOBITES.

Stewart **Dugald.** Scottish philosopher. Born in Edinburgh, Nov. 22, 1753, he was educated there and in Glasgow. In 1785 he was appointed Professor of Moral Philosophy at Edinburgh. He wrote *Elements of the Philosophy of the Human Mind, Philosophical Essays* and *The Philosophy of the Active and Moral Powers.* He died June 11, 1828.

Stewarton Burgh of Ayrshire. It is on Annick Water, 5½ m. from Kilmarnock and 19 m. from Glasgow, on the L.M.S. Rly. Spindle-making, carpet-weaving and other textile industries are carried on. Important horse and cattle fairs are held. Pop. (1931) 2749.

Stewartry Scottish term formerly applied to a district governed by a steward. Appointed by the king, he exercised both civil and criminal jurisdiction. The term is now obsolete except in the case of Kirkcudbright which is called the Stewartry.

Steyning Town of Sussex. Within easy reach of the South Downs, and on the S. Rly., it was a Roman settlement, and before the sea receded in the 14th century, an important port. Prior to 1832 it was a borough returning two members. It has a fine church, chiefly Norman, built on the site of an old Saxon church mentioned in Domesday Book.

Stick Insect Family of straight-winged insects (*Phasmidae*). It is so-called because its body with the wings folded so closely resembles a stick that it often escapes detection when at rest among foliage. It sometimes attains a length of 13 in. in the tropics. Only four or five species out of 600 occur in Europe.

Stickleback Small acanthopterous fish, *i.e.*, one in which the dorsal fin is replaced by strong spines. The male is highly coloured, especially at maturity, and exhibits extraordinary parental care during the spawning season. It builds a barrel-shaped nest in which eggs and young are housed, and will fiercely attack fish many sizes larger than itself that approach it.

Stiff Neck Term usually applied to a form of muscular rheumatism. There is a congenital variety, and it may be a symptom of spinal disease. The ordinary kind may be treated by rubbing with stimulating liniments and wrapping up the neck in wool or flannel. **Wry-neck** or **torticollis** is a twisting of the neck to one side, and may date from birth. A spasmodic form sometimes occurs in middle age, characterised by intermittent spasms of the muscles on one side which forcibly draw the shoulder up and the

back of the head down. The treatment of this should be in medical hands.

Stigand Archbishop of Canterbury. He was probably the priest appointed by Canute to a church at Ashington (Assandun), Essex, built by the king in commemoration of his victory there. Made Bishop of Elmham in 1038, and of Winchester in 1047, he acted as Edward the Confessor's intermediary in his quarrel with Earl Godwin. Appointed, uncanonically, Archbishop of Canterbury, he was excommunicated by five successive popes. He trafficked in church preferments, and deprived of his see died at Winchester, Feb. 22, 1072.

Stigma Botanical term for the top of the style surmounting the ovary in a flower. Usually it is swollen and covered with glandular papillae or hairs, and forms the receptive surface for the pollen grains which are brought by the wind, insects and other agencies in the process of pollination.

Stigmata (Greek, *stigma*, a puncture). Name applied by Roman Catholic writers to body marks believed to represent the wounds inflicted on our Lord at His crucifixion. These marks are supposed to be the result of prolonged contemplation of the Passion, and to denote special divine favour. The most famous case is that of S. Francis of Assisi, but two or three hundred other instances are recorded.

Still Life Art term. It is applied to drawings and paintings of immobile objects such as fruits, vases, drapery, fish, game and so on. Subjects of this character first appear in later Greek and Roman art. The Dutch school excelled in paintings of still life.

Stilt Wading bird (*Himantopus*) of the snipe family. It is so-called from the length of its legs which is almost equal to that of its body. The wings and bill are also long. *H. candidus* breeds in Holland and S. Europe, but only pays occasional summer visits to England. The bird is usually black and white; but New Zealand has a pure black stilt.

Stilton Village of Huntingdonshire. It is 6 m. S.W. of Peterborough, and on the old mail coach route to London. Makers of the cheeses peculiar to the surrounding districts used to put them on the coach at Stilton, which thus gave its name to the commodity.

Stimson **Henry Lewis.** American statesman. Born in New York City, Sept. 21, 1867, he was educated at Yale and Harvard Universities, and started to practise law at the Bar of New York City in 1891. He was United States attorney for Southern New York State, 1906-09, and in 1910 was Republican nominee for the governorship of New York State, but was defeated. He was Secretary for War, 1911-13, and served in the army during the Great War. From 1927-29 he was Governor-General of the Philippine Islands and in March, 1929, was made Secretary of State by President Hoover. He was the head of the American delegation to the London Naval Conference.

Stinchar River of Ayrshire. Rising in the S. of the county, it falls into the Firth of Clyde at Ballantrae. It is 30 m. in length.

Sting Sharp-pointed hollow spine. It is present in certain insects for defence or other purposes, and represents a modified ovipositor provided with a poison gland supplying an acid or alkaline secretion. The sting of a scorpion is the hooked end of the terminal body segment in which lie two poison glands. Mosquitoes and fleas do not sting, but puncture the flesh with their modified mouth parts.

In plants, a stinging hair of the nettle has a flinty point which readily breaks, setting free the acid sap.

Stinkhorn Fungus (*Phallus impudicus*). It grows to a height of about 7 in. and is surmounted by a conical cap containing an olive-green slime, the disgusting smell of which gives the growth its familiar name.

Stinkwood Name given to timbers of several unrelated trees having in common an unpleasant odour. S. African stinkwood, one of the elm family, is as hard as beech and greyish in colour. A much harder and darker S. African wood is known also as Cape walnut.

Stint Genus of small shore birds. They are about 6 in. long, with a black bill, and brown and buff streaks from the bill to behind the eye. The feathers are grey and brown, with white underneath, and the tail is double-forked.

Stipendiary Recipient of a stipend or periodical payment. A stipendiary magistrate is one who is paid, as distinct from a justice of the peace who serves voluntarily. Stipendiary magistrates are appointed by the crown, and must be barristers of at least five years standing. They preside over police courts in London, Birmingham and several other cities.

Stipple Art term. It is applied to the process of producing an effect by means of dots or small marks with brush, pencil or other appliance. The term is used in drawing, etching, engraving and miniature painting. In tempera painting, owing to the nature of the medium, stippling was resorted to to give a high relief, and in the engravings of Bartolozzi the process is seen at its best.

Stirling Burgh of Scotland, and county town of Stirlingshire. It is situated on the Forth, 40 m. from Edinburgh, on the L.M.S. and L.N.E. Rlys. It is full of historical interest, has been a royal burgh since 1100 and was a favourite residence of the Scottish kings. The castle, a strongly fortified place, is public property. Leather and tweeds are manufactured, also agricultural machinery. Pop. (1931) 22,593.

Stirlingshire County of Scotland. It lies in the middle of the country, bordering on the Firth of Forth, and has an area of 466 sq. m. In the N.W. it has part of the Grampians, including Ben Lomond. Parts of Lochs Lomond and Katrine are in the county. It has some coal mining districts, but is mainly agricultural. Stock is raised and cereals, especially wheat and oats, are grown. Stirling is the county town, and among other towns are Falkirk and Bridge of Allan. With Clackmannan it sends two members to Parliament. Pop. (1931) 166,447.

Stitchwort (or **Starwort**). Perennial herbaceous plant (*Stellaria holostea*) common in hedgerows. A native of Europe and parts of Asia, it has long angular stems and narrow grass-like leaves in pairs. The 5-petalled star-like white flowers are ¾ in. across. There is a smaller species (*S. graminea*). *S. media* is known as the chickweed (*q.v.*).

Stiver Obsolete Dutch coin worth about a penny. In common speech the word is used to denote an insignificant sum, much in the same way as "a brass farthing."

Stoat (or **Ermine**). Small carnivorous mammal (*Mustela erminea*) related to the weasel. It is widely distributed over northern regions, and common in Britain. The total length is about 15 in., of which the black-tipped tail accounts for a third. The pelt is reddish brown above and whitish beneath. In more northern lands it adopts a white winter coat, except for the black tail tip. The fur is much valued as ERMINE (*q.v.*).

Stock (*Matthiola*). Popular annual and biennial flowering plants of the cruciferous order. Ten week stocks, which bloom ten weeks after sowing, should be sown under glass in March and planted out in early May. Brompton stock, a perennial variety, is usually treated as a biennial.

The annual night scented stock (*M. tristis*) has insignificant flowers which give out a delicious fragrance in the evening. Virginia stock is a miniature border plant, 8 or 9 in. high, which has blooms of pink, mauve and white.

Stockade Type of fence or barrier used in military defence. It is also used in jungle and wild country to keep out wild beasts or to enclose them when captured. An effective stockade is made of a double circle of stakes or posts, with earth between. In military defence there may be a ditch between the rows.

Stockbridge Market town of Hampshire. It is on the Test, 72 m. from London and 19 from Southampton, on the S. Rly., and is a favourite resort for fishermen. Pop. 880.

Stock Exchange Market for the buying and selling of securities. The London Stock Exchange is in Throgmorton Street, and transacts more business than any other in the world. Founded in 1773, it opened its present building, since extended, in 1802. The premises and property are owned by a company, administered by nine trustees and managers appointed by the shareholders. The business of the "house" is regulated by a committee of thirty shareholders, elected annually, whose permission is required before securities can be dealt in. The income of the Exchange is drawn from the subscriptions of members and their clerks, entrance fees paid by new members, rents and investments. New members with three sureties pay a subscription of 100 guineas, and members with two sureties (*i.e.*, a clerk of four years' service) 50 guineas. Entrance fees are 600 guineas for a member with three sureties and 300 guineas with two sureties. Clerks authorised to deal pay 50 guineas entrance fee and 100 guineas subscription, and unauthorised clerks, 15 and 30 guineas respectively. There are about 4000 members.

Dealers (or jobbers) and brokers have distinctive functions. The jobber, like a wholesale dealer, keeps a stock of securities and quotes his buying and selling prices, the difference representing his profit. Brokers, who represent the public, buy from and sell to the jobber, but may not deal on their own account. Purchasers who speculate for a rise are known as "bulls," those speculating for a fall as "bears."

Other stock exchanges are in Manchester, Glasgow and other large cities of Great Britain, as well as in the Dominions. In France the Stock Exchange is called the Bourse. In New York it is in Wall Street, by which name it is usually known.

THE STOCK EXCHANGE AS A CAREER. The usual training is to enter the office of a member at a nominal salary. A boy of proved ability has the prospect of becoming a settling room or unauthorised clerk, and may eventually be authorised to deal for his employer. The business of a member demands judgment, foresight and a sound knowledge of industrial and economic conditions.

Stock-fish Name given to cod, ling, hake, haddock, etc., split and cured by drying in the air without salt.

Stockholm Capital city of Sweden. It is beautifully situated on islands at the outlet of Lake Mälar into the Baltic, and is divided into three parts, Staden, the ancient centre, Norrmalm and Södermalm. Staden, with old, winding streets, contains the royal palace, the government buildings, the great church of S. Nicholas, an old Franciscan church used as the royal burying place, the docks and the business district. Norrmalm, however, is the finest quarter of the city and contains the royal opera house, the museum, statues, gardens and fine streets. The city has a university and is the seat of the principal academies and learned societies. There are numerous other places of entertainment and learning. The Deer Park is a noteworthy feature. Of the industries iron and steel, including engineering and shipbuilding, are the most important; others are porcelain works and factories producing cork, wood, silk and chemicals. A new dock for large ships was completed in 1926. The city has a broadcasting station (436 M., 55 kW.). Pop. (1931) 514,333.

Stockport County borough chiefly in Cheshire but partly in Lancashire. Built on the slopes of a ravine, it is situated on the Mersey, at the point where that river receives the waters of the Tame and the Govt, and is 6 m. from Manchester, on the L.N.E. and L.M.S. Rlys., with tramway connection with Manchester. Largely a cotton manufacturing centre, the borough has iron foundries, breweries and hat factories. Pop. (1931), 125,505.

Stocks Device for punishing offenders. They consist of two bars of wood between which are holes for the feet. When they are locked together the victim is firmly imprisoned. Some stocks have also holes for the arms. Stocks were much used in England in the 16th and 17th centuries, when the usual punishment for a vagabond was to put him in the stocks, and they continued in use until the 19th century. They were usually placed on the village green, and in some villages are still kept as relics of the past. In London, according to John Stow, there were stocks in every ward.

Stocksbridge Urban district of Yorkshire (W.R.). It is 8 m. from Sheffield. There are coal mines and associated industries. Pop. (1931) 9253.

Stockton-on-Tees Borough, market town and seaport of Durham. It is 4 m. from Middlesbrough and 235 from London, on the L.N.E. Rly. There are machine shops, glass works, iron foundries and shipbuilding yards. Races are held three times a year. Pop. (1931) 67,724.

Stockwell District of London. To the S.W. of the city, it is in the borough of Lambeth, on the tube railway. Here is the orphanage founded by C. H. Spurgeon in 1867.

Stoicism Ancient school of philosophy. Its name is derived from the porch (*Stoa*), where its founder, Zeno (340-270 B.C.) taught at Athens. Later Stoicism had great influence in the Roman world, and its greatest teachers, Seneca, Epictetus and the Emperor Marcus Aurelius, were Romans. The leading doctrines of the system may be summed up in the aphorism, Virtue alone brings happiness.

Stoke Village of Nottinghamshire. It is 4 m. from Newark. Here, on June 16, 1487, Henry VII. defeated an army raised by Lambert Simnel, which contained about 2000 German mercenaries.

There are many other Stokes in England. **Stoke d'Abernon**, on the Wey in Surrey, has a church containing the oldest brass in England. The village is 3 m. from Leatherhead. Another **Stoke**, a village near Hartland, has a church called the Cathedral of North Devon.

Stoke-on-Trent County borough and market town of Staffordshire. It is 140 m. from London, on the L.M.S. Rly. It includes Stoke proper, the former boroughs of Burslem, Longton and Hanley, and the former urban districts of Fenton and Tunstall, which were all united in 1910. The chief industry is the manufacture of pottery. In 1925 Stoke was made a city, and in 1928 its mayor was advanced to the rank of lord mayor. Pop. (1931) 276,619.

Stoke Newington Borough of the county of London. It lies between Islington and Hackney. The buildings include the parish church built by Sir Gilbert Scott. Clissold Park is an open space, and here is Abney Park cemetery. Pop. (1931) 51,215.

Stoke Poges Village of Buckinghamshire. It is 20 m. from London on the G.W. Rly. The church of St. Giles dates from the 14th century. Its churchyard is famous as having suggested to Thomas Gray, who is buried here, his famous *Elegy*. The land near is owned by the National Trust.

Stokesay Village of Shropshire. It is 6 m. from Ludlow, its nearest station being Craven Arms, on the L.M.S. and G.W. Rlys. Its chief attraction is the 13th century castle, probably the most perfect extant example of a fortified manor house in England. The gatehouse is Elizabethan and there is a moat.

Stokesley Market town of Yorkshire (N.R.). It stands on the Leven, 16 m. from Stockton-on-Tees, on the L.N.E. Rly.

Stole Narrow vestment worn by the clergy. It is really a long scarf with ornamental ends such as were worn by the magistrates in Rome as a sign of office. It is worn by the priests of the Roman Catholic church during mass, and by many clergy of the Church of England at the celebration of the Holy Communion. Stoles are of various colours, each season of the church's year having its own colour.

Stoll **Sir Oswald.** British theatre and cinema magnate. He was born in Melbourne, Jan. 20, 1866, and educated in Liverpool. He devoted himself early in life to matters theatrical, and became chairman and managing director of the Coliseum Syndicate. He controls picture houses in London and the provinces, was knighted in 1919 and is the author of some books on philosophy and finance.

Stomach Muscular bag-like expansion of the alimentary canal. It is between the oesophagus and the small intestine, and beneath the diaphragm. Food in its passage through the stomach is acted upon by secretions from the gastric glands, the insoluble proteins of meat, etc., being changed into soluble peptones which are absorbed readily into the blood.

In cases of poisoning and catarrhal distention a **stomach pump**, or syringe with a long, flexible tube, is used sometimes for washing out the stomach.

Stone In geology any small piece of rock, especially fragments worn down by water or the action of the weather. As a suffix, it is found in the names of many rocks and minerals, such as sandstone, limestone, ironstone, alumstone, etc.

A precious stone is a mineral which, by reason of its colour, crystal form or other characters, is prized as a gem. In a particular sense the term is applied to blocks dressed and shaped in a quarry; also to a concrete formation in the kidney or bladder.

Stone English measure of weight. It varies to some extent, and local stones are found in various parts of the country. It varies also according to the article sold. For instance a stone of meat is 8 lb. The standard stone is one of 14 lb.

Stone Market town and urban district of Staffordshire. It is on the Trent, 7 m. from Stafford and 139 from London, on the L.M.S. Rly. In the Middle Ages there was an abbey here. Near is Stone Park, the seat of Earl Granville. Pop. (1931) 5952.

Stone **Marcus.** English painter. He was born in London, July 4, 1840, and educated privately. As a youth he furnished illustrations for the works of Dickens, Trollope and others. He exhibited at no fewer than 63 consecutive exhibitions of the Royal Academy, being made A.R.A. in 1877, and R.A. in 1887. He died March 24, 1921.

Stone Age Term applied to a primitive stage of human development before man was acquainted with metal and when he used stone in adapting to his needs the materials at his command. The Stone Age is divided into four periods: (1) Eolithic, the dawn of history; (2) Palaeolithic, the old Stone Age when tools were fashioned by chipping; (3) Mesolithic, a transitional stage, intermediate between the old and the new Stone Ages; (4) Neolithic, the new Stone Age, when tools were fashioned by grinding or polishing.

Stonechat (*Pratincola rubicola*). Small bird found on British moorlands and commons. It is about 5 in. in length, the plumage black with a brownish tinge on the back and white markings on the neck, wings and tail. The breast is orange-red and the legs and bill black. The eggs are a bluish grey speckled at one end with reddish brown. It nests on the ground among grass or undergrowth.

Stonecrop (*Sedum*). Name for a number of creeping plants of the order *crassulaceae*. The stonecrop, common on old walls or roofs of country cottages,

with small thick green leaves and masses of tiny bright yellow flowers, is the biting stonecrop, or wall pepper. There are eight species native to Great Britain and other cultivated varieties are largely grown in rock gardens.

Stonehaven Burgh, seaport and watering place of Kincardineshire, also the county town. It is on the E. coast, 16 m. from Aberdeen, at the mouth of two small rivers, and is served by the L.M.S. and L.N.E. Rlys. The old town has a harbour for the fishing fleet, and a new quarter with many attractions for visitors. Near are the ruins of Dunnottar Castle. Pop. (1931) 4185.

Stonehenge Prehistoric stone circle, the most famous in England. It is on Salisbury Plain, about 2 m. from Amesbury. It consists of an outer and an inner circle of stones. In the former 16 of the 30 are still standing. The inner circle is less complete. Within it are other stones, one of which is called the altar stone; and outside are some isolated stones, one being the slaughtering stone. The largest stones are 21½ ft. high.

The stones were brought, it is believed, from Pembrokeshire, and were erected about B.C. 1700. There are various theories about their purpose; the one most favoured is that they were concerned with the worship of the sun. On June 21 many persons visit Stonehenge to see the sun rise over one of the stones. Around are earthworks and barrows.

Stonehouse Town of Lanarkshire. It is situated about 4 m. N.W. of Strathaven, on the L.M.S. Rly. Coal mining and weaving are important industries. Pop. 4200.

Stoneleigh Village of Warwickshire. It is on the Avon, 2 m. from Kenilworth. Stoneleigh Abbey, the seat of Lord Leigh, occupies the site of a Cistercian house. It was built early in the 18th century, but includes some remains of the abbey church. It has a valuable collection of paintings and stands in a large park.

Stoneware Hard, glazed form of earthenware usually of a coarse character. Stoneware of the finest quality was made first in England at Fulham in 1671, by John Dwight, under a patent from Charles II. Sanitary ware such as drain pipes, sinks, etc., are made of glazed stoneware.

Stonyhurst English public school. It is 12 m. from Blackburn, its station being Whalley on the L.M.S. Rly. It is conducted by the Society of Jesus for Roman Catholics, and has accommodation for about 400 boys. The college was founded in 1592 at St. Omers; it was moved to Bruges in 1762, and to Liege in 1773. In 1794 the present school was opened in a hall at Stonyhurst presented by Mr Weld of Lulworth.

Stony Stratford Market town of Buckinghamshire. It is 2 m. from Wolverton and has engineering works and a trade in corn and cattle.

Stool-Ball Ancient game formerly played in the N. of England, and said to be the predecessor of cricket. A stool was placed on the ground, with one player standing before it: his opponent tosses a ball at the stool, the former having to hit it away with his hand. One point is counted each time the ball is hit. A variety of the ancient game is now occasionally played at camps and fairs in the S. of England.

Stopes **Marie Carmichael.** English scientist and author. Daughter of Henry and Charlotte Carmichael Stopes, and educated at Edinburgh, Munich and London University: she first gained distinction for fossil research in Japan. She is president of the society for constructive birth control and racial progress, and lecturer in palaeobotany at the universities of Manchester and London, being the first woman to be appointed (1909) to the science staff of Manchester University. She has published plays, novels and works on botany. In 1918 she married Humphrey Verdon Roe.

Stork Family of large wading birds (*Ciconiidae*) related to the heron. Protected in some central European countries, it nests on the house-tops, feeding on small mammals, reptiles, insects, etc., and acting somewhat as a scavenger. The white stork (*Ciconia alba*) attains a length of 40 ins. The long beak and legs are red. The black species (*C. nigra*), a little smaller, has black plumage, except that the lower parts beneath are white. It breeds in N. Europe. Both are migrants, wintering in Africa, the former an occasional visitant to Britain.

Stork's Bill (*Erodium cicutarium*). Herb of the order geraniaceae. Related to the crane's bill, its fern-like leaves have deeply cut leaflets growing in pairs rather irregularly along the central rib. The flowers are a bright rosy pink, each rising on a separate slender stem from the flower head, and the seed is pointed and hairy.

Stormont Castle and estate of Co. Down, N. Ireland. Near Belfast, it was bought in 1921 for the headquarters of the Government of N. Ireland. The castle became the official residence of the Governor-General and in the grounds the Houses of Parliament and offices for the administration were built. The cost, £500,000, was borne by Great Britain.

Stornoway Burgh and seaport of Lewis in the county of Ross and Cromarty. It is 180 m. from Oban, and is a fishing centre with a good harbour. Lews Castle was presented to the town by Lord Leverhulme. Pop. (1931), 3771.

Storrs **Sir Ronald.** British administrator. He was born Nov. 19, 1881, and educated at Charterhouse and Cambridge. He entered the Egyptian Ministry of Finance in 1904, and was later Oriental Secretary to the British Agency in Egypt. In 1917 he was attached to the secretariat of the War Cabinet, and from 1917 to 1920 was Military Governor of Jerusalem, and later Civil Governor of Jerusalem and Judaea. From 1926 to 1932 he was Governor of Cyprus. He received the C.M.G. in 1916, knighthood in 1924 and the K.C.M.G. in 1929.

Stothard **Thomas.** English painter and designer. Born in London, Aug. 17, 1755, his earliest published efforts were designs and illustrations for Bell's *British Poets* and the *Novelist's Magazine*. So popular were these that for many years the leading London publishers competed for his services. He exhibited at the Royal Academy, was made a member in 1794, and in 1813 Academy Librarian. He died April 27, 1834.

Stour Name of several English rivers. The most important is in Kent.

It flows from near Hythe, past Ashford and Canterbury to Pegwell Bay. It has an estuary which was protected by castles in Roman times and later. Its length is 40 m.

Another Stour divides Suffolk from Essex. It enters the sea by an estuary at Harwich, and is 47 m. long. A tributary of the Avon in Oxfordshire, 20 m. long, is another river of this name. The fourth Stour rises in Worcestershire and, having passed by Stourbridge and Kidderminster, joins the Severn at Stourport. It is 20 m. long. The longest of the Stours is in Somerset, Dorset and Hampshire. It is 55 m. long and falls into the Avon at Christchurch.

Stourbridge Borough and market town of Worcestershire. It is on the Stour, 12 m. from Birmingham and 144 from London, on the G.W. Rly. Hardware, fire-bricks and glass are manufactured. A canal passes the town. Pop. (1931) 19,903.

Stourport River port and urban district of Worcestershire. It stands at the mouth of the Stour where it joins the Severn. It is 14 m. from Worcester and is served by the G.W.Rly. and by a canal. Hardware is manufactured. Pop. (1931) 5949.

Stow **John.** English historian and antiquary. Born in London about 1525, the son of a tallow chandler, he became a tailor, but about 1560 took up historical research. His invaluable *Survey of London and Westminster*, 1598, gives a vivid description not only of the buildings, but also of the social conditions and customs prevailing during the previous six centuries. His labours entitled him to an old age of ease, but his only reward was letters-patent from James I. authorising him to beg. He died April 8, 1605, and was buried in the Church of St. Andrew Undershaft.

Stowe Public school in Buckinghamshire. It is 3 m. from Buckingham and was formerly the seat of the Duke of Buckingham, and surrounded by extensive grounds and beautiful gardens. The magnificent house was built by Sir Richard Temple about 1660 and was sold in 1921. In 1923 it was opened as a school for boys, and has accommodation for about 500 boys.

Stowe **Harriet Elizabeth Beecher.** American writer. The daughter of Lyman Beecher, a Presbyterian minister, she was born at Litchfield, Conn., June 14, 1811, and married Rev. C. E. Stowe in 1836. She lived many years near Kentucky, a slave state, and the horrors she saw there led her to write *Uncle Tom's Cabin*, 1851-52. The anti-slavery feeling this work aroused was partly responsible for the Civil War. The book has been dramatised and translated into more than twenty languages. Mrs. Stowe also wrote *Sunny Memories of Foreign Lands*, and stirred up a great deal of controversy in 1869 by her *Lady Byron Vindicated*. She died July 1, 1896.

Stowmarket Market town and urban district of Suffolk. It is 12 m. from Ipswich and 80 from London on the river Gipping, and on the L.N.E. Rly. There is a trade in farm produce, and fertilisers are manufactured. The restored church has an organ by Father Smith. Pop. (1931) 4296.

Stow-on-the-Wold Market town and urban district of Gloucestershire. It is 20 m. from Cheltenham and 89 from London on the G.W. Rly. A place of singular charm, it has an old church and a cross in the large market place. Fairs are held. Pop. (1931) 1266.

Strabane Urban district of Co. Tyrone, N. Ireland. It is on the river Foyle, 14 m. from Londonderry and 161 from Dublin, and is reached by railway. It has an agricultural trade and other industries. The town has some shipping and a canal connects it with the estuary of the Foyle. Pop. (1926) 5156.

Strabo Greek geographer. He was born in Asia Minor about 63 B.C. He travelled a good deal, but was living in Rome when he died about A.D. 20.

Strabo's *Geographica* deals with the geography of Europe, Asia and Africa and is of high value. The author takes much from earlier writers, but much also is from his personal experience. His *History*, from 146 B.C. to the death of Julius Caesar, has come down to us only in fragments.

Strachey **Giles Lytton.** English essayist and biographer. Born March 1, 1880, son of Sir Richmond Strachey, the Anglo-Indian administrator (1817-1908): he was educated at Trinity College, Cambridge. His first book, *Landmarks in French Literature*, appeared in 1912, and was well received. In 1918, with *Eminent Victorians*, he immediately became famous. With his vivid, incisive and often caustic language, and his penetrating wit, Strachey created a new style in biographies. His other publications were *Queen Victoria*, 1921; *Books and Characters*, 1922; *Pope*, 1925; *Elizabeth and Essex*, 1928; *Portraits in Miniature*, 1931; and a few essays. He died Jan. 21, 1932.

Stradivarius **Antonius.** Italian violin maker. He was born about 1644 at Cremona, where he raised the art of violin making to its highest perfection. A pupil of Nicolas Amati, he improved on his master's work by modifying and beautifying the designs, and especially by using a wonderful varnish, the secret of which has been lost. His instruments, which are all known by name, such as "la Pucelle," "Vieuxtemps" and "the Cessot," to-day command enormous prices. He also made excellent violas and cellos. He died Dec. 18, 1737.

Strafford **Thomas Wentworth, Earl of.** English statesman. He was born in London, April 13, 1593, eldest son of Sir William Wentworth, and educated at Cambridge. After supporting the Petition of Right in 1628, he transferred his sympathies to the side of Charles I. (*q.v.*), becoming one of his chief advisers. Created viscount in 1628 and earl in 1639, he was appointed Lord Deputy of Ireland in 1632. He changed the country from anarchy to order and prosperity. Accused by the Long Parliament of high treason during the Scottish Rebellion of 1640, he was beheaded in the Tower, May 12, 1641.

Strain and Stress Terms applied in mechanics to the condition of a body, either solid or liquid, when its form or volume undergoes a change (strain) by the action of a system of forces known as a stress. These forces always act in a pulling or pushing direction. In a shearing stress the force of compression is met by an elongation at right angles, and the rigidity of a solid is the resistance offered to this stress.

Straits Settlements British crown colony on or near the Malay Peninsula. It includes Singa-

pore (with the Cocos Islands and Christmas Islands), Penang (with Wellesley and the Dindings), Malacca, and Labuan. It is administered by a governor aided by executive and legislative councils. The Peninsula areas are connected by railway. They have rich soil with a hot wet climate and export tin, rubber, copra, spices, sago, pine-apples, etc. Christmas Island is an important source of phosphate. Singapore is the chief port and the capital. Area 1535 sq. m. Pop. (1931) 1,113,992.

Strand Word meaning the edge of the sea or of a river. It is used particularly of the street in London that was once the strand of the Thames. It runs from Temple Bar, where it is a continuation of Fleet Street, to Charing Cross. In it are Somerset House, King's College, the Royal Courts of Justice, Australia House, Bush House, the Savoy Hotel, several theatres and two churches, St. Clement Danes and St. Mary le Strand, both on islands in the street.

Strang **William.** British painter, engraver and etcher. Born in Dumbarton, Feb. 13, 1859, he went to London in 1875, studying for six years under Legros at the Slade School. He was one of the original members of the Royal Society of Painter-Etchers. Hardy and Kipling were among the subjects of his many portrait-etchings. His collected etchings number over 700. Among his notable engravings are "St. Jerome," "A Woman Washing her Feet" and "The Bachelor's End." He was elected R.A. (engraving) in 1921, and died April 12, 1921.

Strangford Lough or inlet on the east coast of Northern Ireland. It enters County Down for about 20 m., cutting off the Ards Peninsula from the rest of the country. At its entrance and facing each other are the little towns of Strangford and Portaferry.

The Irish title of Viscount Strangford was borne by the family of Smythe from 1625 to 1869, when it became extinct. Its most notable holders were Percy, the 6th viscount (1780-1855) who was a diplomat, and his son, George, the 7th viscount (1818-57) who was an M.P., 1841-52. He was a member of the Young England Party and is described in *Coningsby*.

Strangles Disease of horses, especially young ones. It is a form of fever. The symptoms are coughing, swelling of the glands and a discharge from the nose.

Stranraer Burgh and seaport of Wigtownshire. It is 59 m. from Ayr and 103 from Edinburgh, on the L.M.S. Rly. There are ruins of a 10th century castle. Stranraer has a good harbour on Loch Ryan, and there is a regular service of boats to Belfast and Larne. Pop. (1931) 6420.

Strasbourg Capital of Alsace-Lorraine. It is situated on the Ill, at its junction with the Breusch, and is an historic city of much antiquarian interest. Chief among its ancient buildings is the Gothic cathedral and there is a university, founded in 1567.

Manufactures are beer, locomotives, leather, etc., and there is an extensive printing industry. A famous table delicacy, pâté de fois gras, is prepared here. Since the Great War Strasbourg has become an important port. The city has changed hands several times since it was captured by the Germans in the 10th century. France lost it to Germany in 1870 after a severe siege, and it was restored to France after the Great War in 1919. It has a broadcasting station (345 M., 11.5 kW.). Pop. (1931) 181,465.

Strategy Art of military, naval and air movements in war. The word is generally used to denote the conduct of a campaign as a whole. *See* TACTICS.

Stratford District of London, part of the borough of West Ham. It is on the Lea, 4 m. from the city, and is an important junction on the L.N.E. Rly. There are railway shops, chemical works, breweries, furniture making and many other industries. Thornton Fields is an athletic ground. Across the Lea is Bow, hence the Stratford-atte-Bowe of Chaucer's day.

Stratford City of Ontario. It stands on the river Avon, 88 m. from Toronto. The C.N. Rly. has repairing shops here. There are some manufactures. Pop. (1931) 17,742.

Stratford-on-Avon Borough and market town of Warwickshire. It is 24 m. from Birmingham and 103 from London, by the G.W. Rly; it also has a station on the L.M.S. Rly. It is chiefly famous as the birthplace of Shakespeare, and this association attracts many visitors, especially during the annual festival week. Its buildings include the fine church of Holy Trinity with the poet's grave, the house in which he was born, and the guildhall, long used as a grammar school, with its guild chapel adjacent. The town hall dates from the 18th century. Other buildings are Harvard House, and some half-timbered houses. The museum is in an old house next to the gardens of New Place, once Shakespeare's home. The Shakespeare Memorial Theatre, rebuilt after a fire, was opened in 1932. There is a fine bridge across the Avon called Clopton Bridge, and there is a fine fountain in the town. Stratford has an agricultural trade, and every Oct. the Hop Fair is held here. Pop. (1931) 11,616.

Strathaven Market town of Lanarkshire. It stands on the river Avon, 14 m. from Glasgow, on the L.M.S. Rly. There are ruins of a castle and textiles are manufactured.

Strathcona District of Edmonton, Canada. It stands on the Saskatchewan river to the south of Edmonton, with which it was included in 1912. Here is the University of Alberta. *See* EDMONTON.

Strathcona and Mount Royal, Baron. Canadian statesman and railway magnate. Donald Alexander Smith was born Aug. 6, 1820, and emigrating from Scotland to Canada when 18, entered the service of the Hudson's Bay Co. In conjunction with his cousin, George Stephen (later Lord Mountstephen) William Van Horne, Thomas Shaughnessey (later Lord Shaughnessy) and a few other men of vision, he built the Canadian Pacific Railway. He was knighted in 1886, made High Commissioner for Canada in London in 1896, and raised to the peerage in 1897. He died Jan. 21, 1914.

Strathmore District of Scotland. It is a great valley stretching for about 100 m. through the counties of Perth and Angus.

The title of Earl of Strathmore and Kinghorne has been held since, 1677 by the family of Lyon, later Bowes-Lyon. Claude George Bowes-Lyon, the 14th earl, was the father

of Elizabeth, who became the wife of the Duke of York. The earl's seat is Glamis Castle and his eldest son is called Lord Glamis.

Strathpeffer Watering place of Ross and Cromarty. It is 5 m. from Dingwall, on the L.M.S. Rly. and is an airport. It is noted for its medicinal springs and magnificent scenery.

Stratification Term in geology. It is applied to the arrangement of sedimentary rocks in beds or strata. Derivative rocks such as sandstone, conglomerate, clays and shale have been deposited by water under varying conditions, which are indicated by the character of the stratification. The strata by lateral pressure may be tilted or folded.

Stratum In geology an individual layer or bed in a sedimentary rock, such as a limestone, sandstone, shale or coal. Strata may be arranged in various ways from horizontal to vertical, the direction of inclination being known as the dip, or the beds may be folded by lateral pressure.

Stratus Low-lying cloud. It forms a sheet of mist and appears as a horizontal layer of varied thickness. Clouds of this character act as heat-screens by day, and at night prevent the loss of heat radiated from the earth.

Strauss **Johann.** Austrian composer and conductor. Born in Vienna, March 14, 1804, and famous for his waltzes, he made his name as the greatest composer of dance music of the day with the *Täuberl-Walzer*, 1826. He formed his own concert band, which at one time contained over 200 performers, and toured Europe, being noted for his quiet and effective conducting. He died Sept. 25, 1849.

His son, Johann (1825-99) was the composer of the most famous of all waltzes, *The Blue Danube*.

Strauss **Richard.** German composer. Born at Munich, June 11, 1864, he began playing the piano at four and composing at six. His principal works are *Elektra, Ariadne auf Naxos, Don Juan, Tod und Verklärung Til Eulenspiegel, Don Quixote, Salome, Also sprach Zarathustra, Der Rosenkavalier*, and *Helen of Egypt*.

Stravinsky **Igor Fedorovich.** Russian composer. Born near St. Petersburg, Jan. 17, 1882, he aroused admiration by his originality, and adverse criticism by his departure from all accepted musical canons. He first studied law, but on the advice of Rimsky Korsakov, devoted himself to music. His first ballet, *The Firebird*, created a sensation by the extreme novelty of its construction. Later followed *Petrushka, Le Sacré du Printemps, Renard, Les Noces Villageoises, Oedipus Rex*, and *Le Rossignol*.

Strawberry (*Fragaria*). Perennial herb belonging to the natural order Rosaceae. It is valued for its delicious fruit. The small, wild strawberry (*F. Vesca*) is a native of Britain, and is one of the species from which the cultivated varieties have originated. Although strawberries may be propagated from seed, the usual method is by runners.

Strawberry Hill Suburb of London. It is on the Thames, 12 m. from the city, on the S Rly. Here is the villa in which Horace Walpole lived from 1747-97, with the garden laid out by him.

Streamline Term used for a line corresponding to the course taken by a stream of fluid or air. Motor-cars built for speed are constructed so that the surfaces follow stream lines, thus offering a minimum resistance to the air. Racing aircraft are streamlined for the same reason.

Streatham Suburb of London. It is 6 m. from the city and has three stations on the S. Rly. It is also served by tramway and motor omnibuses, and is in the borough of Wandsworth.

Streatham Common is an open space covering over 60 acres. The districts of Streatham Hill and Streatham Common are new.

Streatley Village of Berkshire. It is a boating centre on the Thames, 45 m. from London, and has a station, Goring and Streatley, on the G.W. Rly. A bridge, built in 1923, unites the two places.

Street Urban district of Somerset, 14 m. from Bridgwater, on the G.W. Rly. Boots and shoes are made here. Pop. (1931) 4453.

Stresemann **Gustav.** German statesman. Born May 10, 1875, and educated at the universities of Berlin and Leipzig, he entered the Reichstag as a National Liberal in 1907, and in 1917 was leader of his party. In 1923 he became Chancellor and held the post of Foreign Minister simultaneously. He worked energetically for peace, and was largely instrumental in bringing about the Locarno Pact in Oct., 1925, and the entrance of Germany into the League of Nations. His efforts gained him a Nobel Prize for Peace in 1926. He died Oct. 3, 1929.

Strickland **Baron.** British administrator. Gerald Strickland, born in Malta, May 24, 1861, son of Captain Walter Strickland, was educated at Trinity College, Cambridge, graduating with honours in Law in 1887. Assistant Secretary of Malta, 1888, he was made Chief Secretary, 1889, and was successively Governor of the Leeward Islands, 1902-4, Tasmania, 1904-9, Western Australia, 1909-13, and New South Wales, 1912-17. Since 1927 he has been head of the Ministry and Minister of Justice in Malta, where he came into conflict with the Roman Catholic Church. He was made a baron in 1928.

Stricture Unnatural contraction of a mucous canal, such as the urethra, œsophagus, or an intestine. It is commonly due to inflammation and prompt medical attention is advisable.

Strike Combination among employees in industry or trade to cease work in order to rectify a grievance or enforce a demand. Strikes are commonly organised by trade unions who arrange for distribution of strike pay while the dispute lasts.

In the 19th century, with the growth of the industrial system, strikes became very frequent. In 1889 there was a prolonged strike of dock labourers in London, in 1893 the coal miners ceased work, and in 1911 the railwaymen did the same. There were many other strikes before the Great War and one or two during its progress, though others were prevented by arbitration. In 1919 there was another strike of railwaymen in Great Britain, and in 1921 the coal miners struck work as they did again in 1925. In the winter of 1935-36 another national coal strike was narrowly averted. In Australia, where strikes were also

very frequent, arbitration was made compulsory, as it was in New Zealand, but the system was not a success. In Great Britain strikes have usually been free from serious violence, but in other countries one or two approximated to civil war, *e.g.*, at Pittsburg in 1892, Chicago in 1894, and Spain in 1934.

In 1926, for the first time in England, although it had been tried in France and Sweden, there was a general strike, declared by the trade unions to support the coal miners. The government took prompt steps to safeguard the supply of food and such essential services as sanitation and water supply, and in a few days the strike collapsed, although the miners remained out until nearly the end of the year. In 1927 the Trade Disputes Act was passed making a general strike illegal.

Strindberg Johan August. Swedish author. Born Jan. 22, 1849 at Stockholm, the poverty of his early days was possibly responsible for much of the cynicism which later brought him unhappiness. His first great drama, *Master Orlof*, appeared in 1878. The stories published later under the title of *Married* led to prosecution. He was, however, acquitted. Two tragic marriages did not tend to give him a more cheerful outlook and one morbid book after another appeared. He wrote altogether 53 plays, many stories and treatises on history, the theatre, philosophy and miscellaneous subjects. He died May 14, 1912.

Stroke An attack of paralysis. The word is also used to describe the rate at which rowers use their oars and the member of a rowing crew who sets the pace for the others.

Stromboli One of the Lipari Islands. To the north of Sicily, it is famous for its volcano which, being continuously, though, as a rule, mildly active, is known as the "lighthouse of the Mediterranean." The volcano has an altitude of 3038 ft.

Stromness Seaport and summer resort in Pomona, the largest of the Orkney Islands. It lies in a bay 15 m. W.S.W. of Kirkwall and has a good harbour. Herring-fishing, distilling, ship repairing and rope making are carried on.

Strontium Metallic element having the symbol Sr and atomic weight 87.63. Strontium occurs as a sulphate in the mineral celestine and as a carbonate in strontianite. It is a hard yellow malleable metal which melts at red heat and oxidises in the air. Its compounds are used in pyrotechny, medicine and in the beet sugar industry.

Strood District of Kent. It is on the left bank of the Medway, opposite Rochester, on the S. Rly. It consists of two parishes, Strood intra and Strood extra.

Stroud Market town and urban district of Gloucestershire, 12 m. from Gloucester and 102 from London, by the G.W. Rly. It stands at the junction of the Slade and Frome rivers on a branch of the Thames and Severn Canal and is a noted centre for woollen manufactures. It has numerous cloth mills, iron foundries, sawmills, breweries and dye-works. Population 8360.

Stroud, New South Wales, 113 m. by rly. from Sydney, lies near the Copeland Gold Field and has a population of about 1100.

Stroud Green Suburb of N. London, lying between Highgate and Finsbury Park, on the L.N.E. Rly. It belongs to the borough of Hornsey, and is 3½ m. from King's Cross.

Strutt Jedediah. English inventor. Born in Blackwell, Derbyshire, July 28, 1726, he made a fortune by the invention of a machine for the production of ribbed hose and by planning many devices for improvements in spinning cotton. He died May 6, 1797.

Strychnine Highly poisonous alkaloid obtained from the seeds of Nux-vomica, St. Ignatius' beans and other species of the genus Strychnos. It is a white non-odorous crystalline powder, slightly soluble in water, and having an intensely bitter taste.

Strychnine salts are more soluble, and its solubility in water is increased by acids. In its poisonous action, it affects the spinal cord, producing convulsions, but when used medicinally is a cardiac and respiratory stimulant and an aid to weak digestion.

Stucco Smooth, hard plaster applied to the walls of buildings, usually those of brick, to imitate masonry or for decorative work. It consists of three or four parts of fine sand mixed with one part of hydraulic lime.

Stud Establishment for horse-breeding. The place where stallions and broodmares are kept is generally called a stud-farm. Pedigrees of thoroughbred horses have been systematically filed since 1791 and are published at intervals in stud-books. There is also a stud-book for pedigree dogs which has been published since 1874 by the English Kennel Club.

Studio Room or building used as a workshop of an artist or photographer. In a painter's studio the question of lighting is important; usually the windows have a northern or eastern aspect, as the light is less variable, and the size and height of the windows also have to be considered.

Studley Royal Former seat of the Marquess of Ripon. About 3 m. from Ripon, it is situated in a fine park which also contains Fountains Abbey. The grounds were laid out in the 18th century by John Aislabie, and include Dutch and Italian gardens.

Sturdee Sir Frederick Charles Doveton. British admiral. Born at Charlton, Kent, June 9, 1859, he entered the navy in 1871. He was made captain, 1899, rear-admiral, 1908, and Admiral of the Fleet, 1921. He early saw service in Egypt and elsewhere, but his name is largely associated with the World War. From 1914 to 1915 he was chief of the War Staff, and on Dec. 8, 1914, as Commander-in-Chief in the South Atlantic and Pacific he defeated a German squadron off the Falkland Islands. He was in command of the 4th battle squadron at the Battle of Jutland and was created a baronet in 1916. From 1918 to 1921 he was Commander-in-Chief at the Nore. He died on May 7, 1925.

Sturgeon Genus of ganoid fishes of the family *Acipenseridae*, order *Chondrostei*. The common sturgeon (*Acipenser sturio*) has a long narrow body and snouted head. The skin is provided with five longitudinal rows of bony shields. The length of an adult fish is from 6 ft. to 9 ft. In England the sturgeon is traditionally a royal fish belonging, when captured in a river, to the king. A larger variety (*A. huso*) attaining 25 ft. is found in the Black and Caspian Seas, the roe being made into caviare and the air-bladder into isinglass.

Sturry Village of Kent. It is near Canterbury, 73¼ m. from London, on the S. Rly. Here is a manor house, or court, dating from the 16th century, which is now the junior school of King's School, Canterbury. It was at one time the residence of Viscount Milner, whose widow presented it to the school.

Stuttgart City of Germany, the capital of the republic of Württemberg. Situated about 2 m. from the Neckar, 127 m. S.S.E. of Frankfort and 190 m. by rail W.N.W. of Munich, it derives its name from a stud-farm of the early counts of Württemberg. It has many fine public buildings, including a polytechnic and library with a collection of 7000 Bibles. There are also numerous former royal seats and palaces in the neighbourhood. It ranks, after Leipzig, as a centre of the German book trade. Other industries are textiles, breweries, chemicals, pianos, chocolate and artists' colours. The city has a broadcasting station (360.5 M., 60 kW.). Pop. (1933) 415,028.

Stye A small abscess on one of the hair follicles of the eyelid. When the soreness is first felt the treatment is to pull out an eyelash at the point of greatest tenderness. If the stye forms in spite of this preventive measure, bathe with warm boracic lotion (made by dissolving one teaspoonful of boracic powder in 1 pint of boiling water) and apply yellow mercury ointment.

Stylites **Simeon.** Christian saint and ascetic of the 5th century. He lived on the top of a pillar 72 ft. high and only 4 ft. square at the top. Here he spent thirty years, preaching to the crowds that gathered around him. The fame of his sanctity attracted pilgrims from all parts. He died A.D. 459, at the age of 72.

Styr River of Galicia, Poland. It rises near Brady, flows north past Lutsk and Rafalovka and, after a course of about 250 m., joins the Pripet a little east of Pinsk. Two battles in the Great War were fought on the Styr between the Russians and combined Austro-German forces. The first, fought in Oct., 1915, after the second Russian withdrawal from Lutsk, had no definite result. In the second a Russian offensive under Lesh in June-July, 1916, was successful, over 12,000 German and Austrian prisoners being captured.

Styria A division of the Austrian republic, formerly an Austrian duchy and crown land. Its present area is 6323 sq. m., over 2300 sq. m. in the south having been transferred to Yugoslavia after the Great War. Its capital is Graz. A mountainous region and forested over half its area, it has great mineral wealth. Large quantities of iron are produced and worked and salt, coal, graphite and zinc are also mined. The Styrian Alps stretch to the N.E. and traverse much of the country. The principal peak is the Schreeberg (6810 ft.). Pop. (1923) 978,845.

Styx In classical mythology the river of hate. It was a poisoned stream across which Charon ferried the souls of the departed on their transference to Hades.

Suakin Port of the Anglo-Egyptian Sudan. It is situated partly on an islet in the Red Sea and partly on the mainland. It formerly had some commerical importance, but has been largely superseded by Port Sudan, 36 m. distant, with which it is connected by rail. Suakin was occupied by the British as a strategical point after the Mahdist rising, and several battles were fought in the neighbourhood. The name is a battle-honour for several British and Indian regiments.

Subaltern Term applied to all commissioned officers in the army below the rank of captain. The name is officially recognised by its use in connection with duty notes, a "subaltern of the day" being regularly appointed in regimental orders.

Subconscious Psychological term for ideas and mental processes present in the mind but of which the subject is unaware. Such phenomena as loss of memory, dual personality, somnambulism, trance states and some involuntary actions, have been explained in terms of the Subconscious, which should be carefully differentiated from the Unconscious (*q.v.*).

Submarine A vessel which can be navigated on the sea surface, but is capable of being submerged and of moving under water without outside assistance. Its principal weapon is the torpedo, but it has guns for use when on the surface. It is also fitted with a lens and mirror system called a periscope which operates through a long tube and enables the occupants to scan the horizon during a period of submersion.

There are various classes of submarines, some of such size and power that they are to all intents and purposes submersible cruisers. Others are more nearly destroyers, and as such are capable of sinking the largest warships. Five British battleships and five cruisers are known to have been sunk by German submarines in the Great War, and the damage done by them to British mercantile shipping was almost incalculable.

The construction of submarines, more particularly in the matter of machinery for submerging and rising to the surface, is necessarily very complicated and they are handled in the British Navy by a separate and specially trained service. As a rule sufficient compressed air is carried to enable submersion to be prolonged for 60 hours. The surface speed of a submarine is about 17 knots, the under-water speed about 10 knots.

Repeated disasters to submarines, as *e.g.*, the loss of the British submarine M2 in 1931, and opposition to their illegal use in warfare, have led to a movement for their abolition, which is supported by Great Britain.

Subpoena Latin phrase meaning "under a penalty." It is used in English law to denote a process or writ compelling the attendance of a party, more particularly a witness, in a court of law. It takes the form of a writ in the name of the sovereign insisting upon attendance without regard to business or other preoccupation. If neglected, a fine or committal to prison may follow.

Subsidy Literally, a grant-in-aid (Latin, *subsidium*, aid). Formerly it was a term applied to parliamentary grants to the Crown, but it is now used chiefly to denote assistance lent either by one Power to another in cash or arms, or by the State to various trades or industries. During the Napoleonic Wars Great Britain furnished subsidies to foreign Powers in order to enlist their assistance against the French, and in later times many Asiatic and African rulers have received subsidies to ensure their friendliness and good behaviour. From time to time various British industries, coal-mining, dyeing and others have been subsidised. Shipping companies carrying mails or supplying auxiliary cruisers have regular subsidies.

Succession Duty In Great Britain a duty payable by persons who inherit real estate, or persons who inherit personal estate under a settlement. It is equivalent to the legacy duty, and is at the same rates. *See* LEGACY DUTY.

Suck River of the Irish Free State. Rising in a lake in Connaught it flows between Co. Roscommon and Co. Galway until it joins the River Shannon below Ballinasloe. It is 60 m. in length.

Sucker Gardening term applied to a shoot coming from a plant at or below the ground level. Carefully detached and transplanted it will sometimes serve the same purpose as an ordinary cutting.

Sucking Fish Name given to the Remora, which has a sucker-disc on its head, and to other fishes which have suckers formed by the union of the ventral fins. With these suckers the fish attaches itself to rocks and ships, and sometimes to turtles and sharks. About seven species are found in British waters.

Sudan Region of North Africa. It includes the Anglo-Egyptian and the French Sudan. The rule of Egypt in the former was interrupted in 1882 by the Mahdist revolt, and only after the Battle of Khartum in Sept., 1898, was the country recovered and placed by a Convention under nominally Anglo-Egyptian, but practically British, administration. There are 15 provinces governed by British officers of the Egyptian Army, or by British officials of the Sudan Political Service. The capital is Khartum. The area is about 1,008,100 (1931) sq. m. Pop. 5,605,848.

The French Sudan was formed in 1904 from the territories of Senegambia and the Niger, less the Senegal Protectorate. It was given its present name by decree of Dec. 4, 1920. Part of Upper Volta was added in 1933. The capital is Bamako. The area is about 380,557 sq. m. Pop. (1933) 3,568,825.

Sudbury Borough of Suffolk. Situated on the Stour, close to the Essex boundary, it has three old churches and a grammar school originally built in 1491. The principal industries are manufactures of coconut matting, bricks, etc. Formerly it was a famous centre of the woollen industry of the Flemings. The painter, Gainsborough, was a native. Pop. (1931) 7007.

Sudbury Town of northern Ontario, Canada, 443 m. W. by N. of Montreal. It has stations on the C.P. and C.N. Rlys. It is connected by branch lines with districts containing large deposits of copper and nickel which are smelted on the spot. Pop. (1931) 18,518.

Sudd Mass of floating vegetation. It is sometimes 20 ft. thick and so dense as to be able to support the weight of an elephant. It occurs on the Upper Nile and completely blocks navigation unless a channel is cut and kept open.

Sudeley Village of Gloucestershire. Here is **Sudeley Castle**, built in the 14th century by Thomas Boteler, the Lord Sudeley of a former creation. It was subsequently acquired by the fourth husband of Catharine Parr, the widow of Henry VIII. Catharine married Lord Thomas Seymour of Sudeley, a former lover, very soon after Henry's death in 1547 and died in childbirth at Sudeley Castle the following year. It was restored in the 19th century and is still a place of residence.

Sudermann **Hermann.** German writer. He was born at Matzinken, East Prussia, on Sept. 30, 1857, and educated at Tilsit and the universities of Königsberg and Berlin. After a short period of journalism, he started writing novels, the best known of which are *Im Zwielicht*, *Frau Sorge*, *Der Katzensteg*, *Das Hohelied*, *Purzelchen*. While these showed keen powers of observation, it is to his plays that he owes his fame. *Die Ehre*, appearing in 1880, secured him instant renown. This was increased by several others, notably by *Magda*, his masterpiece, in 1892. He died in Berlin, Nov. 22, 1928.

Suetonius **Gaius Suetonius Tranquillus.** Roman historian and critic. The exact date of his birth, his birthplace and his parentage are unknown, but he was a contemporary of the emperors Domitian, Trajan and Hadrian. The younger Pliny, on being appointed proconsul of Bithynia, took Suetonius with him, and subsequently described him to Trajan as the most upright and learned among men. He later became private secretary to Hadrian, and, on losing the post, devoted himself to literature, writing the *Lives* of the first twelve Caesars.

Suez Gulf at the northern end of the Red Sea between Egypt and the Sinai Peninsula. It is 190 m. long and has an average breadth of 30 m. At the head of it lies the town of the same name which is connected by railway with Cairo and Port Said, and with Port Ibrahim at the southern entrance to the Suez Canal. Pop. 40,523.

Suez Canal Artificial waterway connecting the Mediterranean and Red Seas. Projected by Ferdinand de Lesseps it was started in 1859 and opened on Nov. 17, 1869, having cost about £17,000,000. In 1875 Great Britain secured a controlling interest in the canal through the purchase by Lord Beaconsfield of the shares of the Khedive of Egypt. The investment, apart from political considerations, has been a most profitable one. The canal is 99 m. long and now has a minimum depth of 33 ft, and a minimum width of 198 ft. Ships of 27,000 tons with searchlights can navigate the canal in 15 hours.

During the Great War the Turks made two determined attempts to reach the canal, in February and March, 1915, but on both occasions were repulsed and finally retreated across the Sinai Peninsula.

Suffocation Death by obstruction to respiration caused by any means other than by strangulation. It may be due to the closing of air passages by tumours, to the introduction of foreign bodies into the larynx, to pressure on the chest in a crowd, or by falls of earth in tunnels, sandpits, etc. It occurs among children of the poor, owing to the practice of parents sleeping with their infants, which in Germany is illegal.

Suffolk County of England, bounded on the east by the North Sea, on the north by Norfolk, on the south by Essex and on the west by Cambridgeshire. Its area is 1475 sq. m. It is divided into two administrative counties, each with its county council. The county town is Ipswich. Other important places are Lowestoft, Bury St. Edmunds, Beccles and Stowmarket. Felixstowe and Southwold are favourite watering-places. It is mainly an agricultural county, but a considerable amount of horse-breeding is carried on and the Suffolk Punch (*q.v.*) is famous. East

Suffolk has three Parliamentary divisions, Eye, Lowestoft and Woodbridge. West Suffolk has two, Bury St. Edmunds and Sudbury.

Prior to the Norman Conquest Suffolk was part of East Anglia and exposed to frequent Danish raids. Sea-fights took place off Lowestoft (1665) and Southwold (1671). Pop. (1931) 313,567.

Suffolk Earls and Dukes of. Titles borne by the families of Ufford, Pole, Brandon, Grey and Howard. The present earldom dates from 1603, when Thomas Howard, son of the Duke of Norfolk, was created earl. In his youth he fought against the Spanish Armada, becoming an admiral in 1599. He was Lord Chamberlain from 1603-1614. Charles Henry George Howard, the present earl, was born March 2, 1906, and succeeded his father as 20th earl in 1917. His full title is Earl of Suffolk and Berkshire.

Of the Dukes of Suffolk, the most famous were William de la Pole (1396-1450) who served with Henry V. in France and was taken prisoner by Joan of Arc in 1129, and Charles Brandon (1484-1545), a favourite of Henry VIII.

Suffolk Punch Powerful breed of horses, used chiefly for agricultural purposes and peculiar to Suffolk. Its distinguishing characteristics are a round barrel and short legs, the name being possibly a corruption of bunch.

Suffragan Ecclesiastical term. Strictly speaking, all provincial bishops are suffragans as being subordinate to or assistants of the metropolitan. The term is now used in England to denote coadjutor or assistant bishops. A suffragan is appointed in dioceses which have become inconveniently large for single episcopal administration. There are now over thirty suffragan bishops of the Churches of England and Wales.

Suffrage By the Representation of the People (Equal Franchise) Act, 1928, men and women were first put on an equal footing. The following are the conditions under which they can be registered as Parliamentary electors: the individual must be 21 years of age, and have resided for three months in any one constituency or contiguous constituency in the same Parliamentary borough, or have occupied for business purposes land or premises of £10 annual value for the same period.

The qualifications are now the same for both sexes for the Local Govt. franchise.

Degree holders are entitled to be registered for university constituencies.

Great extensions of the suffrage have taken place since 1832 when the first Reform Act was passed. Other extensions took place in 1869 and 1885, and in 1918 women were first admitted to the franchise (*q.v.*).

Sufiism A form of mysticism within or emanating from Islam, but in some ways antagonistic to it. It was founded in the 9th century and its followers were called Sufis or "men of wool" from their monkish garb. The original object of Sufiism was to deliver men from slavery to the passions by destroying the power of the flesh and uniting souls to God by purely spiritual ties. It has flourished chiefly in Persia, and nearly all the great Persian poets, notably Hafiz and Sadi, have been Sufis.

Sugar Generic term for a group of carbohydrate food stuffs present in plant tissues and in milk. The sugars contain carbon, hydrogen and oxygen, and are sweet crystalline substances very soluble in water. There are two groups: the monosaccharoses, having six carbon atoms, include glucose or dextrose found in grape juice and honey, and laevulose also present in honey; the disaccharoses, having twelve carbon atoms, include maltose in malt, lactose in milk and sucrose, the sugar of commerce, present in the sap of the sugar cane and the sugar beet, the latter now producing a large share of the world's supply of sugar.

In Great Britain the beet sugar industry within recent years has been fostered by a state subsidy or bounty. The by-products of both the sugar cane and beet industries are of value and include the waste as fuel and cattle food, molasses, and the well known spirit, rum.

Suggestion The indirect introduction of a thought or impulse into the mind of another (Lat. *sub*, under and *gerere*, to carry). A suggestion may be purely casual and innocent, but the term is frequently used to denote the act of exercising control over a hypnotised subject by communicating some belief or impulse by means of words and gestures, sometimes with malevolent intent. Beneficially employed suggestion in the form of faith-healing has wrought remarkable cures, and phenomena, otherwise inexplicable, have been attributed to it, notably the occurrence of stigmata (*q.v.*).

Suicide Act of killing oneself. In English law it is a felony, and was formerly followed by the barbarous practice of burying the deceased at cross-roads, with a stake driven through the body. At coroner's inquests a verdict of suicide while temporarily insane is commonly returned where the act has been committed as the result of mental derangement, *felo de se* being applied to cases in which obviously sane people have killed themselves. Statistics of suicides vary greatly according to contemporary circumstances, epidemics being fairly frequent. Suicides are steadily increasing in Europe and America. In England and Wales there are approximately between 4000 and 5000 suicides every year.

Suir River of the Irish Free State. Rising in the mountains of Tipperary, it flows past Thurles, Cashel, Clonmel and Carrick until it falls into Waterford harbour. Salmon are found in the river, which is about 90 m. in length.

Sukkur. *See* INDUS.

Sulby Village of the Isle of Man. It is 20 m. from Douglas and is known for the woollen goods which have been made here for a century. The industry was established by two Yorkshiremen. **Sulby Glen** is a beauty spot.

Sulgrave Village of Northamptonshire. With a population of only about 400 it contains the old manor house occupied by the ancestors of George Washington. The house was bought by the British Peace Centenary Committee and presented to the **Sulgrave Institution** (offices, 1 Central Buildings, Westminster, S.W.1.) which, in 1914, opened it as a museum of Washington relics.

Sulina Town, port and naval base of Rumania. Situated on the Sulina, one of the lower branches of the Danube, with a fairway to the Black Sea, it is about 120 m. N.E. of Constanza and has a population of about 8000. It was bombarded by the Russians in the Russo-Turkish War of 1877 There is a considerable export trade in grain.

Sulla **Lucius Cornelius.** Roman commander and dictator. Born 138 B.C. of a patrician family, he became quaestor in 107 under Marius in Africa, and brought about the surrender of Jugurtha. In 93, after distinguishing himself greatly in the Teuton Wars (104-101), he was praetor in Cilicia, returning to Rome in 91 after restoring Ariobarzanes to the throne of Cappadocia. Coming into political conflict with Marius he was expelled from Rome, but returned at the head of his legions and overthrew the Marian party. From 87 to 83 he conducted the Mithridotic War. In 82 he became dictator and introduced many reactionary changes. Retiring in 79 he indulged in reckless debauchery, dying in 78 B.C.

Sullivan **Sir Arthur Seymour.** English composer. Born in London of Irish parentage on May 13, 1842, as a boy he was chorister in the Chapel Royal. He studied music in Leipzig under Moscheles and Reinecke. He wrote many popular songs—including *The Lost Chord*—cantatas, hymns, and other sacred and secular music. He is best remembered through his collaboration with Sir W. S. Gilbert in the composition of light operas, which had, and still have, an enormous vogue, owing to their humorous librettos and tuneful music. The favourite ones are *Trial by Jury*, *H.M.S. Pinafore*, *The Pirates of Penzance*, *Iolanthe*, *The Yeomen of the Guard*, *Patience*, *The Mikado* and *The Gondoliers*. Sullivan died on Nov. 22, 1900.

Sullivan **John Lawrence.** American prize-fighter. Born Oct. 15, 1858, he won the heavyweight championship by defeating Jake Kilrain in 1889, and lost it to James Corbett in 1892. He died Feb. 2, 1918.

Sully **Maximilien de Bethune, Duc de.** French statesman. He was born on Dec. 13, 1560. He was famous as the minister and counsellor of Henry IV. of France. He was a Huguenot, but managed to escape the massacre of S. Bartholomew. On appointment, his first task was the gigantic one of repairing the ruinous financial condition of the kingdom. In this he had a great measure of success. In 1601 he became grand-master of artillery, receiving his dukedom in 1606. After Henry IV.'s assassination, he was obliged to resign. He soon retired from public life, devoting himself to writing his valuable memoirs. He died on Dec. 22, 1641.

Sulphates Name given to a series of salts formed by the action of sulphuric acid upon various bases. Most sulphates are soluble in water, but barium sulphate is insoluble in water and acids, and the sulphates of lead, calcium and strontium are only slightly soluble. Common examples are Epsom salts, Glauber salts, and gypsum.

Sulphonic Acids Name given to a group of compounds formed by the action of strong sulphuric acid upon benzene (benzene-sulphonic acids) or other organic compounds (ethyl and methyl-sulphonic acids). These acids play an important part in rendering organic dyestuffs soluble in water by the process of sulphonation, a stage in the formation of dyestuff intermediates.

Sulphur Non-metallic element having the symbol S, atomic number 16, and atomic weight 32.06. Sulphur is found in the native state as incrustations in volcanic regions, or in crystalline and earthy forms associated with gypsum in clays and marls. The chief natural supplies come from Italy, Sicily, Spain and the United States. Sulphur is obtained also from vat-waste in the Leblanc soda process. It is a yellow, crystalline or amorphous, odourless, tasteless solid, insoluble in water and burning with a blue flame at 260° C. It is used in the manufacture of gunpowder, rubber and fireworks, also in medicine and the preparation of many compounds.

Sulphuric Acid Oil of vitriol. It is made on a large scale in Great Britain and other countries, chiefly from sulphur dioxide. This is oxidised by nitrogen peroxide in the presence of water into sulphuric acid, or sulphur dioxide and oxygen are passed over a catalyst to form sulphur trioxide, which is dissolved in water to form the acid. Pure sulphuric acid is a heavy, colourless, oily liquid having a strong affinity for water, and forms sulphates with bases. The chemical symbol is H_2SO_4.

Sultan Arabic, Turkish and Persian word signifying the ruler of a Mohammedan country. Formerly the chief holder of the title was the **Sultan of Turkey**, who used to call himself the Sultan of Sultans. Now the most prominent sultans are those of Morocco, Johore and Zanzibar, but the term is also applied to many petty Asiatic and African potentates who are little more than tribal chiefs.

Sultana is the name given to wife, mother, or daughter of a sultan.

Sultana Kind of raisin. It is the result of drying in the sun a small white grape grown chiefly near Symrna in Asia Minor. Large quantities are exported and the fruit, light brown in colour, is freely used in pudding and cake making for which its seedlessness is a recommendation.

Sumac **(or Sumach).** Genus (*Rhus*) of small trees and shrubs of the natural order *Anacardiaceae*. It bears small flowers and fruit, and several species have medicinal and other uses, while two are distinctly poisonous. The Venetian Sumac (*R. cotinus*) is often planted as an ornamental shrub. Its twigs and leaves yield the yellow dye known as young fustic. The sumac used in tanning is derived from *R. coriaria*. The Virginian sumac (*R. typhina*) supplies an astringent and refrigerant. Two poisonous varieties (*R. toxicodendron* and *R. venenata*) are familiarly known as poison ivy and poison elder.

Sumatra Island of the Malay Archipelago. The Malacca passage separates it from the Malay Peninsula and the Sunda Strait from Java. It forms part of the Dutch East Indies and is divided into 8 administrative districts. The area is about 178,000 sq. m. and the population about 7,604,974. A range of mountains rising to heights of 7000-10,000 ft. runs along the west coast, and from them the ground slopes to the N.E. where the soil is fertile and sugar-cane, rice, coffee, pepper, tobacco, etc., are freely grown for export. The mountains are heavily forested. There are close upon a hundred volcanoes, a dozen still more or less in a state of activity. Gold is found and coal is worked. The people are mostly Malay Mohammedans. The chief towns are Padang and Palembang.

Sumer Ancient name for southern Babylonia. It is commonly, but falsely, identified with the Biblical Shinar, which, however, represented northern Babylonia. Sumer was the cradle of a very ancient but highly-developed civilisation, reaching back to prehistoric times. Dynasties post-dating the Flood arose at Kish, Ur, Lagash and Larsa,

and important archaeological remains have been discovered at these cities and at Susa. The Sumerians, a non-Semitic people, were the inventors of a pictorial hieroglyphic writing, which was taken over from them and adapted into cuneiform (*q.v.*) by the Semitic invaders who built up the Babylonian empire.

Summary Jurisdiction

Jurisdiction of a court entitled to try and pronounce sentence forthwith on offenders brought before it. The typical court of summary jurisdiction is that of the stipendiary magistrate, but justices of the peace in petty session have powers of summary jurisdiction in relation to minor offences. In more serious cases they can only commit for trial at assizes, at quarter sessions, or in the Central Criminal Court.

Summons In English law a document ordering a person to appear in a court of law to answer a charge. A summons is issued by the magistrates at the request of the police, or a private individual, and must state what is the charge against the person summoned. Other summonses, usually those concerning debts, are issued by the registrars of the county courts. Summonses are issued by the police or by bailiffs of the county courts. *See* WRIT.

Sun The central body of the solar system around which the planets revolve in their orbits and from which their light and heat is derived. The distance of the sun from the earth is about 92,830,000 miles and its diameter is calculated to be 864,000 miles. Its radiating surface or photosphere is finely mottled and in certain positions are to be seen dark sunspots. Above the photosphere is the solar atmosphere whose lower levels are known as the reversing layer. Beyond this lies the bright-red incandescent chromosphere, and above the chromosphere the extremely tenuous gaseous corona, which extends to an enormous distance and is seen only during a total eclipse of the sun.

The study of the absorption bands in the solar spectrum has revealed the presence of about fifty of the chemical elements found on the earth. In this way helium was first discovered from its occurrence in the solar envelopes.

Sun-bathing Exposure of the body to the rays of the sun for reasons of health. The ultra-violet rays of the sun activate the ergosterol (*q.v.*) in the skin, which becomes vitamin D, required for bone formation. In addition they increase the power of the blood to destroy microbes, and tone up the system generally. Sun-bathing, which is of immense benefit in the treatment of rickets (*q.v.*), and lupus (*q.v.*), has become fashionable. Care should be taken, however, not to allow the skin to become too rapidly sun-burnt, and exposure for short periods is desirable at first.

The realisation of the beneficent action of sunlight has stimulated the growth of the Nudist movement—a movement aiming at physical health through the action of sunlight and air on the body, and at psychological well-being through the return to nature and the liberation of the mind from sex-repression and morbid curiosity. Nudist colonies have sprung up widely in Germany and also in Britain and the U.S.A.

Sun Bear (or Honey Bear). Small bear (*Ursus malayanus*) inhabiting forest regions in the Malay Archipelago. It is timid and inoffensive. The fur is short and black, with a lighter patch at the neck. The animal feeds on honey and insects, digging open the mounds of termites and devouring the latter.

Sun-Bird Name for birds of the family *Nectariniidae*. Found in tropical Africa, Asia and Australia, they somewhat resemble the humming birds in small size and the vivid colouration of the males. There is a long tail. The long slender bill and long tongue are adapted to the diet of insects, nectar of flowers, etc.

Sun Bittern South American bird (*Eurypyga helias*) related to the cranes. It frequents the river banks and feeds on insects and fish. About 16 in. long, it has a long neck and beak, the plumage being banded transversely and mottled with black, white and brown. There is another larger species (*E. major*) in Colombia and Central America.

Sunbury Urban district of Middlesex. It is 17 m. from London, on the S. Rly. On Sunbury Common the Metropolitan Water Board has reservoirs. Near is Kempton Park racecourse. Situated on the Thames, Sunbury is a boating centre.

Sunday The first day of the week. It is observed by Christians as a day of rest and worship in commemoration of the resurrection of Jesus Christ. In the early Church, Jewish Christians continued to observe their Sabbath together with the rest of the Mosaic law, but Paul laid down that the Jewish Sabbath was not binding on Gentiles. In A.D. 321 Constantine enjoined Sunday as a day of rest.

There is an Imperial Alliance for the Defence of Sunday and a Lord's Day Observance Society, both with offices in London.

Sunday Closing In Great Britain it is the law that shops and places of amusement must be closed on Sunday, but there are many exceptions. Public houses can legally be open at certain hours in England, but not in Wales. In Scotland each locality decides the question for itself. As regards shops where refreshments and newspapers are sold the law is tacitly broken, and in Jewish quarters Sunday is regarded as the weekly shopping day. As regards places of amusement, the law is that no fees can be charged for admission to an entertainment on a Sunday. Theatrical performances, to which admission is by ticket only, are often given on Sunday.

In the case of cinema houses the local authorities allow them to open on Sunday provided the proceeds are given to charity, although strictly speaking this practice is illegal under an act of 1780. Consequently they are open in some districts, for instance the county of London, but closed in others. In 1932 a measure was introduced to bring uniformity into the law. It was proposed to continue the law as regards theatres, but to alter it as regards cinemas. In its final form the measure allowed the cinema houses to remain open in those districts in which Sunday opening was already the rule. In other districts the local authorities could apply to parliament for permission to open if the inhabitants clearly desired it. The opening hours, however, must not exceed five in the day, and the proceeds, as before must be given to charity, except a part set aside for the support of a film institute. *See* SHOP.

Sunday School Voluntary agency for the religious training of young people. The origin of the Sunday School in its present form is ascribed to Robert Raikes, who, in 1780, gathered a number of poor children from the streets of Gloucester for instruction by paid teachers. The movement thus started grew with remarkable rapidity and in 1803 the **Sunday School Union** was started. The pioneer work of G. Hamilton Archibald has, within the last 30 years or so, brought about great advances in Sunday School methods.

Sunderland County borough and port of Durham. It is situated on the estuary of the Wear, 12 m. north of Durham, and comprises Monkwearmouth and Bishopwearmouth, which face each other on opposite sides of the river. With a good harbour and ample dock accommodation, the borough has important shipping and shipbuilding interests, as well as manufactures of machinery and chemicals. The prosperity of the place is due to its situation on the Durham coalfield, and coal is largely exported. S. Peter's church, at Monkwearmouth, forms part of a 7th century monastery where S. Bede was educated. Pop. (1931) 185,870.

Sundew (*Drosera rotundifolia*). Insectivorous plant found in bogs or marshy hollows on heath or moorland. The leaves form a rosette on the ground radiating on long stalks from the slender root. The margin of the leaf has rows of crimson glandular threads in the rounded end of which a sticky fluid is secreted. This entraps small insects who alight on the leaf and their struggles to liberate themselves irritate the glands which close over the intruders. The leaf margins curve inward imprisoning the insect in a hollow, where it is ultimately absorbed by the plant.

Sundial Instrument by which the time of day is shown from the sun's shadow thrown by an upright upon a flat surface. A simple type of shadow clock appears to have been used in ancient Egypt and a more elaborate sundial was known to other early peoples. In its modern form the sundial consists of a plate or dial marked with the hours and their subdivisions, with a metal upright known as a style or gnomon.

Sun Fish Genus of large bony fishes (*Orthagoriscus*) allied to the globe-fishes. The body is short, deep and compressed, with a very short tail, giving the fish a somewhat disk shaped outline. *O. mola*, sometimes met with in British waters, is 7 to 8 ft. in length. It is widely distributed.

Sunflower Annual and perennial plant, a genus of the order *Compositae*. Sunflowers are of very vigorous growth with erect stems which attain a height of several feet, the flowers being of a brilliant yellow. The perennial varieties spread rapidly, the roots running underground in every direction. The size of the flowers varies from comparatively small blooms, to the giant cottage garden variety, an annual easily grown from seed sown in spring.

Sunium Rocky promontory on the southern extremity of Attica. It was fortified in 413 B.C. against the Spartans, and there still remain the ruins of a temple to Poseidon, built in the time of Pericles, and used as a landmark for ships. It is the modern Cape Colonna.

Sunn Hemp Herb (*Crotalaria juncea*) of the order *Leguminosae*. The flowers, which grow in sprays, are yellow, and similar to the broom. The silvery leaves are long and pointed, covered with fine silky hairs. The plant is a native of India, and the fibre of the inner bark is used commercially.

Sunni Orthodox Mohammedan believer. The sect of the Sunnis (or Sunnites) arose together with others on the death of Mohammed, as he left no authorised successor. The Sunnites derive their name from Sunna, a body of traditional teaching, consisting of rules, regulations and legends, which they ascribe to the prophet. They regard the Sunna as having equal authority with the Koran.

Sun Power Term applied to the suggested utilisation of the sun's heat as a mechanical power. The direct solar heat on the earth's surface is sufficient to raise the temperature of a water film, one centimetre thick, by two degrees Centigrade per minute. A solar engine has been devised for utilising the concentrated solar rays in tropical countries.

Sunspot Black irregular area seen on the photosphere of the sun. Sunspots occur near the equator and their diameter often measures many thousands of miles, although they vary much in size. They consist of a black central nucleus surrounded by a less dark penumbra. Their nature is not definitely known, but one view is that they represent a down-rush of cooler gases from the outer atmosphere of the sun. Their numbers vary but reach a maximum every eleven years.

Sunstone A reddish variety of oligoclase felspar showing a golden sparkle due to the presence of minute scales or spangles of haematite diffused through the mineral.

Sunstroke Form of prostration due to excessive heat usually from the sun. It is common in tropical countries, where Europeans usually cover the head and neck as a preventive. The symptoms include sickness, faintness, headache and dizziness.

Treatment—Remove the patient at once to shade and quiet, loosen the clothing and sponge the face and head with cold water, giving cold water to drink if the patient is conscious, and sal volatile. The head should be kept up, unlike treatment for fainting, as it is necessary to draw the blood away from the brain.

Sun-Worship Ancient cult. By many peoples the sun has been regarded as the supreme deity and source of life. Agricultural peoples particularly have worshipped the sun, in Persia as Mithras, in Egypt as Ra, in Greece as Apollo, and records of sun-worship have been found in Central and South America, India, Japan and elsewhere.

Sun Yat-sen Chinese reformer. He was born in 1867 at Hong-San, Kwantung Province, China, and was the son of a Christian convert. He organised the revolutionary party in 1893, and after many desperate attempts, overthrew the Manchu dynasty, which had ruled China nearly 300 years. He became first president of the republic. In his efforts to establish a democratic form of government and to put China on a new economic foundation, Dr. Sun led his Kuomintang party incessantly against reactionaries who had once joined the revolutionaries and subsequently deserted them. He died in Peking on March 12, 1925.

His most important writings are: *Plans for National Reconstruction, Fundamentals of*

National Reconstruction and *The Three Principles of the People.*

Superannuation *See* PENSIONS.

Superheater Apparatus for superheating steam used especially for supplying turbines as it gives economy of steam and avoids the corrosive action of water upon pistons and valves. In a superheater the steam is heated in passing through straight or looped steel tubes expanded at their ends into headers or tubeplates.

Superior Lake of North America. The largest freshwater lake in the world, it covers 31,800 sq. m. It is 412 m. long and divides Canada from the United States. Into it flow the waters of 200 rivers and the united mass passes by the St. Mary River to Lake Huron and then through the other Great Lakes to the St. Lawrence. The chief port on the American side is Duluth and on the Canadian side Port Arthur; from these ports ships can pass to the St. Lawrence and then to Europe. Around the lake are vast supplies of copper, iron and other minerals.

Supernaturalism Belief in a power or powers transcending the forces of nature. Primitive man probably was devoid of the conception of mechanical causation. Hence his belief in the supernatural would arise from a feeling of awe, occasioned by the unfamiliar and startling in natural objects and events. In this emotion is found the raw material of magic as well as religion, which as it rose to higher planes was mingled with gratitude and changed into reverence. Modern thinkers who retain the notion of the supernatural, do so in the conception of a Divine Creator, who maintains the laws that He has made, without interfering with their operation.

Superphosphate Name given to a fertiliser which is a mixture of calcium hydrogen phosphate and calcium sulphate, prepared by treating phosphorite and bone ash with dilute sulphuric acid. The fertiliser value of superphosphate depends upon the amount of soluble phosphate present, and this varies with the source of the material.

Superstition Irrational fear of the unknown or mysterious. This is often expressed in a disposition to ascribe phenomena which admit of natural explanation to occult or supernatural causes. Many primitive superstitions, beliefs and customs survive in the modern world, *e.g.*, Christmas room decoration is connected with an ancient fertility-rite; and belief in the unluckiness of Friday probably arises from a primitive tabu associated with special days.

Supreme Council Term used for the council set up by the Allies in Paris in 1919. Its business was to see that the terms of the peace of Versailles were carried out and on it were representatives of Great Britain, France and Italy. It ceased to function in about a year. Earlier, in 1917-18, there was a **Supreme War Council.** This met at Versailles and its business was to direct the operations against the Germans, thus establishing a single control.

Supreme Court The highest court of law in England, the United States and some other countries. In England the Supreme Court was set up in 1873. It consists of the High Court of Justice and the Court of Appeal. It sits in the Royal Courts of Justice, Strand, London, and although called supreme there are appeals from it to the House of Lords. In the United States the Supreme Court, with the Chief Justice as president, hears appeals for the courts of the separate states. It sits at Washington and from its decisions there is no appeal. The German republic has a Supreme Court of Appeal that sits at Leipzig.

Surbiton Urban district of Surrey. It is 12 m. from London, on the Thames and is reached by the S. Rly. A residential district for Londoners, it is visited for the boating. Pop. (1931) 29,396.

Surd In algebra a quantity which cannot be expressed by rational numbers. The fifth root of 243 is a surd, as it can only be expressed as $\sqrt{3}$.

Surety Person who guarantees something, usually money, for another person. A person charged with a serious offence will only be released, pending his trial, if he finds sureties that he will appear. The sureties usually bind themselves to pay a certain sum of money, fixed by the magistrates or judge, if the accused fails to appear. *See* GUARANTEE.

Surface Tension Term used in physics for the cohesive force between the particles of a liquid, apparent as a tension in the surface film. Common demonstrations of this property are capillarity (*q.v.*), the movement of camphor on water, and the spherical shape assumed by small drops of liquids and by soap-bubbles.

Surgeon Name used for a medical man who specialises in operations. He goes through the same course of training as any other medical student, but usually includes in his degrees fellowship of the **Royal College of Surgeons.** This dates from before 1369, but in its present form from 1800. The college has a house at 40 Lincoln's Inn Fields, London, W.C., where there is the museum begun by John Hunter. There are royal colleges of surgeons also in Edinburgh and Dublin. Like the English ones these conduct examinations and give degrees to medical students.

Surgery Science of treating disease and accident by cutting and manipulation. It originated with the Greeks and the word means, in Greek, hand-work. It has been a separate study since the days of the Greeks. It was revived by the Arabs about 900, but for nearly 1000 years its methods were very crude. In the 17th century anatomy was seriously studied in France, England, Italy and elsewhere and the modern period began. The greatest of English surgeons was John Hunter. Enormous advances were made in the 19th century, these being rendered possible by the invention of anæsthetics and antiseptics, followed by that of the X-rays.

Surinam River of Dutch Guiana, S. America. Also another name for the colony itself. The river has a course of about 400 m. and flows into the Atlantic Ocean near Paramaribo. It is navigable for small craft for 100 m. The colony has an area of 54,291 sq. m.; pop. (1931) 155,888.

Surplice Outer garment worn by the clergy and choristers during divine service in the Roman Catholic and Anglican churches. It is a loose garment of white linen worn over the cassock or other garments. The surplice worn by the clergy is longer and fuller in the sleeves than the one

worn by the choristers. In the Roman Catholic church the surplice is trimmed with lace. In the Church of England its use became general in the 19th century.

Surrey County of England. Wholly inland, it lies to the south of the Thames and covers 722 sq. m. The northern part is included in the county of London and much of it is a residential area for Londoners. In the south, where the North Downs cross the county, is some very beautiful scenery. Kingston is the county town; other boroughs are Croydon, Wimbledon and Richmond in the London area, Guildford, Reigate and Godalming. Other places are Woking, Epsom, Farnham and Dorking and several urban districts of greater London such as Mitcham and Sutton. The chief rivers are the Wey, Mole, Wandle and Eden. In the county are Virginia Water, Leith Hill, Box Hill, Waverley Abbey, Runnimede, Gatton and other places of beauty and interest. The county is in the dioceses of Southwark and Guildford. It sends seven members to Parliament. Pop. (1931) 1,180,810.

The county has two regiments, the **East Surrey** and the **West Surrey**. The former, formerly the 31st and 70th Foot, has its depôt at Kingston. The latter, known also as the Queen's Royal Regiment, is the old 2nd Foot which was raised in 1661 and was called the Lambs. Its depôt is at Guildford.

Surrogate Deputy or delegate. The term is used for the person appointed by a bishop to issue licences for marriages.

Surtax Term used in the United Kingdom for the branch of the income tax called formerly the super tax. It is levied on all incomes, whether earned or unearned, that are in excess of £2000 a year. On the first £500 above £2000, 1s. in the £ is charged and the scale rises until it is 7s. 6d. in the £ on all income over £50,000 a year. In addition, an additional 10 per cent. was levied in 1931, making the highest rate 8s 3d. in the £. These rates were in force in 1934-35.

The surtax was introduced in 1909 when it was 6d. in the £ on all incomes in excess of £5000 a year. It was greatly increased to meet the expenses of the Great War. The existing scale dates from 1930. In 1935 the surtax produced £51,165,000.

Surtees **Robert Smith.** English novelist. Born in 1803, he is famous for the creation of Jorrocks, a sporting Cockney grocer, who made his appearance in a series of articles, *Jorrocks's Jaunts and Jollities*, written between 1832-34 for the *New Sporting Magazine*, which was founded by Surtees. *Handley Cross*, 1843, is probably the best known of his other works. He died March 16, 1864.

Surveying The art by which the boundaries and size of an area of the earth's surface are determined for purposes of map-making and the various requirements of civil and other departments of engineering. Surveying has many branches; thus in a topographical survey the contour and principal landmarks of a district are noted, a geological survey shows not only the topography but also the outcrops of the geological strata and rocks, a mine survey is concerned with all indications relating to mining, and a hydrographic survey deals with a chart of the sea and other large bodies of water, their depths, currents, coasts and other necessary data. The survey of Great Britain is carried out by the Ordnance Survey.

Surveyor Overseer or supervisor, or person designing and superintending the construction of a building. The term is also applied to some one who inspects and examines, to ascertain condition or value, and is also used for a customs officer who ascertains the quality and quantity of imported merchandise.

Susa Capital city of Susiana (Elam). The chief residence of Darius I. and his successors, it dates from Neolithic times. It has been the scene of much modern excavation, the code of Hammurabi (*q.v.*) being discovered there. It was, until the 14th century, a flourishing district, famous for silk, sugar cane, and oranges, but is now desolate.

There is also a city of Tunisia on the Gulf of Hammamet of this name.

Sussex County of England. In the south-east of the country, it covers 1457 sq. m. and has a coastline of 90 m. on the English Channel between Hampshire and Kent. It is crossed by the hills called the Downs and is a district of great beauty. The chief rivers are the Adur, Arun, Cuckmere, Ouse and Rother. The county is agricultural and famous for its sheep. Lewes and Chichester are the county towns, but the largest are the watering places on the coast, Brighton and Eastbourne. Others are Hastings, Hove, Worthing, Seaford, Bexhill, Littlehampton and Newhaven as well as Winchelsea and Rye. Inland are Horsham, Midhurst, Arundel and Hayward's Heath. The county contains Petworth and Goodwood; Battle Abbey and Chanctonbury Ring, Pevensey and Hurstmonceaux. It is divided into two counties, east and west, each with its own county council. Six members are sent to Parliament. The county is in the diocese of Chichester. Pop. (1931) 770,078.

There was an Anglo-Saxon **Kingdom of Sussex** from about A.D. 470-825, when the South Saxons submitted to Wessex.

The **Sussex regiment**, is the 35th and 107th of the line. It was raised in 1701 and has been a royal regiment since 1882. The depôt is at Chichester.

Sussex **Duke of.** Title borne by the sixth son of George III. He was Augustus Frederick, created duke in 1801. He married Lady Augusta Murray and their children were named d'Este. Before his time there had been an earldom of Sussex, held from 1529 to 1641 by the family of Radclyffe; from 1644 to 1671 by the family of Savile and from 1717 to 1799 by the family of Yelverton.

Sustentation Maintaining or supporting. It is chiefly used in the Church of Scotland and other Presbyterian churches. These have a **sustentation fund** from which payments are made to support the ministers of the church. The principle is that the richer churches pay more than they receive, and the poorer ones receive more than they pay.

Sutcliffe **Herbert William.** English cricketer. Born at Summersbridge, near Harrogate, Nov. 25, 1894, he first played for Yorkshire in 1914. In 1924, having made a great reputation as a batsman, he went to Australia and in the succeeding test matches, down to 1930, with one or two exceptions, he and Hobbs opened the batting for England in a partnership that has become historic. His batting averages in test matches are unique; in 1930 it was 87.2 and he has scored seven centuries against Australia. In 1930 he scored 3006 runs, and in each season since 1919 he

has exceeded 1000. In June, 1932, Sutcliffe and Holmes established a record by scoring 555 runs in a first cricket partnership for Yorkshire against Essex, Sutcliffe's score being 313. With the M.C.C. team he went to Australia in 1932-33. In 1935 he was second to Hammond in the batting averages.

Sutherland Duke of. Scottish title borne by the family of Leveson-Gower. The title of Earl of Sutherland, a very old one, was inherited in 1766 by Elizabeth Gordon who married **George Granville Leveson-Gower.** In 1803 he became Marquess of Stafford, and in 1833 was created Duke of Sutherland. His successor, **George,** who became the 5th duke in 1913, was a member of the Unionist Government, and took a special interest in the Air Force. The duke owns a great deal of land in Sutherlandshire where he has a splendid seat, Dunrobin Castle. His London house is now the London Museum.

Sutherlandshire County of Scotland. It covers 2028 sq. m. in the far north of the country, with the sea on three sides. The coast is very much indented and to the south is Ross and Cromarty. A very mountainous area, it has several peaks over 3000 ft. high and a number of lochs, Shin being the largest. The soil is unfertile, much of it being only suitable for sheep rearing, deer forests and grouse moors. Its rivers include the Oykell, Helmsdale and Brora and the county includes many islands. Dornoch is the county town; other places are Golspie, Tongue, Lochinver and Bettyhill, all on or near the coast. With Caithness it sends one member to Parliament. Pop. (1931) 16,100.

Suttee (or **Sati**). Hindu custom by which the widow of a dead man flings herself on his funeral pyre and is burned to death. It was prohibited by law in 1829. The word is derived from the Hindu meaning "virtuous wife."

Sutton Urban district of Surrey. It is 13 m. from London, on the S. Rly., while it is connected with Wimbledon by another line. A feature of the town is the long High Street, which is part of one of the main roads to Brighton. Since 1927 the urban district has included Cheam. Pop. 46,488.

Sutton Bridge District of Lincolnshire. It is on the Nen, near the Wash, 7 m. from Wisbech and is a river port and a railway junction. Near is Long Sutton, a town with an old and beautiful church. Pop. (1931) 2837.

Sutton Coldfield Borough of Warwickshire. It is 8 m. from Birmingham and 117 from London, on the L.N.E. and L.M.S. Rlys. The grammar school dates from the 16th century. **Sutton Park** is a large and picturesque open space. The industries include the manufacture of hardware, and there is a trade in farm produce. Near the town is a moated mansion of the 13th century called New Hall. Pop. (1931) 29,926.

Sutton Courtenay Village of Berkshire. It is 2 m. from Abingdon and quite near the Thames. There is an old church restored and a 14th century manor house.

Sutton-in-Ashfield Urban district of Nottinghamshire. It is 140 m. from London and 15 from Nottingham, on the L.N.E. and L.M.S. Rlys. The industries are coal mining and hosiery making Pop. (1931) 25,151.

Sutton-on-Sea Pleasure resort of Lincolnshire. It is 28 m. from Boston and 135 from London, on the L.N.E. Rly. There are excellent sands.

Suture Term applied to the immovable articulations between the bones of the skull and face. Usually the edges of the bones are very irregular, the projections of one dovetailing into the indentations of the other, giving rise to a zigzag line of union. In some, however, the edges overlap forming a squamous suture.

Suvla Bay Inlet of the west coast of the Gallipoli Peninsula, where the Gulf of Saros joins the Aegean Sea. On Aug. 6, 1915, a British force was landed here as a part of an allied offensive against the Turks. It was hoped that this force would succeed in taking the Anafarta Hills and link up with the Australian forces on its left. Difficulties of transport and water supply as well as casualties due to dysentery caused the failure of this plan. The position was successfully evacuated on Dec. 20.

Swadlincote Urban district of Derbyshire. It is 5 m. from Burton-on-Trent and 126 from London, on the L.M.S. Rly. In the urban district are Stanton and Church Gresley. Coal mining is the principal industry. Pop. (1931) 4302.

Swaffham Market town and urban district of Norfolk. It is 116 m. from London, on the L.N.E. Rly. The town is an agricultural centre. Pop. (1931) 2783.

Swahili Coast people of E. Africa. Derived from Arabic meaning "the coast," the name is applied to the Bantu tribes who have become intermixed with others of African and Arab blood in the coastal area from Somaliland to Mozambique. The word is also used for their language, now understood over a considerable part of Central and E. Africa.

Swakopmund Town of S.W. Africa, on Walvis Bay, at the mouth of the River Swakop, which flows for a length of 240 m. Under German rule, Swakopmund was the port of S.W. Africa, but with its administration as mandated territory, the port of Walvis Bay is beginning to develop. There is a good harbour, and whaling and fishing are carried on. British, Dutch and German steamers now call at the mail port of Walvis Bay, and Swakopmund has been permanently closed as a port.

Swale Name of two rivers in England. The Yorkshire Swale rises in the N.W. of the county, about 4 m. from Kirkby Stephen, and passes by Richmond until it reaches the Ure. It is 60 m. long and the district through which it passes is called **Swaledale.**

The Kentish Swale is a branch of the Medway. It divides the island of Sheppey from the mainland, is 16 m. long and flows from Queen borough to Whitstable.

Swallow Migratory passerine insectivorous bird (*Hirundo rustica*) of the family *Hirundinidae.* It is allied to the martins (*q.v.*), and like them characterised by the short, wide beak, forked tail and long, narrow wings. Widely distributed through the Old World, it visits Britain during the summer months, making its nest of mud and grass, straw, etc., in the roofs of barns, outhouses or other buildings. The male is steel-blue on breast and upper parts, chestnut on throat, and whitish beneath.

Swallow-Hole Small cave, which forms the entrance to the underground channel of a stream and is made by the corroding action of naturally acidulated water. These swallow-holes are mostly found in chalky and limestone districts.

Swallow-Wort Perennial herbaceous plants of order *Asclepiadaceae*. Mostly climbers, they are native to America. Some are used medicinally, and the young shoots of others are cooked and eaten. *A. tuberosa* yields a remedy for pleurisy. The blood-flower, *A. curassavica* is used to expel tapeworms.

Swan River of W. Australia. It flows from the Darling Mountains to the Indian Ocean. Fremantle is situated at its mouth and Perth 60 m. up the river.

Swan Genus (*Cygnus*) of large aquatic birds, widely distributed. Of the family *Anatidae*, they are related to the geese, etc. The mute swan (*C. olor*) one of three species which come to Britain in winter, is the tame swan of our rivers and lakes, having become naturalised in the course of some centuries. It is entirely white, the bill orange with black basal patch and tubercles. The neck is long and curved, the legs short, the body about 54 in. long. The young cygnets have greyish brown plumage for the first year.

Swan **Sir Joseph Wilson.** English physicist and electrician. Born in Sunderland, 31st Oct., 1828, his name is chiefly associated with electric lighting and photography. In 1860 he produced the first carbon electric lamp, a scientific curiosity at the time, but paving the way for Edison's later improvements. He was the first to produce photographic dry plates and bromide printing paper. A miner's electric safety lamp, and improvements in the process of electro-plating are likewise owing to his inventive genius. He was knighted in 1904, and died May 27, 1914.

Swanage Seaport, pleasure resort and urban district of Dorset. It stands on Swanage Bay, 131 m. from London by the S. Rly. An object of interest is a great globe, a geographical sphere of the world weighing 40 tons. Near Swanage are the Tillywhim caves and Corfe Castle. Pop. 6276.

Swan Mussel Fresh water bivalve mollusc (*Anodonta cygnea*). It is common in ponds and rivers, where it rests half-buried in the mud. It is 4 to 5 in. long. The larval form (*glochidium*) is parasitic on fish, becoming encysted on the host. When metamorphosis is completed the mussel leaves its temporary host.

Swansea County borough of Glamorganshire, Wales. It is situated on the bay of the same name, 45 m. W. of Cardiff. Tinplate is an important manufacture; various metals are smelted; and oil is refined. The deep-blue **Swansea ware,** exquisitely decorated with paintings of flowers and birds, is well known. There are ruins of a 14th century castle. Important buildings include the University College, the Royal Institution, and an art gallery. There are many seamen's and other benevolent institutions. Mumbles Head is a promontory at the western end of Swansea Bay. Pop. (1931) 164,825.

Swaraj Term consisting of two Hindu words which together mean "self-mastery" or "self-government." Since about 1920 it has been accepted by the Indian Nationalists to express their aim of self-government for India. The desire for Swaraj was greatly stimulated by the Indian share in the European War. There have been in India three parties in the nationalist movement: (1) political extremists who virtually boycotted the Montagu-Chelmsford reforms; (2) a moderate party working with the government in the reforms, but with the same ultimate end in view as (1); and (3) Gandhi and his party, whose aim is the strengthening of national character.

Swarthmore Borough of Delaware County, Pennsylvania. It is the site of Swarthmore College, founded in 1864 by the Society of Friends, and of the Swarthmore Press from which much of the society's literature is issued.

Swastika Religious emblem or symbol. It consists of a Greek cross with the ends of the arms bent to right angles. Sometimes it is enclosed in a circle. The swastika originated in India or China and was a mystic symbol amongst the Buddhists, who still use it. It is also used by the American Indians. In Europe it was used as a decorative figure in the Middle Ages. In Germany the Nazi party under Adolf Hitler have adopted the swastika as their symbol. To them it stands for Aryanism against Semitism.

Swaziland British protectorate of S. Africa, enclosed by the Transvaal, Natal, and Portuguese E. Africa. The western part is high and healthy, but the climate of the lower eastern regions is trying to Europeans. Cattle and sheep are raised and wheat and maize are among the crops grown. Minerals mined include tin and gold. There is a resident commissioner, the ultimate authority being the High Commissioner for S. Africa. Swaziland is 6704 sq. m. in area. Pop. 133,500.

Sweat Term applied to the perspiration or exudation of moisture from small glands in the skin. The sweat gland apparatus acts as a means of regulating the heat of the body as the evaporation of moisture from the skin removes a great amount of bodily heat, especially when the air is hot and dry.

Sweating System which began in the early 19th century, and was due to contractors sub-contracting in certain trades, particularly ready-made clothing. It meant that poor people worked long hours for extremely poor pay, usually in their own overcrowded homes, and as it was chiefly temporary work, there was difficulty in getting these workers to band themselves together, and demand better conditions. These, however, have been gradually obtained by the establishment of Trade Boards (*q.v.*) and by the spread of mass production methods, which has rendered sub-contracting unprofitable. Sweating has now almost ceased to exist in England.

Sweating Sickness Epidemic disease which spread over the greater part of Europe during the 15th and 16th centuries. It first appeared in England in 1485, when 20,000 persons died from the disease in London. It was characterised by excessive perspiration, high temperature, and a severe form of eczema, and was usually fatal.

Swede **(or Swedish Turnip).** Large variety of turnip. Its leaves are smooth and bluish, and spring from a collar or neck at the top of the root. It is an important root crop, being fed to cattle, and there are several varieties which are cultivated in the kitchen garden. *See* TURNIP.

Sweden Country of Europe. In the north-west of the continent, it is part of the district called Scandinavia. It covers 173,000 sq. m. and has a long sea coast on the Baltic. Its land boundaries are over 1000 m. with Norway on the west and a shorter one with Finland. The country is hilly in parts, but never mountainous, and the soil is fertile. It contains some great lakes, Wener covering over 2000 sq. m. Stockholm is the capital and the largest place. Next in size are Goteborg and Malmo. Pop. (1931) 6,162,446.

Sweden is agricultural and produces oats, wheat, rye, etc. Cattle and sheep are reared, and the fisheries are of considerable value. It is rich in minerals, especially iron ore, of which a great deal is exported. Its forests afford much timber which is turned into pulp and paper. The manufactures include textiles, machinery, chemicals, clothing and matches. Electric power is abundant and well developed.

Sweden is ruled by a king and a diet, or parliament, of two houses. The upper house consists of 150 members elected by the provinces and towns for eight years. The lower house consists of 230 members elected for four years by universal suffrage. The executive is in the hands of a council of state under a prime minister. The State Church is Lutheran. There is an army raised by compulsory service, a navy and a small air force. The country has a State Bank. The unit of currency is the krona, worth normally 1s. 1½d.

Sweden became a kingdom about the 10th century and a little later its inhabitants accepted Christianity. It contained two races, the Swedes proper and the Goths, but after a time they were united. The early kings included S. Eric and a conqueror called Birger, and for a time the kingdom was united with Norway. In 1397 it came under the same ruler as Denmark and Norway and for over a century there were struggles with its Danish overlords. In 1523 Gustavus Vasa succeeded in driving out the Danes, and was himself chosen king, this event marking the beginning of modern Sweden.

In the 17th century Sweden under Gustavus Adolphus and then under Charles XII., was one of the great powers of Europe, a position due chiefly to military strength. Extensive conquests were made, but they were not kept, and the rise of Russia deprived Sweden of her dominant position among the Baltic states. In 1810 Napoleon secured the choice of his marshal, Bernadotte, as heir to the childless king, Charles XIII., and in 1818 Bernadotte became king as Charles XIV. He ruled also over Norway, which was united with Sweden from 1814 to 1905. In 1907 Gustavus V., a descendant of Bernadotte, succeeded his father Oscar II., as king. Sweden is a member of the League of Nations. The economic depression following the World War was reflected in the great industrial crisis of 1921-2. The temperance question led to the rise of a coalition government, 1926-28. The present Socialist Ministry assumed office in 1932.

Swedenborg **Emanuel.** Swedish scientist, philosopher, and mystic. He was born in Stockholm on Jan. 29, 1688. The son of the Bishop of Skara, he was educated at Upsala University, subsequently travelling widely. Charles XII. made him assessor in the College of Mines, and he published many scientific works. From his 55th year onward, he devoted his time solely to spreading the tenets of the New Jerusalem Church, of which he was the founder, living alternately in Stockholm, London and Amsterdam. He was never married. He died in London, Mar. 29, 1772.

Swedish Drill Form of physical training, also called "free movements," first used in Sweden. It is now in use in Britain and other countries, in the army, navy, police force, and, in a modified form in schools. No apparatus is needed.

Sweepstake Form of gambling, in which chance or skill wins the combined subscriptions of the competitors. The commonest form is organised on horse races, in which the horses are drawn by lottery, the prize money being distributed to the winners according to the placing of the horses in the race. As lotteries, sweepstakes are illegal in England, but the London Stock Exchange Sweep is organised by means of a "mutual subscription" confined to members of a "private club." The Calcutta Sweepstake on the Derby is another private sweep, limited to members of the Royal Calcutta Turf Club, but shares in tickets can be obtained through members. Sweepstakes on a large scale have recently been organised by the Irish Free State. A proportion of the money subscribed is earmarked for Irish hospitals, and the sums yielded have been substantial. It is illegal to sell Irish sweepstake tickets in Britain, and the results of the sweepstake must not be announced in British newspapers.

Sweetbread Term commonly used to denote certain glands of animals when used for food, notably the pancreas, or stomach sweetbread, and the thymus, or breast-sweetbread.

Sweetbrier (*Rosa rubiginosa*). Species of rose of shrubby growth, with prickly stems and serrated leaves. The small rose-pink flowers are single and borne in small sprays, followed by red or orange hips in the autumn. The familiar fragrance of the sweetbrier is produced by the exudation of a sticky substance covering the under side of the leaves.

Sweet Flag Perennial herbaceous plant (*Acorus calamus*), of the order *Araceæ*. It grows in marshy places, and has long sword-shaped leaves and flowering stem. At the end of the latter is the spathe from which arises the spadix with its numerous yellow flowers. The aromatic root-stock has been used in medicine.

Sweet Pea Annual leguminous plant (*Lathyrus odoratus*) cultivated for its handsome flowers. The stem is weak and needs some supporting structure to which it can attach itself by its tendrils. The butterfly-like blossoms, are borne in clusters of two to four on long stalks, the colours including white and tints of purple, maroon, cerise, pink and red. Large blossoms and good clusters are obtained by limiting the plant to a single stem.

Sweet Potato (or Batata). Perennial herbaceous plant (*Ipomaea batatas*) belonging to the order *Convolvulaceæ*. It has a long trailing stem and large funnel-shaped white and purple flowers. A native of S. America, it is grown in many warm countries for its edible tubers, and is cultivated elsewhere as a green-house plant.

Sweet William Perennial herb (*Dianthus barbatus*) of the order *Caryophyllaceæ*. A popular garden plant, it is treated as a biennial, and propagated from seed and by cuttings. The flowers are

borne in a cluster at the top of the stem. Many varieties have been evolved by horticulturists in recent years.

Swift Insectiverous, gregarious, bird (*Cypselus or Micropusapus*) of Europe, Asia and Africa, a summer visitant to Britain. Sometimes confused with the swallow, to which it bears a superficial likeness, it is 7 in. in length with long narrow wings, and forked tail. The claws are curved and hook-like, enabling the bird to cling to walls, etc. It is almost continually on the wing during daytime, and only perches at night. The nest, placed usually under the eaves, is made of straw, grass, etc., cemented together with saliva. The swift's plumage is sooty black, with a greyish white throat patch.

Swift **Jonathan.** English author. Born in Dublin of Yorkshire parentage on Nov. 30, 1667, he was educated at Trinity College, Dublin. The revolution of 1688 drove him to England, where he became secretary to Sir William Temple, under whose roof he met "Stella" (Hester Johnson), and wrote *The Tale of a Tub*, his most original satire. Ordained 1694, and holding Irish benefices, he divided his time between Ireland and London, where his gifts as a satirist made him a valuable ally of the Tory party. In 1713 he was made Dean of S. Patrick's, Dublin, and from there he wrote the famous *Drapier Letters*, inveighing against the grant of a patent to William Wood, secured by dubious means, for supplying a copper coinage to Ireland. In 1726 he wrote *Gulliver's Travels*, a satire on parties and statesmen, now a classic of children's literature. He died on October 19, 1745.

Swilly Sea lough, or lake, of Ireland. It is in Co. Donegal and extends for about 25 m. into the land. It is 4 m. wide at the entrance and forms a good harbour.

Swimming Self-propulsion in water. As a pastime it has developed greatly in recent years. Competitions for speed, fancy diving, back strokes, etc., have figured prominently in the Olympic Games. The recognised speed stroke was formerly the trudgeon, but this has been superseded by the crawl. America, with such champions as Weissmuller, among men, and Miss Ederle, among women, has generally held the first place, but various records have been held by Arne Borg of Sweden, Taris of France and J. Medica, U.S.A. The Channel has been crossed many times since Webb's pioneer effort, in Aug., 1875.

Swinburne **Algernon Charles.** English poet and critic. Born in London, April 5, 1837, he passed much of his childhood in Northumberland. He was educated at Eton and Oxford, and in early life was intimately associated with Rossetti and William Morris. In 1864 appeared his *Atalanta in Calydon*, considered to be his finest work. His first volume of *Poems and Ballads*, published in 1866, excited storms of adverse criticism. Many of these poems, as well as some of his later works, such as *Songs Before Sunrise*, contain passages which have been considered too erotic, but they show consummate artistry and a wonderful sense of rhythm. He also wrote plays, critical essays, studies, and pamphlets. He died April 10, 1909.

Swindon Borough and market town of Wiltshire. It is 77 m. from London, on the G.W. Rly. Old Swindon is a market town with a corn exchange. Below is New Swindon which grew up after 1840 around the works established here by the G.W. Rly. Most of the inhabitants work on the railway, but there is quarrying and an agricultural trade at Old Swindon. Coate Reservoir, a large artificial lake near the town, covers 80 acres. Pop. (1931) 62,407.

Swine Fever Three infectious and incurable diseases affecting pigs, having certain characters in common. They are of bacterial origin and comprise a form of pneumonia, a septic type of gastro-enteritis, and hog-cholera. When an outbreak occurs, notification must be made and the animals destroyed.

Swinton Market town and urban district of Yorkshire (W.R.). It is on the Don, 10 m. from Sheffield, and is a junction on the L.M.S. Rly. It is also a river port. There are some manufactures and around are coal mines. Pop. (1931) 13,925.

Swinton District of Lancashire. It is 4 m. from Manchester, on the L.M.S. Rly., and is part of the urban district of Swinton and Pendlebury. It has large engineering works and cotton mills. Pop. (1931) 32,761.

Switchboard Term in electrical engineering for the assembly of switch gear including switches, pressure gauges, ammeters, rheostats and cut-outs. A switchboard provides the proper isolation and protection of the apparatus, also control of the current, the various appliances being mounted usually on a slate or marble panel in a steel framework.

Swithun English saint, also called Swithin. Born about 800, he became a priest and tutor to Ethelbert, the future king. In 852 he was made Bishop of Winchester and there he died in 862. He was canonised and is commemorated on July 15. It is a common belief that if it rains on that day it will rain for 40 days afterwards; alternatively if it is fair, it will continue so. The legend is that in 971 the removal of the saint's body to the cathedral was delayed for 40 days owing to heavy rain.

Switzerland Country of Europe, lying between France and Austria, Italy and Germany. It has an area of 15,940 sq. m. Politically it consists of a confederation of 25 cantons, each with its separate government, and with a Federal Council over the whole. German is the language of 19 of these cantons, French of 5, and Italian of one only, Ticino. Berne is the federal capital, and the largest cities are Zurich, Bâle, Geneva, Lausanne.

The country has been called the playground of Europe because of the hosts of visitors who go there for its beautiful scenery and for winter sport. It is also much visited for health reasons, especially by tubercular patients. Thus hotel-keeping may be reckoned as an industry. Besides this, the principal one is agriculture, and especially the production of cheese and condensed milk. Manufactures include watches and clocks, chocolate, and such handicrafts as embroidery and wood carving.

Electricity is cheap and easily produced by the many mountain torrents and falls. Tram and railways systems are excellent, and the state education is on a very high level. Pop. (1930) 4,067,305.

Sword Offensive weapon. It consists of a steel blade with one or two cutting edges, and fitted with a hilt for grasping. A

sword is used for cutting or thrusting or for both. Ancient swords were usually short with a broad pointed blade, but in mediaeval types the sword was long and often cross-hilted. Two-handled swords of considerable length were also used.

Sword Dance Scottish Highland dance performed by a single dancer over crossed swords lying on the ground and accompanied on the bagpipes. It is also a folk dance.

Sword Fish Ocean fish of the family *Xiphidae* of the bony fishes, found in the Atlantic, Pacific and Mediterranean. From 3 to 14 ft. long, it is fierce and powerful, with a sword-like prolongation of the upper jaw which serves as a weapon to transfix the other large fish which form its prey. The European species, *Xiphias gladius*, is seen occasionally in British waters.

Swords Town of Co. Dublin, Irish Free State. It is 8 m. from Dublin, on the Gt. Northern (Ireland) Rly. There is a round tower here, as well as ruins of a castle and an abbey.

Sybaris Ancient city of Italy. It stood on the west side of the Gulf of Tarentum and was founded by Greek colonists about 720 B.C. During the next 200 years it was a very wealthy place and its citizens lived in such luxurious fashion that the term sybarite has since been used for a person who surrounds himself with an unusual amount of comfort and luxury.

Sycamore Large timber tree (*Acer pseudo-platanus*) of the order *Araceae*. It has long been naturalised in Britain, and is grown as an ornamental tree in parks. The firm, close-grained wood is used for toys, turnery, printing type and furniture. The sycamore grows to a height of 60 ft. or more. The large serrated leaves are five lobed. The clusters of drooping greenish flowers appearing in May are succeeded by winged fruit.

Sydenham District of London. It is about 8 m. S. of the city, in the borough of Lewisham. It is reached by the S. Rly., and contains the Crystal Palace on Sydenham Hill.

The title of **Baron Sydenham** was borne, 1840-41, by Charles Edward Poulett Thomson. He was President of the Board of Trade 1834-39, except for a few months, and Governor-General of Canada 1839-41. He died Sept. 19, 1841, when his title became extinct. In 1913 the soldier, Sir George Sydenham Clarke, was made **Baron Sydenham**. He was Governor of Victoria, 1901-04, and of Bombay, 1907-13, and is an authority on imperial defence.

Sydney Capital of New South Wales. The oldest town in Australia, built around Port Jackson, it has one of the finest harbours in the world. It is connected by rail with Queensland, Victoria, its own neighbourhood, and the fertile plains inland of the precipitous Blue Mountains. The city proper covers 3244 acres, and is surrounded by 40 municipal areas scattered over 180 sq. m. around the harbour, the suburbs extending to the ocean beaches.

There are some narrow streets, but considerable improvements have been made and many excellent modern buildings exist, including banks, shops and business offices. Notable buildings include Government House, overlooking the harbour, the University and Parliament House. There are many parks and open spaces, including the Domain, Hyde Park, Moore Park, Centennial Park and the Agricultural Show grounds, while around the harbour are numerous reserves.

The city is the banking, commercial and shipping centre of the country, in direct communication by steamer with most maritime countries. The famous bridge, opened March 19, 1932, provides direct rail and other communication between the city and the northern shore of the harbour, avoiding the previous long detour. It has a broadcasting station (31.28 M., 20 kW.). Pop. (1931) 1,256,230.

Sydney City and seaport of Nova Scotia. It is on Cape Breton Island, 277 m. from Halifax, and is a terminus of the C.N. Rly. It has a fine large harbour from which coal is shipped. There are iron and steel works. Steam ferries cross the harbour, and steamers sail regularly to Newfoundland. From 1784 to 1820 Sydney was the capital of Cape Breton Island, then separate from Nova Scotia proper. Pop. (1931) 23,089.

Sydney Mines Town of Cape Breton Island, Nova Scotia. It stands on the north side of Sydney Harbour, 10 m. from North Sydney, on the C.N. Rly. It is a coal mining centre and has blast furnaces. Pop. (1931) 7,769.

Sykes **Sir Tatton.** English sportsman. He was born in 1772, educated at Westminster and Oxford, and started life as an attorney's articled clerk. In 1803 he took up sheep farming, continuing it with great success for 58 years. He is best known in connection with the Turf, as he was one of the largest breeders in the kingdom, having upwards of 200 horses and mares in his stud farm. He frequently rode his own horses to victory. Although he attended only one Derby, he saw 74 St. Legers. He died March 21, 1863.

Syllogism Argument expressed in logical form. It should contain three, and not more than three, propositions, the first two being the premises and the last the conclusion. It contains also three terms; the major, the minor and the middle. An example is:

All birds are winged creatures,
Swallows are birds
Therefore swallows are winged creatures.

In this swallows is the major term, winged creatures is the minor term and birds is the middle term. The propositions of a syllogism may be either universal or particular, affirmative or negative. "All men are liars" is a universal affirmative. "No horses are men," is a universal negative. "Some men are fools," is a particular affirmative.

Symbiosis An intimate association between dissimilar organisms among plants and animals for their mutual benefit. The best known example among plants is the lichen which consists of an association between an alga and a fungus, each being essential to the other and forming a composite plant.

Symonds **John Addington.** English writer and poet. Born in Bristol, Oct. 5, 1840, he was educated at Harrow and Oxford. He won the Newdigate Prize in 1860, and became Fellow of Magdalen College in 1862. He was specially drawn to Italian literature, his first book being on Dante, published in 1872; this was followed by *The Renaissance in Italy*. He also wrote books of travel, monographs on Michelangelo, Shelley, Philip Sidney and Ben Jonson, as well as many miscellaneous works. He died April 19, 1893.

Symphony Ancient term used by the Greeks for a general conception of concord in music. In the 17th century the term was employed to describe certain vocal compositions accompanied by instruments, for example, those of Schütz. Later, it became a kind of sonata for orchestra, having analogy with an operatic overture. A breaking away from the overture was begun by Mozart and Bach.

Synagogue Meeting place for Jewish worship. Its origin is obscure. There is no certain reference to the synagogue in the Old Testament, but in the time of Christ it was already an old-established and wide-spread institution (Acts xv. 21) not only in Palestine but throughout the Dispersion. Probably it arose during the Exile, when the Jews were unable to maintain their customary religious observances.

Syncopation Term in music originally signifying displacement of the accent of a beat. Thus a note will commence on an unaccented, and continue with an accented beat. To the practice of this, initiated by Gershwin and others, we owe the present vogue for syncopated music, popularly known as "jazz."

Syncope Severe form of fainting due to the sudden failure of the heart's action. In the case of organic disease of the heart or lungs it may prove fatal. It is sometimes the first indication of organic cardiac disease and it may be necessary to apply electrical treatment, artificial breathing, or subcutaneous injection of ether or brandy.

Syndicalism Term used early in the 20th century for a development of the Labour movement. It aimed at the elimination of the capitalist and the control of industry by syndicates or workers. It originated in France and its principles are set out in the writings of G. Sorel.

Synge **John Millington.** Irish dramatist. Born at Rathfarnham, near Dublin, on April 16, 1871, he was educated at Trinity College, Dublin. He had an unusually deep insight into the character of the Irish peasantry, and wrote a series of remarkable plays illustrative of their life and their feelings. *The Playboy of the Western World* is considered by many to be the greatest of these plays. Others are *In the Shadow of the Glen*, and *The Well of the Saints*. In 1904 he founded the Abbey Theatre, Dublin, in conjunction with Lady Gregory and W. B. Yeats. He died on March 24, 1909.

Synod Ecclesiastical assembly. In the Presbyterian Church the Synod stands above the local presbyteries and is subject to the General Assembly.

Syphilis Infectious and contageous disease transmitted chiefly by sexual intercourse, but also by contact with some medium contaminated by the virus. The micro-organism responsible for this disease is the bacterium, *Spirochoete pallida*, and the first symptom, which appears about three weeks after infection, is the appearance of a small pustule which passes into a hardened ulcer or chancre. Special treatment over a period of two years is essential if the disease is to be radically cured.

Syracuse Seaport and city of Sicily, on the east coast. Founded about 732 B.C., it was one of the earliest and most important Greek cities in Sicily. It early established a joint land and sea power, securing lasting dominance over the south-east coast. Captured by the Romans, 212 B.C., it became an important Roman provincial town, but was destroyed by the Saracens A.D. 878. The modern city has a cathedral and an amphitheatre. There is a trade in salt, wine, olive oil and fruit. Pop. (1931) 50,320.

Syria State of W. Asia. Bounded on the N. by Turkey, on the S. and E. by Palestine, Transjordan and Iraq, and on the W. by the Mediterranean, it comprises the republic of Syria and the Lebanon, and the states of the Alonites and Jebel ed Druz. Cereals, leguminous crops, and fruits are widely grown, and tobacco is a valuable crop, especially around Latakia. The white mulberry is grown for silkworms in the north. Exports include silk, cattle, sheep, goats, fruits, tobacco and wool. Besides the capital, Damascus, Aleppo, Beirut and Homs are important towns. Modern Syria covers some 60,000 sq. m. Pop. about 3,000,000.

The region to which the name Syria has been applied has varied at different periods. The Syria of ancient times stretched along the Mediterranean from Egypt as far as the Taurus. It passed from Egypt to Assyria and to Persia, and from 64 B.C. until A.D. 634 was part of the Roman Empire. After being occupied successively by the Saracens and the Seljuks, Syria remained, with a short interval, in the hands of the Ottoman Turks from 1516 until 1918, when they were expelled by the British. In 1920 French interests in Syria were recognised by the assignation of a mandate for the country to France. A revolt of the Jebel ed Druz from 1925 to 1927 led to its inclusion in the republic of Syria.

Syringa Genus of deciduous shrubs of the order *Oleaceae*. It includes the common lilac (*S. vulgaris*). The name is popularly applied to the mock orange, a shrub of the order *Saxifragaceae*, which bears panicles of fragrant creamy white blossoms.

TAAL Name for the form of the Dutch language spoken in South Africa. It is lacking in both inflexions and gender, and in it are some English and French words. There is a Taal literature.

Tabard Cloak worn by heralds. On it the arms of the sovereign are displayed. The word is also used for a similar cloak worn by the trumpeters of the Life Guards and Royal Horse Guards. The **Tabard Inn** at Southwark, from which Chaucer started his pilgrims on their way to Canterbury, has been pulled down.

Tabernacle Recess in which an image is placed, generally over church doorways. The figures in the tabernacle were usually built in, not detached. The Hebrew **Tabernacle** was a portable sanctuary set up by Moses for the worship of Jehovah in the wilderness (Ex. xxv.). It was formed of curtains and divided into two parts, the holy place, and the "holy of holies," in which was the ark of the covenant.

The **Feast of Tabernacles** is an autumn festival of the Hebrews. It begins on the 15th of Tishri and lasts seven days, commemorating the dwelling of the Israelites in booths in the wilderness.

Tableland Stretch of land that, although level, is raised above the surrounding country. The Deccan in India is an example. Another word for it is plateau.

Table Mountain Mountain of South Africa. It is at the end of the Cape of Good Hope, near Capetown. It is 3600 ft. high and was first climbed in 1503. A great fire in Dec., 1935, destroyed much of the beautiful forest on the slopes of the mountain. **Table Bay** is the name of the arm of the sea which it overlooks. It was first called Saldanha Bay, as Antonio de Saldanha was the first European to visit it in 1503.

Tabor Small drum used as an accompaniment to a pipe or fife. In size it is little larger than a tambourine and is carried on the wrist of the player who uses only a singledrum stick.

Tabriz Capital of the province of Azerbaijan, Persia. Founded in 791, Tabriz has long been the centre of the carpet-making industry. Until recently railway communication has been indifferent. In 1915 it was the scene of Russo-Persian conflicts, and was occupied by both Russian and Persian forces. It has suffered considerably from earthquakes. Pop. 180,000.

Tabu (or **Taboo**). Custom of prohibiting contact with certain persons or things. It is a practice widespread among primitive peoples in all parts of the world, and has a two-fold character. Either the object of tabu is the seat of supernatural powers and contact with it may bring harm, or it is evil and will infect a person with its own nature. Some people or things are inherently tabu, *e.g.*, strangers, pregnant women, the dead; on others tabu may be imposed temporarily or permanently by priests or rulers. An offence against tabu makes the offender himself tabu; in some cases he may cleanse himself by ritual practices, in others the guilt is irremovable.

In a modified form tabu may exist among civilised people, *e.g.*, among the Jews certain foods are tabu, and custom makes certain modes of action tabu in different classes of society.

Tachometer Appliance for measuring variations in the speed of machines. A simple tachometer consists of a revolving spindle with a worm which acts upon a worm-wheel attached to a graduated disc and a fixed index. *See* SPEEDOMETER.

Tacitus Cornelius, praenomen, either Publius or Gaius, historian. Born about A.D. 58, he studied rhetoric, and early became a successful pleader at the Roman bar. He married the daughter of Agricola, the conqueror of Britain, was in Germany from 89 to 93, and was consul in 97. His extant writings are the *Life of Agricola*, a biography of his father-in-law; the *Germania*, treating of the ethnography of Germany; the *Annales*, the history of the Roman Empire from Tiberius to Nero (14 to 68); and the *Historiae*, from Galba to Domitian (69-97). He died in A.D. 120.

Tacna Northern province of Chile. It is important because of its deposits of sodium nitrate and minerals. It has a hot climate and is subject to earthquakes. The capital is Tacna. Pop. 40,000.

The **Tacna-Arica** question arose at the end of the war between Chile and Peru, won by Chile, 1883. The Treaty of Ancon provided that these two provinces should be held by Chile for ten years and that a plebiscite should then determine their sovereignty. It was found impossible to agree upon the method of carrying out the plebiscite, and efforts made in 1925 and 1926, with the U.S.A. as arbitrator, were unsuccessful. The dispute was amicably settled, however, in 1929, Tacna going to Peru, and Arica to Chile.

Tacoma City of Washington, U.S.A. It is named after the Indian term for Mt. Rainier (Ta-ho-ma, or "great white peak"). Formerly known as Commencement City, Tacoma has supplies of coal, and exports lead, timber and railway stock. It has developed rapidly of recent years, its harbour having grown greatly in importance since 1925. Pop. (1930) 106,817.

Tactics Term originally applied to the combined use of infantry, cavalry and artillery in battle. It has been generally held that tactics have remained fundamentally similar throughout the ages though changes in weapons have brought corresponding changes in methods of fighting, *e.g.*, the subordination of bayonet and sabre to fire, and the diminishing importance of cavalry. Whereas previously the balance of advantage was usually with the attacking side, the Great War, with the widespread use of machine guns, tilted the scales heavily in favour of the defending side. Tanks, introduced at the Somme in 1916, somewhat restored the balance.

Tadcaster Market town of Yorkshire (W.R.). It is on the river Wharfe, 9 m. from York, on the L.N.E. Rly. The chief industry is brewing. Tadcaster was a Roman station, and in the Middle Ages had a castle. Pop. 3500.

Tadmor *See* PALMYRA.

Tadpole Word used for the undeveloped frog or toad. The tadpole lives in the water, which it leaves when the tail vanishes and the legs appear. *See* FROG.

Tael Chinese monetary unit. Theoretically it is about an ounce of silver, but its value varies in different parts of the country. The customs tael is worth just under three shillings. Altogether there are about 170 different taels.

Taff River of South Wales. It rises in the hills of Brecknockshire and flows for 40 m. through Glamorganshire to the sea at Cardiff. It passes Merthyr Tydvil and a number of other industrial centres. The railway down the valley, once called the Taff Vale, is now part of the G.W. system.

Another Taff flows through Pembrokeshire and Carmarthenshire to the sea in Carmarthen Bay. It is 25 m. long.

Taft **William Howard**, American statesman. Born in Cincinnati, Sept. 15th, 1857, he studied at Yale University. He practised law for several years, and was made Solicitor-General in 1890. In 1900 he was appointed first Civil Governor of the Philippine Islands, and in 1906 Provisional Governor of Cuba. He was Secretary for War 1907-8, and 27th President of the United States from 1909-13. He was then appointed Professor of Law at Yale, and in 1921 Chief Justice of the U.S.A. He died March 8th, 1930.

Tagore **Sir Rabindranath.** Indian poet and sage. Born in Calcutta, May 6, 1861, he received his education in India, subsequently visiting England, Japan, China, and North and South America. In 1901 he founded at Santiniketan, Bolpur, Bengal, a school which gradually developed into a kind of international university, called Visva Bharata, making this his life's work. In 1913 he was awarded a Nobel Prize (£8000) for literature, devoting the proceeds to the upkeep of the institution. He visited England in 1930.

He has written more than 30 volumes of poetry, many essays, novels, dramas, and sermons, and is a composer. All his writings reveal a keen sense of the beauties of nature, a deep love of children, and a consciousness of God. Many have been translated into English.

Tagus River of Spain and Portugal. It rises in Spain, through which it flows for nearly 400 m., then enters Portugal, and falls into the sea near Lisbon, where its estuary begins. It passes Toledo, and is navigable to Santarem. Its total length is 565 m.

Tahiti One of the Society Islands, also called Otaheiti. It is a French possession, covering about 600 sq. m., and contains many extinct volcanoes. Papeete is the capital.

Tailor Bird (*Orthotomus sutorius*). Small bird of the order *Sylviidae*. Its curious method of nest-building has given it the name of tailor bird. Choosing a large leaf at the end of a twig, it fastens the edges together with vegetable fibre, or silk, thus forming a pouch, within which it constructs its nest. It is found in Asia.

Tailteann Games National games of Ireland. These were popular events in the Middle Ages when they were held in many places and in an informal manner. In 1924 the games were revived and they were held again in Dublin in 1928. They include literary and artistic, as well as athletic, contests.

Tain Burgh and seaport of Scotland. In the county of Ross and Cromarty, it stands on the Dornoch Firth, 44 m. from Inverness, on the L.M.S. Rly. Pop. 1383.

Taine **Hyppolite Adolphe,** French historian. Born April 21, 1828, in Vouziers, he studied in Paris, taking his Docteur-ès-Lettres in 1853. In 1864 he was appointed Professor of Aesthetics and History of Art at the École des Beaux Arts. His chief works were *Histoire de la littérature anglaise, Notes sur l' Angleterre, Philosophie de l'art*, and his history of the French Revolution: *Les origines de la France contemporaine.* He died March 9, 1893.

Tait **Archibald Campbell.** British prelate. Born in Edinburgh, Dec. 22, 1811, he was educated at the Edinburgh Academy, Glasgow University, and Balliol College, Oxford. In 1842 he succeeded Dr. Arnold as headmaster of Rugby; in 1849 he was made Dean of Carlisle, and Bishop of London in 1856. In 1868 he succeeded Longley as Archbishop of Canterbury. He died Dec. 3, 1882.

Taj Mahal Mausoleum at Agra, India, built in 1632 by the Emperor Shah Jahan for the remains of his favourite wife, Mumtaz Mahal; he also lies buried there. It was constructed in the Persian style by Ustad Isa, a Turk. It is built of white marble, with a large centre dome, four smaller domes at the corners, and four minarets. A marble terrace surrounds it.

Talbot English family. Its head is the Earl of Shrewsbury, and it has a talbot (*q.v.*) on its crest. It is descended from a Hertfordshire landowner, and since the 14th century has had members in the House of Lords. To the family belongs **Rev. Edward Stewart Talbot.** Born Feb. 19, 1844, he was educated at Charterhouse and Christ Church, Oxford. From 1870 to 1889 he was warden of Keble College, Oxford, and from 1889 to 1894 vicar of Leeds. From 1894 to 1905 he was Bishop of Rochester; in 1905 he became the first Bishop of Southwark, and was from 1911 until his retirement in 1923, Bishop of Winchester.

Talbot Extinct breed of hound. It was large eared and broad mouthed, a variety of the bloodhound.

Talbot House Welfare centre for soldiers at Poperinghe. It was established in 1915 in memory of Gilbert Talbot, a son of the Bishop of Winchester, who was killed at Hooge in that year. The organisation which grew out of it is named Toc H. (*q.v.*).

Talc Soft mineral with greasy feel and pearly lustre, composed of magnesium silicate, and occurring in silvery white or greenish foliated masses which readily split into thin flexible but inelastic plates. The name talc is applied commercially to mica, whose plates however are elastic. Steatite or soapstone and potstone are varieties of talc.

Talking Film **(or "Talkie").** Name given to motion pictures accompanied by sound, especially speech. Sound films owe their existence largely to modern electrical developments in the reproduction and amplification of sound. One method is to synchronise the motion picture with a separate sound record, but in the method now generally in use the sound is photographically recorded along the edge of

the motion picture film. When the film is being projected, light is transmitted through this record on to a photo-electric cell and transformed into a variable electric current, which is amplified and reproduced as sound by a loud speaker.

Talking pictures, which were first produced about 1928, have not only revolutionised film production and technique, but have greatly extended the range of motion pictures, while topically and historically they perform a great service by preserving both the image and the voice of famous persons. *See* CINEMATOGRAPHY.

Talking Machine *See* DICTAPHONE, GRAMOPHONE, PHONOGRAPH, TALKING FILM.

Tallage Tax levied in England by the king on the boroughs, and on his demesne lands, and by lords on their demesne lands. In 1340 tallages were forbidden except by consent of Parliament, and soon they disappeared.

Talleyrand **Charles Maurice de Talleyrand-Perigord.** French statesman. Born on Feb. 13, 1754, at Paris, in his third year he fell and lamed himself for life. As a youth he trained for the church and became Bishop of Autun in 1789. During the Revolution he loosened the ties binding him to the Church, and played an important part at Paris from 1789-1793. He later became ambassador in London, but on the execution of Louis XVI. he was banished, and lived in America. As foreign minister, from 1797-1807 he frequently sought, but without success, to modify Napoleon's aggression, and to seek aggrandisement by colonisation. At the Congress of Vienna (1815), where he was the French representative, he gained more favourable terms for France than she would otherwise have had. In 1830, as ambassador in England, he played an important part in the foundation of modern Belgium, and in 1834 he negotiated an alliance between England, France, Spain and Portugal. He died on May 17, 1838.

Tallinn Name sometimes used for Reval, the capital of Estonia. *See* REVAL.

Tallis **Thomas.** English organist and composer. Born about 1515, he was organist of Waltham Abbey till 1540, and later, with his pupil Byrd, of the Chapel Royal. He wrote many chants, motets, anthems, Te Deums, etc. He died Nov. 23, 1585, and was buried in Greenwich.

Tallow Tree Chinese tree (*Excaecaria sebifera*) of the order *Euphorbiaceae*. The seeds are covered with a tallowy grease from which the Chinese manufacture candles. The African tallow tree (*Pentadesma butyracea*) is of the order *Guttiferae*. This has large red blossoms and edible berries that taste like butter.

Tally Hazel or willow stick, usually about an inch thick, on which notches were cut to indicate an amount paid. Tallies were used in the Exchequer in mediaeval times, and the practice was continued in the Treasury till 1826. The amount of the transaction was marked on the two opposite sides; the piece of wood was split down the middle, one half (the tally) going to the payer as receipt, the other (counter-tally) kept by the payee. Scoring at cricket was formerly notched on tallies.

Talmud Book of heterogeneous Rabbinical writings; a kind of Jewish Bible. Some consider it to be Mosaic, others think it was handed down by Ezra. It consists of two parts, the Mishnah, a collection of laws and traditional duties, and the Gemara, a kind of commentary. Two Talmuds exist, known as the **Jerusalem Talmud,** and the **Babylonian,** the Gemara of each being different. The latter, which is of greater authority among Jews, still exercises enormous influence over that people and stands second only to the Bible.

Tal-y-Llyn Lake of Merionethshire. It is about 2 m. long and is surrounded by beautiful scenery. It can be reached from Machynlleth, 8 m. to the south.

Tamar River of England. It rises in Cornwall and flows to the sea at Plymouth. It is 60 m. long and forms for much of its course the boundary between Devon and Cornwall. Its estuary, called the Hamoaze, forms part of Plymouth Harbour. The river is crossed by a fine bridge at Saltash.

Tamarind Tropical leguminous tree (*Tamarindus indica*). Native of the East and West Indies, it bears racemes of yellow flowers striped with red, and the pods contain acidulous pulp which surrounds the seeds. The pods and bark are used medicinally, while the leaves yield a yellow colouring matter.

Tamarisk Evergreen tree (*Tamarix gallica*), of the order *Tamaricaceae*. About 10 or 12 ft. in height, it has feathery branches and minute leaves, while the tiny white or pale pink flowers are borne in short spikes. It is used extensively for hedges in seaside places in Southern England, owing to its hardiness and immunity from the effect of cold, salt winds. There are over 60 species of trees and shrubs in the genus, but *T. gallica* is the only one common in England.

Tamatave Seaport of Madagascar, lying on the eastern coast. Its harbour is formed by a coral reef. The town itself is well developed, possessing good thoroughfares, and exports gold-dust, raffia and hides. It has suffered severely from plagues. Pop. 15,000.

Tame River of England, 30 m. long. It rises in the south of Staffordshire and flows in a northerly direction to join the Trent. Tamworth stands on the river.

Tamerlane (or **Timur**). Oriental conqueror. Born at Kesh in 1336, he was a gentle and studious youth, but 1358 saw him commence a series of conquests which were to take him from his kingdom in Turkistan as far as the Caspian Sea, the Urals, the Volga, through Persia, even into Egypt and India. In 1398 he captured Delhi. Samarkand was his chief city. He died at Atrar on Feb. 17, 1405.

Tamil Sanskrit name for the Dravidian, or South Indian peoples and languages. The Tamils are small and intelligent, and form a merchant and working class. The Tamil language is spoken in S. India and Ceylon. It is the richest and most progressive of the South Indian tongues, and owes less to Sanskrit than Kanarese and Telugu. The literature is of high antiquity.

Tammany Hall Political organisation of New York. The word "Tammany" is an Indian word meaning "affable." The Society was founded in 1789 by William Mooney, an Irishman, and there has been a strong Irish element in it ever since. Its headquarters were first in Frankfurt Street and then at the City Hall. The Society has played an important part in city and state

politics, where it has proved a powerful ally of the Democratic party.

Tammuz God of the sun in Phoenician legend. He was supposed to spend six months of the year in the heavens with Astarte, the moon goddess, and six in the lower regions. He resembles the Greek Adonis.

Tamping Mining term for the act of filling up a bore-hole above the explosive in the process of blasting. This is done to prevent an explosion in the wrong direction, the material or tamp, usually clay or similar matter, being rammed down tightly with a tamping bar.

Tamworth Borough and market town of Staffordshire. It is at the junction of the rivers Tame and Anker, 110 m. from London and 13 from Birmingham, on the L.M.S. Rly. The fine parish church, the town hall and the grammar school are of interest. The gateway of the castle is used as a museum. Tamworth's industries include brewing and a trade in farm produce. The town was a stronghold of Mercia before the gold mines. Pop. (1931) 7790.

Tamworth Town of New South Wales. A pastoral centre, it is 200 m. due north of Sydney, with which it is connected by railway. In the vicinity are gold mines. Pop. (1931) 7790.

Tanager Family of finch-like passerine birds. They are natives of America. The plumage is brilliant and the conical bill, notched towards the end, is a characteristic feature. *Tanagra rubra*, the scarlet tanager, or summer red bird, has brilliant scarlet plumage with black wings and tail. In autumn his plumage changes to a dull green like the female bird. The food consists of insects, fruit and berries.

Tanderagee Urban district and market town of Co. Armagh, Northern Ireland. It is on the River Casher and has a little trade. The castle is a seat of the Duke of Manchester. Pop. 1400.

Tanfield Urban district of Durham. In a colliery district, it is 7 m. south-west of Gateshead, and 267 from London by the L.N.E. Rly., its station being Shield Row. Pop. (1931) 9236.

Another Tanfield is in Yorkshire, 6 m. north of Ripon. The church contains monuments of the Marmion family.

Tanga Town and seaport of Tanganyika Territory, East Africa. It has a good harbour protected by the island of Pemba and is connected by railway with the interior. It is 77 m. from Mombasa and 73 from Zanzibar. The original town was on the island of Tanga, now a quarantine station. Pop. 11,000.

Tanganyika Lake of Africa. It is about 450 m. long and covers about 13,000 sq. m. In the centre of the continent, its eastern shores are British territory and its western shores Belgian. The ports on it include Ujiji, Kigoma, Kirando and Bismarckburg. Kigoma is the terminus of the railway line from Dar-es-Salaam. The chief port on the Belgian side is Albertville. The lake was discovered in 1858.

Tanganyika Territory

Territory in Central East Africa, east of Lake Tanganyika. In area it is 374,000 sq. m. Formerly German it is now under mandate to Great Britain, small parts being controlled by Belgium and Portugal. It contains the highest peak in Africa, the extinct volcano, Mt. Kilimanjaro (19,720 ft.). There are large forests containing valuable timber, and much fertile land. The natives keep many cattle and sheep. European settlers grow sisal, coffee, etc., and groundnuts, copra and cotton are exported. Gold, coal and other minerals are known to exist. The capital is Dar-es-Salaam. Pop. 5,022,640.

Tangier Seaport of Morocco. It is situated on the Strait of Gibraltar. The port belonged to England for some 22 years, being part of the dowry of Catherine of Braganza, wife of Charles II. It was captured by the Moors in 1683. To-day it and its surrounding district is international. There is some small trade, but the place is chiefly known as a health resort. Pop. 53,000.

Tango Spanish national dance. A modified form of this dance has had considerable vogue in England and on the Continent. It is a slow, graceful dance in $\frac{2}{4}$ time, with a variety of steps which can be combined at the will of the dancers.

Tank Armoured motor vehicle carrying light guns, first used by the British Army for offensive purposes during the Great War. Being secretly made, the first tanks introduced a considerable element of surprise, which contributed to their success. Primarily designed for dealing with machine guns, they were required to traverse rough country, negotiate trenches and overcome minor defences, besides being bullet-proof and armed. They incorporated the caterpillar track, already used in agricultural and other vehicles, disposed along the whole length of the tank which was specially shaped to enable them to deal with trenches 10 ft. wide. The modern tank is light, easily handled, fast, and has a large range on one supply of fuel.

Tannenberg Village of East Prussia. It is 75 m. from Königsberg, and is celebrated for two battles fought near here. In 1410 the Teutonic Knights were defeated by the Poles, and in August, 1914, the Russians were beaten by the Germans. The battle, directed on the German side by Hindenburg, was one of the most decisive of the Great War.

Tannin Alternative name for tannic acid which is present in gall nuts. It is an amorphous astringent powder very soluble in water and less so in alcohol. An analogous series of tannins is found in many plants, such as tea, oak bark, and catechu, these having the general characters of great solubility, astringency, affinity for the skin of animals, and colouration with iron salts. Tannin is used in making inks, the clearing of wines and in medicine.

Tanning Process by which leather is made from the skins of animals. In vegetable tanning the process depends upon the action of tannic acid upon the skin, and the materials used are oak, wattle and mangrove barks, valonia, divi-divi, sumach, etc. Chromium salts are used in making chrome leather, a highly resistant material, while alum is the tanning agent in another process. Oil tanning is used in making chamois leather to give the required soft supple character.

Tansy Genus of perennial herbaceous plants (*Tanacetum*) of the order *Compositae*. *T. vulgare*, the native British variety, has a creeping rootstock, green feathery leaves and flower heads of a golden yellow. The plant is aromatic and bitter to the taste. It was formerly used for flavouring and

medicinal purposes. *T. leucophyllum*, a garden variety, has silvery leaves.

Tantalum Rare metallic element having the symbol Ta and atomic weight 181·5. It occurs in the minerals tantalite, columbite and struverite. When isolated it is a white, ductile, hard metal with a high melting point and electrical resistance. It is used for filaments of incandescent lamps and for alloying with steel.

Tantalus In Greek legend, a son of Zeus. As punishment for a crime he was sentenced to stand up to his neck in Hades in water which receded when he tried to drink, while above him were fruits which the wind blew beyond his reach whenever he attempted to grasp them. Hence the verb " to tantalise."

Taoism Philosophy and religion of the Chinese. The philosophy is a system of the sage Lao Tsze, and is associated with movements of the earth and heavens, which are the causes of phenomena occurring in the world. The religion is a mixture of magic and polytheism and has been largely influenced by Buddhism.

Tape Machine Telegraph instrument designed to print messages on a moving paper tape, and used in the distribution of news, especially stock market prices. In this instrument a revolving type wheel is pressed against the moving tape by the action of an electro-magnet.

Tapestry Fabric coverings of furniture, floors and walls, woven with coloured threads by needles instead of in shuttles. At the Gobelin factories in Paris, the threads were stretched in vertical frames (high warp), at Beauvais, Bayeux and elsewhere, in horizontal frames (low warp). The subjects vary with the prevailing forms of art, but are romantic, historical or pastoral in nature. Practised from earliest times, the art has almost died out.

Tapeworm Parasite (*Entozoon*) inhabiting the alimentary canal of warm-blooded vertebrates. It attaches its suckers to the mucous membrane and absorbs its nutrition through its skin. Some eight kinds are known in man, and those in animals produce such affections as measles in pigs and oxen, and the staggers in sheep.

Tapioca (*Manihot utilissima.*) Tropical plant of the order *Euphorbiaceae*. It is several feet high, of shrubby growth, and has a large fleshy root. The root contains an acrid milk juice, poisonous in its natural form, which is extracted by pressure and purified. Its root also yields a starchy substance which is subjected to heat and dried to form tapioca for use at the table. The dried and grated root is baked, forming cassava bread, and a beverage called piwarry is also made from the fermented juice.

Tapir Ungulate mammal (*tapirus*) of the order *Perissodactyla*. They are found in Central and S. America and Malaya. On the front feet there are four digits, on the hind feet three only. A shy nocturnal animal, inhabiting forest regions near water, it is vegetarian in diet. The body is clumsy and pig-like with short legs and short tail, the snout being prolonged into a proboscis. The skin is dark brown. The Malayan species has a band of white about its middle.

Taplow Village of Buckinghamshire. It is on the Thames, 4 m. from Slough, on the G.W. Rly. There is an interesting old church and here is **Taplow Court**, the residence of Lord Desborough. The village is visited for boating.

Tap Root Primary root of certain plants which grows downward without division. In some plants it is expanded to form a storage place for plant material as in the beet or parsnip, which tapers towards the end, and the turnip which takes a globular form.

Tar Dark brown or black viscid liquid with a peculiar aromatic odour, obtained when wood, coal or similar substances are subjected to destructive distillation. It is variable in composition, but consists largely of carbon compounds such as acetic and pyroligneous acids, resins, paraffins, phenols, etc. By distillation coal tar yields numerous substances from which aniline dyes are derived. Tar is used also as a protective coating for wood and iron, for road making and also in medicine.

Tara Village of Co. Meath, Irish Free State. It is on the Boyne, 6 m. from Navan. On its hill the kings of Ireland were crowned, the chieftains assembled, and S. Patrick preached.

Tarantella Neopolitan dance in 6-8 measure, and the music to which it is performed. This quick dance was formerly supposed, by causing perspiration, to drive out the poison caused by the bite of the tarantula, a venomous spider of Tarentum, which was responsible for the malady known as tarantism.

Taranto City and seaport of Italy. It stands on an island in the Gulf of Taranto, an opening of the Mediterranean Sea, in the extreme south of Italy. It is 44 m. from Brindisi and consists of a new town and an old one. With a large commercial harbour, it is also a station of the Italian Navy. The buildings include the cathedral, the castle and a museum. The industries include shipping, fishing, oil refining and some manufactures.

Taranto was founded by the Greeks, who called it **Tarentum**, and was one of the richest cities on the Mediterranean coast until partly destroyed by the Romans in 209 B.C. Pop. (1931) 105,808.

Tarantula Several species of large spider, but especially *Lycosa tarantula*, found near Taranto in Italy. It is not more poisonous than other spiders of similar size. Living in a burrow in the ground, it catches its prey by pouncing on it, not in a web.

Tarbert Port of Argyllshire. It is on the east side of the Mull of Kintyre, 30 m. from Campbeltown. There are some ruins of a castle; it is a fishing centre with a good harbour and is visited by tourists.

Tardieu **André Pierre Gabriel Amédée.** French statesman. He was born in Paris, Sept. 22, 1876, and educated there. After a journalistic career, during which he was foreign editor of *Le Temps*, he entered the chamber of deputies in 1914, and was High Commissioner of France to the United States, 1917-19. He was a French delegate to the Peace Conference, 1918-19. An adherent of Clemenceau, he firmly opposed any variation of the Versailles Treaty. He became Prime Minister in 1929, again in 1930, and on the fall of the Laval government, Feb. 21, 1932. He resigned, May 10, on the election of a new

President, following the adverse result of a general election. In 1934, for a time, he was Minister without portfolio. He has published several books of a political character.

Tariff List of goods on which duties are paid when they enter a country. Nearly all countries impose duties on imports, though Great Britain, between 1860 and 1931, preferred free trade. Duties were imposed on certain articles, *e.g.*, tobacco and wines, during that period, but they were for revenue purposes only; industry was in no way protected by tariffs.

In 1903 Joseph Chamberlain advocated a scheme of tariff reform for Great Britain, and led an agitation for the imposition of protective duties. Though not then successful, the movement has been kept alive, and in 1931 the changed economic conditions led to the adoption of a tariff, for which the way had been prepared by the imposition of duties on imported luxuries by Mr. M'Kenna in 1915. Pending the drawing up of a scientific tariff, heavy duties were placed upon certain imports and on certain classes of fruit, flowers and vegetables. This was followed in 1932 by the imposition of a basic tariff of 10 per cent. on all manufactured goods, excluding those arriving from other parts of the British Empire. An independent committee of three was established to make recommendations about tariffs and, on its advice, the duties on certain articles were raised beyond 10 per cent., while some of those imposed in 1931 were reduced. This committee remains in being to watch the working of the tariff scheme, and to recommend changes to suit altered conditions. A list of exemptions, reduced duties and additional duties has been published, revised and consolidated as from Jan. 1st, 1936. The duties are collected by the board of customs and excise.

It is believed that high tariffs were a contributory cause of the economic crisis of 1931-32, and there has been a good deal of discussion about reducing them. In June the Netherlands, Belgium and Luxembourg made between themselves an agreement for reducing tariffs. *See* IMPERIAL PREFERENCE; M'KENNA, REGINALD.

Tarpeia Figure in Roman legend. She was the daughter of Spurius Tarpeius, keeper of the citadel on the Capitoline Hill. She betrayed the city to the Sabines by opening the gates, but was crushed to death by them. The name was given to the rock on the hill from which traitors were thrown down.

Tarpon (*Megalops atlanticus.*) Fish of the herring family. Abundant in South Atlantic waters, it often weighs over a hundredweight. The body is elongated and covered with large silvery scales. It is a food fish and affords good sport to anglers.

Tarquinius **Superbus, Lucius.** Seventh and last of the traditional kings of Rome. According to legend he began to reign in 534 B.C. He greatly extended the Roman power by the subjection of neighbouring tribes. He completed the Capitol, and built the temple of Jupiter. For 300 pieces of gold he acquired the Sibylline books (*see* SIBYL). He was eventually driven from Rome, following the outrage perpetrated by his son Sextus on Lucretia (*q.v.*), and died at Cumae, 510 B.C.

Tarragon Perennial herb (*Artemisia dracunculus*). Native to Spain, Italy and other countries of the Mediterranean region, it is an aromatic plant, allied to wormwood, and is used to flavour vinegar, pickles and sauces.

Tarrytown Village of New York State. It is 25 m. from New York, with which it is connected by railway, and stands on the Hudson River. It is known for its connection with Washington Irving, who made it the Sleepy Hollow of his stories.

Tarsier Rare animal of the genus *Tarsius*, a kind of lemur, inhabiting the Eastern Archipelago. It is so named because of its elongated tarsal bones, which produce very long feet and hands. It is about as big as a squirrel, fawn in colour, with large ears and eyes, a tufted tail and disc-like adhesive surfaces on its fingers. It inhabits trees, and feeds on lizards and insects.

Tarsus City of Asia Minor. It is about 12 m. from the north of the River Cydnus. It was an important place under the Greeks and the Persians, but belonged to Rome when S. Paul was born here.

Tartan Material cross-barred with threads of various colours. Originally of wool or silk, and used in Scotland, where each clan had its own peculiar pattern, the cloth was known as early as the 14th century. After the 1745 rising in Scotland attempts were made to prohibit its use.

Tartar Crude potassium tartrate ($KHC_4H_4O_6$). Wines when fermenting deposit a crystalline crust (argol), which, when purified, yields **Cream of Tartar.** This is used in making tartaric acid, silver cleaning, wool dyeing and in the preparation of drinks and baking powder; also as a purgative. **Tartar Emetic** is a substance which occasions vomiting. It is, in large doses, a poison and is used as a mordant in dyeing. Tartar of the teeth is a salivary deposit, consisting of mucus and phosphate of lime.

Tartarus In Greek legend a place of punishment in Hades. It was surrounded by a wall and was a place of utter darkness.

Tartary Area inhabited by the **Tartars** in the Middle Ages. It was partly in Europe and partly in Asia. In the latter continent the name was used for the vast district that stretched to the Pacific.

Tasmania State of Australia. An island south of Victoria discovered in 1642 by Tasman, it became British in 1803. Its excellent climate, noted by Captain Cook, had greatly facilitated development and progress, and, together with natural scenic beauty, is responsible for attracting thousands of visitors yearly. Mining is important, especially zinc, copper, tin and osmiridium. This and other industries owe much to the development of hydro-electric power from elevated lakes, which is still proceeding. Intensive agriculture, such as fruit growing, especially apples, is practised, and timber and wool are important exports. Education, from elementary to university standard, is well organised. Hobart, the capital, is a fine city and the principal port. The area is 26,215 sq. m. Pop. (1931) 214,694.

Tasmanian Devil Nocturnal marsupial mammal of the genus *Dasyurus*, found only in Tasmania. It is about 21 ins. in length, with a tail of 7 ins. The limbs are thick-set, short and clumsy, the feet plantigrade, the toes clawed. The black fur is harsh and thick, with white patches on the chest and haunches. Though somewhat resembling the badger, its gait and movements are bearlike. Voracious

and fierce, it owes its name to the early colonists whose sheep and poultry suffered from its nightly attacks.

Tasso **Torquato.** Italian poet. He was born in Sorrento, March 11, 1544, the son of Bernardo Tasso, also a poet. He became early attached to the ducal court at Ferrara, and while there wrote a beautiful pastoral play, *Aminta*, and his immortal epic, *La Gerusalemme Liberata*. Shortly after, his mind became unhinged, and in 1579 he was confined to hospital for 7 years. Eventually he was summoned to Rome to be crowned as poet laureate, but died April 25, 1595, before the ceremony could take place.

Tate **Sir Henry.** British manufacturer, merchant, and patron of art. Born in Chorley, Lancashire, on March 4, 1819, he entered the sugar trade and amassed a large fortune. A great lover of art, he acquired a fine collection of pictures, which he offered to the nation, together with £80,000 towards a building. A gallery was erected on the site of the old Millbank Prison on the Thames and opened July 21, 1897. Popularly known as the **Tate Gallery**, it is under the control of the trustees of the National Gallery. Sir Henry also gave liberally to Liverpool University, and presented four free libraries to London. He was created a baronet in 1898 and died Dec. 5, 1899.

Tattersall's Auction rooms in London. Here race horses are bought and sold, and the establishment is a meeting place for bookmakers and betting men for settling their accounts with one another. The rooms were opened in 1766 by Richard Tattersall at Hyde Park Corner. Since 1865 they have been in Knightsbridge.

Tattershall Village of Lincolnshire. It is 7 m. from Horncastle. There is an interesting church and a village cross, but the place is more famous for its castle. The present building, long a seat of the Cromwell family, dates from the 15th century. It was restored by the Marquess Curzon and presented to the nation. It is a magnificent example of mediaeval brickwork.

Tatting Species of lace made by hand. The cotton thread is looped round the fingers and manipulated by means of a small shuttle into tight rings. These are then joined to form a pattern. Once a popular form of fancy work, the shuttles were often of tortoise-shell, mother of pearl or ivory.

Tattoo Primarily a signal given by a bugle or drum to call soldiers to their quarters. Its nature varies with the different branches of the service, but it generally includes "God Save the King" and "The Last Post."

The word has come to be used for a military display, given at night. Tattoos are held every year at Aldershot and Woolwich. Wonderful effects are produced by the moving troops and the use of lights.

Tattooing Practice among uncivilised nations of marking the skin by incisions into which are introduced charcoal or coloured liquids. This operation is performed in the South Sea Islands with a kind of bone comb dipped in charcoal and driven into the flesh with a mallet. High-born natives were often tattooed all over, while the result was esteemed as protection against cold, heat or insect-bites, as an ornament, or as lending an expression of ferocity in battle. The practice, which was condemned by Moses (Lev. xix., 28), is now falling into disuse.

Tauchnitz **Karl Christoph Traugott.** German publisher. Born near Leipzig, Oct. 29, 1761, he established a printing and publishing business in Leipzig. His fame rests on his enterprise in issuing cheap but excellent editions of the Greek and Latin classics, which soon had a world-wide circulation. He died in 1836. His nephew, **Baron Christian Bernhard von Tauchnitz**, born Aug. 25, 1816, began in 1841 to publish his world-famed *Collection of British Authors*, for circulation outside the British Isles. He died at Leipzig, Aug. 13, 1895.

Taunton Borough of Somerset, also the county town. It is on the Tone, 163 m. from London, on the G.W. Rly. The finest building is the church of St. Mary Magdalene, with a lofty tower, dating from the 15th century. The church of St. James is equally old. Other buildings include the castle, now used as the county museum. There is a market hall and a market cross. Taunton is an important agricultural centre and has manufactures of gloves and cider. The district around is called **Taunton Deane.** Pop. (1931) 25,177.

Taunus Mountain range in western Germany, about 55 m. in length. Some of its peaks overlook the Rhine. It is celebrated for its ruined castles, its vineyards and its spas, among them Homburg and Wiesbaden.

Taurus System of mountain ranges of Asia Minor, running for the most part parallel to the S.E. coast. The two principal ranges are the Bulghar Dagh and the Ala Dagh. Of the passes of the Taurus the best-known is that called the Cilician Gates, which gives access to the Adana valley. In the so-called **Anti-Taurus**, a northern spur of the Taurus proper, is Mt. Argaeus, the loftiest peak in Asia Minor.

Tau Sagis Wild plant. It grows in Turkestan and is said to contain 40 per cent. of coagulated pure rubber in its roots. In 1932 its cultivation was encouraged by the Soviet authorities, as it was hoped that in this way the demand for rubber could be met internally. Under the second five-year plan some 1,400,000 acres are to be planted with tau sagis, and these will produce 88,000 tons of rubber.

Tavistock Urban district and market town of Devonshire. It is on the Tavy, 16 m. from Plymouth, on the G.W. and S. Rlys. A canal connects it with the Tamar. The guildhall includes some remains of the abbey. Here are Kelly College and Endsleigh, the seat of the Duke of Bedford, whose eldest son is called the **Marquess of Tavistock.** The town has an agricultural trade, but formerly it was a centre of the wool trade and of lead mining. Pop. (1931) 4453.

Tavy River of Devonshire. Rising on Dartmoor between Oakhampton and Princetown, it flows south past Tavistock and joins the Tamar about 5 m. above Devonport. It is about 20 m. in length.

Taw River of Devonshire. It rises on Dartmoor and flows N. for 50 m., falling into the sea near Appledore.

Tawe River of Wales. It rises in the Black Mountains, Brecknockshire, and flows S. to Swansea, where it falls into Swansea Bay. It is about 36 m. in length.

Taxation Method of raising money from a people for the maintenance of the state. It may be direct or indirect. Direct taxation is levied immediately on the individual, though it may be differently obtained. Income Tax, that is to say a certain proportion of each person's income, is the most obvious type of this kind. Indirect taxes are derived from a general payment on some commodity or activity (*e.g.*, the **Entertainment Tax**). Here the amount of the tax is paid by the dealer or organiser, who raises the price of his product or entertainment accordingly, thus recouping himself from the public. It is an accepted axiom that if a person is taxed he should also be represented in the legislature.

The term **local taxation** is sometimes applied to the money collected by means of a local rate by local authorities for the maintenance of public services authorised by the state. *See* RATES.

Taxation In law a method of examining, and if necessary reducing, the bills of costs of solicitors. In the supreme court there is a taxing office where this is done; it is also done by the registrars of the county courts. The costs of taxation are borne by the client unless the charges are considered excessive, when they are borne by the solicitor.

Taxidermy Preparation and preserving of the skins of animals. The process was introduced in the 18th century to answer the demands of sportsmen. Formerly the skin was stripped with fine knives or scissors, and stuffed with tightly-packed tow, being made to stand in the desired posture by the judicious use of wire. Nowadays modelling has replaced stuffing; a copy of the body is prepared in full anatomical detail, and the skin placed around it.

Tay River of Scotland. Rising in the hills in the west of Perthshire, it flows across that county to the Firth of Tay, near Perth. It is 118 m. long and on it are Dunkeld and Perth. Its tributaries include the Earn, Almond, Tummel, Garry and Isla. It is famous for its salmon. **Loch Tay** is a lake in Perthshire. It is 14 m. long and is visited for the fishing. The **Firth of Tay** is crossed by a railway bridge, the property of the L.N.E. Rly. The first was opened in 1878, but was destroyed by a storm, Dec. 28, 1879. The existing bridge, over 2 m. long, was built between 1882 and 1887.

Taylor **Jeremy.** English divine. Born in Cambridge, August 15, 1613, he entered Caius College as a sizar at 13, graduated at 18, and was ordained at 21. In 1638 Bishop Juxon made him rector of Uppingham, and after many vicissitudes he was made Bishop of Down and Connor at the Restoration. He died at Lisburn, August 13, 1667. Coleridge called him the most eloquent of divines, if not of men. His *Holy Living* and *Holy Dying* are the finest examples of devotional literature.

Taylor **Tom.** English playwright and journalist. He was born in Sunderland, Oct. 19, 1817, and educated there and at the universities of Glasgow and Cambridge. He either wrote or adapted more than 100 plays, among which were *Still Waters Run Deep*, *The Ticket o' Leave Man* and *Our American Cousin*. In 1874 he succeeded Brooks as editor of *Punch*. He died in Wandsworth, July 12, 1880.

Taymouth Name of a castle in Perthshire. Now a hotel, it stands near the union of the River Tay with the loch of that name. Until 1921 it was the seat of the earls and marquesses of Breadalbane.

Tayport Burgh and port of Fifeshire. It is on the south side of the Firth of Tay, 4 m. from Dundee, with which it is linked by ferry. It has a station on the L.N.E. Rly. The industries include linen and jute mills. Pop. (1931) 3164.

Tchitcherin **Georghi Vasilievitch.** Russian statesman. He was born in 1872, of a noble family, but after leaving the university became a revolutionary, and was banished. He was imprisoned in England during the war, and on his return to Russia in 1918 he succeeded Trotzky as Foreign Commissar. His health broke down in 1928, and except for occasional visits to Moscow he lived abroad, mainly in Germany, until January, 1930, when he returned to Russia.

Tea The prepared leaf of the plant *Thea* (*Camellia*) *sinensis*, grown in China for centuries, but only known in England since 1645, when the Dutch introduced it. At first it was infused, and kept in barrels, like beer. The young leaves are picked, and spread on trays to wither, and then rolled. They are then spread in a moist, fermenting room, and afterwards "fired," (passed on trays through hot-air chambers) sorted, and again fired.

India and Ceylon export about two-thirds, and China one-third of the tea drunk in the British Isles, which are the largest tea-consumers in the world. London is the chief tea-market and controls prices. Tea growing is an important industry in India and Ceylon.

Teaching **as a Career.** The work of teaching offers an attractive career for both men and women. The salary is reasonably good, the hours are not over long, the holidays are longer than in most occupations, and teachers who work in schools aided or maintained from public funds are entitled to a pension at the age of sixty, provided they have spent not less than thirty years in teaching.

The best preliminary preparation is a good secondary education, followed by a university course. An intending teacher is eligible for a government grant which will pay the cost of tuition and provide a contribution towards maintenance and lodging. After a degree is obtained, a further year is spent in professional training, either in a university department of education or a training college.

Another plan is to enter one of the training colleges provided by municipal authorities or by such bodies as the Church of England or the Wesleyans. Here the student takes a two-year course aided by government grants, and prepares for an examination conducted by university examining bodies, but not leading to a degree. Success in this examination entitles the student to rank as a certified teacher.

Usually the holder of a degree may hope for employment in a secondary school. He must be able to give special instruction in one or more subjects of the school curriculum, while being ready to take part also in the general work of the school. The great public schools usually recruit their staffs from university graduates of good standing, and in schools for boys some athletic prowess is an advantage.

According to the Burnham scale of March, 1925, in public elementary schools the salary of a certificated assistant master begins at a figure of from £168 to £192 a year, according to the district, and rises by increments of £12 a year to a maximum of £312 or £408 a year.

For certificated assistant mistresses the starting salary is from £150 to £180, rising to £246 or £324. Head teachers receive higher salaries according to the locality and size of school. The salaries of an average London headmaster and headmistress are £500 and £400 respectively, though they may rise to £606 and £486.

In state-aided secondary schools graduate assistant masters in London begin at £295 a year and rise by annual increases of £15 to £528 a year. In the provinces the corresponding figures are £244 and £480 maximum. Graduate assistant mistresses in London begin at £264 rising to £420 and in the provinces at £216, rising to £384. For headmasters the minimum salary in secondary schools is £600 and for head-mistresses £500, and the maximum may be over £1000 a year for an important school. Payment in privately owned schools is on much the same scale. Salaries in state-aided schools were subjected to a 10 per cent. reduction in 1931, but half was restored in 1934, and the Burnham Committee resolved that as from July, 1935, salary cuts should not affect annual superannuation allowances beyond 2 per cent.

Teachers in state schools may receive an annual pension depending upon the final salary and the number of years of service. A cash payment is paid in addition. For example, a teacher who has served for forty years will receive on retirement a pension equal to half of the average annual salary during the last five years and a cash payment equal to one and a third times that salary. Retirement is optional at the age of sixty and compulsory at the age of sixty-five. In the best privately-owned schools there are also systems of superannuation.

Teachers who hold the qualifications described above are eligible for admission to the Official Register of Teachers on payment of a small registration fee. This entitles them to membership of the Royal Society of Teachers, and the letters M.R.S.T. indicate definite professional standing, since the Register is authorised by Parliament and maintained by a representative Council of Teachers.

Teak Asiatic timber tree (*Tectona grandis*) of the order *Verbenaceae*. It attains an immense height and bears panicles of small white flowers. The wood, extremely hard and durable, is used in shipbuilding.

Teal Small duck (*Querquedula crecca*) of Europe and Asia. It is common throughout the year on British inland waters, and many migrants reach Britain in winter. The male has a chestnut head, marked with a green patch behind the eye, black or buff rump and tail, and black and white wing markings. The bill is black and the legs grey. The total length is 14 to 15 ins.

Teasel (*Dipsacus sylvestris.*) Common British biennial plant of the order *Dipsaceae*. The first year it bears only radical leaves which form a large rosette flat upon the ground. The flower stems in the second year attain a height of 5 or 6 ft. They are rough and spiny and bear cylindrical flower heads of purple flowers. *D. fullonum*, a cultivated variety, is used by cloth manufacturers for raising the nap of cloth.

Technical Education

Special training in the arts or sciences underlying a trade or profession, usually taught in a technical school. It has resulted from changed conditions of production, whereby the master has no time to instruct his apprentice himself. In technical schools there are courses in practical instruction for every kind of trade, and in clerical and linguistic work for commercial purposes. With these may be compared the continental trade schools (*e.g., L'École Diderot* at Paris). Modern types are rapidly conforming with commercial conditions, and are attracting greater numbers of students. By the Smith-Lever law, the U.S.A. have increased facilities particularly for agricultural instruction.

Teck German family. The name is taken from a castle in Württemberg. In 1871 Francis, a prince of Württemberg, was made Duke of Teck. He married Mary Adelaide, a daughter of the Duke of Cambridge, and settled in England. He died Jan. 20, 1900, and the duchess died Oct. 27, 1897. Their family consisted of a daughter, Mary, who married King George V., and three sons: Adolphus, created Marquess of Cambridge in 1917; Francis, who died in 1910; and Alexander, created Earl of Athlone in 1917. In 1917 the family name was changed to Cambridge.

Teddington Urban district of Middlesex. It stands on the Thames, and is 13½ m. from London by the S. Rly. The National Physical Laboratory has been here since 1902. The authority of the Port of London ceases at Teddington, and that of the Thames Conservancy begins. Pop. (1931) 23,362.

Te Deum Hymn or psalm used in the services of the Christian Church. Its authorship is unknown, but it was compiled in the 5th century or earlier. It begins with the words *Te Deum Laudamus* (We praise Thee, O God), and is in the prayer book of the Church of England for use at morning prayer. Of the tunes composed for it the most famous is by Handel.

Tees River of England. It rises on Cross-fell and flows east, separating both Yorkshire and Westmorland from Durham. The upper valley of the river is called **Teesdale.** It flows by Middlesbrough and Darlington and other industrial towns. It is about 80 m. in length and is navigable to Stockton.

Teeth Teeth consist of three substances, ivory, enamel and bone, with nerves and blood vessels. The main structure of the tooth is composed of dentine, a hard elastic substance; the exposed part, above the gum, is covered with enamel, while the surface of the root is covered with bone. The tooth is formed chiefly of calcium phosphate. In man there are 16 teeth in each jaw, arranged symmetrically eight per side. These consist of four incisors, two canines, four bicuspids, and six molars. Teeth develop in two sets, the milk teeth and the permanent. There are twenty milk teeth, ten in each jaw, which drop out in the sixth, seventh and eighth year. The first permanent tooth follows on immediately, and others develop until the wisdom teeth manifest themselves about the eighteenth year, or occasionally later; in some cases they never appear at all.

Teething begins normally about the 6th month. Some babies become quite feverish with teething, and if they seem really ill a doctor should be consulted. The bowels should be kept open and plenty of water and diluted milk given, but the child should not be forced to eat. He should be given a bone or ring to chew.

In case of toothache the only adequate treatment is to have the tooth seen to by a

dentist, and this should be done at the first hint of trouble. Acute pain may be relieved by rubbing the gum with oil of cloves or brandy.

Teheran (or **Tehran**). Capital of Persia. About 70 m. S. of the southern shore of the Caspian Sea, it occupies a plain formed from a gravel deposit sloping from the foothills of the Elburz mountain range. It is surrounded by walls, and has an inner circumference of about 7½ sq. m. It is the centre of a carpet industry and has been the capital since the last quarter of the 18th century. Pop. 350,000.

Teifi River of Cardiganshire. It rises in the north of the county, and flows S.W. to enter the sea at Cardigan, where it forms an estuary. It is 50 m. in length, and for part of its course divides Cardiganshire from Carmarthenshire and Pembrokeshire.

Teign River of Devonshire. It rises on Dartmoor and flows for 30 m. to the English Channel, which it enters at Teignmouth. Newton Abbot is on its banks.

Teignmouth Urban district and seaside resort of Devonshire. It is 15 m. south of Exeter and 189 from London by the G.W. Rly. China clay is shipped from the town, which stands at the mouth of the Teign. Teignmouth had an interesting history in the middle ages; when it was a flourishing port. Pop. (1931) 10,019.

Telautograph Telegraphic instrument invented by Elisha Gray for transmitting and recording a message in facsimile. In Gray's instrument a series of intermittent electric currents act upon electro-magnets causing the movement of a stylus or writing pen in a distant station, thus making a copy of a written message. In another form of telautograph devised by J. H. Robertson, the strength of the current is varied according to the curves of the writing, this varied current acting upon the stylus.

Telegraph Electrical apparatus devised to transmit messages to a distance. The first needle telegraph was patented by Cooke and Wheatstone in 1836, and in the following year tried successfully between Euston and Camden Town Stations. In this form of the instrument a magnetic needle at the receiving station is deflected by an electric current sent by a conducting wire from the transmitting station. The Morse telegraph involves the principle of the electro-magnet and is in general use for most land-lines. The Morse code is used for telegraphic messages, the dots and dashes being represented by short or long periods during which the current is kept on.

Recording is made automatically on a tape or by means of a perforated ribbon, and in one type of instrument by printing the message. In submarine telegraphy a siphon recorder invented by Lord Kelvin acts as a receiving instrument and marks the message upon a travelling tape in a series of irregular waves.

The wireless telegraph (*q.v.*) is based upon similar principles, the messages being transmitted by electro-magnetic radiations.

A method has recently been developed by which photographs can be transmitted by telegraph, the picture being broken up into dots during the process.

Tel-el-Kebir Village of Egypt. Near Cairo, it was the scene of a battle between the British and the Egyptians on Sept. 13, 1882. There Arabi Pasha and his army, 38,000 strong, had entrenched themselves. Under Sir Garnet Wolseley a British army of 15,000 men marched silently across the desert by night and in the morning the Highland brigade led the attack on the enemy position which was over two miles long. In an hour or more the Egyptians had fled. The British losses were under 500.

Telemachus In Greek legend the son of Odysseus and Penelope. He lived with his mother during his father's absence, and when he was 20 years old he set out to find the wanderer. He returned to Ithaca after his father's return, and assisted him to kill the suitors of Penelope.

Telemeter Instrument for determining distances in surveying and in gun practice. There are a number of types, many coming under the head of range finders. In most cases they are based upon the angular measurements of a triangle whose base is the instrument and whose apex is the object whose distance is to be measured.

Teleology Philosophical term for the doctrine of ends or final causes. It is discussed in Kant's *Critique of Judgment*.

Telepathy Transference of thought. The earliest recorded experiments in telepathy were conducted by Sidgwick in 1871, while among later experimenters may be mentioned Sir Oliver Lodge; yet, to date, the successes have not greatly exceeded those which might be ascribed to chance. Sir W. Crookes has attempted to explain telepathy as a series of waves, while others have suggested telepathy to be responsible for mediumship.

Telephone Electrical instrument by which sound is transmitted and reproduced at a distance. The first telephone capable of reproducing speech was invented by Graham Bell and exhibited at the Philadelphia Exhibition in 1876. In this instrument a circular diaphragm of soft iron was made to vibrate by the sound waves impinging upon it in front of the poles of an electro-magnet, whereby a variable current was generated. By a reverse action in the receiver the diaphragm was set vibrating, reproducing the original sound waves.

Improvements were made by Edison, and a carbon transmitter or microphone was devised by Prof. Hughes. In the modern type of microphone the action depends upon the varying compression of carbon granules between two carbon discs caused by the vibrations set up by the sound waves.

The wireless telephone (*q.v.*) is a development on similar principles, but using electro-magnetic radiations for transmission.

Telephotography Long-distance photography. The photographing of distant objects by ordinary photographic methods is rendered unsatisfactory by atmospheric moisture which diffuses the rays of visible light and produces the blurred effect of normal vision. Long-distance photography, however, can now be achieved, with or without the use of a telescopic lens, by using only the infra-red rays, which are less easily diffused and so travel in a more direct line than visible rays from the object to the lens, thus giving a sharper definition. For this purpose a special filter is used which cuts out all but the infra-red rays, while the exposure is made on a plate particularly sensitive to these rays. In this way details of landscape, etc., which are obscured

by haze to normal vision, can be rendered clearly in a photograph.

Telescope Optical instrument for viewing distant objects. The simplest form of astronomical telescope consists of two lenses placed one at each end of a tube. One of these, the objective, is either a simple convex lens or a compound achromatic lens which receives the rays from the distant object, bringing them to a focus and forming a small inverted image. The other lens, the eyepiece, may be a simple lens or a system of two lenses which presents a magnified and erect image to the observer.

In the reflecting type of telescope a slightly concave mirror at the end of the tube forms the objective, the rays from the open end of the tube being reflected either to one side by a secondary mirror through a lateral eyepiece, or by an aperture in the mirror to a terminal eyepiece. Opera and field glasses are binocular modifications in which there are two parallel telescopes.

Television Transmission by electrical means of representations of events at the time they occur. One successful method breaks up the whole scene into a series of points of light, which by means of photo-electric cells, are converted into electric currents, amplified and transmitted. At the receiving end, the electric signals are converted into light, the varying intensity of which, when symmetrically arranged as at the transmitting end, gives a representation of the scene.

The greatest principles required for the accomplishment of television were known as long ago as 1884, but success was not achieved till the perfection of devices for amplifying currents. J. L. Baird, in Britain, and C. F. Jenkins, in America, exhibited television apparatus in 1925; in 1927 the American Telephone and Telegraph Co. gave a public demonstration over a long distance, and in 1928 Baird transmitted images across the Atlantic, and in colour. The B.B.C. began broadcasting television programmes in 1932 and discontinued in Sept., 1935. But the Television Committee, appointed in Feb., 1935, arranged that regular transmission under the aegis of the B.B.C. should start early in 1936 from London's first television station at Alexandra Palace.

Telford **Thomas.** Scottish engineer. He was born in Eskdale, Aug. 9, 1757, and became a stonemason. In 1783 he moved to London, and in 1787 secured an official position as superintendent of the roads in Shropshire. This led to his appointment as engineer for the suggested Ellesmere canal. He was chosen by the Government to report on the Scottish roads, and became engineer for the Caledonian Canal. In addition, he was responsible for many hundred miles of roads, numerous bridges and work on the harbours of some Scottish seaports. He died Sept. 2, 1834, and was buried in Westminster Abbey.

Tell **William.** Swiss legendary hero. According to tradition he was instrumental in Nov., 1307, in rescuing his country from the tyranny of Austria, whose duke, Albert II., wished to annex certain cantons. The story of how Tell was compelled to shoot an apple from his son's head, how he subsequently shot Gessler, the Austrian vogt, or steward, and how this led to a rising of the people, is accepted as a myth. Schiller made the story into one of his finest plays.

Tell el-Amarna Ancient city of Egypt. It stood on the right bank of the Nile and was built by Akhenaton (*q.v.*) as the seat of government in place of Thebes. Excavations here have brought to light important relics of Egyptian civilisation, including 300 clay tablets in cuneiform, which contain correspondence between Akhenaton and his governors in Palestine.

Tellurium Non-metallic element having the symbol Te and atomic weight 127.5. Tellurium, though resembling a metal in its silvery lustre, is placed along with sulphur and selenium. It occurs rarely in the pure state, and is found chiefly as a telluride in combination with bismuth, gold, silver, etc., in the minerals sylvanite and tetradymite.

Telpherage System of electric traction on a ropeway for transport of ore or other material over rough country. It consists of a track formed of a strong steel cable supported at intervals by posts. On this cable run the wheels of small suspended trolleys which are propelled by a current from an overhead wire.

Tempe Valley of Greece. It is in the north of the country, between the mountains of Olympus and Ossa, and is now called Lykostomo, or "wolf's mouth." The River Peneus flows through it. To the ancients it was known for its beautiful scenery and in it Apollo was worshipped.

Tempera Ancient method of painting, the forerunner of fresco. The medium used is some kind of sticky substance with which the colour can be mixed and the whole then applied to the stone surface. Yolk of egg was one of the most usual mediums.

Temperance Movement which aims at reducing or ending the consumption of alcohol as a beverage. It originated in 1826 and seeks to attain its purpose by the advocacy of total abstinence, by spreading information concerning the effects of alcohol as a narcotic drug, and by political action. The Report of the Royal Commission on Licensing, issued in 1931, was received with satisfaction by the leaders of the movement, at least so far as its findings are concerned, though disappointment was expressed at its recommendations for legislative reform. *See* PROHIBITION.

Temperature Thermal condition. Condition of hotness or coldness of a body that determines the transfer of heat energy to other bodies; according to the second law of thermodynamics, always to those of lower temperature. Two bodies are at the same temperature when the mutual interchange of heat is the same, but if one body transmits more heat than it receives from the other, the first body is said to be at a higher temperature. The thermal range is measured in units or degrees of temperature by means of a thermometer.

As regards the human body the temperature in health is about 98·4° F., but in fevers may rise to 106° F. or higher, while in collapse it may fall to 80° F. or even lower. Only a limited range of temperature of the air is endured by the body in comfort, the normal condition for a room being about 62·5° F.

Tempering Process by which steel is given various degrees of hardness. Heated steel quickly cooled becomes dead hard but too brittle for use. Reheating it reduces the hardness but leaves it suitable for practical purposes. This "tempering" is indicated by the colour during the heating,

ranging from pale yellow to deep blue in the lowest temper.

Tempest **Marie Susan.** English actress. She was born in London, July 15, 1866, and educated at the Ursuline convent at Brildonck, Belgium. Her first stage appearance was as Fianetta, in Boccaccio. She has toured in Canada, the United States, Australia, New Zealand, South Africa, Peking and Manilla, and has produced plays by Arnold Bennett, Harold Chapin, Jerome K. Jerome, Henry Arthur Jones, Robert Marshall, etc. She gave up musical plays in 1900, and turned to comedy, and in recent years has appeared in *The First Mrs. Fraser* (1929), *To-morrow will be Friday* (1932) and *Theatre Royal* (1934). The jubilee of her stage début was celebrated in 1935.

Templars *See* KNIGHTS TEMPLARS.

Template Pattern in wood or metal used as a guide in the making of mouldings, etc., or of parts of machinery, showing the position of the holes for rivets or bolts and other details; also the stone block in a wall to hold the end of a girder.

Temple Building for worship. It originally fulfilled the need for a shelter for a deity, and was a stage onward from open-air worshipping places. The earliest Jewish temple was that built by Micah (Judges xvii., 5), but the most famous was that of Solomon. This consisted of three parts, the temple proper, a porch in front of it, and a lower building surrounding the other three sides. Egyptian temples, which were on a simpler but no less imposing plan, reached their apogee in the magnificent sanctuary of Karnak. Then follow Greek and Roman temples, usually rectangular in form. The **Temple Church,** in London, one of the five round churches in England, was built by the Knights Templars.

Temple District in London. It lies between Fleet Street and the Thames Embankment, and is so named because it was once the property of the Knights Templars. It now belongs to the two legal societies, the **Inner Temple** and the **Middle Temple,** both of which have the right to call students to the bar. The buildings include the two halls, that of the Middle Temple dating from 1572, the libraries and the chambers in the various squares and courts, *e.g.*, Fountain Court, Pump Court, etc. The finest building is the church, notable for its Norman doorway, its figures of the Templars, and its marble pillars. Its musical services are famous. In the gardens an annual rose show is held. **Temple Bar,** the western boundary of the city, is in Fleet Street. The old bar is now in Theobald's Park. It is a gateway designed by Wren, replacing an old one on which the heads of traitors were exposed.

Temple **Frederick.** English archbishop. Born Nov. 30, 1821, in the Ionian Islands, he was educated at Blundell's School and Balliol College, Oxford. He was ordained in 1846 and took up educational work. In 1857 he was appointed headmaster of Rugby, where he remained for 12 years. In 1869 he was appointed Bishop of Exeter, in 1885 Bishop of London, and 1896 Archbishop of Canterbury. He died Dec. 23, 1902.

Temple **Richard Grenville-Temple, first Earl.** Born September 26, 1711, he held various public offices between 1752 and 1761 under his brother-in-law, Pitt (Earl Chatham). He broke with him on the question of the Stamp Act in 1766, and, together with his brother, George Grenville, bitterly opposed him afterwards. He retired from public life in 1770, and died Sept. 12, 1779.

Temple **Sir William.** English diplomat and author. He was born in London in 1628 and educated at Cambridge. In 1668 he negotiated the Triple Alliance between England, Holland and Sweden to resist the designs of France on the Netherlands, a treaty nullified by Charles II. by his secret Treaty of Dover (1670). He became ambassador at the Hague in 1668, and negotiated the marriage of William of Orange and Princess Mary. He is known by his *Memoirs* and various essays. He died Jan. 27, 1699.

Temple **William.** English archbishop. Born Oct. 15, 1881, a son of Frederick Temple, then Bishop of Exeter, he was educated at Rugby and Balliol College, Oxford. He was fellow and tutor of Queen's College from 1904 to 1910, when he became headmaster of Repton School. In 1914 he became Rector of S. James's, Piccadilly, London. In 1919 he was made Canon of Westminster; in 1920 Bishop of Manchester, and in 1928 Archbishop of York.

Templemore Urban district and market town of Co. Tipperary, Irish Free State. It is 70 m. from Dublin, on the G.S. Rlys., and is situated on the Suir. The town has an agricultural trade. Its name is due to the fact that the Templars once had a castle here. Pop. (1926) 2233.

Temple Newsam District of Leeds. It is 3 m. from the city proper. Here in the 12th century the Templars had a house, believed to be the original of Templestowe in *Ivanhoe*. In 1922 Viscount Irwin presented the house and much of the estate to the city of Leeds. The house, a Jacobean one and the birthplace of Lord Darnley, husband of Mary Queen of Scots, contains some fine paintings.

Tempo Rate of a movement of a piece of music, *e.g.*, grave (very slow), lento (slow), largo or adagio (leisurely), andante (walking), allegro (quick), presto (rapid). These words are often qualified by molto (very), non troppo (not too much). "A tempo" indicates resumption of a former speed.

Tenacity Term in physics applied to the resistance of a material to a tensile or stretching force tending to overcome the cohesion of the component particles. Usually the tenacity of a metal or other substance is decreased by a rise in temperature or by the presence of impurities.

Tenant One who holds or occupies land or buildings which belong to another, called the landlord. For this he pays rent and his tenancy is protected under the Law of Property Act (1925), the Landlord and Tenant Act (1927), the Rent Restriction and other acts. *See* LANDLORD, RENT, REPAIRS.

Tenbury Market town of Worcestershire. It stands on the Teme, 22 m. from Worcester and 149 from London, by the G.W. Rly. There are mineral springs and the town is sometimes called **Tenbury Wells.** S. Michael's College, founded in 1857 for the study of church music, is 2 m. distant.

Tenby Borough, market town and pleasure resort of Pembrokeshire. It is 257 m. from London by the G.W. Rly., and 9 from Pembroke. There is a harbour for the fishing. Objects of interest are the walls and a gateway of the old fortifications, and the remains of the castle. The town has become a

popular watering place, and round is some beautiful scenery. Pop. (1931) 4108.

Tench Fresh water fish (*Tinca vulgaris*) related to the carp. It is a native of Europe and certain parts of Asia Minor. It grows to a length of 16 in. and a weight of 4 lb. A fish of quiet waters, it frequents the muddy bed and passes the winter buried there. The colouring is usually deep olive above with grey beneath. There are two barbels at the head. The flesh is somewhat tasteless, and the fish requires prolonged washing to render it fit for cooking.

Ten Commandments *See* Decalogue.

Tendon Fibrous cord, attaching the muscles to the bone which it regulates. The name is frequently applied to those particular tendons which are thick and rounded and attached to round muscles: when broad and flat they are known as aponeuroses. Tendons are white and glistening, and consist of fibres joined by cellular tissue.

Tendril Botanical term for spiral thread-like growths which enable certain species of plants to attach themselves to an adjacent support. Some tendrils, as in *clematis vitalba* or traveller's joy, are extensions of the leaf stalk and are hard and wirelike. Those of the white bryony are slender coiled shoots which support the trailing stems and enable them to twine in all directions. Other forms are modifications of a part of the leaf blade, or of the leaf blade itself.

Tenebrae Service in the Roman Catholic Church. It is said or sung on the last three days of Holy Week and celebrates the darkness that fell on the earth at the Crucifixion. One by one the lighted candles are extinguished until only one remains alight. This is then hidden in order to be brought forth as a symbol of the Resurrection.

Tenedos Island of Turkey. It is in the Aegean Sea and covers 16 sq. m. Here, according to Homer, the Greek fleet anchored during the siege of Troy. The island became famed for its wine and its pottery. It became a Turkish possession and so remained until surrendered to Greece in 1920. By the Treaty of Lausanne in 1923, it was returned to Turkey. Pop. 4000.

Teneriffe Largest of the Canary Islands, belonging to Spain. Its capital is Santa Cruz and Orotava is another important town. Its scenery and mild climate commend it to visitors. The centre of the island is occupied by the extinct volcano, Pico de Teyde, whose highest point, El Piton, is 12,200 ft. high. It has a broadcasting station (41.6 M., 0·05 kW.) Pop. 110,000. *See* CANARY ISLANDS.

Teniers Family of Flemish painters of the 17th century. David Teniers the Elder was born at Antwerp in 1582, and died there in 1649. He was a pupil of Rubens, and his canvases are either mythological or rustic in subject. His "Playing at Bowls" is in the National Gallery. David Teniers the younger was born at Antwerp, Dec. 15, 1610, and died at Brussels, April 25, 1690. He was a greater painter than his father. His greatest picture, "Meeting of the Civic Guards," is at Leningrad, while his "Village Fête" is in the National Gallery, London.

Tenison **Thomas.** English prelate. Born at Cottenham, Cambridgeshire, Sept. 29, 1636, he was educated at Norwich and Corpus Christi College, Cambridge. In 1680 he was presented to the living of St. Martin-in-the-Fields, where he endowed a school for boys. In 1691 he was appointed Bishop of Lincoln and in 1694 Archbishop of Canterbury. He crowned Queen Anne and George I., and died Dec. 14, 1715.

Tennant **Sir Charles.** British merchant. Born in Glasgow, Nov. 4, 1823, he was educated there, and entered his grandfather's chemical works at St. Rollox. By his skilful management of this and other industrial ventures he amassed a big fortune. He became a great patron of the arts, and was made a trustee of the National Gallery in 1894. His private collection was opened to the public in the **Tennant Gallery**. He sat in the House of Commons as a Liberal from 1879-86, but later joined Chamberlain as a tariff reformer. He was made baronet in 1885, and died June 4, 1906. His grandson now holds the title of Lord Glenconner, and his daughter Margot married H. H. Asquith (*q.v.*).

Tennessee State of the United States. It is wholly inland, in the south central part of the country, and covers 42,000 sq. m. Nashville is the capital, but Memphis is the largest city. It produces large crops of cotton and tobacco and much coal is mined. Extensive areas are covered with forest. The state is governed by a legislature of two houses. Pop. (1930) 2,616,556.

Tenniel **Sir John.** English caricaturist. Born in London, Feb. 28, 1820, he became world-famous through his long connection with *Punch* (1850-1901), for which he drew the principal weekly cartoon. The last of these appeared in Jan., 1901. He also illustrated *Alice in Wonderland*, *Through the Looking Glass*, *Lalla Rookh* and the *Ingoldsby Legends*. All his illustrations are remarkable for their originality, their finish, and their accurate, graceful drawing. He was knighted in 1893, and died Feb. 25, 1914.

Tennis Ball game. It is played in a walled court divided by a net, and from it the modern game of **lawn tennis** has developed. It was played in Italy, France and England in the 16th century, when courts were built at some of the palaces. Henry VIII., who built one at Hampton Court, and later Henry IV. of France, both played the game.

The game is still played to-day, and there are courts at some of the London clubs, at Oxford and Cambridge and at one or two country houses. On three sides of the court there is an inner wall, with a roof sloping from the outer wall, called the penthouse. On the front wall is a buttress, called the tambour. In one of the end walls is an opening, called the dedans, and in the other a smaller opening, called the grille. All these have their part in making scoring points. The sides are called the hazard side and the service side respectively. The floor is of stone or composition. Both balls and rackets are much heavier than those used in lawn tennis.

There is an amateur championship at tennis, and its holders have included such noted players as J. M. Heathcote. Alfred Lyttelton, Viscount Grey, and Jay Gould. Peter Latham is perhaps the greatest professional player of the game. Matches are played between the older universities.

Tennyson **Alfred, Baron.** English poet, He was born at Somersby, Lincolnshire, Aug. 6, 1809, the third son of the rector, and educated at Louth Grammar School and Trinity College, Cambridge. In 1826

Poems by Two Brothers (Alfred and Charles) gave an inkling of the poet's great future. His first publication, *Poems, Chiefly Lyrical* (1830) elicited both praise and derision, but a succession of beautiful lyrics during the next 10 years made his place secure, and in 1850 he succeeded Wordsworth as poet laureate. In this year appeared *In Memoriam*, occasioned by the death of his friend Arthur Hallam.

The Idylls of the King appeared in instalments in 1859, 1870, 1872 and 1885. Of his several plays, *Becket* is perhaps the finest. His last poem, *Crossing the Bar*, would alone entitle him to immortality. In 1884 Tennyson was created Baron Tennyson of Freshwater and Aldworth. He died Oct. 6, 1892, and was buried in Westminster Abbey.

Tenor Third of the four parts of harmonised music, and the highest range of the adult male voice, the compass being normally from C in the second space of the bass staff to A in the second space of the treble staff.

Tension Term applied when a body is subjected to a state of stretching or straining, resulting in an alteration of its original form or volume. The series of forces causing this tension or strain is termed a stress, and this always acts either in a pulling or pushing direction.

Tentacle An elongated arm proceeding from the head or cephalic extremity of a number of lower animals. It is used for gripping or for exploring. The tentacles of an octopus possess great power owing to the suckers upon then.

Tenterden Borough and market town of Kent, 62 m. from London, on the S. Rly. At one time it was a Cinque Port, but the sea has receded. It is an agricultural town with fairs and markets, and has associations with Ellen Terry. Pop. (1931) 3473.

Charles Abbott, appointed Lord Chief Justice in 1818, was made a peer as **Baron Tenterden** in 1827. He died Nov. 4, 1832.

Terebene Colourless liquid consisting of a mixture of terpene, dipentene, and other hydrocarbons. It is prepared by treating turpentine with sulphuric acid followed by distillation. Terebene has an odour resembling pinewood, and is used as an antiseptic and deodoriser. A painters' drier called terebine is a mixture of turpentine, linseed oil and metallic salts.

Terebinth Tree, also known as Chian turpentine (*Pistacia terebinthus*). Belonging to the order *Anacardiaceae*, it is a native of southern Europe and the Levant. An oleo-resin, Chian turpentine which exudes from the excised trunk and hardens on exposure, is used in medicine in liniment form.

Teredo Genus of molluscs. They are found in the submerged timber of ships, piers, etc. The small annular shell is open at each end and the molluscs establish themselves when small in the timber, perforating it in numberless directions by means of two small valves. The common ship worm is *Teredo navalis*.

Terence Latin poet. Publius Terentius Afer was born at Carthage in 195 B.C. He was a slave, but his remarkable talents gained for him his freedom. His chief comedy was *Andria*, which was followed by five others. He was fortunate in the protection of Scipio the younger. He died in Greece in 159 B.C.

Teresa Christian saint. She was born in Castile, March 28, 1515, the daughter of a Spanish noble, Alphonsus de Cepeda. She early entered the Carmelite Order, and lived to found 32 convents. She left an autobiography which is a Spanish classic. She died at Alba, Oct. 4, 1582, and was canonised by Pope Gregory XV. in 1622.

Term Period of time. Lawyers used it in connection with leases which are for a term of years. At one time it was used for the sitting of the English law courts, and it is still used for the four periods during which students for the Bar eat their dinners.

In educational circles the word still persists. At Oxford there are four terms, but two of them, Hilary and Lent, are kept as one, making in practice three, the others being Trinity and Michaelmas. At Cambridge and practically all the English universities, colleges and public schools, the terms are Lent, Easter and Michaelmas, or Easter, summer and autumn.

Tern Sea bird of the *Laridae*, or gull family. The common tern (*Sterna fluviatilis*) has a black head and nape of neck, grey back, white rump and under parts, the bill being orange with bluish black extremity, and the legs red. The whole length is 14 to 15 in. The legs are short, and the wings long and pointed. It is a summer visitant to Britain, frequenting inland as well as coastal waters.

Terni City of Italy. It is on the River Nera, 68 m. from Rome by railway. It has a cathedral and there are remains of a Roman city. The river Velino, which falls into the Nera near here, has a famous waterfall, 650 ft. high, used for generating electric power.

Terpenes Series of isomeric hydrocarbons nearly related to cymene. They form one of the benzene derivatives, and occur in the essential oils of many plants. The principal terpenes are pinene, present in turpentine and the oils of eucalyptus and juniper, limonene, in the oils of lemon and orange, and the solid terpene, camphor.

Terpsichore One of the nine muses. Her province was dancing, and she was pictured holding a lyre. *See* MUSE.

Terra Cotta Variety of reddish brick-like earthenware, consisting of a mixture of fine clay and sand moulded into the required form, dried in the air and baked at a high temperature. It was used for decorative purposes and statuary by the Greeks and in Italy during the Middle Ages. As a mural decorative material, terra cotta became popular in England during the 19th century, as its partially vitrified surface resists atmospheric action well.

Terrapin Amphibious tortoise of the family *Testudinidae*. One species, *Malacoclemmys terrapin*, found in the salt marshes of the eastern shores of N. America, is used as food. Some terrapins (*Cryptodeira*) have a snake-like neck which is vertically bent on itself when withdrawn within the carapace; others (*Pleurodeira*) bend the neck laterally for this purpose. *See* TORTOISE, TURTLE.

Terrier Breed of dog. Light and nimble, with short muzzles and large brains, they are extremely intelligent and brave. Among the many breeds may be cited the English or fox-terrier, smooth of coat; the rough-haired Scotch terrier; the

Skye terrier, short legged, with long body and large ears; the small Maltese terrier; and the bull terrier, which possesses many of the qualities of the bull-dog.

Territorial Army Part of the British Army. It was established under the Territorial and Reserve Forces Act of 1908 by Lord Haldane, who made it a self-contained body, with cadets, officers' training corps, and veteran reserves. The modern army demands a four years' engagement, 14 days' service per year, and attendance at camp, usually in August. The Territorial Army first served in the War in Sept., 1914. Its numerical force in 1934 was 198,935. *See* ARMY.

Territorial Waters Belt of sea surrounding the coast of a state and subject to its jurisdiction. By the Territorial Waters Jurisdiction Act of 1878, English courts have power to arrest and try persons, whether British subjects or not, for offences committed on the high seas within one marine league (*i.e.*, the range of a gun) from the coast. Twelve miles from the coast is the limit within which the U.S.A. by treaty with Gt. Britain and other powers, has the right to seize suspected "boot-legging" vessels.

Territory Land forming part of a federal state, but not fully organised with state rights, *e.g.*, the North-West Territories of Canada. A territory is usually administered by officers of the federal government.

Terror Extinct volcano of Ross Island, Antarctica. It is 11,000 ft. high, and was named after the ship of Sir James Ross, who discovered it in 1841.

Terry **Dame Ellen Alicia.** English actress. She was born in Coventry, Feb. 27, 1848, making her first stage appearance at the age of 8. Her real début was in 1863, at the Haymarket, as *Gertrude* in *The Little Treasure*. In 1875 she made a sensation as *Portia*, under the Bancrofts. In Dec., 1878, began her memorable association with Irving at the Lyceum. After Irving's death in 1905 she continued to act at the Court Theatre under her own management. Her stage jubilee in 1906 excited world-wide interest. In 1925 she was given an O.B.E. She died July 21, 1928. Sir Johnston Forbes-Robertson said of her that "taken all in all, she was one of the most remarkable figures in the history of the stage."

Tertiary Geological group of systems of strata. Lying above the Cretaceous rocks, it is also known as Cainozoic, a term implying that the forms of life present are more nearly related to present types. This period is divided into Eocene, Oligocene, Miocene, Pliocene and Post-Pliocene. The climate was mild at first, then tropical, followed by a cold period and during this age mammals became abundant and diversified in character, finally approaching existing genera.

Tertiary Member of a Roman Catholic order. Tertiaries were instituted by the Mendicant Orders as a third order, the first being the friars and the second the nuns. They were laymen or women who shared in the religious life of the community, but did not live under a rule. They are now divided into Regulars, leading a fully organised religious life, and Seculars, living according to the original idea.

Tertullian Christian theologian. Born about 155 at Carthage, Quintus Septimus Florens Tertullianus was not converted to Christianity until after 190. He was the founder of a Christian Latin literature, and influenced Cyprian and Augustine, as well as many other early religious writers. The unity of the early Church owes much to him. He died in 222.

Teschen Town of Poland. It is about 50 m. S.E. of Troppau, and is situated on the Olsa, a tributary of the Oder. Coal is mined, and other industries are tanning, cloth weaving and flax spinning. In 1625 the duchy became an appanage of the Bohemian crown, and in 1722 it passed to Austria. In 1920 the Teschen district was divided between Poland and Czechoslovakia. The Poles call it Cieszyn and the Czechs Tesin. Pop. 23,336.

Test River in Hampshire. It rises in the north of the county, and flows into Southampton Water, which it enters near Totton. It is a famous trout stream. Its chief tributary is the Anton, and Stockbridge and Romsey are the largest places on its banks.

Test Act A measure passed in England in 1673. By it every one holding office must take the sacrament, according to the rites of the Church of England, once a year. After a time it ceased to be enforced, but it was not repealed until 1828.

Testament Any solemn declaration; a statement that is witnessed and therefore authentic. A will is called a testament and the word is used for the two parts of the Bible, the New and the Old Testament. *See* WILL.

Tester English coin now obsolete. It was coined in the 16th century and was worth about 1s. 6d. Later the word was sometimes used for a sixpence. Another **tester** is the canopy over a bedstead.

Tetanus Infective disease. Popularly known as lockjaw, it is due to the action of the *Bacillus tetani* introduced into the body through a wound from infected soil. The virus acts specially upon the nervous system causing a spasm of the jaw and other muscles. The use of an antitetanic serum has been found of value.

Tetany Nervous disease connected with the impaired action of the parathyroid glands. It occurs in children suffering from rickets or the effects of teething, and also in adults weakened by certain diseases or defective hygienic conditions. It is characterised by attacks of tonic spasms of the muscles, especially those of the hand or foot.

Tetbury Urban district and market town of Gloucestershire. It is 8 m. from Stroud, and 98 from London, by the G.W. Rly. The town has an agricultural trade. Pop. (1931) 2237.

Tetradymite Alternative name for telluric bismuth, a mineral consisting of the telluride of bismuth occurring associated with gold in N. America, Norway and Hungary. Tetradymite is found massive, granular or in tabular steel grey crystals showing a metallic lustre. In some cases sulphur and selenium also are present.

Tetrarch Originally the ruler of a fourth part. It came to be used for any subordinate ruler, especially for the princes who ruled in Syria when it was part of the Roman Empire. There is a reference to **Herod the Tetrarch** of Galilee in Luke iii.

Tetrazzini **Luisa.** Italian singer. Born in Florence in 1871, she

studied singing there under Cocherini, and made her debut in 1895 in the Teatro Verdi, Florence. She captured London on her first appearance at Covent Garden in 1907. A wonderful coloratura soprano, she excels in Italian opera, her favourite rôles being *Lucia* and *La Sonnambula*. In 1921 she published *My Life of Song*. In 1933 she visited Britain in the course of a " Farewell Tour."

Tettenhall Urban district of Staffordshire. It is 2 m. from Wolverhampton. Near is Wrottesley Hall, the residence of Lord Wrottesley. Pop. 5767.

Tetuan City of Morocco. It is about 6 m. from the Bay of Tetuan, and 2½ m. from Ceuta. Connected by railway with the coast and the interior, it is the capital of the Spanish zone. Pop. 38,000.

Tetzel **Johann.** Dominican monk. Born in Leipzig about 1455, he entered the Dominican Order in 1489. In 1517 he travelled in Germany, selling indulgences to assist Pope Leo X. in raising funds for the building of S. Peter's, Rome. Luther, indignant at the procedure, nailed his famous 95 theses on the church door at Wittenberg, combating this abuse, and others. Indirectly this act led to the Reformation in Germany. Tetzel died of the plague at Leipzig on July 4, 1519.

Teutonic Order Religious order. Together with the Templars and Hospitallers it came into being during the Crusades. It owes its origin to some pious citizens of Bremen and Lübeck, who desired to alleviate the sufferings of the troops attacking Acre in 1190. Later it became a powerful instrument for the spread of German civilisation, was suppressed by Napoleon in 1809, but was revived in Austria in 1840.

Teviot River of Roxburghshire. It rises on the Dumfriesshire border and flows across the county until it falls into the Tweed near Kelso. It passes by Hawick, is noted for its fishing and is 40 m. in length. The beautiful district through which the river flows is known as **Teviotdale.**

Tewkesbury Borough and market town of Gloucestershire. It is 8 m. from Cheltenham and 153 from London, by the L.M.S. Rly., and stands on the Avon near its junction with the Severn. An agricultural centre, the town is famous for its abbey church, once part of a Benedictine monastery. Tewkesbury is the Nortonbury of *John Halifax, Gentleman*. Pop. (1931) 4352.

During the Wars of the Roses, the **Battle of Tewkesbury** was fought near here, May 3, 1471, when the Lancastrians were defeated.

Texas State of the United States. It is in the south of the country with a coastline on the Gulf of Mexico. It covers 265,900 sq. m., making it the largest state in the union. Austin is the capital, but there are many larger places, especially Houston, Dallas, San Antonio, Fort Worth, El Paso, and Galveston. The state produces an enormous quantity of cotton, maize, wheat and oats. Fruit is extensively grown and there are very productive oil wells. It is governed by a legislature of two houses. Formerly part of Mexico, Texas was an independent republic, 1836 to 1845, when it became a state of the United States. Pop. (1930) 5,824,715.

Texel Island of the Netherlands. It covers 70 sq. m. and is the most westerly of the Frisian Islands. De Burg is the chief town. The northern part is famous as a haunt of seabirds. The inhabitants are engaged in fishing and keeping sheep.

On July 31, 1653, an English fleet, under Blake and Monk, defeated a Dutch fleet here. On Aug. 11, 1673, there was another fight between the same antagonists. The English were helped by the French, but the result was indecisive. On Oct. 11, 1797, a Dutch fleet was defeated here by Duncan's ships.

Textiles General name for woven goods. The raw materials employed may be flax, silk, wool or cotton. In Great Britain the principal centres of the textile trade are Lancashire and Yorkshire for cotton and wool, Northern Ireland for linen, and certain districts in Scotland, *e.g.*, the Hebrides, for special tweeds.

Thackeray **William Makepeace.** English author. He was born July 18, 1811, in Calcutta, of Yorkshire parentage, and educated at Charterhouse and Cambridge. He then took up, successively, law, journalism, art (in Paris), and journalism again, and contributed for a time regularly to *The Times*. In 1840 appeared his first book, *The Paris Sketchbook*. He joined *Punch* in 1842, using both pen and pencil. Early in 1847 he began *Vanity Fair*, issuing it in monthly parts. It was finished in July, 1848; Thackeray's reputation was made, and he became the idol of society. *Pendennis* and *Esmond* quickly followed, and he then conducted a successful lecture tour in the United States. *The Newcomes* appeared in 1853; he edited *The Cornhill Magazine* from 1860-62, his *Roundabout Papers* appearing in it, and he was engaged on *Denis Duval* when he died suddenly, Dec. 24, 1863. Just as Dickens was a master with his pictures of low life, so was Thackeray supreme in his high life delineations.

Thais Greek courtesan. She is known for her association with Alexander the Great. She went with him to Asia, and the legend says she persuaded him to burn the Persian palace at Persepolis. Dryden, in *Alexander's Feast*, describes the incident.

Thaler Old coin of Germany. It was first struck in the valley of St. Joachim in Bohemia, and was originally known as a Joachimsthaler. It was in circulation from about 1520 until the latter part of the 17th century. The word dollar is a corruption of thaler. The silver thaler had a value of about three shillings.

Thales Greek philosopher. He was born about 640 B.C. at Miletus and lived until 550. Regarded as one of the seven wise men of Greece, he put forward the idea that water is the first principle of the universe, everything else being but a variant of it. Although his theory is absurd, he was the first to suggest a scientific explanation of the facts of the universe. He is said to have foretold an eclipse of the sun that took place in 585 B.C.

Thalia Name of one of the nine muses. The muse of comedy, she is usually represented with a comic mask and a shepherd's staff.

Thallium Rare metallic element having the symbol Tl and atomic weight 204.39. It is widely diffused in small quantities in iron pyrites, chalcopyrites, mica and lepidolite, also as a selenide in certain silver ores. It is a soft, heavy, white metal resembling lead in many of its properties, and readily tarnishes on exposure to air.

Thame River of England. It rises in the Chiltern Hills and flows past

Thame to the Thames, which it enters near Dorchester in Oxfordshire. It is 35 m. in length.

Thame Urban district and market town of Oxfordshire. It is 41 m. from London and 15 from Oxford, by the G.W. Rly., and is situated on the Thames. It is an agricultural centre. Lord Williams' Grammar School is an old foundation, and the Spread Eagle is a famous inn. Near is **Thame Park.** Pop. (1931) 3019.

Thames River of England. It rises in several head streams in the Cotswold Hills and flows in an easterly direction to its estuary in the North Sea. From Lechlade in Gloucestershire to the Nore it is 250 m. long, the last 60 being from London Bridge to the open sea. It flows past Oxford, Reading, and other places, and is crossed by a number of bridges, especially in the London area. The lowest is the Tower Bridge. Below this it is crossed by tunnels, one being between Greenwich and Poplar, and lower down by ferries at Woolwich and Gravesend. The chief tributaries from the north are the Cherwell, Thame, Colne, Brent, Lea and Roding; from the south they are the Kennet, Loddon, Wey, Mole, Darent and Medway. Canals connect it with the Severn and other waterways. At London Bridge the river is 300 yds. wide, at Greenwich 800 yds., and at the Nore 6 m.

The Thames is tidal to Teddington; and from there to Oxford it is given up almost entirely to boating and angling, although steamers go regularly along it. On its banks are many beauty spots, such as Goring and Cliveden. Below Teddington it is a commercial river controlled by the Port of London Authority. It is much subject to floods. A good deal has been done to alleviate these, although there were serious ones in London in Jan. 1928.

Thames River of Canada. It rises in the peninsula of Ontario between Lakes Huron and Erie and flows into Lake St. Clair. It is 160 m. long and on it is the city of London.

Thames Town and seaport of New Zealand. It stands on a bay of the North Island, 40 m. from Auckland, with which it is connected by railway. There is a little shipping, and in the neighbourhood are gold mines. Near the town a river called the Thames, or the Waihi, falls into the bay.

Thames Conservancy Body appointed to look after the River Thames. It controls the river from its source down to Teddington. The duties include the care of the locks and the prevention of floods. It dates from 1857. Its members are chosen by the county councils and other authorities whose interests adjoin the Thames. Serious drought in this area in 1933 and 1934 caused grave concern, and suggestions for a regulated national water supply were brought forward. The offices are in Norfolk Street, Strand, London, W.C.2.

Thames Ditton District of Surrey, part of the urban district of Esher and the Dittons. It is 14 m. from London by the S. Rly., and stands on the Thames. The place is an angling centre. Pop. 8450. *See* ESHER.

Thameshaven Seaport of Essex. It is 32 m. from London, on the L.M.S. Rly. Developed as a centre for the storage of oil, it has wharves and other accommodation for the landing of the fuel.

Thane Title of honour among Anglo-Saxons. Originally confined to personal followers of the king, the honour could be gained by a freeman who acquired 5 hides of land or made 3 sea voyages. A thane was also entitled to sit in the Witan. Thanes grew in powers with the kings, but the title lost significance after the Norman Conquest.

Thanet District, sometimes called an island, of Kent. In the north-east of the county, it is made an island by the River Stour. It is surrounded on three sides by the sea, and its prominent headland is the North Foreland. On it are Margate, Ramsgate, Broadstairs, and other watering places, as well as Ebbsfleet.

Thanet beds is the geological name for the lowest division of the Eocene in Gt. Britain. It is found in Thanet, and in it are many marine fossils.

Thanksgiving Day Holiday in the United States. It began in New England as a thanksgiving for the harvest. In the 19th century it was made a general holiday. The last Thursday in November was chosen and since 1864 this has been a general holiday.

Theatines Order in the Roman Catholic Church. It was founded in 1524 by the cleric who afterwards became Pope Paul IV.

Theatre Building for public performances. The drama originally rose from the choric dances composed in honour of Dionysus. The cult of the theatre was very widespread in Greek and Roman times, and great amphitheatres, capable of seating 40,000 persons, were constructed. In the Middle Ages, set stages were abandoned for booths and tents, while miracle plays replaced dramas. The first English theatre was constructed at Shoreditch in 1576, but theatre-construction and popularity reached its apogee in England in the 19th century. The post-war years have seen a marked decline in dramatic activities, amateur and professional, owing to the popularity of the film, which responds to an increased desire for action.

Thebaine Alkaloid also known as paramorphine occurring in minute proportions in opium. When isolated it crystallises in square plates of a silvery colour. In its physiological action thebaine is more like strychnine than morphine, and in its molecular structure is similar to the closely allied opium alkaloid, narcotine.

Thebes Ancient city of Boeotia (Greece). It is said to have been built by Amphion at whose playing of his lyre the stones moved into their places. It was the birthplace of Hercules and Bacchus. It appears very early as a flourishing city, with seven gates, the rival of neighbouring Athens. In 371, at the Battle of Leuctra, Thebes defeated Sparta and became the foremost city of Greece. With the death of Epaminondas, its glory faded, and it was partially destroyed by Alexander in 336.

Thebes Ancient city of the Upper Nile, now completely in ruin. One of the oldest cities of Egypt, it reached the zenith of its greatness in the 18th and 19th Dynasties under Rameses II., when its mammoth buildings and riches were the envy of the world. Later, the seat of power moved northward and after the sacking of the city in 668 B.C. by Assur-banipal, it never recovered its former greatness. Thebes, the greatest collection of monumental ruins in the world, boasts of a giant necropolis, the colossus of Rameses II.

(58 ft. high), the temples of Karnak and Luxor, and the colossi of Memnon.

Thecla Christian saint. She lived at Iconium in Asia Minor, and was converted to Christianity by the preaching of S. Paul. She suffered persecution. A book of the Apocrypha called *The Acts of Paul and Thecla*, deals with her career. Another **Thecla** was an English saint who went with St. Boniface to Germany.

Theebaw King of Burma. He began to reign in 1878. He failed to keep his engagements with Great Britain and this, together with some years of bad government, led to war in 1885. After a short campaign the king was deposed, and sent a prisoner to India. He died Dec. 16, 1916.

Theft General term for robbery, or the act of acquiring property unlawfully. In English law it may be burglary, larceny or embezzlement, and the punishment depends upon the nature of the offence and the amount at stake. Robbery with violence is punished more severely. *See* LARCENY.

Theism Belief in the existence of God, and in His influence upon the world. Theism should not be confused with deism, which admits the existence of God, but denies His revelation in the world. Theism corresponds to the Natural Theology of the Romans, and, in its exclusion of polytheism, has been extensively meditated through the ages. Cicero was a theist, as were Kant, Hegel (whose theism was impregnated with pantheism), Descartes (who sought God as a Cause), Malebranche, Leibnitz, and others.

Themis In Greek legend a wife of Zeus. She was the daughter of Uranus and Ge, and was regarded as the goddess of law. She bore to Zeus the three Hours and the Fates. Later he left her for Hera.

Themistocles Athenian general and statesman. Born about 514 B.C., he became the political leader in Athens after the ostracism of Aristides (482), and induced the Athenians to build a navy and fortify the Peiraeus. In 480 B.C. by means of a stratagem, he inflicted a crushing defeat near the isle of Salamis on Xerxes, who had arrived with an enormous fleet. This victory and others over the Persians made Athens the foremost maritime power of the period. Themistocles, however, now lost the confidence of the people, was ostracised, and settled at Magnesia (*q.v.*) where he died in 449 B.C.

Theobald's Park District of Hertfordshire. It is near Waltham Cross, being 12 m. from London, on the L.N.E. Rly. Near here Lord Burghley built a fine house which came to James I., who died here in 1625. It was pulled down and sold in the 18th century, and near the site a new house was built between 1765 and 1770. In the park is old Temple Bar. In 1931 the house was opened as an hotel or country club.

Theocritus Greek poet. He was born about 300 B.C., probably at Syracuse, and lived first at Cos and then at Alexandria. Of his poems 30 called *Idylls* are extant. He is the first and the greatest of the pastoral poets, and also wrote epic poems. His pastoral poems are famous for passages beautiful in idea and perfect in form. They influenced the work of Virgil and have been translated into English.

Theodolite Instrument used in land surveying for measuring areas by the method of triangulation. By means of the theodolite horizontal and vertical angles are measured. It consists essentially of a telescope capable of being rotated in a vertical and a horizontal plane, the movements being read off by means of two graduated circles. A compass and a spirit level are incorporated, and the instrument is supported on a tripod.

Theodora Roman empress. She was the mistress and then the wife of Justinian I., over whom she exercised much influence. A later **Theodora** was the wife of Theophilus, and was regent for her son, Michael III. in 842.

Theodoric the Great. Founder of the Ostrogothic monarchy. Born about A.D. 454, he led the East Goths from Pannonia over the Alps in 487, defeated Odoacer at Aquileia and Verona, and after the capture of Ravenna in 493 founded the Ostrogoth Empire, comprising Italy, the lands as far as the Danube, Switzerland, S.E. Gaul and Dalmatia. His wise and just rule gave the country a period of tranquillity and prosperity not enjoyed for centuries, and few autocratic rulers in history have, on the whole, used their powers so well. He died Aug. 30, 526. As Dietrich von Bern he figures largely in Germanic legends, such as the *Nibelungenlied*.

Theodosius I. The Great. Roman Emperor. He was born about 346 in Spain. In 379 he was offered the emperorship of the East, and for 4 years successfully resisted the oncoming tide of the Goths, who were more and more threatening the very existence of the empire. After the death of Gratian and Valentinian II. he became (the last) sole ruler, and on the whole ruled wisely. Soon after his death, Jan. 17, 395, began the barbarian invasions which eventually led to the overthrow of the empire.

Theodosius II., grandson of the above (401-50), succeeded his father, Arcadius, in 408. From 441 the Balkan region was frequently overrun by Attila's hordes, who were sometimes beaten back, sometimes bought off. He compiled the *Codex Theodosianus*.

Theology Science of religion, the study of God and man, and their relations to one another. Theology may be dogmatic, stating what is taught by the Scripture; exegetical, interpreting the Bible; historical, moral, polemical, metaphysical or practical. The first theologians were the Greek Gnostics, after which may be cited Athanasius, apostle of human immortality, Augustine, Calvin, the father of the Protestant faith, Luther and the leaders of the Oxford Movement. Among modern tendencies in moral theology are the principles of the German, Barth, which insist upon a greater spiritual reality.

Theosophy Religious system. The word means "divine wisdom" and has been applied to various systems of philosophy and religion, which profess to attain to a knowledge of God by direct intuition. These include the Theosophical Society (London office, 45 Lancaster Gate, W.2), founded by Madame Blavatsky in 1875, which has 400 branches throughout the world. Its teachings, which have close affinity with Buddhism, Gnosticism and Neoplatonism, are based on the principles of Karma and Re-incarnation (*q.v.*).

Therm Term adopted in England for the thermal unit of heat. It is defined as the amount of heat required to raise

1 lb. of water through one degree Fahrenheit. The term is also used in connection with the consumption of coal gas for domestic purposes, measuring the quantity equal to 100,000 British thermal units.

Thermionics Branch of physics dealing with the emission of electrically charged particles from heated solid matter. The **thermionic valve**, used in wireless telegraphy and broadcasting, consists of a metal filament enclosed in an evacuated tube and heated by an electric current. The electrons given off enable electric current to pass to another conductor (the anode) only in one direction. The valve can therefore be used for rectifying alternating electric currents, and also for amplification and the production of high-frequency alternating current, the control being introduced by a third electrode, the "grid."

Thermit Mixture of aluminium powder and a metallic oxide, usually that of iron, used for producing high localised temperatures for welding iron or steel rails, etc. Aluminium has a great affinity for oxygen, and when in contact with an oxygen-carrying substance and ignited usually by means of magnesium ribbon, a violent action takes place with the evolution of great heat. Defective castings can often be repaired by the thermit process.

Thermochemistry Branch of physical chemistry dealing with the relation between heat and chemical action. The quantity of heat evolved during chemical action bears a definite relation to the quantity of the elements involved. The study of the subject has had an important bearing on many industrial processes.

Thermodynamics Section of physical science dealing with heat in relation to mechanical work. Thermodynamics owes its inception principally to Joule who first determined the mechanical equivalent of heat, definitely asserting that heat is a form of energy. The first law of thermodynamics states that a definite amount of heat is absorbed for every unit of work done and that a given quantity of work produces a definite amount of heat. The second law states that heat energy is transferred always from a high to a low temperature.

Thermograph Thermometer which registers a continuous record of the variations of temperature. In one form a strip composed of two metals with dissimilar coefficients of expansion under heat is fixed at one end and connected at the other to a pen marking on a revolving drum. Alterations in temperature cause the pen to rise or fall, leaving a permanent record.

Thermometer Instrument for measuring variations in temperature by the expansion or contraction of a liquid or gas. One thermometer in general use consists of a sealed capillary glass tube ending in a bulb and containing mercury in the lower part with a vacuum in the upper portion. The thermometric scale commonly used in English-speaking countries is that of Fahrenheit, with freezing point as 32° and boiling point at 212°, but for scientific work the Centigrade scale with 0° as freezing point and 100° as boiling point is used everywhere. Specially constructed thermometers are employed for registering maximum and minimum temperatures for clinical purposes, etc.

Thermopylae (*Gr.* "Hot springs"). Pass of Greece. It leads from the north into the south of the country, being between the mountains and the sea on the east coast. Here, in 480 B.C., about 300 Greeks under Leonidas, King of Sparta, defended the pass against a Persian army, one of the great feats of antiquity. The Persians, by treachery, got to the rear of the Greeks who were all killed. Their famous epitaph may be translated as "Here we lie, Sparta, obedient to thy word."

Thermostat Appliance for indicating automatically changes in temperature by the expansion of metals, and used for regulating steam pressures or temperatures in incubators, etc. One type used in some fire-alarms consists of a platinum wire, connected with an electric circuit, fused into a thermometer bulb, and another wire into the tube about the normal temperature level. On an excessive rise in temperature the mercury contacts the upper wire, completing the circuit and ringing a bell.

Theseus Legendary hero of Attica. The son of Ageus, King of Athens, he performed many marvellous feats, freeing his country from robbers and monsters. Perhaps the greatest was the slaying of the Minotaur, a monster living in Crete, in the labyrinth. The Athenians had to pay him a periodical sacrifice of seven youths and seven maidens. Ariadne, daughter of King Minos, gave Theseus a ball of string, which he unwound on entering the labyrinth, thus leaving a clue to the exit.

Thespis Greek dramatist. He lived in the 6th century B.C., and is regarded as the founder of the drama, as he introduced an actor to assist the chorus in the festivals that were held in honour of Bacchus. The actor wore a mask and spoke from the platform, being responsible for the prologue and the dialogue. Thus the choral songs of the festival became the drama that was one of the greatest productions of Greece.

Thessalonians Epistles to. Two New Testament books. They appear to have been written by Paul to the Church at Thessalonica (mod. Salonica) not very long after his visit to that place recorded in Acts xvii. They are probably among the earliest of his letters. Their purpose is to congratulate the Thessalonian Church on its steadfastness under persecution, to reply to charges made against Paul, and to deal with difficulties about the Second Coming of Christ.

Thessalonica Original name of the town of Salonica (*q.v.*).

Thessaly District of Greece. In the north of the country, it lies to the south of Macedonia. The River Peneus flows through it and it is really a plain about 70 m. across surrounded by mountains. The Vale of Tempe leads through them to the north.

Thetford Borough and market town of Norfolk. It is 31 m. from Norwich and 94 from London by the L.N.E. Rly. It takes its name from the River Thet, which here falls into the Little Ouse. There are remains of two religious houses. There is also a grammar school and a museum. It has an agricultural trade and brewing is carried on. In Anglo-Saxon times it was the capital of East Anglia and had a bishop whose see was transferred to Norwich. To-day the Bishop of Thetford is a suffragan of the Bishop of Norwich. Pop. (1931) 4097.

Thetford City of Quebec, Canada. It is 76 m. from Quebec, and is served by the Quebec Central Rly. Here are asbestos mines. Pop. 7886.

Theydon Bois Village of Essex. It is 15 m. from London, on the L.N.E. Rly. The church is modern. Here are **Theydon Garnon** and **Theydon Mount**, both with churches of interest.

Thiepval Village of France. It is on the River Ancre 4 m. from Albert. It was the scene of fierce fighting during the Great War, especially during the Battle of the Somme (July, 1916), when it was one of the places taken by the British. It has a memorial to the men of the Ulster Division, and here in 1932 the Somme memorial was unveiled by the King when Prince of Wales.

Thiers **Louis Adolphe.** French statesman and writer. Born at Marseilles, April 16, 1797, he became a barrister and in 1821 went to Paris, where he soon became a prominent Liberal. Between 1823 and 1827 he wrote his famous *Histoire de la Révolution Française*, and in 1830 helped to found a newspaper, the *National*, which helped to provoke the revolution of that year. Elected Deputy for Aix in 1830, he was Minister of the Interior in 1832, and became President of the Council and virtual Prime Minister. Resigning in 1836, in 1840 he was again President of the Council and Foreign Minister. Exiled for a year after Louis Napoleon's *coup d'état*, he returned to politics in 1863 and after the fall of the empire in 1870, he negotiated for peace. From 1871 to 1873 he was President of the Republic. He died Sept. 3, 1877. Thiers also wrote *L'Histoire du Consulat et de l'Empire*.

Third Degree Originally an American slang expression (probably connected with the "Third Degree" in Masonry), it has now come into general use to denote the employment by the police of violence or other forms of physical maltreatment of a prisoner in order to extort a confession.

Third Party Term used in English law. It describes a person who is brought into a law suit, but is not a principal. It is also much used in connection with insurance against accidents. Since the legislation of 1929 in Great Britain, motorists must insure against risks to third parties, *i.e.*, they must not only insure their own lives and property against accident, but also those of any person who is injured by them, such being a third party.

Third Republic Republic that has existed in France since 1870. The first republic was set up at the Revolution and overthrown by Napoleon; the second was set up in 1848 and overthrown by Napoleon III.

Thirlmere Lake of Cumberland. It is near Helvellyn, and is over 3 m. in length. From it Manchester obtains much of its water supply. The water is carried to that city by an aqueduct, 106 m. long.

Thirlwall **Connop.** English bishop. He was born at Stepney, Jan. 11, 1797, educated at Charterhouse and Cambridge, where he gained many distinctions, and ordained in 1827. From 1840-1874 he was Bishop of St. Davids. He wrote a history of Greece, and in conjunction with his friend, Julius Hare, translated Niebuhr's *History of Rome* from the German. He died at Bath, July, 27th, 1875.

Thirsk Market town of Yorkshire (W.R.). It is 23 m. north-west of York and 210 from London by the L.N.E. Rly. The River Cod Beek flows through the town, which is an agricultural centre. Tanning and flour milling are carried on. Pop. 2755.

Thirty-nine Articles Creed of the Church of England. The Articles were adopted by the united convocations in 1563 and became law by Act of Parliament in 1571. Since 1604 no change has been made in them. The following are the topics dealt with; Articles 1-5, Universally recognised truths of the Christian religion; 6-8, Standards of faith; 9-18, Sin and Grace; 19-36, Church and Sacraments; 37-39, Civil order. Their predominantly negative character as shown in their condemnation of heresy and error is due to the exigencies of the special situation which they were designed to meet, and they are not to be interpreted as containing a systematic statement of Christian doctrine.

Thirty Years' War Name given to hostilities carried on in Germany between the years 1618 and 1648. The war started through the revolt of Bohemia against the rule of the Catholic Habsburgs. The offer of the Bohemian crown to the Lutheran prince, Frederick, Elector Palatine and son-in-law of James I. of England, was followed by the defeat of Frederick and the seizure of his lands by the Emperor Ferdinand. The Protestant princes of Germany and Gustavus Adolphus of Sweden then carried on the struggle for Protestantism against Catholicism, but after the death of Gustavus at Lützen in 1632 the war lost its religious character and became a political struggle between the Hapsburgs and Spain on the one side, and France, who entered it in 1635, on the other. The war was ended in 1648, when the Emperor, after suffering defeat, agreed to the terms of the Treaty of Westphalia (*q.v.*).

Thisbe Figure in Babylonian legend. She is the beloved of Pyramus. The story is used by Shakespeare in *A Midsummer Night's Dream*.

Thistle Name given to many plants with prickly stems, leaves, etc. There are many kinds and they belong chiefly to the genus *carduus* and the natural order *Compositae*. Some of the varieties are the spear thistle, specially associated with Scotland, the dwarf thistle, the milk thistle and the musk thistle. Another is the field thistle which is very harmful to agriculture. The thistle bears red or purple florets and silky hairs called thistledown are attached to the seeds.

Thistle **Order of the.** Scottish order of knighthood founded by James II. in 1687 and dedicated to S. Andrew. Falling into abeyance at the Revolution, it was revived by Queen Anne. Originally it consisted of the sovereign and eight knights. The number of knights was raised to twelve in 1703, and to sixteen in 1827. The collar is formed of thistles, alternating with sprigs of rue. The motto is *Nemo me impune lacessit*. The chapel is in St. Giles', Edinburgh.

Thomas Called Didymus (the twin); one of the twelve apostles. He is known as "doubting Thomas," on account of his disbelief in Christ's resurrection until he had received personal proof (John xx. 26-29). According to tradition, S. Thomas founded the church in Parthia, going later to India. He is commemorated on December 21.

Thomas **Albert.** French politician. He was born at Champigny-sur-Marne in 1878. His father, a baker, managed to give Albert a university education. In 1903 he became associated with Jean Jaurès, as assistant editor of *L'Humanité*. Elected to the Chamber of Deputies in 1910, he became Under-Secretary for Armaments in 1915, and Minister for Munitions in 1916. He left politics in January, 1920, to become the first Director of the International Labour Bureau at Geneva, where he worked strenuously for world peace. He died in Paris, May 8, 1932.

Thomas **James Henry.** English politician. Born at Newport, Monmouthshire, Oct. 3, 1875, he began life as an errand boy and became a railwayman as a cleaner on the G.W. Rly. In Swindon he came to the front both as a railwayman and in municipal affairs, and by 1910 was president of the Amalgamated Society of Railway Servants. He helped to reorganise the National Union of Railwaymen, becoming General Secretary in 1911. In 1910 he was elected to Parliament for Derby in the Labour interest, and has represented that constituency ever since. He was chairman of the Parliamentary Committee of the Trades Union Congress, 1920-21, and president of the International Federation of Trade Unions, 1920-24. In the Labour Government of 1924 he was Colonial Secretary, and in the second Labour ministry of 1929, he was Lord Privy Seal, later becoming Secretary for the Dominions. In the crisis of 1931 he joined the National Government, again becoming Dominions Secretary, in which capacity he attended the Imperial Economic Conference at Ottawa in 1932. After the General Election of Nov., 1935, he became Secretary of State for the Colonies. A popular and racy speaker, he published *When Labour Rules* in 1902.

Thomond District of Ireland, now part of Munster. The **earldom of Thomond** was held by the family of O'Brien between 1543 and 1774, and members of this family were **Marquesses of Thomond** from 1800 to 1855.

Thompson **Francis.** English poet. Born in Preston, Dec. 18, 1859, and educated at Ushan College, he studied medicine at Owens College, Manchester for 6 years, but never qualified. In 1885 he left for London where, falling a prey to opium, he became destitute, but managed to write some poems which were highly praised by Browning. He found good friends in William and Alice Meynell and in 1893 appeared his first volume, containing his masterpiece, *The Hound of Heaven*, and bringing him fame. He wrote many other poems, and contributed prose to the *Academy* and the *Athenaeum*. He died Nov. 13, 1907.

Thomson **James.** British poet, who wrote under the pseudonym of B.V. (Bysshe Vanolis). He was born at Port-Glasgow, Nov. 23, 1834, and was trained to be an army schoolmaster. However, his friend, Charles Bradlaugh, induced him to turn to literature, offering him space in his *National Reformer*. In this appeared his most famous work, *The City of Dreadful Night*, and other powerful but gloomy poems. *Vane's Story*, *Essays and Phantasies*, and *A Voice from the Night* are other works. He died June 3, 1882.

Thomson **Sir John Arthur.** British naturalist. He was born in **East Lothian**, July 8, 1861, and studied at **Edinburgh, Jena and Berlin Universities.** He held the post of lecturer in biology and zoology at the Edinburgh School of Medicine, and in 1899 was appointed Regius Professor of Natural History at Aberdeen University, where he remained till his retirement in 1930. His works include *Secrets of Animal Life* (1919), *Science and Religion* (1925), and *Outline of Biology* (1930). He died in 1933.

Thomson **Sir Joseph John.** English scientist. Born near Manchester, Dec. 18, 1856, he was educated at Owens College and at Trinity College, Cambridge, of which he was made Fellow in 1880, and lecturer in 1883. From 1884 to 1918 he was Cavendish Professor of Experimental Physics in Cambridge, and from 1905-1918 Professor of Physics at the Royal Institution in London. He was awarded the Nobel Prize for Physics in 1906, was President of the Royal Society, 1916-1920, and since 1918 has been Master of Trinity College, Cambridge. He was knighted in 1908, and awarded the O.M. in 1912.

Thor In Scandinavian mythology, one of the twelve asas, or gods, and a son of Odin. He lived in a huge palace called Bilskirnir, and the rolling of his chariot caused the thunder. His most precious possession was a magic hammer, called Miolnir, which always returned to his hands after being hurled. Thursday is called after him.

Thorax Anatomical name for the chest or anterior portion of the trunk in animals and man. Its muscular walls are supported in front by the breastbone and rib cartilages, on the sides and back by the body ribs, and in the median dorsal line by the dorsal spinal vertebrae.

Thoreau **Henry David.** American writer. Born at Concord, Mass., July 12, 1817, he was educated at Harvard. In 1835 he began a diary which extended to 30 volumes, full of fine thoughts and graphic descriptions. For several years he was a member of Emerson's household. His most popular book, *Walden, A Life in the Woods*, is a description of two years spent alone in a shanty he himself built in the forest. He died May 6, 1862.

Thorium Rare metallic element having the symbol Th and atomic weight 232.15. It occurs in the minerals thorite, thorianite and monazite. As extracted, it forms a greyish powder which is converted by hydraulic pressure into malleable, ductile bars. It has radio-active properties and is used for X-ray targets and wireless valve filaments.

Thorn Generic name for all trees or bushes with thorny shoots or spined or thorny branches. The common hawthorn, *Crataegus oxycantha*, is an example.

Thornaby Borough and market town of Yorkshire (N.R.). It stands on the Tees, opposite Stockton, with which a bridge connects it. It is 235 m. from London, on the L.N.E Rly. The industries include shipbuilding yards, corn mills and engineering works. Pop. (1931) 21,233.

Thorndike **Dame Sybil.** English actress. She was born at Gainsborough, Oct. 24, 1885, and educated at the High School, Rochester, and the Guildhall School of Music, London. She studied at Ben Greet's Academy, and made her début at Oxford, June, 1904, as Phyllis in *My Lord from Town*. She then toured in the United States in Shakespeare répertoire with

Ben Greet. Later she was with the Horniman Company in Manchester. Her London début was in 1908 at the Scala, and in the same year she married Mr. Lewis Casson. She was seen at her best as Jane Clegg in the play of that name by St. John Ervine, and as Joan of Arc in Shaw's *Saint Joan*. She was made a D.B.E. in 1931, toured Egypt, Palestine, Australia and New Zealand in 1932-3, and returned to play in London and New York. In 1935 she appeared in London in *Grief Goes Over* and in 1936 in *Short Story*.

Thorne Market town of Yorkshire (W.R.). It is 10 m. from Doncaster and 166 from London, by the L.N.E. Rly. and is situated on the Don. Rope is made, and there is an agricultural trade. There is a 14th century church.

Thorne Will. English politician. He was born in Birmingham, Oct. 8, 1857, and began life at 6 in a barber's shop. In 1889 he helped to found the National Union of General and Municipal Workers, and has been general secretary since; he has represented West Ham in the Labour interests since 1906, and has been a member of the West Ham Town Council since 1890, being mayor, 1917-18. He published *My Life's Battle* in 1925.

Thornton Urban district of Lancashire. It is 16 m. from Preston, on the L.M.S. Rly. Pop. (1931) 10,144.

Another **Thornton**, 6 m. from Bradford, Yorks, was the birthplace of the Brontë sisters. Another is a rly. junction in Fifeshire.

Thornton Heath District of Croydon. It lies to the N. of the borough and is a residential area for Londoners, the city being 9 m. away. It is on the S. Rly., and is united by tramways with Croydon and London.

Thornycroft Sir William Hamo. English sculptor. Born in London, March 9, 1850, he was educated at University College School, London, and the R.A. Schools. His first success was "Artemis" (1880). Among his many statues, or memorials, are "Queen Victoria" at the Royal Exchange and at Karachi; "King Edward VII.," at Karachi; "General Gordon," in Trafalgar Square; "John Bright," in Rochdale; "Gladstone," in the Strand, London; "Lord Curzon," in Calcutta and the War Memorial in Durban. Elected A.R.A. in 1884 and R.A. in 1888, he was knighted in 1917, and died, Dec. 18, 1925.

Thorwaldsen Bertel. Danish sculptor. He was born at sea, Nov. 19, 1770. In 1793 he gained a gold medal and a three years' travelling scholarship, at the Copenhagen Academy. He went to Rome, and in 1796 won fame with his "Jason." Other works of his are "Christ and the Twelve Apostles," "Byron," the bas-reliefs "Night" and "Morning," and the "Lion of Lucerne." He died March 24, 1844.

Thoth Egyptian deity. Measurer of souls, his emblem is the ibis. He was the God of science, invention and magic.

Thothmes Name of four kings of Egypt of the 18th dynasty. Thothmes I. carried his arms as far as the Euphrates and greatly beautified Thebes. Thothmes II., under the tutelage of his sister, conquered the Arabs. His brother, Thothmes III., raised Egypt to its highest glory.

Thought Reading *See* TELEPATHY.

Thrace Area in the Balkan Peninsula. It is a country of rugged hills, originally inhabited by a dark, long-skulled race, which dated from the Stone Age. It became a Roman province, and has been frequently overrun by invaders. In 1923 it was divided—Western Thrace being given to Greece, Eastern Thrace to Turkey.

Threadneedle Street Street of the city of London. It goes from the Mansion House to Bishopsgate. On the north side is the Bank of England, which is sometimes referred to as the **Old Lady of Threadneedle Street.**

Three Rivers City and river port of Quebec. It stands on the St. Lawrence, where the St. Maurice falls into it through its two mouths, thus giving rise to the name of the city. It is 96 m. from Montreal and 76 from Quebec, and has a good harbour and stations on the C.P. and C.N. Rlys. Lumber is exported and there are pulp and paper mills, for which electric power is derived from the Shawinigan Falls. There is a Roman Catholic cathedral. Three Rivers was founded by the French in 1634. Pop. (1931) 35,450.

Three Taverns Village of Italy. It was on the Appian Way, 38 m. from Rome. Here S. Paul, on his way to Rome, was met by his friends (Acts xxviii.).

Thrift Perennial plant (*Armeria vulgaris*) of the order *Plumbaginea*, also known as the sea pink. It has tufts of grass-like leaves on woody branching roots which flower heads rise on slender, hairy stems. It is found wild on cliffs and rocks in many seaside places, and also in mountain districts.

Thring Edward. English schoolmaster, born Nov. 29, 1821. In 1853 he became Headmaster of Uppingham School, a post he held with distinction till his death, Oct. 22, 1887.

Throat Front part of the neck from the chin to the collar bone and (internally) the pharynx, which connects to the nose, larynx, vocal cords (Adam's apple), windpipe and oesophagus. **Throat ailments** include pharyngitis and laryngitis, inflammations of the parts concerned, diphtheria, tonsilitis, adenoids and cancer. The **Throat** Hospital in Golden Square, London, was founded in 1863.

Sore Throat. A slight sore throat, from a chill, strain, dirt, etc., will be relieved by sucking chlorate of potash pellets. A gargle of borax and water or salt and water is also soothing, especially for hoarseness. If there is any swelling, hot flannels should be applied, and if the condition is at all severe it is best to go to bed.

Throgmorton Street Thoroughfare in the city of London. It goes from Old Broad Street into Lothbury, and is chiefly known because here is the Stock Exchange. Another building in the street is the Drapers' Hall.

Thrombosis Clotting of blood within a blood vessel. In the brain it leads to hemiplegia, or paralysis of one half of the body. It may occur in connection with varicose veins.

Throne Chair of state occupied by the sovereign. In ancient times, especially in the east, gold, ivory and rock

crystal were used in their construction, while precious stones were freely used for their decoration.

Throttle Valve Type of valve used for the regulation of steam or gas to a cylinder, and worked by means of a lever.

Thrush or **Throstle.** Bird of the species *Turdidae*, allied to which are the ousels, stonechats, robins and hedge-sparrows. The song-thrush is to be met within the British Isles all the year round; its eggs are sea-green with black spots.

Thrush Disease of the mouth and throat. It is marked by the appearance of pearl-coloured fungous vesicles in the part affected, and occurs especially in children, but also affects adults who have been enfeebled by wasting disease. It is also a disease affecting the frog of a horse's foot.

Thucydides Athenian historian. He was born about 460 B.C. A man of wealth and influence, he commanded an Athenian naval squadron on the Thracian coast in 424 and was exiled after failing to relieve Amphipolis from the Spartans. He now travelled, visiting the countries of the Spartan allies, which doubtless, apart from his judicial outlook, enabled him to take the impartial view for which his *History of the Peloponnesian War* is famous. In 404 he returned to Athens, and he died, probably by violence, about 399.

He wrote his *History* not only as a record, but to be a source of political learning for posterity, scrutinising facts and dates with immense care; while the speeches which he puts into the mouths of the leaders of the time throw a bright light on the attitude of the Greek mind to political events.

Thug Indian religious fanatic. The campaign of murder and robbery carried on by thugs in Northern and Central India was suppressed in 1830-48. Thuggery was associated with the worship of Kali, to whom its devotees regarded their victims as sacrifices.

Thumbscrew Instrument of torture. Made of iron, it was operated so as to crush or even break the thumb, thus causing exquisite pain. It was used by the Inquisition in Spain and elsewhere and by the persecutors of the Covenanters in Scotland. Its last recorded use in Scotland was towards the end of the 17th century.

Thun Lake and town of Switzerland. Situated in the Canton of Berne, and on the Aar, the town is a tourist centre and has industries of pottery, slate and brickwork. Pop. (1930) 16,428. The lake is 11 m. long, with an area of about 19 sq. m., surrounded by beautiful scenery.

Thunder Deep roaring sound, which occurs after a flash of lightning. It is caused by the sudden expansion of heated air during the passage of the electric current followed by an equally sudden contraction.

Thunderstone Common name for objects once regarded as being formed by thunder or lightning. It is used especially for objects having more or less a dart or arrow shape, for belemnites, meteorites and the pyritous nodules occurring in cretaceous rocks.

Thurifer In the Roman Catholic Church one who carries the thurible in which incense is burned.

Thuringia Republic of Germany. In Upper Saxony, it lies between the Thuringian Forest and the Harz Mts. It was formerly tributary to Attila, the Hun and to the Franks under Charles Martel. Following the German Revolution, the free state of Thuringia was formed in 1920 by the union of Saxe-Weimar-Eisenach, Saxe-Meiningen, Saxe-Altenburg, Saxe-Gotha, Reuss, Schwarzburg-Rudolstadt and Schwarzburg-Sondershausen. It is a republic with parliamentary government. Weimar is the capital, but Jena and Gera are larger towns. Of its area of 4540 sq. m., over half is devoted to agriculture. The manufactures include textiles, glass, porcelain, machinery, optical and scientific instruments and toys. Pop. (1925) 1,196,244.

Thurles Market town of Co. Tipperary, Irish Free State. It is 29 m. from Clonmel, stands on the Suir, on the G.S. Rlys. There is a Roman Catholic cathedral. Pop. (1926) 4815.

Thurlow **Edward Thurlow, Baron.** English lawyer and politician. Born at Bracon-Ash, Norfolk, Dec. 9, 1731, was educated at Canterbury and Cambridge. He studied law, became K.C. in 1761, and entered Parliament in 1768, becoming Solicitor-General, Attorney-General, and, in 1778, Lord Chancellor (and Baron Thurlow), a post he retained till 1792. He died Sept. 12, 1806.

Thursday Island Small island in the Torres Strait. Belonging to Queensland, it lies 30 m. off Cape York, and has a good harbour, Port Kennedy, at which mail steamers, passing through the Strait, call. The chief industry is pearl and trepang fishing. Pop. 1700.

Thursley Village of Surrey. It is near Hindhead and is known for its picturesque common. The parish church is partly Saxon. Iron was once worked in the neighbourhood and the hammer ponds are still seen.

Thurso Burgh and seaport of Caithness. It is 154 m. from Inverness, on the L.M.S. Rly. Here are the ruins of a 14th-century church and a bishop's palace; also a modern castle and a museum. Thurso is the starting place for steamers for the Orkney and Shetland Islands. Pop. (1931), 2946.

Thurston **Ernest Temple.** English novelist and playwright. He was born, Sept. 23, 1879, and at 16 had published two books of poems. His *City of Beautiful Nonsense* (1909) brought him into prominence, and *The Garden of Resurrection* (1911) increased his reputation. Since 1905 he has published 38 novels, 3 volumes of poems and 10 plays. He died in 1933.

Thyatira Ancient city of Asia Minor. It had one of the Seven Churches mentioned in Revelation (ii. 18-23) The site is now occupied by Ak-hissar.

Thylacine Tasmanian marsupial. In appearance it is a cross between a hyena and an opossum, with dog-like muzzle, long tail and grey-brown fur striped with black. It is nocturnal and destructive to sheep.

Thyme Genus of small, aromatic shrubs (*Thymus*) of the order *Labiatae*. The wild thyme (*T. serpyllum*) is found on downs and hillsides. It has a creeping stem, small leaves and spikes of purplish flowers. Lemon thyme is a variety of the same species. *T. vulgaris*, the garden thyme, is taller and is used for flavouring food.

Thymol Crystalline substance belonging to the phenol group. It is present in the volatile oil of thyme and forms 50 per cent. of oil of ajowan, its chief commercial source. Thymol forms large transparent crystals, having the odour of thyme and a pungent taste. It is a powerful antiseptic and germicide.

Thyroid Gland Soft endocrine gland consisting of two lobes lying one on either side of the trachea and joined by an isthmus. Its internal secretion or hormone increases combustion in the body, stimulates growth of bone and is related to the activity of the sexual glands. Inactivity of the thyroid results in the diseases myxoedema and cretinism and in these cases the use of thyroid extract is found beneficial, while excessive activity causes Grave's Disease, or exophthalmic goitre.

Tiara Triple crown worn by the pope. It was originally worn by the Persian kings and later by Romans, both men and women. A similar headdress was worn by the Jewish high priest and the clergy of the Greek Church. Jewelled tiaras are worn by women of rank on state occasions.

Tiber River of Italy. Rising at Tifernum in the Apennines, its total length is 240 m. It is frequently in flood and has muddy, yellowish waters. It flows past Rome and is famous for its association with that city.

Tiberias City on the western shore of the Sea of Galilee. Built by Herod, it was a centre of rabbinical learning, and was named after the emperor Tiberius. From here came the sightseers to the scene of the feeding of the five thousand (John vi. 23).

Tiberius Roman emperor. Born Nov. 16, 42 B.C., he assumed power at Rome in A.D. 14, by the influence of his mother, Livia. He resided at Capreae, and was murdered on Mar. 16, 37. Abetted by his favourite, Sejanus, he marred his reign by deeds of the greatest cruelty and sensuality.

Tibet Country of Asia. It lies between China and India and covers 463,200 sq. m. A mountainous area, it is thinly peopled and much of its surface is unexplored. Lhasa is the capital. The head of the government is the Dalai Lama, who appoints a regent and ministers to administer the country. The religion is Lamaism. Nominally Tibet is under the rule of China. Rice, barley and a little fruit are grown: sheep and pigs are kept and there is a little mining. There is a considerable trade between Tibet and India, and treaties between the two countries have been signed. Pop. 3,000,000.

Tibia Roman musical instrument. It was similar to the present-day oboe. The name is also given to the shinbone, a long, triangular bone on the inside of the fibula. At its joint with the femur it is broad, but tapers down to join the foot.

Tichborne Village of Hampshire. It is 2 m. from Alresford and has a church with a Saxon chancel. Here is **Tichborne House**, the residence of a family that has owned the estate for some 800 yrs. In 1872 there was a famous lawsuit about the ownership, in which the claimant, whose real name was Arthur Orton, failed to prove his case.

Tickhill Urban district of Yorkshire (W.R.). It is 6 m. south of Doncaster, and 158 from London, by the L.N.E. Rly. There is a ruined castle. Pop. (1931) 2297.

Tide Regular ebb and flow of the oceans, due to the attraction of moon and sun. The lunar force predominates. The waters are drawn into a long wave, whose crests (high tide) are antipodal with corresponding troughs (low tide) between them. Owing to the earth's rotation these high and low tides follow each other regularly from east to west, but differences in ocean depths and the continental masses cause tidal variations along the coasts.

Tideswell Town of Derbyshire. It is 6½ m. east of Buxton, the nearest rly. station being Miller's Dale, on the L.M.S. line. It has a grammar school and a 14th-century church. Near is some of the most beautiful scenery of the Peak District.

Tidworth Village of Wiltshire. It is 9 m. from Andover and 76 from London by the S. Rly. It is near the Hampshire border, and is a military centre in the Salisbury area.

Tientsin Treaty port of China. Opened for foreign trade in 1860, it is situated at the point where the Grand Canal joins the Peiho and is about 70 m. from Peiping (Peking) midway between that city and the coast. Unlike the native city, the foreign city is well built and well kept. Tientsin is the entrepot for Peking, and from here tea caravans start for Russia and Siberia. Salt is an important article of commerce. Pop. (1931), 1,387,462.

Tierra del Fuego Group of islands at the extreme south of South America. Divided between Chile and Argentina, it consists of one large and several small islands, separated by the Strait of Magellan from the mainland. They were discovered by Magellan in 1520. The southern point is Cape Horn. The land is steep and windswept with a few fertile areas on which, in the Chilean area, settlers raise horses, cattle and sheep.

Tiflis Capital of the Soviet Republic of Georgia, and also of the Transcaucasian Socialist Federated Soviet Republic. It is picturesquely situated on both banks of the Kura and is shut in by high mountains. There are warm springs. Cotton, silk, carpets and tobacco are manufactured. It has a broadcasting station (1071 M., 10 kW.). Pop. (1931) 294,007.

Tiger After the lion, the largest carnivore (*Felis tigris*) of the *Felidae*. Widely distributed throughout Asia, it inhabits jungle and forest regions, preying on deer, pigs and other animals. On occasion domestic cattle and man himself are attacked. The body is 6 ft. long with a 3-ft. tail, and at the shoulder the tiger stands 3 ft. high. The rough tongue assists the teeth when the animal is tearing off flesh. The fur is reddish-brown above, with black striping on head, limbs, body and tail. The under parts are white.

Tiger Lily Bulbous plant (*Lilium tigrinum*) of the order *Liliaceae*. It is a Chinese variety of lily, three or four ft. high, with racemes of handsome orange-red blooms spotted with black. The bulbs are usually planted in the early spring.

Tiglath-Pileser Name of four kings of Assyria. The last, Tiglath-Pileser II., who reigned 745-727 B.C., was a usurper who founded the second Assyrian

Empire. King Ahaz called in his help against Rezin of Syria and Pekah of Israel (2 Kings xv. and xvi.: 2 Chron. xxviii.).

Tigris River of Mesopotamia. It rises in the mountains of Armenia and Turkistan, and flows S.E. for some 1100 m. to join the Shat-el-Arab near Kurna. It is known to the Arabs as the Digla, and is one of the rivers of antiquity. Basra and Bagdad are on its banks.

Tilbury Urban district and port of Essex. It is on the Thames, 22 m. from London, on the L.M.S. Rly. There is an old church, but the place is chiefly known for its docks. Belonging to the Port of London and enlarged since the Great War, these cover 676 acres and accommodate the largest vessels afloat. They are chiefly used by vessels trading with the East, Near the town is **Tilbury Fort.** This was built in the time of Henry VIII. and here at the time of the Spanish Armada Elizabeth reviewed her troops. Pop. (1931) 16,826.

Tile Thin, flat slab of marble, stone or baked clay, glazed or unglazed, and used in the structure or decoration of a building. Tiles are divided into three groups—roofing, floor and wall tiles.

Roofing tiles were known early in Japan, and were usually yellow and glazed, and in ancient Greece and Rome were of marble-coloured clay, and "Spanish" with the contour of the letter "S."

Floor tiles were, in 12th-century Europe, usually mosaic in type, or of two colours. Italian majolica tiles were decorated in the classic designs. The modern tendency is to use machine-pressed tiles, which are hard and vitrified, in a few simple colours and shapes.

Wall tiles were known in an elaborate form in ancient Egypt and Babylon, and later in Persia and Rome. The Persian tiles were blue-white in colour, with beautifully intertwined flowering plants in green with occasional touches of colour. Moorish tiles had metallic lustre decoration, and in Delft, from 1600, were made blue tiles containing a picture, or a piece of landscape, or a figure. Modern wall tiles have many beautiful crackled effects, in a great variety of shades and blendings.

Tillett **Benjamin.** English Labour leader. He was born in Bristol in 1860 and after serving in the navy and the mercantile marine, settled at the London docks and organised the Dockers' Union. He was M.P. for N. Salford, 1917-24 and 1929-31, and chairman of the General Council of the Trade Union Congress, 1928-29 and published his *Memories and Reflections* in 1931.

Tillicoultry Town of Clackmannanshire. It is 5 m. from Alloa, on the L.N.E. Rly. The River Devon flows past the town, which has a reputation for plaids and tartans. Pop. 4461.

Tillotson **John Robert.** Archbishop of Canterbury. He was born at Sowerby, Yorkshire, 1630, and educated at Cambridge. He served Cromwell as Attorney-General in 1656, and in 1664 married Cromwell's niece. In 1672 he was made Dean of Canterbury, in 1689 Dean of St. Paul's and in 1691 Archbishop of Canterbury. He died Nov. 22, 1694. The best preacher of his age, he was mild and tactful in controversy. His sermons are noteworthy for their masterly prose style.

Tilly **Count.** German soldier. Born in Tilly, Brabant, in 1559, Johann Tzerclaes, Count of Tilly, commanded the League in the Thirty Years' War. He won many victories, including the storming of Magdeburg in May, 1631, when over 40,000 people were butchered. In the following Sept. Tilly was routed by Gustavus Adolphus at Breitenfeld and in April, 1632, was mortally wounded at the Battle of the Lech.

Tilsit Prussian town. It is situated on the Memel about 65 m. N.E. of Königsberg and manufactures iron, glass, cloth and machinery. Pop. about 40,000. Here on July 7, 1807, Napoleon, then at the height of his power, made a Treaty with Tsar Alexander I., by which Westphalia was formed out of Hanover and West Prussia, and placed under Jerome Bonaparte; Prussian Poland was given to Russia and Saxony; Alexander was to join France against Britain.

Timber Wood prepared for building and carpentry purposes. Timber is divided into soft and hard woods, and after felling is sorted according to grain and texture. It is seasoned in sheds and to prevent decay and rot is soaked in or painted with a preservative, such as cresote. Oak is used for indoor and outdoor work; ash for aircraft. In real property, timber means oak, ash and elm, and, in some localities, beech.

Timbrel Musical instrument. It was a form of tambourine and is mentioned in the Bible, being used by the Israelites in dance and song.

Timbuctu City in the French Sudan. It is on the edge of the Sahara, near the most northerly point of the Niger. Formerly an immense walled city, it has been improved and partly rebuilt since the French occupation in 1894. It is an important trading centre and terminus for camel caravans bringing salt, gold, dates, etc., for exchange for cloth and other manufactured goods. Pop. (1931) 5,677, but 20,000 during the trading season.

Time Term generally applied for the sequence of events. The solar day of 24 hrs. is the universal unit. Other natural units are the month and year; the hour, minute and second being artificial. For time-measurement clock mechanism is in common use. Owing to the west to east rotation of the earth in 24 hrs. equal to 15° per hour, there is a difference in local times, consequently standard time belts have been adopted.

Time In music, relative duration of sound or rest. The semibreve is the unit. The minim is half a semibreve, the crotchet half a minim, the quaver half a crotchet; there are also the semiquaver, demisemiquaver, and so on.

Times **The.** London newspaper, regarded as the country's premier journal. It was founded in 1785 by John Walter, its price being 3*d.* The building is in Printing House Square, London, E.C.4. Under John Walter's son and grandson the paper became very influential and prosperous. New methods were adopted, and the personality of its greatest editor, John T. Delane, added much to its authority. In 1861, the price, which had been as high as 7*d.* was reduced to the original 3*d.* Towards the end of the 19th century *The Times* became less prosperous and this made it possible, in 1908, for Viscount Northcliffe to acquire control. He introduced a number of mechanical improvements and reduced the price to a penny. Later it was raised and in 1922 it was stabilised at 2*d.* On Lord Northcliffe's

death in 1922 the control was acquired by Mr. John Walter and Major the Hon. J. J. Astor, who made arrangements to prevent the paper from passing into the hands of any sectional interest. *The Times* publishes a weekly illustrated edition and various supplements, including the valuable weekly, *The Times Literary Supplement*. Others are the educational and the trade and engineering supplements. Its *Law Reports* are authoritative.

Timgad Ruined city of Algeria. It lies on the lower slopes of the north side of the Aures Range, at the point where six roads meet. It was called Thamugas by the Romans. The Arch of Trajan, restored in 1900, is a fine example of the triumphal arch. A temple of Jupiter, a theatre, and baths have been excavated.

Timor Island of the Malay Archipelago. It is mountainous, one peak reaching 11,500 ft., and the volcanic activity of the neighbourhood is represented by mud geysers. The western area forms part of the Dutch East Indies; capital Kupang. The eastern part is Portuguese; capital Dilly. The products include coffee, cocoa, copra and sandalwood. Pop., Portuguese (1927) 451,604; Dutch (1930) 1,656,636.

Timothy Saint and companion of S. Paul, whom he accompanied to Europe. He helped to found churches in Macedon and did important missionary work in Corinth, Thessalonica and Philippi, and later in Asia Minor. He was imprisoned at one time with S. Paul, and tradition makes him Bishop of Ephesus and a martyr under Domitian. His death is celebrated by the church on Jan. 24.

Timothy **Epistles to.** Two books of the New Testament. The traditional view that they were written by the apostle Paul has not been disproved, though they reveal striking points of divergence from the other Pauline letters, both in language and subject-matter. The purpose of the letters is summed up in I. Timothy iii., 15.

Tin Metal, atomic weight 118, symbol Sn, melting point 232°C. It is a brilliant, whitish-grey metal, its chief source being cassiterite SnO_2. The principal mines are in the Malay States, Bolivia, the Dutch E. Indies, Nigeria, China and Siam. It is largely used as a covering for iron, in tinfoil for wrappings (though largely superseded for this use by aluminium), mirrors and in vessels. As an alloy with copper, it forms bronze and bell-metal and pewter with lead.

Tincture In medicine, the solution of a substance in alcohol; tincture of iodine is a familiar example. The term is also used in heraldry to denote metals, colours and furs. In general use it means simply a tone or shade of colour.

Tindal **Matthew.** English deist, born in Devonshire about 1656. In 1706 he excited fierce controversy by the publication of *The Rights of the Christian Church Against All Romish and Other Priests.* In 1730 he published *Christianity as Old as the Creation*, popularly called "The Deist's Bible," which was intended "to strip religion of the additions which policy, mistakes and the circumstances of the time have made to it." He died Aug. 16, 1733.

Tinder Any inflammable substance used in kindling a flame. Before the invention of matches a spark struck by means of a flint and steel was used to ignite the tinder. This consisted chiefly of rotten wood, touch paper, scorched linen, and amadoue—a form of dry fungus found on forest trees.

Tinfoil Name given to thin sheets of aluminium or sometimes of an alloy of tin used for wrapping tobacco, drugs, chocolate, and so on.

Tinplate Sheets of wrought iron or mild steel coated with tin and so protected from oxidation. Tinplate is used extensively in the manufacture of receptacles for preserved meat, fruit, fish, etc. The process of tinplating originated in Bohemia. Tinplate should not be confused with terne plate, which is formed by dipping the sheets of iron and steel into baths of molten lead and tin. The result is dull-coloured and used extensively in roofing.

Tinsel Fabric of silk of wool, into which are interwoven threads of gold or silver. The name is also given to any glittering metallic substance which has been cut into pieces, strips or threads and presents a sparkling appearance.

Tintagel Village of Cornwall. It is on the north coast, 5 m. from Camelford and 20 from Launceston. On Tintagel Head are the ruins of a castle which legend associates with King Arthur. The scenery around is very wild and the coast very rocky. There are golf links.

Tintern Village of Monmouthshire. It is 5 m. from Chepstow and 144 from London, on the G.W. Rly. It is famous for the ruins of its abbey, once one of the wealthiest Cistercian houses in England. The ruins include the chapter house and refectory, but above all the church, rivalling in size the minster at York. In 1900 the Duke of Beaufort presented the estate to the nation and extensive repairs have been carried out. The abbey stands by the Wye in a landscape of almost unique beauty.

Tintoretto Italian painter whose real name was Jacopo Robusti. Born in Venice, Sept. 29, 1518, he studied under Titian. His skill in portraiture, in composition, drawing, colour and general conception caused Ruskin to rank him among the "five supreme painters." Famous works of his are "St. George and the Dragon" in the National Gallery, London; "Belshazzar's Feast," "The Last Supper," and the large painting "Paradise," in the Doge's Palace, Venice. He died May 31, 1594.

Tinworth **George.** English artist in terra-cotta. Born in Walworth, Nov. 5, 1843, he studied sculpture, and in 1867 joined Doulton's pottery works in Lambeth, staying there till his death on Sept. 10, 1913. He excelled in terra-cotta reliefs, exhibiting at the Royal Academy for many years. In collaboration with Street, the architect, he executed a large panel of the Crucifixion for York Minster, as well as 28 panels for the Guards' Chapel in St. James' Park.

Tipperary County of Munster, Irish Free State. Wholly inland, it covers 1662 sq. m., and is divided into two parts or ridings. In it are the Galty Mountains and other ranges of hills, but in the centre and the W. the land is level and the soil fertile. The Suir is the chief river. Clonmel is the county town of the S. riding, and Nenagh of the N. riding. Other places are Thurles,

Cashel, Tipperary and Carrick-on-Suir. Milk and butter are produced, and there is a little coal mining. Pop. (1926) 141,115.

Tipperary Urban district and market town of Co. Tipperary, Irish Free State. It is 110 m. from Dublin, on the Gt. S. Rlys. It is a centre for the sale of butter, milk and other farm produce. There are remains of a monastery, but none of the castle built here by the English. Although it gives its name to the county, Tipperary is not the county town. Pop. 5555.

The song, "It's a Long Way to Tipperary," so popular during the Great War, was written and composed by Jack Judge in 1911.

Tippu Sahib Sultan of Mysore. He was born in 1749. His invasion of Travancore in 1789 led to a three years' sanguinary war; on his defeat he was compelled to resign half of his dominions, pay a big indemnity and give his two sons as hostages for future good behaviour. His implacable hatred of the British, however, led him to stir up further strife. On May 4, 1799, he was killed during the storming of his capital, Seringapatam.

Tipstaff Officer of the high court of justice. His business is to arrest persons guilty of contempt of court or other offences in the region of the court. The name is due to his staff, which is tipped with metal.

Tipton Urban district and market town of Staffordshire. It is 8 m. N.W. of Birmingham and 124 from London, by the L.M.S., Rly., and is also served by the G.W. Rly. In the Black Country, the town is a centre of the coal mining and iron working industries. Pop. (1931), 35,792.

Tiptree Town of Essex. It is 46 m. from London, on the L.N.E. Rly., a light railway running from Kelvedon. The place is famed for its jam factories. The jam is made from fruit grown on land once a bare heath, but made productive by irrigation and drainage.

Tirah Mountainous tract in the N.W. Frontier Province of India. Lying between the Khyber Pass and the Khanki Valley, in a kind of mountain cul-de-sac, it covers some 700 sq. m., and comprises the valleys round the headwaters of the River Bara. Peopled by the fierce and warlike Afridis and Orakzais, it is chiefly memorable as the scene of the British campaign against these tribes in 1897-98.

Tiree Island of the Hebrides. Part of the county of Argyll, it lies to the S. of Coll, and 19 m. from Iona. It is 14 m. long and covers 30 sq. m. There are two small harbours and the chief occupation is the rearing of cattle.

Tiresias In Greek mythology a famous blind soothsayer of Thebes. He is the subject of a fine poem by Tennyson.

Tirol Region of Austria and Italy. It lies between Munich and Verona, and contains all the highest peaks of the Austrian Alps, with the Brennan Pass as the way from one country to the other. It has an area of 4,790 sq. m., and is almost entirely mountain and forest. Innsbruck is the capital. The Ortler Spitz (12,811 ft.) is the highest mountain.

Since the Great War the Trentino, which used to be part of the Austrian Tirol, has belonged to Italy. The industries are mainly agricultural, with lumbering and cattle-rearing. Salt and lead are mined, and there is some silk manufacture. Pop. 313,885.

Tirpitz **Alfred Friedrich von.** German admiral. Born at Küstrin, March 19, 1849, he entered the navy in 1865, and became Lord High Admiral in 1911. In his capacity of Secretary for the Navy (1897-1916) his aim was to make Germany a great naval power, and he gradually built a formidable battle fleet. He commanded the navy from Aug., 1914, to March, 1916, being a strong advocate of the policy of "frightfulness." He entered the Reichstag in 1921 as a national deputy. He died March 6, 1930.

Tiryns Ancient fortified city on a rocky ridge near the E. side of the plain of Argos, in the Peloponnese. About 3 m. from the coast, it was supposed to have been founded by Proetus, brother of the Argive king, Acrisius. It was destroyed in 468 B.C. Ruins of two palaces, dating about 1600 B.C., have been among the more interesting archaeological discoveries.

Tissot **James Joseph Jacques.** French painter. He was born at Nantes, Oct., 15, 1836, and studied art in Paris. In 1861 his great painting, "The Meeting of Faust and Marguerite," was bought by the state for the Luxembourg Gallery. During the war of 1870-71 he left Paris for London, where he soon attracted attention by his caricatures in *Vanity Fair*. His great work was a series of some 700 water colours illustrating the Bible, and 350 drawings of events in the life of Christ. He died Aug. 8, 1902.

Tissue Biological term for cell aggregation. It is applied to cellular tissue as found in nails and epidermis; and connective tissue, in which the cells are separated, as in fat and cartilages. Tissues are tubular in muscles and nerves. Tissue culture, the cultivation of cells, wherein they multiply and synthesise new protoplasm, is a study of importance to physiology and pathology.

Tit Small passerine bird of the family *Paridae*. Natives of N. Europe and Asia, some seven species of tits are found in Britain. They are tree-living birds. The tomtit or blue tit (*Parus coeruleus*) is about 4½ in. long. The head, wings and tail are blue, upper parts greenish-yellow, yellowish beneath, throat being black. The long-tailed, bearded and marsh tit are common; the great tit and crested tit being confined to certain regions.

Titan Name given to the children of Uranus (Heaven), and Ge (Earth), in Greek mythology. They were twelve in number—six male and six female. The males were Oceanus, Cocus, Crius, Hyperion, Iapetus and Cronus; the females, Thea, Rhea, Themis, Mnemosyne, Phoebe and Tethys. Cronus became involved in a war with Zeus, and the other Titans sided with Cronus, but Zeus was victorious, and imprisoned them all in Tartarus.

Titanic British liner. She belonged to the White Star Line, and was sunk in the Atlantic Ocean, April 15, 1912. Over 1500 lives were lost including W. T. Stead and J. J. Astor, and about 700 were saved. The disaster was due to the vessel striking an iceberg. An inquiry was held in London into the affair.

Titanium Metallic element having the symbol Ti and atomic weight 48·1. It occurs in ilmenite containing iron

and titanium oxides; in rutile, an impure titanic acid; and in certain iron ores. It is a white, very infusible metal used in steel alloys, also for incandescent lamp filaments, and the oxide for making a white pigment.

Tithe Originally a levy of one-tenth of a man's estate. This tax is of great antiquity, and took the form of a levy upon produce payable to the Church. The Tithe Commutation Acts (1836-60) commuted tithes into a permanent tithe rent charge, payable in money. The Act of 1891 put responsibility for collection on the landowner; while the Tithe Act of 1925 secured the complete redemption of ecclesiastical tithe in a period of 85 years, the tithe rent charge being fixed at £105, of which clerical owners receive £100. By this Act any rent charge, attached before March 31, 1927, to a benefice or ecclesiastical corporation, was transferred to the Governors of Queen Anne's Bounty (*q.v.*) to be held in trust for the incumbent. **Tithe Barns** were barns belonging to a lord or religious house in which crops representing rent or tithes were stored.

Titian Italian painter. Tiziano Vecelli was born about 1477. The son of Gregorio Vecelli, a soldier and councillor, he was sent as a child to Venice. There he became the pupil of Giovanni and Gentile Bellini, and Giorgione. He is one of the greatest portrait painters and colourists in the history of art. The Emperor Charles V., whose portrait he painted, made him a Knight of the Golden Spur. He painted many great religious pictures and a number of an allegorical and poetical character. Five of his works are in the National Gallery, London. He died Aug. 27, 1576.

Title In law the right by which a person holds property, especially real property. It may be acquired by purchase, gift, inheritance or even length of possession, as when a squatter obtains a title to the land on which he has settled for a period of years.

In Great Britain the title to land is usually transferred by conveyance, this being done by lawyers who prepare the necessary documents. Land can be transferred by registration, a method which has been operative for some time in Australia and other British possessions. In the county of London the registration of title to land is compulsory when property is bought or sold. When this has been done the title is guaranteed by the state. The land registration office is in Lincoln's Inn Fields, London, W.C.

Titus Christian convert and follower of S. Paul, who consecrated him first bishop in Crete, and addressed one of his epistles to him. He died towards the end of the 1st century.

Titus **Flavius Sabinus Vespasianus.** Tenth Roman emperor, A.D. 79-81. Born Dec. 30, 40, he served as military tribune in Britain and Germany. In 70 he besieged and destroyed Jerusalem. The terrible eruption of Vesuvius, when Herculaneum, Pompeii and Stabiae were buried by lava, occurred during the first year of his reign. He completed the Colosseum, and died Sept. 13, 81. Probably the best beloved of all Roman emperors, he earned the title *amor et deliciae generis humani.*

Tiverton Borough and market town of Devonshire. It is 12 m. N. of Exeter and 163 from London by the G.W. Rly., and stands on the Exe. An agricultural centre, it has breweries and flour-mills. Here is Blundell's School, founded in 1604, and now occupying modern buildings outside the town. Tiverton has also a 15th century church, a blue coat school and the remains of a castle. The town hall contains some fine pictures. Pop. (1931) 9611.

Tivoli City of Italy. In the province of Rome, and known to the Romans as Tibur, it was a favourite resort of the ancient world. The Emperor Hadrian had a villa here, of which the ruins are still extant. It is still visited by thousands of people annually for its sulphur baths, as well as for its archaeological interest. Its situation at an altitude of 750 ft. in the Sabine Hills makes it both beautiful and healthy. Pop. 12,340.

Tlemcen Town of Algeria. It is 2500 ft. above sea-level and about 70 m. S.W. of Oran. Known to the Romans as Pomaria, and later the Moorish capital of N.W. Africa, it contains several handsome mosques, a fortress of the Moorish sultans and other relics of Moorish culture. The museum possesses among other treasures the epitaph of Boabdil, the last King of Granada, and also the standard cubit measure. Olive oil and alfa are among the exports. Pop. (1931) 46,060.

Toad Genus (*Bufo*) of batrachians. Toads resemble frogs in the metamorphosis, etc., but with striking differences. The skin is dry, with glands exuding an acid secretion; there are no teeth and the legs are shorter. After the larval stage toads are land dwellers. British species are the common toad (*B. vulgaris*), which has a wrinkled, warty skin; and the hatterjack (*B. calamita*) of sandy regions, which has a smooth skin and runs instead of hopping.

Toad Flax Genus of plants (*Linaria*) of the order *scrophulariaceae.* The yellow toad flax (*L. vulgaris*) has a creeping rootstock, tufts of long, narrow leaves and bright yellow flowers resembling the snapdragon. Unlike the snap-dragon, the flowers are spurred, the hollow spur containing honey.

The ivy toad flax (*L. cymbalaria*) has slender trailing stems, dark-green leaves with a purplish under surface and delicate purple-blue blossoms. It grows on old walls and ruins. *L. spuria* and *L. minor* are annuals found in sandy cornfields during the summer months.

Toadstool Mushroom-like fungi of the order *hymenomycetae.* Some varieties are definitely known to be poisonous; others may be innocuous, but it is unwise to regard any of them as edible.

Toast Drinking toasts is said to be so named from the pieces of toast which formerly were placed in one's liquor to improve the taste. The custom of toasts is probably derived from the ancient rite of drinking to the gods and to the dead. Norsemen, Romans and Greeks all observed this custom. Whereas toasting is now merely a rite of little importance, it was formerly regarded as an insult not to respond to it.

Tobacco Plant of genus *Nicotiana.* It is extensively used as a narcotic in chewing, snuff and smoking through cigars, pipes and cigarettes. Natives smoking cigars were seen by Columbus in 1492; snuff was noted by Pane in 1494; and tobacco chewing observed in 1502, in America, where the custom seemed to be an ancient tribal one. Tobacco

was first brought to Europe by Francisco Fernandes, and was sent by Jean Nicot (whence Nicotine) to Catherine de' Medici. The United States still yield the largest supply, but Mexico, Germany, Russia, China and Turkey produce large quantities; while the tobacco export of S. Africa and Canada is increasing. The plant requires rich soil and plenty of sun, and, having been cut, is sun-cured and fermented before being used.

Tobacco is an important source of revenue, duty being paid in England on tobacco in the manufactured state. The world production is about 2,300,000 tons per annum.

Tobago Island in the British W. Indies. One of the healthiest, it lies 20 m. N.E. of Trinidad. It is 26 m. long and 7½ m. broad, and has an area of 114 sq. m.

Much of the island is covered with dense forest, but the valleys produce sugar, cotton, tobacco, cocoa and rubber. There is also some horse and sheep-rearing. It is under the same laws as Trinidad. Tobago was discovered in 1498 by Columbus. The chief town is Scarborough. Pop. (1930) 26,407.

Tobermory Seaport of Argyllshire. It is on Tobermory Bay, 30 m. from Oban, with which there is a regular steamer service, and has a good harbour. Fishing is the chief industry. In 1588 a Spanish galleon sank in the bay with, it was believed, a vast sum of gold and other treasure on board. In recent years many attempts have been made to recover this.

Tobit **Book of.** One of the books of the Old Testament Apocrypha. It has been dated at about 350 B.C. Amid the account of the life in Nineveh of Tobit, his wife Anna and his son Tobias, are pleas for the giving of alms and tithes.

Tobogganing Winter sport. It was probably copied from the devices of American Indians for sliding down steep snow-covered hills. Tobogganing, or coasting, is prevalent in America, Great Britain and Scandinavia. It has been perfected in the winter resorts of the Engadine, Switzerland, where specially prepared runs, such as the Cresta at St. Moritz, are available for annual championships. The most modern toboggans or sleds are of steel, and on them competitors, lying flat and steering with their feet, have attained 75 m.p.h.

Toby Jug Small earthenware jug or beer mug. Toby jugs are made in the semblance of a corpulent jolly-looking man wearing a three-cornered hat; the corners forming spouts. The old name was Toby fillpot. Some 18th-century specimens are valued by collectors.

Tobolsk Former government of W. Siberia, now known as the Ural area. Its capital, Tobolsk, stands on the Irtysh River and is a trade centre of some importance. It was formerly the capital of the whole of W. Siberia. Pop. 18,268.

Toc H Organisation for Christian fellowship and social service. It originated during the Great War at Poperinghe, where Talbot House (so named after a fallen officer, and founded by the Rev. P. T. B. Clayton), served as a club and a church for soldiers from Dec., 1915. Toc H is the army signaller's name for the initials T. H. The aim of the movement is to uphold the ideals of fellowship and service. In 1922 it was incorporated by royal charter. It has now (1936) 1000 branches scattered all over the world, with headquarters at 47 Francis Street, London, S.W. 1, and its guild church is All Hallows, Barking-by-the-Tower.

Tocqueville **Alexis Charles Henri Chérel de.** French politician and writer. Born in Paris, July 29, 1805, and called to the bar in 1825, he acquired fame by his *De la Démocratie en Amérique*, written after a visit to America in 1831. He visited England in 1835. Another important work was *L'ancien Régime et la Révolution*. He died April 16, 1859.

Todmorden Municipal borough of Yorkshire (W.R.). It lies 19 m. from Manchester, and 203 from London, by the L.M.S. Rly. It is situated in a coal district, and its industries include spinning, weaving, and foundries. Pop. (1931) 22,223.

Toga Loose outer garment, once a mark of Roman citizenship. The ordinary toga was white, and was assumed by Roman youths on attaining majority. The purple toga of triumphant generals became the prerogative of the emperors.

Togoland Country in W. Africa, between the Gold Coast and Dahomey. Formerly German, it was divided between France and Britain in 1919. The British area is attached to the Gold Coast, French administration is centred at the port, Lome. The land is hilly with stretches of forest and open savannah country. The chief crops are foodstuffs, exports being cocoa, cotton and oil palm products. Area: French, 21,893 sq. m.; British, 13,041 sq. m. Pop.: French area (1932) 750,065; British area (1931) 275,968.

Tokay Town of Hungary, famous for its wine. Tokay wine is white and sweet. **Imperial Tokay** is a greenish colour and is a liqueur made from the juice of over-ripe grapes which is expressed by their own weight. Ausbruch is another quality, made from dried grapes of an ordinary kind. All have a delicate flavour due to the sunny land in which the grapes are grown and the method of preparation. Pop. 5570.

Token Form of coin. It differs from ordinary coinage in that its intrinsic value is considerably less than its currency value. Tokens have been used as state currency, but are more often issued privately. In modern times they are often issued by tramway companies and similar corporations, especially on the Continent.

Tokyo Capital of Japan, formerly called Yedo. It is situated on Honshiu Island, on both banks of the Sumida River. The part known as Honjo is an island, intersected by canals and connected by bridges with Tokyo proper. The temples are found chiefly in Honjo and in the suburbs or Midzi, which is the seat of the imperial university, with a fine library. Notable among the temples are that of Kwannon, the goddess of mercy, in Midzi; and, in Honjo, the temple of Hachiman, the god of war, and the temple of 500 images. The Government buildings, and the mercantile and manufacturing quarters, are in the ward of Kojimachi; also the imperial palace. In Uyeno Park are the zoological gardens. The city dates from the 16th century. It received its present name in 1868, at the time of the revolution. Tokyo suffered severely from an earthquake in 1923. Pop. (1930) 4,978,390.

Tolbooth Term used in Scotland for a prison. The most famous was the one in Edinburgh mentioned in *The Heart of Midlothian.* Near St. Giles Cathedral in the High Street, it was pulled down in 1817. In one or two of the Scottish burghs the tolbooth still stands. The word meant originally a booth at which dues or tolls were collected.

Toledo Province and city of Spain. The city, one of the most ancient and interesting in Spain, stands on the Tagus, 47 m. from Madrid, and is full of beautiful buildings; the most notable being the cathedral and the Alcazar. Many of the old fortifications, gateways and the like, are still standing. Its principal manufacture of old days, *i.e.*, sword blades, is still important. Cutlery, cloth and richly embroidered ecclesiastical vestments are also made. Pop. 27,443.

Toleration Term used to denote the right of private judgment in matters of religion. It has never been professed by the Roman Catholic Church. Even the reformers, who claimed liberty for themselves, did not tolerate what they regarded as "the pernicious doctrines" of their opponents. The Act of Toleration passed by William III. removed some disabilities from dissenters; but the feeling in favour of complete religious toleration is a modern movement.

Toll Payment made in return for a privilege. They are best known as payments for the use of markets, bridges, roads and rivers. In olden times they were made to the king or lord who granted the privilege, and who often found it a valuable source of income. To collect the tolls on roads and bridges toll gates were erected, and these were a feature of England in the 18th and 19th centuries. Most of them have been abolished.

Tolstoy **Count Leo Nikolaevitch.** Russian author, social reformer and religious mystic. He was born Aug. 28, 1828, and attended Kazan University. He joined the army, but left it after the siege of Sebastopol (1855), later becoming a fanatical believer in non-violence. After marrying in 1862 he settled on his estates, devoting himself to the interests of the peasantry. He wrote all his life—poems, novels, philosophisings. Important works include *War and Peace, Anna Karenina, The Kreutzer Sonata, What is Art?, Resurrection.* The last few years of his life he shared the poor life of the peasants. He died Nov. 20, 1910.

Toltec Race once living in Mexico and Central America. They were the precursors of the Aztecs who inherited some of their civilisation. Remains of their buildings can be still seen, but little is really known about them. Their greatest figure was Quetzalcoatl, who lived in the 9th century, and is the subject of many legends.

Toluene Clear liquid with a pleasant aromatic odour. It occurs in the light oils distilled from coal tar and separated by further distillation. By nitration, amidation and sulphonation it is converted into important intermediates for making a number of synthetic dye-stuffs. Toluene is also the source of the high explosive, trinitrotoluene.

Tomato (*Lycopersicum esculentum*). S. American plant of the order *Solanaceae.* It is a climbing plant with red or golden fruit, and is now a popular article of food. Tomatoes are grown extensively in England for the market. Under glass with heat they can be grown in succession for crops all the year round. They can be grown out of doors in any sunny, suitable position, in good soil free from manure.

The plants should be placed out in June and stacked as soon as a suitable height is attained. All side shoots should be pinched off, and the plants kept moist, with the roots mulched in very hot weather. If the amount of fruit is great, the plant must be well supported. Green tomatoes can be ripened in a warm sunny room if the season is cold, or utilised for chutney. Tomatoes are very rich in vitamins A, B, and C.

Tombola Form of lottery. It is a popular amusement, especially in Italy and France, and is seen sometimes at bazaars and entertainments in England. Cards, each bearing several numbers, are used. When the numbers are drawn any card on which every number is drawn brings a prize to the owner.

Tomsk Town of Siberia. It is built on two terraces on the right bank of the Tom River, some 25 m. above the point where it is joined by the Ob, and is a station on a branch line of the Trans-Siberian Rly. The place owes its rise to the discovery of gold in the district in 1824. Manufactures include soap, candles and spirits. There is considerable river traffic. The university was founded in 1888. Pop. 92,418.

Tom Thumb Name given to an American dwarf whose real name was Charles Sherwood Stratton. Born at Bridgeport, Conn., in 1838, he was 2 ft. 7 in. in height, and was exhibited in London in 1844 and 1857. He married another dwarf, Lavinia Warren, in 1863. Charles died in 1883 and Lavinia in 1919.

A fairy tale of the same name by Perrault deals with the adventures of a child dwarf.

Ton Measure of weight. In Great Britain it is 2240 lb., or 20 hundredweight. The American ton is 2000 lb., and is called the **short ton**, the English one being a **long ton.** For international purposes the **metric ton** of 2204·6 lb. is much used.

Tonbridge Urban district and market town of Kent. It is on the Medway, 29 m. from London, and is a junction on the S. Rly. The principal building is the restored parish church. The gateway of the castle still stands, and the Chequers Inn dates from the 16th century. Brewing is an industry. At Tonbridge is the headquarters of the Kent county cricket club, and a cricket week is held here every year in June. Pop. (1931), 16,332.

Tonbridge School was founded in 1553, and is now a large public school. It is controlled by the Skinners' Company, and has extensive modern buildings accommodating 500 boys. There is a separate preparatory school.

Tone **Theobald Wolfe.** Irish patriot. He was born in Dublin, June 20, 1763, educated at Trinity College and became a barrister in 1778. Wishing to make Ireland independent, he enlisted the help of the French, and took part in Hoche's unsuccessful attempt at invasion in 1796. Two years later he again embarked with a small French squadron, which was captured. He was condemned to be hanged for treason, but cut his throat in prison, Nov. 19, 1798.

Tong Village of Shropshire. It is 3 m. from Shifnal, and has a church called the village Westminster Abbey; its golden chapel with a fan-vaulted roof is notable, and it contains the tombs of the Vernons, and a small library. The existing castle, a building in the Moorish style, dates from 1765. Another **Tong,** in Kent, near Sittingbourne, is also notable for its church. A village in Ross and Cromarty and a town in Yorkshire (W.R.), have the same name.

Tong-King French protectorate, between China and Annam. In the forests of the mountainous regions of the N. teak abounds. The shores of the Gulf of Tong-King in the S. are flat and swampy. The principal river is the Hong-Kiang. Products include rice, ramie, tin, coal and silk. The capital is Hanoi. Tong-King covers 40,530 sq. m. The French protectorate dates from 1883. Prior to that it was a province of Annam. Pop. (1932) 8,012,429.

Tongue Fleshy organ in the mouth. It is used for eating and in human beings is the organ of speech and taste. It is covered with a mucous membrane, and at the base is in relation with the epiglottis and the pharynx.

Tonic Sol-fa System of writing music. Any scale is a natural scale, whether founded on the key of C D E or on another tone. The key-note or tonic note of the scale is called doh; the others successively, ray, me, fah, soh, lah, te or, as in print d, r, m, f, s, l, t. Time and accents are marked by dots in tonic sol-fa music. Higher octaves are marked d′ r′ m′, lower d, r, m,.

Tonnage Carrying capacity of a ship. The gross tonnage is the total space occupied by the vessel; the net tonnage is the space available for carrying cargo. In Great Britain a space of 40 cubic ft. is regarded as equal to one ton. Each country has its own laws for calculating tonnage, and the registered tonnage is really less than the real tonnage. Shipping dues are usually charged upon the registered tonnage. In the case of warships the tonnage is the weight of the vessel, *i.e.*, the weight of the water displaced.

Tonnage and Poundage. In England a tax once levied on imported goods. It was formerly imposed on English ports in the form of duty on every tun of wine and every pound of goods, whether imported or exported, and was frequently voted direct to the sovereign. Under George III. the whole custom and excise system was reorganised, and tonnage and poundage was abolished.

Tonquin Bean Seed of a leguminous tree of Guiana (*Dipteryx oderata*). It is a scented bean growing in a short one-seeded pod, and is used in perfumery.

Tonsil Name of two small glands situated at the entrance to the throat, and placed between the pillars of the fauces or soft palate. The tonsil tissue is lymphoid in character, and the glands normally serve to trap and destroy germs in the air passing to the throat. As they so often tend to become septic, especially in children, their removal is advocated by many doctors, if chronically enlarged and infected.

Tonsilitis, or inflammation of the tonsils, may arise from a cold and is often accompanied by enlargement of the glands. Where there is a rheumatic tendency the condition may pass to suppuration resulting in quinsy.

Tonsure Rite of shaving the head. The custom is observed, as by those who enter the priesthood or a monastic order, as a symbol of self-dedication. In the Greek Church the whole head is left bare. In the Roman Church only the crown is shaved, so as to leave a fringe of hair all round (" the coronal of S. Peter ").

Tontine Form of life insurance. It originated with an Italian banker named Lorenzo Tonti. His idea was that a number of persons should subscribe to a fund which is invested and becomes the property of the last survivor. In France and Great Britain, in the 18th century, the state raised money by tontines.

Toole **John Lawrence.** British comedian. He was born in London, March 12, 1832, and educated at the City of London School. He made his first stage appearance at 20, and in a short time had acquired immense popularity in Ireland and Scotland. He arrived in London in 1854, appeared at the Adelphi and the Gaiety, and in 1879 took over the Folly, changing its name to Toole's. He toured successfully in America and Australia. He retired in 1896 and died July 30, 1906. A great friend of Irving, he published his *Reminiscences* in 1889.

Toothwort Perennial plant (*Lathrea squamaria*) of the order *Orobranchaceae*. A British species of a genus of root parasites, it is found chiefly on the roots of hazel bushes in woods and coppices in spring. The roots are fleshy, the stems thick and scaly and the flowers a bright purple.

Tooting District of London. It is in the borough of Wandsworth, and has stations on the underground and other railways. Tooting Common, covering 200 acres, is a large open space embracing the commons of Tooting Bec and Tooting Graveney. These were at one time separate areas, and are now represented by Lower Tooting and Upper Tooting. On the common is a large Asylum. The churches of S. Nicholas and Holy Trinity are notable.

Toowoomba Town of Queensland. It is 101 m. from Brisbane on a main railway leading inland. It is connected by rail with Sydney, and is the centre not only for its immediate neighbourhood, which produces wine and other crops, but also, by means of branch lines, for the surrounding wheat, pastoral and timber country. Pop. (1931) 26,139.

Topaz Chemically a fluosilicate of aluminium. Used as a gem stone, its characteristic colour is yellow, varying from a pale tint to a deep orange. It is also white, greenish or blue, and some specimens become pink or red when heated. The topaz occurs in gneiss or granite. The finest stones are found in Russia and Brazil.

Toreador (Lat., *taurus*, a bull). One of the participants in a bull fight. He usually fights on horseback.

Tornado Type of whirlwind. Tornadoes travel at an average rate of between 20 and 40 m.p.h., from 5 to 30 m., and devastate the country as they go. They are seen as a funnel-shaped cloud, and make a peculiar roaring noise. At sea they are known as waterspouts. They are prevalent in the basin of the Mississippi and Ohio.

Toronto Capital city of Ontario, Canada. Situated on the north shore of

Lake Ontario, it contains the provincial parliament buildings, a great provincial university, many fine schools and libraries, 69 parks, 72 hospitals, and many fine commercial buildings, including the Royal York Hotel, the largest in the British Empire, and the Union Station. The Canadian National Exhibition held here is the greatest annual fair in the world, and a great agricultural Winter Fair is held here every year. There is a fine harbour with accommodation for large vessels, and a fine lakeshore driveway built on reclaimed land. A great manufacturing and publishing centre, Toronto is also a fine residential city, served by a municipally owned street-car system and deriving cheap electric power from the publicly owned Hydro-Electric Power Commission. It is served by both C.P. and C.N. Rlys., and has connections by water with Montreal and Great Lakes ports both Canadian and American. It has several flying fields. Pop. (1931) 672,982.

Torpedo Type of missile used by ships or aircraft. It consists of a cigar-shaped receptacle with a high-explosive charge, and was invented by Whitehead in 1870. Besides the charge, each torpedo has an engine which propels it, and it can be directed by means of a gyroscope. Torpedoes have a range varying between 7000 and 10,000 yards; and when discharged travel under water, striking the target below the water line. Aerial torpedoes are discharged by a special launching gear.

Torpedo Boat Vessel built for carrying torpedoes. It has been largely superseded by the destroyer, the full style of which is torpedo boat destroyer, which has a far greater speed and resistance than the original torpedo boat. *See* DESTROYER.

Torphichen Coal mining centre of Linlithgowshire. It is 4 m. S.W. of Linlithgow. The nucleus of the place was a preceptory of the Knights of S. John of Jerusalem, on the site of whose church the parish church stands. There are remains of the hospital of the knights. Pop. 4000.

Torquay Borough, seaport and watering place of Devon. It is situated on Tor Bay, on the English Channel, 26 m. S. of Exeter. It has an equable climate, and this, added to the natural beauty of its site, makes it popular as a winter resort.

Terra-cotta, clay and marble are found in the neighbourhood. There are remains of Tor Abbey, built in 1196. William of Orange landed at Torbay in 1688. Pop. (1931) 46,165.

Torque Twisted collar of gold or other metal. They were worn by some of the early inhabitants of Europe and Asia, especially by the Celts. They were formed of bands or bars of the metal twisted spirally. The finest extant examples were found in Ireland. They were worn on the arms or perhaps round the neck. *See also* TORSION.

Torquemada **Thomas de.** Spanish Inquisitor. He was born in Valladolid about 1420. He became prior of a Dominican monastery, and, in his zeal for the destruction of heresy, induced the pope to create the Holy Office of the Inquisition. Appointed first general in 1483, his ruthless methods have made his name a by-word for cruelty. He died Sept. 16, 1498.

Torrens **Lake.** Shallow lake of S. Australia. It is about 90 m. N. of Spencer Gulf, in the northern part of the Great Valley. Its greatest length is 130 m. and its greatest breadth 20 m. It was discovered by E. J. Eyre in 1840, and was named after Sir R. R. Torrens.

Torrens **Sir Robert Richard.** Australian statesman. He was born in Cork in 1814, and educated at Trinity College, Dublin. In 1840 he went to S. Australia, becoming premier in 1857, and conferring enormous benefit on the country by his Act—known as the Torrens Act—which substitutes public registration of land for the cumbrous system of conveyancing. This system became general throughout Australia by 1862. He returned to England in 1863, sat as a Liberal 1868-74; and died Aug. 31, 1884.

Torres Strait Strait between Queensland and New Guinea. It is 90 m. wide, and in it are a number of islands. The strait, discovered by Torres in 1606, is noted for its pearl fisheries.

Torres Vedras Town in Portugal. It is 40 m. by rail from Lisbon. Near here, during the Peninsular War, Wellington constructed the famous fortifications known as the "Lines of Torres Vedras," which he successfully defended during the winter of 1810. Pop. 7900.

Torridge River of Devonshire. It rises in the N. of the county, and near Barnstaple falls into the estuary of the Taw. It passes by Bideford.

Torridon Village and sea loch of Scotland. The village stands on the loch, which is an opening of the sea into the W. coast of the county of Ross and Cromarty.

Torrington Borough and market town of Devonshire. An agricultural centre, it is 7 m. S. of Bideford and 226 from London by the S. Rly. Gloves are manufactured. Here is a blue-coat school, founded in the 17th century. Pop. (1931) 2913.

Tor Royal Devonshire residence of the King when Prince of Wales. It is near Princetown.

Torsion Term in mechanics. It is used for the strain produced in a body such as a bar or wire when the parallel planes are twisted round a perpendicular axis by a torsion force acting at a certain distance from the axis. The product of the magnitude of the force and its distance is termed the torque, and the quotient of the torque by the sectional area of the body which is twisted, is known as the torsional stress.

Tort In English law a class of wrongs. It describes all wrongs which are not breaches of contract, but for which compensation or damages may be awarded. Trespassing and doing damage on land is a case of tort. An infant is responsible for his torts, although not for his contracts, and a husband is responsible for his wife's torts.

Tortoise Land reptiles of the order *Chelonia*, which includes also turtles and terrapins (*q.v.*). It is characterised, like these, by a box-like armour beneath which head, limbs and tail can be withdrawn for security. The dorsal and ventral carapaces of horny material overlie bony shields formed from the ribs, etc. Tortoises belong to the warm regions. Five European species—from 6 in. long to the giant tortoise of Galapagos Is.,

which may attain a length of 5 ft.—are known. The handsome mottled tortoise shell of commerce is obtained from one of the turtles, the hawksbill (*C. imbricata*).

Torture Extreme physical pain inflicted for judicial purposes. In ancient times it was inflicted either as part of punishment or to extort a confession. For the latter purpose it persisted until comparatively modern times. It was never recognised as legal in England, but was practised extensively, reaching its culmination in the reign of Elizabeth. In Scotland it was retained until much later, and obstinate prisoners were sometimes transferred from England to Scotland to be examined by torture. Types were the rack, the boot and the thumbscrew.

Tory Name of an English political party. Used for robbers in Ireland, it was employed as a term of contempt in England for the supporters of Charles I. and Charles II. It was used derisively for those who opposed the proposal to exclude James, Duke of York, from the throne. It soon became the accepted name of the party opposed to the Whigs, and remained so until about 1832, when it was superseded by Conservative. The early leaders of the party were Bolingbroke and St. John, and the later ones Wellington and Peel. It is now used for members of the Unionist Party. *See* CONSERVATIVE.

An island off the coast of Donegal, Irish Free State, is called **Tory Island.**

Tosti **Sir Francesco Paolo.** Italian song-writer. He was born at Ortona, Abruzzi, April 9, 1846, studied in Naples, and became singing master to Princess (later Queen) Margherita; and later to the English Royal Family. In 1894 he was made Professor of Singing at the Royal College of Music. He composed many hundreds of songs, "Goodbye" being probably the most popular. He was knighted in 1908, and died in Rome, Dec. 2, 1916.

Totalisator Machine used for betting on horse and dog races, and also other sporting events. They are worked by electricity and automatically record the number of bets on a given horse or dog, and the amount of money that the winners receive. Long used on the continent of Europe, in Australia and elsewhere, they were first permitted in England in 1928. They can be used in racing clubs, but the consent of the Betting Control Board is necessary before they can be erected on courses where horse races are run. Totalisator betting was prohibited on greyhound tracks in 1933 but was restored as from July, 1935, subject to certain restrictions such as the nature of the bet, the number of meetings, etc.

Totemism Primitive religious belief. It was held by the ancient Britons, Hebrews and Greeks and is still in vogue among the Australian aborigines and N. American Indians. Totemism rests on the belief in a blood-relationship between the members of a tribe and a plant or animal, the latter being assumed as an emblem and often as an object of worship.

Totnes Borough and market town of Devonshire. It is 22 m. S.W. of Exeter, 203 m. from London by the G.W. Rly., and stands on the Dart. The town has a 16th-century grammar school, and ruins of a castle. It is visited by tourists, and steamers go along the Dart. Pop. (1931) 4525.

Tottenham Urban district of Middlesex. It is 6 m. N. of the city and is served by the L.N.E. and L.M.S. Rlys. The buildings include Bruce Castle with its grounds and the hospital. Tottenham Court Road leads from Charing Cross Road to Hampstead Road. Pop. (1931) 157,748.

Tottenham Hotspur Association football club. It was founded by some boys at Tottenham in 1882, and in 1895 became a professional organisation. It became a member of the Southern League in 1896, and in 1909 entered the League proper. In 1901 and again in 1921, the club won the Association Cup. The ground is in High Road, Tottenham.

Tottington Urban district of Lancashire. A centre of the cotton industry it is 2¼ m. N.W. of Bury and 199 from London by the L.M.S. Rly. Pop. (1931) 6532.

Toucan Bird of the family *Rhamphastidae*, of tropical S. America. Allied to the barbets, toucans have vividly coloured bill and plumage; the former very large, though light and thin-walled. They inhabit forest regions and feed on fruit, insects, etc.

Touchstone Stone used for testing the purity of gold alloys. It is a black variety of quartz. When rubbed across it, the gold leaves a streak which is then moistened with an acid of 78·4 per cent. nitric acid, 1·6 per cent. of hydrochloric acid and 20 per cent. of water. An examination then tells the expert the nature of the alloy. It is sometimes called Lydian stone because a quartz from Lydia was used for this purpose.

Touchwood Tree fungus of the natural order *Polyporus igniarius*. It grows on beech and other forest trees, and smoulders away if ignited.

Toulon Seaport and principal naval station of France. It is on the Mediterranean, 42 m. S.E. of Marseilles. The Roman Telo Martius, it was sacked by Goths, Burgundians, Saracens and Franks. Here Henry IV. established an arsenal which was strengthened by Richelieu and fortified by Vauban. At the **Battle of Toulon,** in 1744, the English fleet, under Admiral Mathews, was defeated by a combined French and Spanish fleet. It was at the siege of Toulon in 1793 that Napoleon first distinguished himself.

Toulon, which has a fine harbour on the bay, is very strongly fortified and is the headquarters of the French Mediterranean fleet. The arsenal and shipbuilding provide important industries; others are fishing and wine-growing. Salt, figs, raisins, almonds, oranges, cork, soap, etc., are exported. The chief buildings are the former cathedral, the naval and military hospital, naval school of medicine, the hospital of S. Mandrier and the lazaretto. There is a broadcasting station (385 M., 8 k.W.). Pop. (1931) 133,263.

Toulouse City of S.W. France, on the Garonne. The Church of S. Saturnin has the largest Romanesque basilica extant; parts of the cathedral date back to the 11th and 13th centuries, and there are many old houses. Toulouse has factories, including the national tobacco factory, and important agricultural markets, as well as two wireless stations (385 M., 8 kW. and 255 M., 0.7 kW.).

The Tolosa of the Romans, Toulouse has often been the seat of religious and political wars. Here, on April 10, 1814, the British and Spaniards, under Wellington, defeated the French under Soult. Pop. (1931) 194,564.

Touraine Former province of France. Tours was the capital, and it was ruled by the counts of Touraine, being joined with Anjou in the 11th century. At the Revolution Touraine became the department Indre-et-Loire and part of Vienne.

Tourmaline Mineral sometimes used as a gem stone. Found in Ceylon, Brazil, Burma and Siberia, its colour varies from an almost colourless tint through yellow, red, green to blue; and it may be clear or cloudy. It is interesting chemically on account of the variety and proportion of its metallic constituents, and technically on account of its optical properties and its behaviour when electrified.

Tournai City of Belgium. A railway junction and military centre, it is situated on the Schelde, 50 m. by railway S.W. of Brussels. Among notable buildings are the Cathedral of Notre Dame, parts of which date from the 11th century, and the churches of St. Quentin and St. Brice. The old fortifications survive in Henry VIII.'s Tower, and a bridge over the Schelde. Brussels carpets are made. The city figured in the Great War. Pop. (1931) 35,940.

Tournament Contest of skill. Originally used to describe a mock combat between armed knights, the term survives in modern usage for any friendly contest in games, *e.g.*, tennis or hockey tournaments. The medieval tournament was ruled by the laws of chivalry. One knight might act as challenger and meet all comers; or the combats might be arranged beforehand. Often the day concluded with a mêlée in which one party of knights fought another. These were by no means bloodless. Usually a lady was chosen as the Queen of Love and Beauty, and it was her privilege to crown the victor. The tournament proper did not long outlast the middle of the 15th century.

Tourniquet Instrument used to compress the main arteries of the leg or arm where bleeding exists, or to prevent bleeding in an operation. A simple tourniquet consists of a pad to press on the artery, with straps to fasten round the limb.

Tours Town of Central France. An ancient town of pre-Roman origin, it stands on the Loire. Here S. Martin, the apostle of the Gauls, was bishop in the 4th century. Later it became a monastic centre, and Alcuin established a famous philosophical and theological school. Its silk industry was established by Charles VII., and until 1772 it had a mint. The chief building is the cathedral of St. Gatien, which dates from the 12th to the 16th century. There are other old churches, the remains of a basilica of St. Martin, some fine old houses and a valuable library. Manufactures include silk, printing, steel, automobiles, machinery, stained glass, porcelain, etc. The wine and fruit trade is considerable. Pop. (1931) 78,585.

At the **Battle of Tours**, in 732, Charles Martel saved Christendom by defeating the Moors under Abd-ur-Rahman, thus checking their advance into Western Europe.

Toussaint l'Ouverture. W. Indian negro insurgent. He was born in Haiti (San Domingo), May 30, 1746, and took part in the negro rebellion there in 1791. In 1795 the French Convention, for services rendered against the Spaniards, made him commander of the army in the island. When Napoleon proclaimed the re-establishment of slavery, and he refused to obey, he was treacherously seized and taken to France, where he died in prison, April 27, 1803.

Towcester Town of Northamptonshire. It is 67 m. from London by the L.M.S. Rly. and 9 from Northampton. It has an agricultural trade, and brewing is carried on. The parish church has several features of interest, and there is a town hall and a corn exchange. Pop. 2383.

Tower Bridge Bridge across the Thames in London, the nearest to the sea. It was opened in 1894, having taken eight years to construct. It consists of two towers, with a roadway 30 ft. above high water, and foot bridges 135 ft. above high water between them. The bridge is 880 ft. long and the roadway can be opened to allow vessels to pass through. Hydraulic power is used to raise the roadway.

Tower Hamlets Name given to a district in London near the Tower. Before 1918 it was used for an area that sent seven members to Parliament, for which purpose it was divided into the divisions of Bow and Bromley, Mile End, Stepney, St. George's in the East, Limehouse, Poplar and Whitechapel.

Tower of London Building in London. It is on the N. bank of the Thames about 600 yards below London Bridge, and is the oldest building in the city. It was built as a fortress by the Norman invaders, but there was probably one on the site before this time. Later used as a palace, it is most famous as a prison, and it has held many notable prisoners. The oldest part is the keep called the White Tower, built in the time of William the Conqueror and containing a beautiful Norman chapel. The other towers are of later date. The grounds cover 13 acres and round them is a drained moat. In the Tower are the Crown Jewels and a fine collection of armour. Visitors are shown also the Traitor's Gate. Just outside the Tower is Tower Hill on which many persons were executed. Trinity Square Gardens contains the site of the scaffold. The Tower is open to visitors every week-day.

Town Originally an enclosed and inhabited place. The word has come to be a general term for a place in which a considerable number of people live. In Great Britain a town has no legal status. They are either cities, boroughs or urban districts, although the word town is in common use for a place that is too large to be called a village and is not a city, borough or urban district. Places with markets are called market towns. The chief permanent official of a city or borough is the town clerk and the building erected for its business is usually called the town hall.

Town Council In the United Kingdom a body elected to manage the affairs of a city, borough or burgh. Sometimes called city or borough councils, they were created in 1834, and consist of councillors and aldermen. Councillors are elected by the ratepayers and serve for three years; aldermen are elected by the councillors and serve for six. A borough is divided into wards, each of which elects three councillors.

The council elects every year a mayor who presides over its meetings and is the official head of the town. Each has a paid official called the town clerk, and a staff of officials. In Scotland the aldermen are called bailliqs and the mayors are provosts. The powers of the councils vary, according to the size of city, borough or burgh.

Town Planning Phrase used for laying out an area in order to give it a pleasing appearance and ensure healthy conditions. Something of this kind was done in the 19th century when new towns were planned, especially in the United States, and where land was plentiful. In 1909 in England a law was passed to encourage town planning, and other Acts followed. The law was consolidated in 1925, in 1932 its scope was further defined and the measure of 1933 vested extensive powers in the local authorities.

The effect of the laws is to enable these authorities to make plans for any area that is built over. They can restrict the number of houses per acre, provide open spaces and make other regulations that will prevent the district from becoming a slum area. They can improve areas in which housing conditions are bad, make roads and build houses.

Townshend **Sir Charles Vere Ferrers.** English general. He was born Feb. 21, 1861, joined the Indian Army in 1886 and served in the 1891 expedition to the Himalayas and in Chitral in 1895. In April, 1915, he commanded the Sixth Division in Mesopotamia, where he captured Kut al Imara in Sept., 1915. Here, however, he was later besieged, being forced to surrender, April 29, 1916. He was interned till 1918 and he died May 18, 1924.

Township Word used by scholars for a district of England in Anglo-Saxon times. It is practically the same as village. In Canada and other parts of the British Empire, it is used to-day for a settlement not large enough to be a town or city.

Townsville Seaport of Queensland, Australia. Situated on Cleveland Bay, it trades in sugar and exports the produce of the district. It is the terminus of the N.Q. Rly. Pop. (1931) 32,050.

Towton Village of Yorkshire (W.R.). 12 m. S.W. of York. Here on March 29, 1461, the Yorkists won a decisive victory in one of the most important of the battles of the Wars of the Roses.

Towy River of Wales. It rises in Cardiganshire, and flows in a southerly direction, by Llandovery and Carmarthen, to enter Carmarthen Bay by an estuary. It is 66 m. in length.

Towyn Urban district of Merionethshire. A seaside resort, it is situated on Cardigan Bay, 12 m. from Aberystwith and 232 from London by the G.W. Rly. Pop. (1931) 3803.

Toy Children's toys, or playthings, have varied little with the ages. Dolls and toy animals still remain with which the children of ancient Egypt played. In Greek and Roman times there were dolls, miniature furniture and balls of different sizes, including one blown out like the modern football. The top is mentioned by Virgil, and has never waned in popularity.

More elaborate toys, such as model train-sets, are now largely made in England, while hand-made toys are made by peasants in the Black Forest and Switzerland.

Toynbee **Arnold.** Englisih social reformer. He was born in London, Aug. 23, 1852, and educated at Oxford, Believing that only those could help the poor who lived among them, he took lodgings in Commercial Road, Whitechapel, co-operating closely with Canon Barnett. His health gradually gave way, and he died March 9, 1883. **Toynbee Hall** was opened in 1884 as a memorial to him, with Canon Barnett as its first warden. It is a college and social centre, where university men go into residence, provide facilities for education and recreation, and formulate plans for promoting the general welfare of the poorer classes, and is the model on which similar institutions in other parts of the world have been founded.

Tracery In architecture the stone framework seen at the head of Gothic windows. It is formed by a continuation of the mullions, which are bent to form an ornamental design. At first it consisted of geometrical forms, but later the designs became more free.

Trachea The windpipe, which extends from the larynx to the two bronchial tubes into which it divides. Its walls are strengthened by a series of cartilaginous rings incomplete at the back, where lies the oesophagus. In diphtheria and other throat diseases it is opened sometimes to prevent suffocation.

Tracheotomy Surgical operation. By it the trachea is opened to admit the insertion of a metal tube to allow air to pass to the lungs in cases of obstruction, disease of the larynx or other parts of the upper respiratory passage as in the case of diphtheria.

Trachodon Extinct animal. It was a dinosaur, and fossil remains have been found in the west of the United States. It resembled the iguanodon.

Tractarian Name given to a supporter of the Oxford Movement. It is due to the fact that its ideas were contained in *Tracts for the Times*. *See* OXFORD MOVEMENT.

Traction Act of drawing something along a road, or other land, or waterway. A locomotive used for drawing vehicles along the road is called a **traction engine.** A **traction wheel** is a locomotive driving wheel which acts by frictional adherence to a smooth track.

Tractor Word used for a traction engine. It is especially applied to the kind used for ploughing, the horses being replaced by power obtained from steam or oil. The word tractor is also used for an aeroplane with the screw at screws in front.

A caterpillar tractor is one in which the wheels are replaced by metal belts, for travel over rough country.

Trade Commerce. This term implies the exchange of commodities for purposes of gain. The word is also used for the organisation and workers of a particular trade. Trade has increased greatly with the advance of civilisation, but in 1932 a serious contraction of world trade was reported, due, in part at least, to the system of tariffs. *See* BALANCE OF TRADE, TRADE BOARD, ETC.

Trade Board of. Department of the British Government. It originated in the Board of Trade and Plantations, founded

in 1660. This lasted until 1782 and was replaced in 1786 by a committee of the Council on Trade under a president. The president, who is a member of the Cabinet, is assisted by a Parliamentary and a permanent secretary and a large staff. The duties of the board include the control of shipping and mines Trade marks and patents are within its province, as are all matters affecting trade with other nations. It administers the company and bankruptcy laws, and is concerned with duties on imports. With the Foreign Office it controls the **Department of Overseas Trade.** The board issues monthly the *Board of Trade Journal*, which deals with trade matters.

Trade Board Organisation set up in Great Britain. In certain industries it exists for fixing rates of pay. The first were established in 1909 in four industries in which the conditions of labour were unsatisfactory. Each board consists of an equal number of employers and employed with an independent chairman. The boards are controlled by the Ministry of Labour. They exist for the following trades: tailoring, box making, chair making, lace finishing, confectionery making, food preserving, shirt making, laundry work and milk distribution.

Trade Mark Distinctive mark placed upon goods offered for sale. The trade mark may be any device, label, ticket, heading, signature, word, letter or numeral. If the mark is a word it must be an invented word, such as Hovis, not one that is in general use, or the name of a place or person. Trade marks are protected by law provided they are registered. They can be registered at the Patent Office, Southampton Buildings, London, W.C.2. Marks on cotton goods can be registered in Manchester; on metal goods in Sheffield. *See* PATENT.

Trade Union Association of workers in a particular trade. Such associations are almost as old as industry itself. In their modern form they date in Great Britain from 1824 when the laws, which had been passed in the 18th century forbidding combinations of masters and workmen, were repealed. About the middle of the 19th century the unions became more active and in 1868 the first **Trade Union Congress** was held. At first there were many unions, each with a small membership, but soon a policy of amalgamation began. In 1884 the weavers formed themselves into a large union or federation and in 1888 the coal miners did the same. In 1889, to give still more unity to the movement, the **General Federation of Trade Unions** was set up.

Other events of note were the first election of trade unionists to Parliament in 1874, the introduction of the Trade Union Movement among agricultural labourers by Joseph Arch, and the formation of a union of women workers. An Act passed in 1875 made peaceful picketing legal. In 1901, in a famous law case called the Taff Vale, the House of Lords decided that the unions were liable for the illegal acts of their officials and that compensation for damages could be obtained from their funds. In 1906, after a long agitation, the law was altered. The funds of the unions were protected from liability and peaceful picketing was allowed in an extended form.

This lasted until 1927 and then the law was again altered. In addition to declaring a general strike illegal, the act of that year ordered the political funds of the unions to be kept separate from the other funds and provided that no member could be compelled to contribute to the political funds.

The political side of the Trade Union Movement has overshadowed the great work they do as friendly societies. They pay out to members large sums during times of illness and unemployment, and in connection with them are approved societies under the National Health Insurance Scheme. They also assist in working the National Scheme of Insurance against unemployment.

In 1934 there were in the United Kingdom 449 unions, the total membership of the 19 industrial groups, excluding employers' associations, being 3,513,097. The income for 1934 was £10,171,132. The transport workers and the miners have very strong unions. The Trade Union Movement has spread to other countries and there are powerful unions in the United States, Australia and elsewhere.

Trade Wind Persistentwind. Always blowing in certain latitudes, in the northern hemisphere it blows towards the Equator from the N.E., in the southern from the S.E. In the days of sailing ships it was of the greatest importance to trade, hence the name. It prevails in the Atlantic and Pacific Oceans, and influences rainfall and climatic conditions generally.

Trafalgar Spanish Cape. It is situated on the south coast and was the scene of the famous battle on Oct. 21, 1805, when Nelson defeated the combined French and Spanish fleets under Villeneuve. Nelson himself was killed in the hour of victory. His last order was the historic message, "England expects every man this day to do his duty."

Trafalgar Square AreainLondon. It as laid out to celebrate the victory at Trafalgar, and in it is the Nelson Column, 145 ft. high, with a statue of the hero at the top and four bronze lions by Sir E. Landseer at the bottom. This was completed in 1867.

Traffic Passing to and fro, especially of vehicles. The introduction of motor vehicles and the rapid increase in their number in the 20th century have made the regulation of traffic difficult. It is done in the main by the police, but other systems have been suggested, including the enrolment of a special force for the purpose.

Since the Great War automatic signals have been introduced for the control of traffic. These take the form of lights, green to proceed and red to stand still; they are changed at stated intervals, and are controlled from a central operating station. Another innovation is the restriction of traffic in certain streets to one way. The roads are marked with white lines, sometimes down the centre and sometimes to show stopping places, and direction marks are prominently displayed. In Great Britain road traffic is controlled by the Ministry of Transport and the police jointly, and was dealt with in an important series of Acts in 1930, 1931, 1933 and 1934. By these the Minister of Transport is empowered to issue a Highway Code, subject to constant revision, for the greater safety and convenience of all road-users, including cyclists and pedestrians. Licensing and registration, lighting, identification and insurance are carefully dealt with, and the 1934 Act introduced the speed limit of 30 m.p.h. within built-up areas. It also made compulsory a standard driving test before the issue of a licence to a new driver.

Tragedy Form of drama. It is the name given to a type of drama which has for its subject the misfortunes of human beings, presented in such a way as to arouse the pity and sympathy of the spectators. It originated in Greece, in the "goat-song," or dirge, accompanying the sacrifice of a goat to Dionysos, and reached, in Athens during the 5th century B.C., a level of beauty and dignity which has not since been surpassed except possibly by the tragedies of Shakespeare.

Train Ferry *See* FERRY.

Training Ship Ship for training boys for sea service. There are several of these establishments in Great Britain both for the navy and the mercantile marine. Of the former may be mentioned the *Warspite* and the *Arethusa*, lying off Grays and off Greenhithe respectively. The *Worcester*, training ship for officers of the mercantile marine, lies off Greenhithe also, and the *Indefatigable* is at Rock Ferry, Birkenhead. There is also the reformatory ship *Cornwall* lying off Denton, Gravesend.

Trajan (**Marcus Ulpius Trajanus**). Roman emperor, A.D. 98-117. He was born in Spain, Sept. 18, 52, and adopted by Nerva in 97. Under him, the empire reached its widest extent, for he made Dacia, Mesopotamia, Armenia and Assyria Roman provinces. Although his military expeditions entailed long absences from Rome, he saw to it that all details of good government were carried out. He built many new bridges, roads and canals; established libraries; built the **Forum Trajanum**; restored the Via Appia. He died in Cilicia, in Aug., A.D. 117.

Trajectory Term in physical science. It is applied to the curved path of a body and formed by the action of certain propelling forces as in the case of a planet; or more especially as applied in ballistics to the path taken by a projectile when discharged from a gun and due to the initial velocity, air resistance and action of gravity.

Tralee County town and seaport of Co. Kerry, Irish Free State. It is situated on the bay of the same name, 21 m. from Killarney, not far from the estuary of the river Lee, and is a junction on the G.S. Rlys. Butter and grain are exported. The town had its nucleus in a Dominican monastery, founded in 1213. The cathedral of Ardfert, some 4 m. N.W. of Tralee, now forms part of the see of Limerick. Pop. (1926) 10,533.

Trammel Net Species of fishing net. It is used principally off the rocky shores of the English Channel. It is composed of three nets, the outer two of a coarse mesh, the inner one finer and hanging more loosely. They are so placed that the fish penetrate the coarse mesh and, striking the inner net, carry it through the meshes of the third net, thus imprisoning themselves inextricably.

Tramway Track along which street cars are drawn or propelled by electricity. The earliest trams were drawn by horses, and were introduced into England about the middle of the 19th century.

Electric trams are run either by overhead wires, or by one of several underground systems. In some systems the car carries its own power, while in others the power is derived from a central power station. The rails are laid on a concrete bed, usually with a gauge of 4 ft. 8½ in. In large cities cars are made with two decks to accommodate more passengers. Sometimes they move underground for part of their journey, a notable instance being the London subway from the top of Kingsway down to the Victoria Embankment. Some towns (*e.g.*, Nottingham) have adopted a trackless, overhead tramway system, the vehicles being fitted with pneumatic tyres.

Trance State of sleep-like insensibility. When accompanied by muscular rigidity it is known as catalepsy. It is of rare occurrence and appears to be of nervous origin. It may be regarded as indicative of some neurological disease or hysteria. A form of trance may also be induced under hypnosis.

Tranent Burgh of E. Lothian. A colliery centre, it is 10 m. from Edinburgh and is served by the L.N.E. Rly. Pop. (1931) 4526.

Transcaucasia District S. of the Caucasus Mountains. Formerly applied to the provinces and governments of Russian Caucasia, with the exception of the provinces of Terek and Kuban, and the Government of Stavropol, and forming part of the Russian Empire, it was in 1919 the scene of prolonged fighting between the Tartars, Armenians, Georgians and other peoples inhabiting the district. Eventually Armenia, Azerbaijan, and Georgia agreed to join the Union of Soviet Republics, and in 1922 the Transcaucasian Socialist Federated Soviet Republic was established, consisting of these three republics, together with an autonomous district, and the Batum area.

Transcendent (**and Transcendental**). Philosophical and religious terms. In philosophy, transcendental was used by Kant to denote a *priori* principles, *e.g.*, causality, which are presupposed in and necessary to experience, and in the Kantian philosophy transcendent is applied to doctrines *e.g.*, those of natural theology, which are not realisable in experience. In religion, the doctrine of the transcendence of God emphasises the existence of the Divine Being apart from the material universe and His freedom from its limitations.

Transcendentalism denotes a school of thought represented by Emerson, which defends the idea of an intuitive perception of divine truth in opposition to dogmatic rationalism.

Transept Section of a building which runs at right angles to the main body, giving it the shape of a T or a cross. Transepts became a common feature of Byzantine work in the 8th century, and are found in a highly developed state in the Norman ecclesiastical architecture of France and England, being used for additional altars.

Transfer The handing over, or conveyance of anything from one place or person to another. The term is also used for the form, manner or method by which it is done. Designs and drawings are transferred by means of transfer papers to the surface of material, pottery and stone.

The transfer of stocks and shares is bound up with the formalities of buying and selling of stocks and shares, and the transfer often takes the form of deeds, which have to be duly signed and sealed before the shares belong to the new owner. The transfer of land is attended by more elaborate formalities. *See* CONVEYANCE.

Transfiguration Feast of the. One of the twelve great ecclesiastical feasts which rank after Easter in importance. It commemorates the incident in the life of Christ described in Matt. xvii. and is celebrated by both Greek and Roman Churches on Aug. 6. The feast is said to have been instituted by Pope Calixtus III. (1455-58), but earlier allusions to it have been discovered.

Transformer Term used in electrical engineering. It is applied to the device for producing from one alternating electric current, another of a different voltage, and strength. There are many types, but essentially a transformer consists of two insulated coils wound upon a laminated iron core, one coil of fine wire with many turns, the other or primary coil of coarse wire with few turns, the change in voltage depending upon the rates of the numbers of turns. In wireless, a transformer of a special type is used in some receivers for coupling the valves.

Transfusion Medical term. It is applied to the practice adopted at the present time in certain cases of collapse of transferring blood from a healthy person to a patient. *See* BLOOD TRANSFUSION.

Transit In astronomy the passage of a heavenly body over the meridian of a place. Transits are very important to astronomers, especially the transits of Venus, which enable them to calculate the distances of the sun from the earth. A transit circle is an instrument for ascertaining the correct time of a transit. It consists of a telescope capable of rotation only in the plane of the meridian, with a divided circle on either side of it and elaborate mechanism for registration purposes.

Transmigration of the Soul. *See* RE-INCARNATION.

Transmission *See* POWER TRANSMISSION.

Transom In architecture a bar or beam laid horizontally across a window or door. It is of wood or stone and is often seen in the windows of Gothic buildings, where it divides the window into an upper and a lower part.

Transport Ministry of. Department of the British Government. It was established in 1919 and until 1922 was in control of the railways. It still exercises a certain amount of control over them, but its main business is concerned with the care and improvement of the roads. *See* ROADS.

Transportation Punishment for criminals. By this they are sent to a penal settlement in a distant land. From England prisoners were sent to the plantations in America, a practice which lasted throughout the 17th century and until the independence of the United States in 1783. In 1783 convicts were first sent to Botany Bay in Australia, but this ceased in 1840. From then until 1853, when transportation from England ceased, they were sent to Tasmania.

In Russia, under the Tsars, there was much transportation of prisoners to Siberia, and the system is still practised in France and other countries. Transportation differs from banishment. The latter merely sends the offender out of the country, allowing him to go where he likes. Transportation sends him to a definite place for a definite period under supervision.

Transubstantiation Theological term. It denotes the belief held by the Roman Catholic Church that "the whole substance" of the Eucharistic bread and wine are changed, in virtue of their consecration, into the body and blood of Christ.

Transvaal Province of the Union of S. Africa. Lying in the north east, it is entirely inland. It was first settled by farmers from the Cape, intolerant of English control, and became a republic in 1852, but was annexed by the British in 1877. Self-government for internal affairs was recognised in 1881, but the country was again annexed in 1900. Responsible government was granted in 1906, and it became one of the original provinces of the Union in 1910.

The Transvaal consists of a high plateau, largely excellent stock country, principally devoted to cattle and sheep, but there is much good agricultural land, maize and tobacco being important crops. The chief asset of the province is its mineral wealth, especially gold and diamonds from the Witwatersrand area in the neighbourhood of Johannesburg, which celebrated its jubilee in Jan., 1936. Railways are well developed, forming part of the Union railway system, and connect the capital, Pretoria, with other centres and with Delagoa Bay. Area 110,450 sq. m. Pop. 2,187,636; Europeans (1931) 695,963.

Transylvania District of Rumania, officially called Ardeal. It is a high plateau surrounded by a continuation of the Carpathians (*q.v.*). Deserted by the Romans A.D. 271, it was taken by Hungary in 1003. In 1526, after the Hungarian defeat by the Turks, it became independent. Transylvania welcomed the Reformation, and under George Rakoczy I. (1631-48) was the leading champion of Protestantism in Eastern Europe. Reduced to vassalage by the Turks, however, in 1661, Transylvania, after the Turkish defeat at Vienna in 1683, came under the Hapsburgs as part of Hungary. The privileged Saxon and Magyar communities now lost much of their supremacy, and the Rumanian peasantry rose until, in the early 19th century a Magyar revival took place, the attempt at reunion with Hungary in 1848 leading to fighting between the Rumanian and Saxon and the Magyar factions. Transylvania was part of Hungary until 1918, when union with Rumania was proclaimed on Dec. 1. Area 22,312 sq. m. Pop. 2,678,367.

Trappist Member of a branch of the Cistercian religious order. It was founded by Dominique A. J. le B. de Rancy, who lived from 1626-1700. De Rancy reorganised the monastery of La Trappe in Normandy, and himself became its regular abbot in 1664. The Trappist monks are vowed to strict silence, hard labour and seclusion from the world; and no wine, meat, eggs, fish or seasoning was permitted in their diet.

Travancore Native state of India, in Madras. It occupies the western side of the southern Deccan, and stretches more than 150 m. along the coast as far as Cape Comorin. The surface is undulating, with mountains in the east, and the coast is fringed with lagoons. Products include teak, pepper, coffee, rubber and copra. The maharaja is entitled to a salute of 19 guns. The area is 7625 sq. m. Pop. 4,000,000.

Traveller's Joy (*Clematis vitalba*). English wild climbing plant of the natural order *Ranunculaceæ*. It is a perennial shrub with tough stems and twining leaf stalks by means of which it climbs in every direction. Four greenish white sepals form the flowers, numerous stamens surround the styles which in autumn elongate into white plumy tails. These give it the familiar name of old man's beard.

Traveller's Tree (*Ravenala madagascariensis*). Plant of Madagascar allied to the banana and resembling a palm. Its leaves, many feet in length, grow in rows on opposite sides of the stem terminating in a cluster giving a fan-like effect. Rain water collects in a cavity at the base of each leaf stalk; and flour prepared from the ground seeds is used as food by the natives.

Trawling Method of deep-sea fishing. A net is dragged along the bed of the ocean, the mouth of which is kept open, the upper edge being supported a few feet above the sea bed, the lower edge sweeping over it. The net tapers from the mouth, the open back end being tied up during trawling to retain the catch, which is hoisted aboard when the trawl is raised.

Treadmill Form of mill used in England for punishing prisoners. The prisoner moved the wheel by ascending it step by step, but never made any upward progress. The power obtained was sometimes put to practical use, but was never very great. The first treadmills were erected at Brixton Prison in 1817, and they were in use for nearly a century. The wheel was used by the Chinese for obtaining water for irrigation purposes.

Treason In English law a serious crime. It means to betray and is used for crimes against the sovereign or the state. At one time there were two kinds of treason, petty and high, but petty treason, an act of treachery of a vassal towards his lord, was abolished in 1828. As defined by an Act of 1848 high treason is any serious betrayal of the interests of the State and the penalty is death by hanging. In Tudor times and earlier many persons were put to death for treason, the punishment at that time being hanging and disembowelling, followed by beheading and quartering. This punishment was inflicted on some persons after the Jacobite risings of 1715 and 1745.

Treasure Trove Term in English law. It denotes any gold or silver, in coin, plate or bullion, found hidden in a house or in the earth, or other private place, the owner thereof being unknown. It belongs to the crown, but usually it is given to the finder. Any one who finds treasure trove and does not disclose the fact may be prosecuted. One of the duties of coroners is to inquire into cases of treasure trove.

Treasury Department of the British Government. It supervises the national revenue and expenditure. The Chancellor of the Exchequer is its head and his chief assistant is the Financial Secretary to the Treasury. The first lord and the junior lords of the treasury have nothing to do with the management of the department. The permanent head is the Secretary to the Treasury who is the official head of the Civil Service. The offices are in Whitehall.

At one time the Treasury was under the **Lord High Treasurer**, one of the great officers of State, but since 1714 his duties have been discharged by a commission. At first the chief official was the first lord, but gradually his work passed to the Chancellor of the Exchequer. The office of the First Lord of the Treasury is usually held by the Prime Minister.

Treasury Bill Document issued by the British Government in return for money borrowed. Introduced in 1877, treasury bills are usually sold by tender to banks and financial houses, those who offer the money at the lowest rate of interest securing them. They are repayable in three, six or nine months. They are in multiples of £1000 and are used to obtain money when it is wanted for short periods. In 1932 the national debt included £604,455,000 in treasury bills.

Treasury Bond Document of security for money borrowed by the government. It is borrowed for a definite term of years, usually five, and the bonds are repayable at par, although they may be sold at less than par. In 1932 the national debt included £494,246,566 borrowed by means of treasury bonds. They usually bear interest at the rate of five per cent.

Treasury Note Term used for the notes for £1 and 10s. first issued by the Treasury in Aug., 1914. They continued in use until 1928, when they were superseded by the currency notes issued by the Bank of England.

Treaty Agreement, contract or league between two or more nations. Treaties are made by diplomatists and other representatives of the various countries, but before they are valid they need ratification by legislative or other authority in the several countries. Important treaties deal with the arrangements made at the conclusion of a war, but others deal with a specific subject and have no relation to war. In modern times many treaties are commercial. Since the Great War it has become the custom to deposit copies of treaties with the League of Nations.

Important European treaties are the Treaty of Westphalia (1648), the Treaty of Ryswick (1713), the Treaty of Paris (1814), the Treaty of Vienna (1815), the Treaty of Berlin (1878), and above all, the Treaty of Versailles (1919).

Treaty Port Name used for certain seaports in China and Manchuria. They are those which are open to European trade by treaty. This was first done in 1842 after a war between Britain and China.

Trebbia River of Italy. A short stream, only 58 m. long, it is a tributary of the Po which it joins near Piacenza. It is notable for the victory gained by Hannibal over a Roman army in 218 B.C.

Trebizond City of Asia Minor. It was founded as a Greek colony near the S.E. angle of the Black sea, and derived its importance from its position on the main caravan route from Asia through Armenia to Europe. For two and a half centuries it was the capital of an empire, founded by Alexius Comnenus after Constantinople was occupied by the Crusaders in 1204. Being well protected on the land side by a range of mountains, it withstood many sieges, until it fell finally to Sultan Mohammed II. in the 15th century. The population is about 60,975.

Treble Term used in instrumental music. In a musical composition the treble is played by instruments of acute tone, such as the violin, flute, clarionet, or on the

higher keys of a piano and organ. It is so called since it was formerly a third part added to the *canto fermo* and counterpoint.

Tredegar Market town and urban district of Monmouthshire. It stands on the river Sirhowy, 24 m. from Cardiff and 163 m. from London, on the G.W. Rly. The chief industries are iron working and coal mining. Pop. (1931) 23,195.

The title of **Baron Tredegar** is held by the family of Morgan. It dates from 1859 and the family seat is Tredegar Park.

Tree Woody stemmed plant, differing from a shrub in size only and perennial in habit. Trees are either deciduous, as the oak and elm, or evergreen like the pine.

Trees are worshipped by some peoples. Such worship may be animistic, *i.e.*, the tree may be regarded as the home of some powerful spirit or departed soul, or may be part of a fertility cult. In the latter instance the tree is rather the symbol than the object of worship. There are some curious survivals of tree worship in civilised countries, the best known of which is the maypole. Trees were also sometimes used as the symbol of life, as may be read in the opening chapters of Genesis. *See* AFFORESTATION, FORESTRY.

Tree **Sir Herbert Beerbohm.** English actor. He was born in London, Dec. 17, 1853, the son of Julius Beerbohm, a merchant, and was educated in Germany. Under the stage name of Beerbohm-Tree he made his début in London in 1877. In 1884 he took the theatre-going world by storm as the curate in *The Private Secretary*. He played melodrama for ten years at the Haymarket Theatre, and later put on Shakespeare with great success at His Majesty's. He was knighted in 1909, and died July 2, 1917.

Tree-creeper Small bird (*Certhia familiaris*) widely spread in the temperate regions of Europe, North America, Asia, and North Africa. It climbs about on the bark of trees by means of its claws and tail feathers in search of insects on which it feeds.

Tree Frog Family (*Hylidae*) of tree living frogs. There are many species widely distributed. The digits of both pairs of limbs are furnished with adhesive pads adapted to its habitat. The male has a vocal sac. *Hyla arborea* is common in S. Europe. Tree frogs resort to water for the breeding season.

Treforest District of Glamorganshire. It stands on the South Wales coalfield, 12 m. from Cardiff and 164 m. from London by the G.W. Rly. Pop. 12,365.

Tregaron Town of Cardiganshire. It is 10 m. from Lampeter and 37 m. from Carmarthen, on the G.W. Rly.

Treharris Urban district of Glamorganshire. It is 14 m. north of Cardiff and 165 m. from London, on the G.W. Rly. It is a coal mining centre. Pop. 8787.

Treitschke **Heinrich von.** German writer. He was born in Dresden, Sept. 15, 1834, and studied at the universities of Leipzig and Bonn, becoming professor at Freiburg in 1863, and later at Keil, Heidelberg and Berlin. He edited *Preussische Jahrbucher* and *Historische Zeitschriften*, wrote a German history of the 19th century, and many political and historical essays. He died April 28, 1896.

Trelawny **Sir Jonathan.** Cornish bishop. Born in Pelynt, Cornwall, March 24, 1650, and educated at Westminster and Oxford, he was ordained in 1673, and held the livings of St. Ives and Southill. In 1685 he was made bishop of Bristol, in 1688 bishop of Exeter, and in 1707 Queen Anne promoted him to the See of Winchester. He was one of the seven bishops accused by James II. in 1688 of seditious libel, and is the subject of the famous ballad "And shall Trelawny die?" The poem is supposed to have been inspired by the fact that Trelawny was the head of an ancient Cornish house. He died July 19, 1721.

Treloar **Sir William Purdie.** English philanthropist. He was born in London, Jan. 13, 1843, and educated at King's College School. He embarked upon a business career, at the same time taking an active interest in public affairs. In 1880 he became a member of the city corporation, was sheriff in 1899-1900, and Lord Mayor, 1906-07. He founded the Lord Mayor **Treloar's Cripples' Hospital** and College at Alton and Hayling Island, Hants. Knighted in 1900, created a baronet in 1907, he died Sept. 6, 1923.

Trench In warfare an excavation in the earth used to protect soldiers from enemy fire. Early in 1915, when the Great War on the western front ceased to be a war of movement, trenches were dug on both sides and soon there were lines of these from the Belgian coast to Switzerland. There were advance, support, communication and other kinds of trenches, and weapons and machines specially suited for trench warfare were developed. These included a cutter for excavating them and a mortar for throwing bombs into them. A disease called **trench fever** developed among troops serving in the trenches.

Trenchard **Hugh Montague, 1st Baron.** Born Feb. 3, 1873, he entered the army in 1893 and served with distinction in the Boer War (1899-1902), as well as during the Great War. He was Colonel in 1915, Major-general in 1916, Air Chief Marshal, 1922, and Marshal of the Air, 1927. He succeeded Lord Byng as Commissioner of the Metropolitan Police Force, Nov. 2, 1931. He was created baronet in 1919, and baron in 1930, and was awarded a G.C.B. in 1924. In 1933 a bill for the reform of the police organisation ("Trenchard's Bill") based on a report by Lord Trenchard, was introduced in Parliament. He retired in Nov., 1935.

Trent River of England. It rises in Staffordshire and flows through Derbyshire into Nottinghamshire. It joins the Humber near Alkborough. It is 180 m. long and has a bore or aegre. It passes by Stoke, Burton, Nottingham, Newark and Gainsborough and its tributaries include the Stow, Tame, Dove, Soar, Erewash, Derwent and Idle.

The Trent is navigable to Nottingham by small craft and to Gainsborough by larger ones. Plans have been prepared to improve the channel and make Nottingham a river port. Canals unite the Trent with other waterways in the northern and central parts of England.

Trent Junction is a station on the L.M.S. Rly., 7 m. from Nottingham. Near is **Trent College**, a public school for boys founded in 1866.

Trent Town of S. Tirol. Formerly Austrian, it now belongs to Italy. It is situated on the River Adige, and is strongly fortified, being the capital of the Trentino. It was captured by the Italians on Nov. 3, 1918. Among the industries may be mentioned

pottery, silk, wine and playing cards. Marble is quarried. Pop. (1931) 56,637.

The Council of Trent, held here in three sessions between 1545-63, was a general council of the Roman Church. It dealt with various doctrinal matters and has deeply influenced that church ever since. The decrees were confirmed by Pope Pius IV. in the year following its conclusion.

Trente et Quarante Card game. Alternatively named *Rouge-et-Noir*, it is a gambling game played with six packs of cards, on a table specially marked out. The cards are dealt out in a row (the black row) until the total number of pips exceeds 30. (Court cards count 10, and aces 1). A second (or red) row is then dealt below the first, and the winning row is that containing the most pips. Players stake on *couleur* (the winning row) or *inverse*, or *à cheval*, a combination of these. When both rows total 31, the *refait* occurs, and stakes are put *en prison*, until after the next deal.

Trentham Village of Staffordshire. It is 3 m. from Stoke-on-Trent, on the L.M.S. Rly. Trentham Hall, the seat of the Duke of Sutherland, was pulled down in 1911 and the grounds made into a public park. One of the finest houses in England, it was built about 1840.

Trentino Italian district. It is a mountainous area on both sides of the River Adige, surrounding the town of Trent, which is 57 m. N. of Verona. Essentially an Italian region it had become, prior to the Great War, part of the Austrian Tirol, with a frontier unfavourable to Italy, leaving 400,000 Italians under Austrian rule. It was the scene of much heavy fighting during the war, and on Nov. 3, 1918, the day before the cessation of hostilities, Trent was occupied by Italian troops. After the war the district, which covers 2539 sq. m., was restored to Italy.

Trenton City of New Jersey, the capital of the state. It stands on the River Delaware, 34 m. from Philadelphia, and is served by several railway lines. There are a number of manufactures for which electric power is generated from the falls in the river. Pop. (1930) 123,356.

Trephine Surgical instrument. It is a small cylindrical saw used by surgeons for operations on the skull. By means of this instrument a small circular portion of bone can be removed to relieve pressure on the brain, caused by disease or injury.

Tresco One of the Scilly Islands. It is 42 m. from Penzance and covers 720 acres. It contains the residence of the lord proprietor, famous for its beautiful gardens, remains of the old abbey and a ruin called Cromwell's Castle. *See* SCILLY ISLANDS.

Trespass Act of going without permission on land belonging to someone else. An action for trespass can be brought by the owner, but unless the trespasser did damage to the property he will be acquitted or let off with a very small fine. Other kinds of trespass are trespass to goods and trespass to the person. The former is interfering with a person's property and the other interfering with his liberty.

Trevelyan Sir George Otto. English statesman and writer. He was born in Leicestershire, July 20, 1838, and educated at Harrow and Cambridge, where he took high honours. Entering Parliament in 1865, he was successively a Lord of the Admiralty, Chief Secretary for Ireland, and Secretary for Scotland, retiring from public life in 1897. His best known works are *Life and Letters of Lord Macaulay*, *The Early History of Charles James Fox*, and *The American Revolution*. He died Aug. 16, 1928.

His eldest son, the Rt. Hon. Charles Philips Trevelyan, was born in London, Oct. 28, 1870, and also educated at Harrow and Cambridge. He became Parliamentary Secretary to the Board of Education in 1908, but resigned in 1914, being opposed to the Government war policy. He re-entered Parliament in 1922 in the Labour interest, and was President of the Board of Education in 1924 and 1929-31.

George Macaulay Trevelyan, the third son of Sir George Otto, was born Feb. 16, 1876, and also educated at Harrow and Cambridge, where he has been Regius Professor of History since 1927. He has honorary degrees from Oxford, St. Andrews, Edinburgh and Durham, and has written an appreciation of Meredith, three books on Garibaldi, a *Life of John Bright*, *England under the Stuarts*, *British History in the Nineteenth Century*, *A History of England*, *Blenheim*, and other books on historical subjects.

Trèves French name for Trier, an ancient German city. It lies on the Moselle, in a fertile valley, spanned by vine-clad hills. Trèves contains many ancient buildings, a Roman amphitheatre and palaces, and an ancient and beautiful cathedral. It was conquered by Caesar in 56 B.C., and later by the Franks, and was throughout the Middle Ages a seat of monastic learning. Pop. (1925) 57,344.

Trevithick Richard. English inventor. He was born in Cornwall, April 13, 1771, the son of a coal mine manager. In 1800 he built a high-pressure non-condensing steam engine and in 1801 a locomotive which carried passengers along a road. He applied his high-pressure engine to many purposes, such as boring and breaking rocks, dredging, threshing. In 1816 he was in Peru, building mining engines. He died April 22, 1833.

Trial Name used for the examination of a prisoner in a court of law before a judge or recorder. It is only used when a person is charged with a criminal offence which is too serious for the magistrates. In some trials there is a jury, but not in all. The counsel for the prosecution opens the case and calls his witnesses, who can be cross-examined by the defending counsel. The defendant's counsel then states his case and calls his witnesses. The judge then gives his verdict or, if there is a jury, sums up the case and leaves the verdict to them. Finally he discharges the prisoner or delivers sentence in accordance with the verdict of the jury.

Trianon Pavilions built in the great park at Versailles. The Grand Trianon was built in 1670 for Louis XIV. It is a one-storeyed building, and was later used by Napoleon and Louis-Philippe. The Petit Trianon was built in 1766. It was a favourite abode of Marie Antoinette, who laid out gardens around it.

The Treaty of Trianon between the Allied Powers and Hungary, signed June 4, 1920, separated Hungary from Austria, allotted parts of her territory to Rumania, Czecho-Slovakia and Yugoslavia on a basis of nationality, and provided for reparations and the reduction of her military forces. The Covenant of the League of Nations forms part of the treaty.

Triassic System Geological system lying on the Permian. It occurs in Wales, the midland and northern counties of England and around the Moray Firth in Scotland. It consists of conglomerates, breccias, sandstones and marls. Gypsum, alabaster and salt are mined, and the rocks provide important building and other materials.

Tribe Clan or body of people descended from the same ancestor. A number of tribes make up a people or nation. The Jews were divided into twelve tribes, descendants of the sons of Jacob, and the American Indians are divided into tribes to-day. In early days the Romans were divided into three tribes and there were also tribes among the Greeks.

Tribune Roman magistrate. The name was given to plebeian officers in Rome, who were first elected 494 B.C., to safeguard the plebeians from oppression by the patricians. They had the right of vetoing the action of any magistrate. At first there were two, afterwards ten, tribunes, whose persons were sacrosanct. Their power was curtailed by Sulla's legislation, but was restored by Pompey, 70 B.C. Under Augustus, the tribunician power passed into the hands of the emperor.

Tricolor Word used for the national flag of the French republic. It dates from the time of the Revolution of 1789, and is red, white and blue. Other European countries have three-coloured flags, but the word is in practice confined to the French one.

Trieste Seaport of Italy. Formerly Austrian, it is on the Adriatic, on the Gulf of Trieste, some 70 m. N.E. of Venice. It has a fine harbour and an extensive trade in oil and wine. Shipbuilding is important. Other industries are oil-refining, iron foundries, chemicals, soap-making, cotton-spinning, etc. There are marble quarries nearby. There is a broadcasting station (247.7 M., 10 kW.). The cathedral of San Ginsto occupies the site of a Roman temple. Five miles distant is the castle of Mirdmar, built for the ill-fated Emperor of Mexico. The port became Italian territory after the Great War. Pop. (1931) 249,495.

Triforium Term in ecclesiastical architecture. It is used for an upper storey above the aisle. Originally set apart for the women of the congregation, the triforium had arcaded openings. It persisted in later architecture, and in English churches frequently forms a wide passage right round the building.

Triglyph In architecture an ornament. It is repeated at equal intervals in a Doric frieze. Each triglyph consists of two gutters, or channels, cut to a right angle, called glyphs, and separated from each other by their interstices.

Trigonometry Branch of mathematics. It treats of the relations concerning the sides and angles of triangles and especially of methods of deducing from given parts other required parts. It is much used by surveyors who take certain points, calculate the size of the angles and from these obtain the required measurements.

Trilobites Class of fossil marine crustacea. Peculiar to the palaeozoic rocks and especially abundant in the Cambrian and Silurian periods, the oval flattened body was covered with a hard trilobed exoskeleton on the dorsal surface and divided into a head bearing a carapace, a thorax composed of movable segments, and an abdomen or tail-piece of fused segments. The thoracic segments being movable, the trilobites were able to roll themselves up like wood-lice.

Trim County and market town of Co, Meath, Irish Free State. It is on the Boyne, 30 m. from Dublin, and is reached by the G.S. Rlys. There are considerable ruins of a castle built in the 13th century by the English invaders, and remains of several abbeys. There is an agricultural trade. Pop. 2800.

Trimdon Urban district of Durham. A colliery centre, it is 8 m. S.E. of Durham and 249 m. from London by the L.N.E. Rly. Pop. (1931) 5410.

Trimmer Term used for a man of moderate views, especially in politics. It is due to the Marquess of Halifax, who used it of himself in a work called *The Character of a Trimmer*, in which he defended persons who could see both sides of a question.

Tring Urban district and market town of Hertfordshire. It is 32 m. from London on the L.M.S. Rly. There is a trade in agricultural produce. Tring Park is the magnificent seat of Lord Rothschild. Pop. (1931) 4364.

Trinidad Island in the West Indies. Forming with Tobago a British Crown Colony, and lying a few miles north of Venezuela, it was discovered by Columbus in 1498, colonised by Spain and ceded to Britain in 1802. It has a tropical, but not oppressive, climate. Principally an agricultural country, producing cane sugar by means of large modern mills, a high grade of cocoa and other tropical produce, it is famous for its pitch lake, covering 114 acres, an important source of asphalt, while petroleum is also worked. The capital, Port of Spain, has excellent buildings. Area, 1862 sq. m. Pop. (1931) 414,572.

Trinitarian One who believes in the Trinity.

Trinitarian is the name of a Roman Catholic order, called also the Redemptionists. It was founded in 1198 to ransom Christian soldiers who had been taken prisoners by the infidels. The members known as the red, or crutched (crossed) friars, had a red cross on a white robe. They had houses in London and elsewhere, The order is now a small one with headquarters in Rome, and its chief work is the ransoming of negro slaves.

Trinitrophenol Yellow crystalline substance. Also known as picric acid, it is formed by the action of strong nitric acid upon phenol. It acts as a strong acid forming salts which explode when heated or struck, especially in the case of potassium and ammonium picrates. Picric acid is sparingly soluble in water and its solution is used in medicine as an application for burns. It is used as a dye, and enters into the composition of high explosives.

Trinitrotoluene High explosive for shells. Formed by the action of strong nitric acid upon toluene, it is also known as trotyl or T.N.T. Unlike trinitrophenol it does not behave as an acid forming explosive salts, and has a lower melting point and sensitivity, also it is insoluble in water, consequently there is less danger in manufacture and use. The high explosives

amatol and ammonal are mixtures of this substance with ammonium nitrate, powdered aluminium and other ingredients.

Trinity The Holy. Theological term. It denotes the Christian belief in the union of three "persons" (Father, Son and Holy Spirit) in one Godhead. The development of this doctrine, traces of which are to be found in the New Testament, owes much to the influence of Greek philosophical thought on the Christian Church during the early centuries of its history.

Trinity College Cambridge. The largest college of Cambridge University. Founded in 1546 by Henry VIII., it absorbed several earlier foundations, among which were Michaelhouse, dating from 1324, and King's Hall, founded in 1337. The five courts include Great Court, Cloister or Neville's Court, and King's or New Court. The library was designed by Wren and contains busts of eminent alumni. The Master is appointed by the Crown. There are valuable exhibitions, some restricted to Westminster School.

Trinity College Dublin. University in Dublin. It was founded in 1591, and is mainly a Protestant body, although religious tests were discontinued in 1873. Unlike Oxford and Cambridge, the university consists of a single college, the head of which is the provost. Women were first admitted in 1903. The library contains a very valuable collection of Irish MSS. There is an observatory at Dunsink and a botanic garden at Balls Bridge. Trinity College returns three members to Dail Eireann.

Trinity House Association of seamen. It was incorporated in 1514, has its headquarters on Tower Hill, London, and is responsible for all pilotage round the British coasts and at Gibraltar. This involves the upkeep of lighthouses and ships, the buoying of channels, removal of dangerous wrecks, and so on. The **Elder Brethren of Trinity House** are persons of high standing in the country, including members of the Royal Family and retired naval officers of high rank. They wear a distinctive costume on state occasions.

Trinity Sunday Sunday after Whitsunday (Pentecost), observed by the Anglican and Roman Catholic churches in honour of the Holy Trinity. The festival, which was not generally observed until the 12th century, was established authoritatively by Pope John XXII. in 1334.

Triolet Form of verse, consisting of eight lines, the first and last two lines are identical and the fourth line is the same as the first. The lines are of six or eight syllables and only two rhymes are used.

Tripe Food prepared from the intestines of ruminant animals. It is usually cut in slices and served with milk and onions. It is regarded as the most easily digestible of all meat foods.

Triple Alliance Alliance made between three nations. There have been many triple alliances between European nations; the most recent of these was that formed in 1883 between Germany, Austria and Italy against the power of Russia and France. This alliance was severed when Italy joined the Allies in the Great War on May 4, 1915.

Tripoli City of North Africa. It is the capital of the district of Libya, usually called Tripolitana, but sometimes itself known as Tripoli. Situated on a promontory of the Mediterranean, at the intersection of three caravan routes, it comprises all the features of a typical Moorish city, containing several fine mosques. The arch of Marcus Aurelius is an imposing monument in marble, and there is an interesting Spanish fortress. Since the Italian occupation many fine government buildings have been erected, as well as a modern fort. In the 16th century Tripoli passed from the Arabs to the Turks. Pop. (1931) 71,793.

Tripolitana Italian colony of N. Africa. It is the W. part of Libya, and is divided into civil and military zones. Until 1911 it was a Turkish vilayet. The chief industry is agriculture, and especially fruit-growing. Tripoli is the capital. Other places are Yefren, Gharian and Aziza. It is a centre for caravan trade with the interior.

Tripos Three-legged stool or altar, used by the Greeks.

Tripos is the name, at Cambridge University, of the Honours examination in various schools, and is derived from the obsolete custom of sitting on a three-legged stool on Ash Wednesday to debate in the Philosophy School.

Triptolemus Son of Celeus, king of Eleusis. An agricultural hero and supposed inventor of the plough, he was, according to one legend, brought up by Demeter, becoming the first priest of Demeter, and founder of the Eleusinian Mysteries. According to the Attic legend, he was a judge in the underworld.

Triptych Decorative piece consisting of three panels. They are often seen in churches where they are used as altar pieces. Some of them are beautifully decorated with paintings of religious personages or scenes. The two wings usually fold over the centre piece.

Trireme Vessel with three banks of oars and two masts. It probably originated in Tyre or Sidon, but was soon copied by the Greeks. The Attic trireme contained up to 174 oarsmen, and possibly reached a speed of nine knots. The sails were not used in battle.

Tristan Hero of romantic legend. He was the nephew of King Mark of Cornwall and the ill-fated lover of his uncle's wife, Iseult. According to some versions, the legend is connected with the Arthurian cycle, but the poem, written by Thomas of Brittany and translated by Gottfried von Strassburg (which forms the basis of Wagner's Opera, *Tristan and Isolde*), knows nothing of King Arthur. Other modern renderings of the tale are found in poems by Swinburne, Arnold and Tennyson.

Tristan da Cunha Island midway between South Africa and South America. It is occupied by the descendants of some of the military force stationed there while Napoleon resided at St. Helena, and remaining when the garrison was withdrawn in 1817. The people, numbering 163 (1932), raise potatoes and have cattle, sheep, pigs and poultry.

Tritoma Genus of herbaceous plants, also known as kniphofia. They belong to the natural order *Liliaceae*, and are natives of South Africa. Several species are grown as garden plants, one known as the red-hot poker plant is conspicuous for its elongated spike of scarlet flowers in the late summer or autumn.

Triton Greek merman. Son of Poseidon and Amphitrite, he dwelt on the Libyan coast, and assisted the Argonauts when their ship went ashore on the Lesser Syrtes. He was human to the waist, but had a fish-tail, and carried a sea shell, which he blew to bring storms or calms.

Triumph Celebration of a Roman general's success. It was an occasion of great rejoicing. The general and his troops marched through the city, with the prisoners and the spoil they had taken, as is illustrated in the story of the British chief, Caractacus. The general went then to the Capitol where sacrifices were offered. One of the most splendid triumphs ever celebrated was that of the Emperor Aurelian in 274.

Arches erected to commemorate these victories were known as **triumphal arches**. There were many of them throughout the empire and some of them still stand. One of the finest is the arch of Titus in Rome, erected to celebrate the capture of Jerusalem in A.D. 70.

Triumvir Member of the Triumvirate in Rome. The First Triumvirate was formed in 60 B.C., when Caesar, Pompey and Crassus joined forces to govern Rome. The Second Triumvirate, 43 B.C., consisted of Octavian, Antony and Lepidus, who divided the Roman Empire among them. The word comes from the Latin *tres*, three, and *vir* a man.

Troglodyte Name given by the Greeks to dwellers in caves. They were supposed to live in the Caucasus, or on the shores of the Red Sea. Their chief occupation was keeping cattle.

Troll Creature of Scandinavian folk-lore. It is sometimes represented as a kind of giant or ogre, sometimes more like a gnome, but always with evil powers and malevolent disposition.

Trolley Small truck on wheels. Usually made to run on rails, it is used in mines, gravel and chalk pits, and for similar purposes. A **trolley car** is a kind of wheeled tram car, much like a motor-bus in appearance, but propelled by electricity and running on rails. In some places it has superseded the ordinary tram.

Trollope **Anthony.** British author. Born April 24, 1815, into a literary family, he was educated at Winchester and Harrow. He worked in the surveyor's department of the Post Office from 1841 to 1867, his duties taking him to the United States, the West Indies and Egypt. He travelled later in S. Africa and Australia, acquiring in all his journeys material for books. His first few fell flat, but *The Warden* (1855) excited attention, and when *Barchester Towers* appeared his reputation was established. *The Last Chronicle of Barset*, *The Claverings*, *John Caldigate* and *An Old Man's Love* are only a few of a very long list. He died Dec. 6, 1882.

Trombone Brass wind instrument formerly known as the sackbut. It possesses a deep tone. In the slide trombone, an outer semicircular tube slides up and down the inner tube, altering at will the length of the tube of air; thus the pitch can be varied. The valve trombone, another variety, is equipped with pistons instead of a slide. Trombones are of three kinds, alto, tenor and bass.

Tromp **Martin Harpertzoon van.** Dutch admiral. He was born at Brielle in 1597, and his name is associated with the seventeenth century struggle for sea supremacy between the Dutch and the English. In May, 1652, he was worsted by Blake, but in November he defeated him in the Straits of Dover. In Feb., 1653, van Tromp returned and suffered defeat off Portland. The final struggle was July 31, 1653, off the coast of Holland, where the Dutch lost thirty vessels, and Admiral van Tromp was killed by a bullet. He was victorious in 33 naval encounters.

Tromsö Seaport of Norway. It is on the island of Tromsö and is the principal port for Spitzbergen. Fishing and its subsidiaries are the chief industry. The town has a broadcasting station (453.2 M., 0.1 kW.).

Trondhjem (or **Nidaros**). City and seaport of Norway. It is situated on the fiord of the same name, on the estuary of the Nid, 350 m. by railway N. of Oslo. The cathedral, built in the 11th, 12th and 13th centuries, has suffered many times from fire; from 1818 the kings of Norway have been crowned here. Shipbuilding is carried on, and there are saw mills, tobacco and other factories. The city has a broadcasting station (493.4 M., 1.2 kW.). Pop. (1930) 54,458.

Founded in 996, Trondhjem was the capital till 1380, after which it declined till the present century. In 1930 it changed its name officially to the older Nidaros.

Troon Burgh, seaport and pleasure resort of Ayrshire. It is 9 m. from Kilmarnock, on the L.M.S. Rly. It has a good harbour from which coal is shipped and has other industries. Troon has become a popular watering place. Pop. (1931) 8544.

Troop Body of soldiers. In the British army it is only used in the cavalry regiments where each squadron is divided into troops. It numbers about 40 men. The phrase **trooping the colour** means carrying the colours in front of a regiment or battalion on the king's birthday.

Trope Expression used in a sense different from that which it properly possesses. It is usually done for emphasis. It is a trope to call a man a dark horse or a sly old fox.

Tropics Term for part of the earth's surface. There are two tropics, north and south. The northern one, bounded by the **tropic of cancer**, lies between latitude 23½° N. and the equator, and the southern, bounded by the **tropic of capricorn**, lies between the equator and 23½° S. They include, therefore, the hottest part of the earth, which is called the torrid zone.

Trossachs **The.** Mountain district of Perthshire, Scotland. The name is Gaelic and means bristling country. The region, which consists of a pass extending from Loch Katrine to Loch Achray, is densely wooded and is noted for its lovely scenery. Overlooking the pass are Ben Venue, 2393 ft., and Ben A'an, 1850 ft.

Trotsky **Leo Davidovich.** Russian politician. His real name is Bronstein (or Braunstein). He was born in 1877 near Elisavetgrad and educated at Odessa University. Arrested as a revolutionary in 1898, he was exiled to Siberia, but escaped to England, where he became acquainted with Lenin. He returned to Russia in 1905, was again arrested, but escaped to Vienna. At the revolution of 1917 he became the People's Commissar for foreign affairs, and after the treaty of Brest-Litovsk, Commissar for War.

In 1927 he was expelled from the Communist party, and exiled to Turkestan. In 1929 he went to Constantinople. He was refused entry to England and Denmark, but in 1931 was permitted to live in Spain. In January, 1932, he was banished for two years by the Soviet Government. In the same year he lectured on Communism in Copenhagen.

Troubadour Mediaeval poet. The troubadours flourished in Provence from the eleventh to the thirteenth century. The three great sources of their inspiration were war, religion and love, and their poetry is for the most part written in very complicated metre and rhyme. They received from the nobility protection and patronage in return for their services in celebrating the exploits of their patrons. The counterpart of the troubadour in northern France was the trouvère.

Trout Fresh water fish of the family *Salmonidae*. The common trout (*Salmo faria*) is found in streams and rivers of northern Europe, or in inland waters from which these flow. There is considerable variation in colouration, but this is generally olive green above and paler beneath, the head, body and fins marked with roundish black spots. The trout varies in weight from ½ lb. to 2 lb. or more, the larger fish being found in the deeper waters. Trout resort to the upper shallow waters of streams to spawn. The fish affords good sport to the angler who uses a light flexible rod and bait of an artificial fly.

Trouville Watering place of France. It stands on the River Touques, 10 m. from Havre and 132 m. from Paris. There is a small harbour and a little fishing, but the place is best known as a popular pleasure resort, with a casino, good bathing and other attractions. Steamers go regularly from Havre. Deauville is on the other side of the river.

Trowbridge Urban district and market town of Wiltshire. It is 12 m. from Chippenham and 97 m. from London by the G.W. Rly. Woollen goods are manufactured. Pop. (1931) 12,011.

Troy Ancient city. It was situated on the N.W. promontory of Asia Minor, at the junction of the rivers Scamander and Simois, 3½ m. from the Hellespont. Its site has been identified in modern times with the mound of Hissarlik, and excavation has revealed the remains of nine cities, of which the sixth has been established by modern scholarship as the Troy of Greek legend. This was believed to have been founded by Teucer, and was the scene of the Trojan War, a ten years' war between the Greeks, led by Agamemnon and Menelaus, and the Trojans whose prince, Paris, had abducted Helen, the wife of Menelaus. The Greeks finally captured the city by stratagem and sacked it. *See* HOMER, AGAMEMNON, HELEN, etc. A small city on the site in Alexander's day was in ruins by Strabo's time.

Troy Weight Measure or weight. Used for weighing gold, precious stones and other precious materials, it was as follows :

24 grains	make	1 dwt.
20 dwts	,,	1 oz
12 ozs	,,	1 lb
25 lbs	,,	1 qr
100 lbs	,,	1 cwt

In addition, 4 grains make one carat and 6 carats make 1 dwt.

Troy weight was abolished in 1878 except for the troy ounce which, with its decimals, is still used for weighing precious metals.

Troyes City of France. The most notable feature of the town is its cathedral which was begun in 1208, and which contains some fine stained glass. The manufacture of cotton, woollen and silk hosiery is here carried on. Troyes is the early Roman Augustobona, and derives its name from the early settlers, the Tricassi. It reached its zenith in the Middle Ages, but has since declined very considerably in importance. Pop. (1931) 58,804.

Truce Word used for a cessation of war for a definite time. It differs from an armistice, which is a cessation of war preparatory to the negotiation of a peace treaty. When a combatant asks for a truce it is usual to carry a white flag.

Truck Term used for the payment of wages in goods instead of in money. It was at one time very usual, but in Great Britain it has been made illegal by a series of acts passed in 1831 and later. The prohibition now applies to all classes of employees, except domestic servants. The truck acts also forbid employers to deduct money for the sharpening of tools and similar purposes, and limit the power of the employer to levy fines. They also forbid the payment of wages in kind where intoxicating liquor is sold. Offenders against the acts can be fined and it is the duty of the factory inspectors to enforce them.

Truffle Genus of edible fungi of the division *Ascomyceteae*. They are underground in habit, being found just below the soil usually beneath a tree or in wooded places. The best known variety (*Taestivum*) is somewhat like a potato in appearance, usually oblong or irregularly globose, with a dark, warty, hard exterior. It is fleshy in consistency with a delicate distinctive flavour. Dogs and pigs are useful in locating them, by means of their scent, as there is no growth above the soil by which to discover them. A French variety (*Tmelausporum*) is especially valued.

Trug Name for a long shallow square-ended basket made of wood. It is light and strong and used by gardeners for carrying small plants, etc.

Trumper **Victor Thomas.** Australian cricketer. Born in Sydney, Nov. 2, 1877, he was early noticed as a fine bat. He played for N. S. Wales, and later was chosen to play in the test teams against England and South Africa, for which he made a series of centuries. He died June 28, 1915.

Trumpet Wind instrument, one of the oldest known. There are three main kinds : the natural trumpet, used mainly by cavalry regiments, with its pitch varied by means of crooks ; the slide-trumpet, in which pitch variation is obtained by tubes sliding upon one another ; and the valve trumpet. The trumpet tuned on C produces the following range of tones : C (second space, bass clef), G, C, E, G, Bb, C, D, E, G.

Trumpet Flower Genus of half hardy perennial climbing shrub of the order *Bigoniaceae*. They bear brilliant red or orange flowers, and should be grown in a sunny sheltered position. The scientific name is teconia.

Trunk Main central part of the human body, to which are attached the head and limbs. The upper part, the thorax,

enclosed by the ribs, contains the heart and the lungs, the abdomen below being occupied principally by the alimentary system. Various muscles cover the surface under the skin.

Truro City, borough and market town of Cornwall. It stands on Truro River, 12 m. from Falmouth and 279 m. from London, on the G.W. Rly. The chief building is the cathedral. This was built between 1880 and 1910, part of the parish church being incorporated in it. Truro has an agricultural trade. Pop. (1931) 11,074.

Truro Town of Nova Scotia, Canada, 61 m. from Halifax, situated on the river Salmon, in the midst of a splendid agricultural district. It is the seat of the Nova Scotia College of Agriculture and of the Provincial Normal College. Pop. (1931) 7,901.

Truss Apparatus for the prevention or relief of hernia. It is worn over the affected part of the body and its object is to prevent any further protrusion.

In building, the timbers that are fastened together for binding a beam or supporting a roof are called trusses. The word means a bundle.

Trustee One who holds property on trust for another. A trustee must not make any profit out of his trust, but he can appoint a solicitor to act as his agent. He must observe strictly the terms of the will by which he is appointed. He must make good any losses caused by his negligence, or that of his agent, but by a law passed in 1925 he cannot be punished for a breach of trust if he has acted honestly and reasonably. He cannot, however, get rid of his responsibilities for a breach of trust by retiring.

Trustee securities are those securities in which a trustee can invest the money in his charge. They include all stocks issued by the British Government, or guaranteed by it, and all stock of British corporations and undertakings such as the Metropolitan Water Board. The debentures and preference stocks of British railways are also trustee securities, except that, since the Great War, owing to the absence of dividends thereon, some of these have been taken out of the list.

Trusts *See* COMBINES.

Tsar or **Czar.** Title borne before 1917 by the rulers of Russia. It is a variant of *Caesar.* **Tsarskoye Selo,** meaning imperial village, was the name of a town 15 m. from Petrograd. It had two palaces, favourite residences of the tsars, and a cathedral.

Tschaikovsky **Piotr Ilytch.** Russian composer. Born May 7, 1840, he studied music at St. Petersburg under Zaremba and Rubinstein. In 1866 he was appointed Professor of Theory at the Moscow Conservatoire, but ill-health forced him to resign in 1877. Thenceforward he devoted his energies to composition. His works comprise ten operas, six symphonies, numerous "tone poems," overtures and concertos, the best known being in the 1812 overture, the *Nutcracker Suite,* the *Queen of Spades, The Tempest, Francesca da Rimini* and *Eugen Onegin.* Of all Russian music, his is the best known, and enjoys world-wide popularity. He died from cholera in Nov., 1893.

Tsetse Fly Name given to blood sucking dipterous flies. Of the genus *Glossina,* they are natives of tropical Africa. They inhabit low-lying bush or forest regions near water, and transmit by their bites the parasites of sleeping sickness, and of nagana, a fatal disease attacking domesticated cattle. The fly somewhat resembles the house fly, with a larger proboscis which projects in front of the head.

Tsingtao Seaport of China. It is on the south side of the Shantung Peninsula in the territory of Kiao Chow which, before the World War, was a German possession. The port was strongly fortified. In Sept., 1914, a Japanese force, aided by a small British contingent, began the siege of the fortress, and this lasted until Nov. 10, when it surrendered. It was kept for a time by Japan, but later was handed back to China. Pop. (1931) 390,337.

Tuam Market town of Co. Galway, Irish Free State. It is 20 m. from Galway and is served by the G.S. Rlys. It is best known as an ecclesiastical centre, as it has both Roman Catholic and Protestant cathedrals. There is a fine cross in the market place. Pop. (1926) 3293.

Tuber Literally a swelling. In botany it describes a thickened underground stem. Very succulent, this is covered with buds from which new plants or other tubers are produced. Many tubers are highly nutritious, the potato and the artichoke being examples.

Tuberculosis Infectious disease. Its causative micro-organism is the tubercle bacillus which invades the body and attacks the bones, lungs and glands, and other tissues. The disease, which has been one of the greatest scourges to mankind, is conveyed chiefly by milk from cows suffering from the disease, and may result in enlargement of the neck glands, disease of the hip-joint, etc.

In phthisis or pulmonary tuberculosis airborne germs enter the lungs, usually attacking young persons, and the disease is accompanied by anaemia, emaciation, loss of energy with a troublesome cough and purulent expectoration. Tuberculosis is no longer regarded as hereditary, and in many cases it yields to special treatment.

In 1911 a committee under Lord Astor investigated the general policy on tuberculosis in Great Britain, and a scheme for combating tuberculosis was inaugurated, consisting of special tuberculosis institutes and residential sanatoria; while the Public Health (Tuberculosis) Act of 1921 made it obligatory on each county to arrange for treatment of all sufferers from tuberculosis, whether insured or not.

Tübingen Town of Wurttemberg, Germany. On the outskirts of the Black Forest, it is a chemical manufacturing centre. The chief buildings are the old castle of Hohentübingen, on a hill overlooking the town, which contains the university library, an observatory, the town hall, and the Stiftskirche (built 1469-83), which is a Gothic building, containing the tombs of the rulers of Wurttemberg. Pop. 20,276.

At the university, which was founded in 1477, the Tübingen school of theology had its origin, and theology has always been the foremost faculty.

Tudor Surname of an English dynasty. It was founded by a Welshman, Owen Tudor, who married Catherine of France, the widow of Henry V. His eldest son was Edmund, Earl of Richmond, who married Margaret, daughter of John Beaufort, Duke of Somerset, whose son was afterwards Henry

VII. Henry VIII., Edward VI., Mary and Elizabeth were Tudor monarchs.

In architecture, the **Tudor style** designates buildings showing traces of Gothic influence, chiefly large country houses or manors, built in the time of the Tudors (1485-1603).

Tugela River of Natal. It rises in the Drakensberg Mts. and flows past Ladysmith and Colenso into the Indian Ocean, near Port Durnford. For part of its course it is the boundary between Natal and Zululand. In its early course it is called the Buffalo.

During the early part of the South African War, from Dec., 1899, to Feb., 1900, there was a good deal of fighting along the Tugela. The Boers were strongly entrenched in the hills to the south of Ladysmith, thus preventing the British from relieving that town. The river was crossed without any great difficulty, but several attempts to dislodge the Boers failed. The final crossing, on Feb. 26, however, had a more satisfactory result and Ladysmith was relieved.

Tug-of-War Event at sporting and athletic meetings. Two sides, each consisting usually of eight men or boys, pull against each other with a rope. The object of each is to pull the other team over the midway line. The decision usually depends on the best of three tugs.

Tuileries **Palais des.** Building in Paris. The palace was founded by Catherine de' Medici and Henri IV., and was for long the residence of Louis XIV., in whose reign the gardens were laid out by André Lenôtre in the present style. The Tuileries played an important part in the French Revolution. On June 20, 1792, the palace was invaded by the mob, and again on August 20 of the same year, when the Swiss Guards were brutally massacred. This second onslaught resulted in the capture and imprisonment of Louis XVI.

Tulip Genus of bulbous plants of the order *Liliaceae*. Natives of Asia and the eastern Mediterranean, they were introduced into England from Holland in the 16th century, and they have been established as garden favourites ever since then. Early flowering varieties, single and double, are from 6 to 12 inches in height. The beautiful Darwin, Cottage or May Flowering tulips have tall, strong stems up to 2 ft. The gorgeously striped Parrot Tulips in shades of scarlet, yellow, red and green are also a late flowering variety.

Owing to crossing and cultivation, there are now an enormous number of species in a range which includes almost every brilliant and beautiful colour. Tulips can be grown in any garden soil that is not too damp or water logged. The ground should be dug deeply and the bulbs planted in late September, about 6 in. deep. A mixture of sand with the soil when planting is advantageous.

Tulip Tree (*Liriodendron tulipifera*). North American flowering timber tree. A species of magnolia, it grows to a great height, sometimes reaching 180 ft. It has glossy leaves and large tulip-shaped flowers of variegated yellow, orange and green colour.

Tullamore Urban district and market town of Offaly, Irish Free State. It is 58 m. from Dublin, on the G.S. Rlys. It is an agricultural centre and has some industries. The Grand Canal passes the town. Pop. (1926) 4930.

Tullus Hostilius Third legendary king of Rome. His traditional dates are 672-640 B.C. The destruction of Alba Longa is the only event of those ascribed to his reign which may be regarded as an historical fact.

Tulse Hill District of London. It is 6 m. to the S.W. of the city, on the S. Rly. It is part of the borough of Lambeth and contains Brockwell Park, a large public pleasure ground.

Tummel River of Perthshire. It flows out of Loch Rannoch and empties itself into the Tay, 7 m. from Dunkeld. On it are the **Falls of Tummel**, a famous beauty spot, and for three miles of its course it forms **Loch Tummel**. The Garry is a tributary.

Tumour Morbid parasitic growth, usually accompanied by a swelling. They are either malignant or non-malignant, although some are intermediate. The latter do not ulcerate and if removed when young by an operation do not usually form again. Malignant tumours may grow on any part of the body; some are cancerous and others sarcomatous. They affect the adjacent parts of the body and the blood stream and even if removed tend to grow again.

Tumulus Mound of stone or earth. It indicates an ancient burial place, though tumuli are occasionally found simply as memorials. Another name for tumulus is a barrow.

Tun British unit of liquid measure. It consists of 4 hogsheads, or 252 gallons.

Tunbridge Wells Borough, market town and spa of Kent. It is 35 m. from London and is served by the S. Rly. Its healing waters made it a popular resort in the 17th and 18th centuries. Places of interest are the covered promenade called the Pantiles and the parish church of King Charles. The town is famed for the ware made here. A cricket week is held and there are golf links and other facilities for sport. Tunbridge has been a borough since 1909. Pop. (1931) 35,367.

Tundra Cold desert area of northern Russia and Siberia. It lies behind the Arctic coasts of that region and during the long winter is ice and snow covered. In summer only the surface becomes thawed, the temperature being even then only about 48°-50° F. It is a treeless plain, sparsely bearing lichen, mosses and low shrubs. The fauna include caribou and reindeer.

Tungsten Metallic element having the symbol W, and atomic weight 184. It occurs in the minerals scheelite, a tungstate of lime, and wolfram, a mixture of iron and manganese tungstates. It is a dull-white, somewhat malleable metal with a very high melting point, and added to steel increases the hardness and cutting properties. Tungsten also is used for electric light and thermionic valve filaments and its compounds for making ceramic glazes, dye mordants, and for fireproofing.

Tunic Short loose garment. Garments of this kind were worn by the ancients. The Romans wore them under the toga. A similar garment is worn by children to-day.

Tunis Seaport and capital of Tunisia. Situated on a small bay of the Gulf of Tunis, it has access to the sea by means of a channel dredged in 1893. It is an ancient city with many fine examples of Arab archi-

tecture, chiefly mosques. It was occupied by the French in 1881. Tunis has many industries and considerable trade. The remains of Carthage are only 3 m. away. Pop. (1931) 202,405.

Tunisia French protectorate of N. Africa. It lies along the Mediterranean coast, between Algeria and Tripoli, and has an area of about 48,300 sq. m. Tunis is the capital. Other towns are Bizerta, Sousse and Sfax.

The country is mainly agricultural. Cereals are grown, also olives, dates and other fruits. There is considerable mineral wealth in phosphates, lead, zinc and iron, which is now being developed. Other industries include spinning and weaving, leather embroidery and similar crafts. It was occupied by the French in 1881. Pop. (1931) 2,410,692, of whom 195,293 are Europeans.

Tunnel Passage cut through a hill or under a river, usually for traffic purposes. The earliest tunnels were made to take railway lines through hills, but later they were much used for relieving the congestion of the traffic in large cities. Tunnels, or tubes for railway lines, are a feature of the travel facilities in London and New York. There are also tunnels beneath the Thames and the Hudson, as well as the Mersey and other rivers.

Tunnels for drainage purposes were made by the ancients. For transport purposes the first in England was made on the Bridgwater Canal about 1760. The longest is probably the one under the St. Gothard Pass from Switzerland to Italy. Suggested tunnels are one under the English Channel from Dover to Calais, and one under the Thames from Gravesend to Tilbury. *See* CHANNEL TUNNEL.

Tunney **James Joseph, more usually Gene.** American boxer. Born in Greenwich Village, New York, in 1898, he served for a time in the marines, but later took up boxing. He defeated Carpentier in 1924, and Jack Dempsey in 1926, the latter match securing for him the world's title. In 1928 he scored a further success against Tom Heeney, after which he retired into private life.

Tunny Large marine fish of the family *Scombridae* related to the mackerel. It is found abundantly in the Mediterranean and also off the southern and eastern British coasts, having a fairly wide distribution through the warm seas. It may attain a length of 8 to 10 ft., and a weight of 1000 lb., and is a useful food fish. Attempts have been made to encourage its use in Britain.

Tunstall Market town of Staffordshire, since 1910 part of Stoke-on-Trent. It lies to the north of Stoke, on the L.M.S. Rly., 151 m. from London. *See* STOKE-ON-TRENT.

Tupper **Sir Charles.** Canadian statesman. He was born in Amherst, Nova Scotia, July 21, 1821. He studied medicine in Edinburgh, and was president of the Canadian Medical Association, 1867-1870. Beginning his political career in his native Province, he became its Prime Minister in 1864. After Confederation in 1867, he entered Dominion politics, holding various portfolios. From May, 1884, to Jan., 1896, he was High Commissioner for Canada in London, and from April 27, 1896, he was Prime Minister until the defeat of the Conservatives, June 23. In 1909 he settled in England, and died Oct. 30, 1915.

Tupper **Martin Farquhar.** English author. He was born in London, July 17, 1810, and educated at Charterhouse and Oxford. In 1835 he was called to the Bar, but after pleading only one case he forsook law for authorship. In all he wrote some forty works, one alone of which, *Proverbial Philosophy*, brought him both fame and wealth. He made two lecture tours in the U.S.A. He died Nov. 29 1889.

Turban Oriental headdress. It consists of a scarf of silk or muslin material, arranged in folds over a fez or cap which forms the foundation. It is the headdress of some regiments in the Indian army. Caps in this style were worn by ladies in the early 19th century. In *Cranford* Miss Mattie refers to one worn by Queen Adelaide.

Turbine Rotary motor employing water or steam to rotate it directly in its bearings. In its simplest form it consists of a wheel with vanes moved by the pressure of water, but the name also denotes a similar device where steam is the moving power. **Hydraulic turbines** are employed in utilising water power for conversion into mechanical or electrical energy, as in the Pelton wheel where a water-jet acts upon the buckets on the rim or in the Francis turbine where a large body of water acts upon curved vanes. **Steam turbines** of several types are used in electrical generating stations, and are applied also to the propulsion of ships.

Turbot Flat fish (*Rhombus*). Of the *Pleuronectidal* family, it is common in northern British waters. The broad body is roughly diamond shaped, greyish brown, with darker spots. It is a popular food fish.

Turenne **Henri de la Tour d'Auvergne, Vicomte de.** French general. He was born at Sedan, Sept. 11, 1611. In 1641 Richelieu entrusted him with the supreme command of the French troops engaged in the Thirty Years' War, during which, with Condé, he gained several notable victories. During the civil wars of the Fronde, Turenne fought against his former friend Condé. He conquered parts of the Spanish Netherlands, ravaged Alsace and the Palatinate, advanced into Germany, but was killed at Salzbach, July 27, 1675.

Turf Top layer of grassland. It has become a colloquial term for horse-racing. The **Turf Club**, 85 Piccadilly, is a centre for racing men and sportsmen generally.

Turgenev **Ivan Sergeievitch.** Russian author. He was born Nov. 9, 1818, of a noble family, and educated in Moscow, St. Petersburg and Berlin. He was the first to make western Europe acquainted with Russian life, his character sketches being unsurpassed. His *Annals of a Sportsman* (1846) brought him fame, but his novel, *Fathers and Children*, is perhaps his most distinguished work. His somewhat outspoken opinions earned him a brief imprisonment in 1852, and he lived thereafter chiefly in Baden-Baden and Paris, where he died Sept. 3, 1883.

Turgot **Anne Robert Jacques, baron de L'Aulne.** French statesman. One of the few honest statesmen of his day, he was born in Paris, May 10, 1727, and educated at the Sorbonne. He was Intendant of Limoges from 1761-1774, and did much to improve the condition of the peasantry. He was appointed Minister of Finance by Louis XVI. in 1774, and endeavoured to reform the whole system of taxation. He thereby made bitter enemies of the privileged classes, and was forced to resign after 20 months, when he retired to private life. He died March 8, 1781.

Turin City of Piedmont, Italy. It was, until 1860, capital of the kingdom of Sardinia, and from 1861-65 the capital of Italy. Of Roman origin, it stands on the Po, about 780 ft. above sea level, 80 m. N.W. of Genoa. Among the notable buildings are the cathedral of S. John the Baptist, the church of San Filippo, the Palazzo Madama, the royal palace with a valuable library, and other palaces with fine pillared courtyards. In the Castello del Valentino are a polytechnic school and scientific museums. There is a flourishing university, founded in 1400. The Academy of Sciences is also a museum. The Mole Antonelliana, also used as a museum, is the highest brick building in Europe (510 ft.). On the Hill of Superga is a basilica, used as the burial place of the House of Savoy. There are several royal castles in the vicinity.

Turin is an important industrial city, the centre of Italy's motor industry. Other industries include aeroplanes, metallurgy, machinery, chemicals, weaving, perfumes, glass, chocolate, liqueurs and vermouth. Hydro-electric power is obtained from the Alpine valleys. The city has a broadcasting station (273.7 M., 7 kW.). Pop. (1931) 596,666.

Turkey Large game bird (*Meleagris*). A native of N. America, there are two species. The common domesticated birds are derived from *M. Gallopavo*, a number of varieties having been evolved by breeders. The male bird may weigh up to 34 lb., with a heavy body, metallic bronze plumage, marked with black and fan-like expansible tail. The latter has a white margin, and the tail coverts also are tipped with white. The neck and head are reddish or bluish, nearly bare, wrinkled and tuberculed, and on the head is a pendent dilatable appendage. On the chest is a bunch of black bristles. The bird is extensively bred for the table.

Turkey Republican country. Lying partly in Asia and partly in Europe, it has an area estimated at 294,416 sq. m., of which 9257 sq. m. are in Europe, and a population of 13,660,275. This figure was arrived at in 1927 by the first census ever taken in Turkey. The capital is Ankara, but Istanbul is the largest city. The next largest towns are Izmir, Smyrna, Adana, Brusa and Konia.

Turkey is rich in minerals but up to the present these have been little worked. They include chrome ore, zinc, silver, manganese, copper and antimony. Agriculture is backward, but is being improved and extended under the new régime. Products include fruits and spices, cereals, oil, opium, furs and hides, etc. Wool and mohair are also objects of commerce.

Carpet weaving is the most important industry. Others are being gradually built up and machinery is being imported for that purpose. Among these, sugar factories may be mentioned. The Ford Company has an assembly works at Tophane.

HISTORY. The Turks enter European history when after a westward movement of the Ottoman tribe, Amurath I. established his capital at Adrianople and defeated the Serbians at Kossovo (1389). His son, Bajazet I., annihilated the combined hosts of Hungary and Poland at Nicopolis (1396) and Ottoman aggression continued till it reached its limit under Solyman the Magnificent (1520-66) who humiliated Vienna and marched against Germany. By the Battle of Lepanto (1571) Spain taught Europe that the Turk was not invincible, and the Peace of Karlowitz (1699) was humiliating to the Porte. In 1730 began the long series of Russo-Turkish wars in which Russia, appearing as the champion of the Christians under Turkish rule, pushed south the northern Turkish frontier. The Crimean War saw England and France united in protecting the Sultan's Empire against Nicholas I. In 1875 risings among the subject peoples of the Ottoman Empire were mercilessly suppressed and Europe rang with reports of atrocities. Again in the war of 1877 and the resultant Berlin Treaty, it was foreign interference which saved the "sick man of Europe" from Russian domination. The Young Turk Reform party was ruthlessly suppressed in 1901, but drove Abdul Hamid from his throne in 1908. In the Great War the Turks stayed the allied attempts to force the Dardanelles (1915). A Nationalist revolution (1919) resulted in the establishment of a separate government at Angora, and a war with Greece ended in Turkey's favour (1922). On Nov. 1, 1922, the sultanate was abolished and on Oct. 29, 1923, Turkey was declared a republic with Mustapha Kemal as President. He was re-elected in 1927, and in 1931. Government is by a Grand Assembly, elected for four years.

Under the guidance of Kemal, Turkey has been modernised and has made great progress. Industry and agriculture have been advanced, the position of women has been raised to European status, and western methods are being adopted in government, education and industry.

Turkistan Area of central Asia. Western Turkistan was formerly known as Russian Turkistan and includes the northernmost province of Afghanistan. Eastern Turkistan is Chinese Turkistan, officially included in the province of Sin-kiang. The Pamir district occupies a large part of the area, and much is desert. The population is almost entirely nomadic, trading in skins, furs and similar articles of commerce. Some of the best known of the tribes are Uzbeks, Kirghiz and Turcomans. Some cereal crops are grown here and the mulberry tree is extensively cultivated. There is also considerable trade in horses. The term Turkistan is used so vaguely that it is difficult to estimate either area or population.

Turks Islands Group of islands in the West Indies. They are a British possession and are ruled from Jamaica. Grand Turk is the largest.

Turnberry Pleasure resort of Ayrshire. It is on the coast 5 m. from Girvan and is a noted golfing centre. Here are the ruins of a castle which once belonged to Robert Bruce. On the L.M.S. Rly., 418 m. from London.

Turnbuckle Kind of coupling. It is so arranged that it regulates the length or tension of the connected parts. It is chiefly used for adding tension to bars, or steel ropes.

Turner Artisan who practices the art of turning. This is a process by which pieces of metal or wood are shaped by holding a tool against the piece while revolving in a lathe. It is used for the legs of chairs and other pieces of furniture.

The Turners' Company is one of the London livery companies.

Turner Joseph Mallord William. English landscape painter. Born in London April 23, 1775, he learnt much about painting, but little about anything else, his

education being considerably neglected. He had the good fortune to know Sir Joshua Reynolds, and studied under his roof. He first exhibited at 15, at 21 his reputation was established and at 28 he was elected R.A. He was an ascetic by nature, never married, and shunned all society. Turner painted in two distinct styles. His early pictures are sober in colouring, browns, blue and greys predominating. The works of his middle and late period are marked by the splendour of colour and brilliance of light of pictures such as "The Fighting Téméraire" and "The Sun of Venice Going to Sea." Much of his most beautiful work is to be found in his water colours. His industry must have been prodigious, for "Turners" are found all over the world. He died in London, Dec. 19, 1851, having bequeathed a large collection of his works to the nation.

Turnham Green District of London. To the west of the city, it is between Hammersmith and Chiswick, on the District Rly. The green still remains an open space, but around the land has been built over.

Turnip (*Brassica campestus*). Edible tuber of the natural order *Cruciferae*. A native of Europe and Asia, it grows freely in Great Britain where it is cultivated as a food plant both for human beings and for cattle. It grows up to a height of 2 ft., has bristly leaves and yellow flowers. There are two main kinds. The white turnip is grown for the table, both leaves and root being used. The gold turnip or swede is grown as a cattle food, especially suitable for winter feeding. In Great Britain turnips are raised from seed sown in March or April, or in June or July for an autumn crop. The drills should be 12 in. apart and they require only a slight covering of soil. The plants should be thinned out to about 6 to 8 in. apart. The plant is attacked by the turnip flea which can be killed by repeated dustings with soot. They are also used to flavour soup. In 1931 the turnip crop of Great Britain amounted to 16,262,000.

Turnpike Gate across a road. They were at one time fairly common in England, their object being to enable the tolls to be collected from vehicles. When the bill was paid the gate was turned. Pike is an old word meaning to go or turn quickly.

The **turnstile** is a variant of the turnpike. It is used to arrest the entrance of visitors to places of amusement and the like. As each entrant pays the required fee the turnstile, which has four arms, moves round and allows him to pass in. The modern turnstile records automatically the number of people who pass through it.

Turnstone (*Strepsilas interpres*). Small shore bird. Allied to the lapwing, it is about 9 in. in length. The plumage is black and white, with reddish brown shading on the back, white tips to the tail feathers, under plumage of white, and legs orange yellow. It frequents the shores of Great Britain from Aug. to March or April. Its name is derived from its method of turning over stones and seaweed on the water's edge in search of crustacea, etc., on which it feeds.

Turntable Device for moving railway engines. It consists of a platform which has on it one or more lines of rail and which rotates in a horizontal plane. It can thus be turned round so that the lines can connect with the other lines running to it, and the engine can be transferred from one set of rails to another.

Turpentine Liquid used for cleaning and industrial purposes. It is obtained by distilling a resin which exudes from pine and other coniferous trees. Oil of turpentine is used in making varnishes and paints. It is also used in medicine to some extent.

Turpin Richard. English highwayman. Better known as "Dick" Turpin, he was born in Essex in Sept., 1705. He began life as a butcher's apprentice, but, wishing for a more adventurous career, took to stealing cattle and horses, to smuggling and housebreaking, and finally became a notorious highwayman. He was hanged for murder in York, April 10, 1739.

Turquoise Mineral used as a gem stone. It is a hydrated aluminium phosphate, containing a little copper. It is found in the rocks of Persia, Arabia and the United States. The best stones come from Persia. In colour the turquoise varies from blue to green, the best being blue. It is valued because it takes a bright polish. The name is a variant of Turkey, because the early stones came from Persia by way of Turkey.

Turret Small tower. They are seen on mediaeval castles where they were part of the scheme of defence. To-day they are introduced into buildings for ornamental purposes. Another kind of turret is the revolving structure which contains the big guns on a battleship. Usually there are two guns in each turret.

Turriff Burgh of Aberdeenshire. It is 38 m. north of Aberdeen and is served by the L.N.E. Rly. Pop. (1931) 2298.

Turtle Aquatic reptile of the tortoise (*Thelonidae*) family. The limbs are modified into paddles adapted to the habitat. The turtles resort to the sandy shores to lay their eggs. The hawksbill turtle (*Thelone imbricata*) yields tortoiseshell. The edible green turtle (*C. midas*) is used for making turtle soup. *See* TERRAPIN.

Turtle Dove Genus of pigeons. A native of N. Africa and parts of Asia, the common turtle dove (*Streptophelia turtur*) is a summer visitant to Britain, nesting in coppices and woods, or even tall hedges. It is a pest of grain crops. The plumage is ashen blue on head, wings, rump and back; wing coverts rufous; brownish tail, margined with white; under parts white to buff; there is a white and black patch on each side of the neck. The length is 11 to 12 in.

Turton Urban district of Lancashire. It is 4 m. from Bolton and 202 from London by the L.M.S. Rly. A house called Turton Tower is of interest. It was built in the 12th century, and has been restored. The town is a centre of the cotton industry. Pop. (1931) 11,847.

Tuscany Division of Italy. Situated to the west of the centre of the peninsula, it consists of nine provinces, having a population of (1931) 2,892,364, and an area of 8,853 sq. m. The valley of the Arno is the most fertile region, the rest being hilly, and in some places thickly forested. The purity of the language of Tuscany has caused its adoption as the literary language of Italy. Here are the great art centres of Florence, the capital, Pisa and Siena.

From 1530-1737 Tuscany was ruled by the Medici (*q.v.*) and on their extinction was given to the dukes of Lorraine, of whom Leopold I. (later the emperor Leopold II.) carried out extensive reforms. During the French revolutionary wars Tuscany was overrun, the grand duke Ferdinand III. being forced to fly, and in 1801, by the peace of Lunéville, Tuscany was given to Spain, only to be ceded to Napoleon in 1807. In 1814, however, Ferdinand returned. Under his son, Leopold II., a constitution was granted in 1848, but revolution broke out, and from 1849-1855 Leopold ruled with the help of Austrian troops. In 1859 Leopold was driven out by the Florentines, and in 1860 Tuscany voted for annexation to Sardinia, becoming part of the Italian kingdom in 1861.

Tusculum The modern Frascati. It was situated in Latium, on a spur of the Alban hills, about 12 m. south-east of Rome. When Octavius Mamilius, Tarquin's son-in-law, was expelled from Rome, he fled to Tusculum, whence he led the Latin allies of Lars Porsena against the Romans.

Tussaud **Madame Marie.** Effigist. Born in Berne in 1760, she learned the art of wax modelling in Paris. She had opportunities for becoming acquainted with many leading persons through the lessons in modelling that she gave to Elizabeth, a sister of Louis XVI. In 1802 she established herself in London, gradually building up the famous waxwork show in Baker Street. Her portraits were always lifelike, and "Madame Tussaud's" is one of the sights of London. She died April 16, 1850, and the show is now owned by her descendants. The building was destroyed by fire in 1925, and was then re-erected upon a larger scale than ever.

Tutankhamen Egyptian king of the 18th dynasty. He succeeded, after a short interval, his more famous father-in-law, Akhenaton whom he had assisted in his religious reforms. His reign (c. 1350 B.C.) appears to have lasted only nine years. In Nov., 1922, his tomb-chamber was found intact in the Valley of the Kings by excavators working under the direction of the late Lord Carnarvon. This discovery proved to be the most remarkable ever made in the history of Egyptological research, for the outer and inner chambers of the tomb contained treasures in unparalleled profusion, including the royal sarcophagus, two splendid canopies, a magnificent chair of state, the paddles of the royal barge, amulets, scarabs, etc.

Tutbury Town of Staffordshire. It is 4½ m. from Burton-on-Trent, and 140 from London by the L.M.S. Rly. Standing on the Dove, it has an agricultural trade. It is known for its castle, now a ruin, in which Mary Queen of Scots was imprisoned. The parish church is a fine building, the Norman doorway being specially notable. The castle and the surrounding land is the property of the Duchy of Lancaster. Pop. 2062.

Twain **Mark.** Pen-name of Samuel Langhorne Clemens, American humorist and author. He was born at Florida, Miss., Nov. 30, 1830. In turns, printer, river pilot, miner and journalist, he gained fame overnight with *The Celebrated Jumping Frog of Calaveras County*, the result being that he was commissioned in 1867 by a San Francisco paper to write letters descriptive of a European trip. These were published under the title of *The Innocents Abroad*, and had a prodigious sale, as did also *A Tramp Abroad*, published 1880. Among many other works were *The Prince and the Pauper*, *Tom Sawyer*, *Huckleberry Finn*. He died April 21, 1910.

Tweed River of Great Britain. It rises in the county of Peebles and flows through the county of Selkirk into Roxburghshire. At Kelso it becomes the boundary between England and Scotland, which it remains until just before it enters the sea at Tweedmouth. It is 98 m. long and its tributaries include the Ettrick, Till and Teviot. It is noted for its fishing and is famous in stories and legends of the border country.

Tweedmouth Town and seaport of Northumberland. It stands at the north of the Tweed, opposite Berwick, with which it is linked by a long stone bridge of 28 arches. It is 324 m. from London and has a station on the L.N.E. Rly. Shipping and fishing are the chief industries. Pop. 5000.

The title of **Baron Tweedmouth** has been borne by the family of Marjoribanks since 1881. Edward Marjoribanks, the 2nd baron, was a Liberal M.P. from 1880 to 1894, when he succeeded his father in the peerage. Having been chief whip of the Liberal party when in opposition, he was Parliamentary Secretary of the Treasury, 1892-94, and Lord Privy Seal, 1894-95. In 1905 he was made First Lord of the Admiralty, an office he left in 1908 in consequence of a letter he wrote to the German Emperor. He was then made Lord President of the Council and he died Sept. 19, 1909. His son, Dudley Churchill Marjoribanks, who became the 3rd baron, is known as a sportsman.

Twelfth Day Twelfth day after Christmas, therefore Jan. 6. On it the feast of the Epiphany is held to commemorate the bringing of gifts to Jesus Christ by the wise men on this day. In the 16th and 17th centuries **Twelfth Night** was a time of rejoicing, festivities of all kinds being held. Shakespeare's comedy, *Twelfth Night*, or *What You Will*, was probably written to be first performed on this night.

Twelve Tables **The.** Code of Roman law. One of the earliest written codes, it was drawn up in 449 B.C., by the *decemviri*, a body of ten chosen for the purpose, after a long struggle between patricians and plebeians. The laws were the written expression of old Roman customs, and their appearance marked a definite step in the progress towards liberty of the Roman people, who had hitherto been at the mercy of patrician magistrates.

Twickenham Borough of Middlesex. It is 11 m. from London on the S. Rly. from Waterloo. York House, once a royal residence, has been bought for the council offices; the grounds are open to the public as are those of Marble Hill, which stretches down to the Thames. In the river here is Eel Pie Island and in the borough is the football ground of the Rugby Union where the international and other important matches are played. Alexander Pope, who is buried in the church, had his famous villa here. A newer one occupies the site. Twickenham was made a borough in 1926. Pop. (1931) 39,909.

Twilight Sleep Obstetric method. It produces a state of insensibility to pain and partial unconsciousness by the use of the drug scopolaminemorphine. By this means it is claimed that the mental and physical pains of childbirth may be removed or prevented without any injurious after-effects.

Two Step American dance. Popular in Europe at the beginning of the 20th century, it soon gave place to the one-step. The step is similar to the polka, and is included in various other dances.

Two Thousand Guineas In England one of the five great horse races. It is run at Newmarket over the Rowley mile on the Wednesday of the first spring meeting. It is for colts and fillies which are three years old. It was first run in 1882.

Twyford Village of Berkshire. It is 31 m. from London by the G.W. Rly., on which it is a junction. Pop. 1269. There is a village of the same name near Winchester, which is 69 m. from London by the S. Rly.

Tyburn Name of a small tributary of the Thames. It gave its name to the gallows formerly standing at the west end of Oxford St., London, not far from the modern Marble Arch. The last execution there took place in 1783. Among those who met their fate there were Perkin Warbeck (1449), the Jesuit, Edmund Campion (1588), Jack Sheppard (1724), and Earl Ferrers (1760). The skeletons of Cromwell and his associates were hung in 1661. The stream flowed from Hampstead heights in a southerly direction to the present site of Buckingham Palace.

Tyldesley Urban district of Lancashire. A centre of the cotton industry, it is 5 m. from Bolton, and 195 m. from London by the L.M.S. Rly. There are coal mines in the neighbourhood. The urban district includes Shakerley. Pop. (1931) 14,848.

Tyler **Wat.** Leader of the peasants' revolt in 1381. The story goes that he killed a poll-tax collector, then gathered a following in Kent and Essex, and marched to London, doing much damage. On their arrival at Smithfield they were met by Richard II. and the Lord Mayor, the latter killing Tyler during an altercation. This revolt was but one of many risings in different parts of the kingdom, the chief cause being unjust taxation.

Tympanum An ancient musical instrument. Called "Tympanon" by the Romans, this name appeared to include the tambourine and the kettledrums; the instrument was used at Bacchanalian feasts.

In architecture, the tympanum is the triangular space contained between the horizontal cornice and the two sloping cornices.

Tyndale **William.** English translator of the Pentateuch and the New Testament. He was born in Gloucestershire, about 1492, and educated at Oxford. He then went to Cambridge, probably attracted by its reputation as a centre of Greek study which Erasmus had helped to establish. In 1525 we find him in Cologne, where he began to print the New Testament in English. It was published in Worms the same year, and was followed by several other editions. He also translated the Pentateuch, and several other portions of the Bible. He suffered martyrdom, Oct. 6, 1536.

Tyndall **John.** British scientist. He was born in Co. Carlow, Ireland, Aug. 21, 1820. He studied at Marburg University, and held many important posts, such as Professor of Natural Philosophy at the Royal Institution (where he was a colleague of Faraday), scientific adviser to Trinity House and the Board of Trade, and superintendent of the Royal Institution. He was eminent as a lucid exponent of last century's physical science, and wrote a number of books on the subject, some of the most important being *Heat as a Mode of Motion*, *Floating Matter in the Air*, *Lectures on Light*. He died Dec. 4, 1893.

Tyne River of England. It is formed by the union of two streams, the North Tyne, and the South Tyne, which unite at Hexham. The former rises in the Cheviot Hills and the latter near Crossfell and before they join each has travelled about 33 m. The Tyne proper is 30 m. long and is a great industrial river. It passes by Jarrow, Wallsend, South Shields, Gateshead and Newcastle and falls into the North Sea at Tynemouth. On its banks are great shipping yards and engineering works.

Tynemouth County, borough and seaport of Northumberland. It stands at the mouth of the Tyne, 6 m. from Newcastle, and is reached by the L.N.E. Rly. It includes North Shields and Cullercoats which is a pleasure resort. The chief industry is shipping for which there are large docks. The borough, which dates from 1849, sends one member to Parliament. Pop. (1931) 64,913.

Tynwald Hill in the Isle of Man. It is 9 m. from Douglas on the way to Peel and is the place where the laws of the island after having been passed are read on July 5. A fair is held on that day. In 1928 the hill was presented by the king to the island. Near is the Manx war memorial. The two houses of the parliament of the island are called the Tynwald Court, when they meet together for public business.

Typewriter Machine for producing characters in printing type on paper without the use of the pen. It appears to have been invented early in the 18th century, but it was not put to practical use until well into the 19th. There are various kinds of machines on the market, and all contain mechanism for reproducing capital and small letters, figures, etc.

Typhoid Infectious disease. Also known as enteric fever, it is due to the presence in the alimentary canal of an organism, the *bacillus typhosus*. Infection may be conveyed by a contaminated water supply, milk, food, or defective sanitary arrangements. The disease incubates from 8 to 14 days, followed by diarrhœa, rapid pulse, bodily prostration and not infrequently purplish spots which appear on the abdomen. Owing to the high fever, the urine becomes deficient and may cause uraemic poisoning, coma and death. Perforation of the intestine and bleeding into the bowel are the two most dangerous complications of this fever.

Typhoon Cyclonic hurricane. The term is applied to a violent type of hurricane occurring in the China Sea from July to Nov., and having its origin in the southern waters under calm conditions and extreme heat. Apart from the danger to shipping, the immense waves associated with the typhoon often cause destruction on the coasts.

Typhus Fever Infectious disease. Also known as gaol fever or spotted fever, it was once prevalent as a regularly recurring disease in Western Europe. It is known now that the causative organism is conveyed by lice, hence the disappearance of the disease where bodily cleanliness is observed. After an incubation of

12 days shivering, a rapidly rising temperature and severe vomiting sets in, followed by a skin eruption. A feeble heart action may cause coma and death in severe cases.

Typography Art of printing, whether from movable type or from type-setting machines, such as are used in modern printing. The letter or figure, word or line, which is used in the printing process, is called type. In olden times it was of wood but to-day it is usually of type metal, a mixture of lead and antimony. It is occasionally set or put in position by hand, but usually by machines.

There are several kinds and sizes of type, each with a distinctive name. The sizes are diamond, pearl, ruby, nonpariel, minion, brevier, bourgeois, long primer, small pica, pica, great primer, and others still larger. Type is also reckoned in points, an American device. Brevier, for instance, is 8 point, and great primer is 18. A higher point means a larger type.

Tyrant Originally, a despotic ruler. The term was applied in particular to rulers over the Greek city states in the 7th and 6th centuries B.C., such as Hiero of Syracuse, Peisistratus at Athens, etc. With the passing of time the word received its modern meaning, although originally it held no derogatory sense.

Tyrconnel Earl of. Born in Ireland about 1625. Richard Talbot came early to London, gained the royal favour, and soon showed himself to be devoid of any scruple. James II. created him Earl of Tyrconnel and Lord Deputy of Ireland, with command of the troops there. At the revolution he curried favour with William III., but after the Battle of the Boyne he fled to France. He died soon after his return to Ireland in 1691.

Tyre Phoenician seaport. It was founded in the 15th century B.C., and became the great mart of the Mediterranean world. Originally a colony of Sidon, it was divided between the mainland and the island, which were joined by a causeway. As an island fortress, Tyre withstood many sieges, but was captured by Alexander the Great in 332 B.C., taken by the Muslims; captured by the Crusaders and finally destroyed by the Muslims after the fall of Acre. In Roman times, Tyre was famous for its silk and purple dye. To-day it is in the state of Great Lebanon, French mandated territory, and is known as es Sur. Its trade is insignificant. Pop. 57,000.

Tyre Outer part of a wheel. On many farm and commercial vehicles metal hoops are used. For bicycles and cars, rubber or pneumatic tyres are employed; the latter more generally. An inner tube of rubber is made separable from the outer cover. Bicycle tyres are repaired by a solution of rubber in CS$_2$, motor-car tyres by vulcanising. Vast improvements have taken place in their manufacture during recent years.

Tyrone County of Northern Ireland. It is situated south of Londonderry, where the river Foyle forms the boundary, other rivers including the Blackwater and the Derg. With the exception of the eastern plain the county is hilly, the chief heights being the Sperrin range. Cattle are raised, and oats, flax, and potatoes are the chief crops. The county town is Omagh. Clogher, once important ecclesiastically, has a cathedral dating from the 18th century. The area is 1218 sq. m. Pop. (1926) 132,792.

Tyrrell Baron. English diplomat. Born Aug. 17, 1866, and educated at Oxford, William George Tyrrell has had a distinguished diplomatic career. He entered the Foreign Office in 1889, where from 1896-1903 he was private secretary to the Under-Secretary; secretary to the Imperial Defence Committee, 1903-4; acting-secretary to the Embassy in Rome, 1904. From 1907-1925 he occupied other important posts at the Foreign Office. He was Permanent Under-Secretary from 1925-28, and British Ambassador in Paris, 1928-34. In 1934 he received the Grand Cordon Legion of Honour.

Tyrrell Father George. Irish divine. He was born in Dublin of a Protestant family, Feb. 6, 1861. Entering the Roman Catholic Church, he was ordained priest in 1891. His advocacy of modernist views brought about his dismissal from the Society of Jesuits, followed by his excommunication in 1907. For the last twelve years of his life he was the close friend of Baron von Hügel. He died July 15, 1909, having received absolution on his deathbed.

Tyrwhitt Admiral Sir Reginald Yorke. British sailor. Born May 10, 1870, he became lieutenant on H.M.S. *Cleopatra* in 1894. In the Great War he commanded destroyer flotillas near Heligoland, and was in action off the Dogger Bank. In 1921-22 he commanded the third light cruiser squadron in the Mediterranean, was commanding officer of the Coast of Scotland, 1923-25, and commander-in-chief of the China station, 1927-29. He was promoted to the rank of admiral in 1929, and has been commander-in-chief at the Nore since 1930. He was created baronet in 1919 and made G.C.B. in 1929.

U-BOAT Abbreviation for *Unterseeboot*, the German name for a submarine. As used in the Great War they were marked U, followed by a number. *See* SUBMARINE.

Uckfield Market town of Sussex. Situated on the Sussex Ouse, it is 8 m. from Lewes and 53 from London by the S. Rly. It is a farming centre, and had an agricultural college. Pop. (1931) 3557.

Uganda British protectorate of E. Central Africa. It has an area of 94,204 sq. m. and a population of 3,553,534 (1931). Administration is by a governor, assisted by executive and legislative councils, but the native states are encouraged to practise a degree of home rule. Kampala is the capital, with the administrative headquarters at Entebbe. The country lies round the great lakes Victoria and Albert Nyanza, Rudolf and others. There is much big game in the swampy areas and tropical forests. Ivory is exported, also skins, chillis, coffee and cotton. The climate is not very healthy for Europeans, and sleeping sickness is a scourge both to them and to the native races. Since the discovery of the tsetse fly as carrier of the parasite responsible for the disease, it has been possible to control this to some extent. The European population has coffee and rubber plantations.

Uhlan Polish word for a cavalry soldier. In the German and Austrian armies, before the Great War, there were regiments of Uhlans, corresponding to the lancer regiments in the British service.

Uist Two islands of the Outer Hebrides, belonging to the county of Inverness. They are mountainous. On North Uist the chief place is Lochmaddy at the head of a harbour and on South Uist it is Lochboisdale. The inhabitants are engaged in cattle and sheep rearing and fishing. North Uist is 18 m. long and South Uist 22 m.

Uitlander Dutch word for a foreigner or outlander. It is chiefly used in S. Africa, when, in the Transvaal and Orange Free State before 1899, the British were regarded as *uitlanders*.

Ukraine Soviet republic of S.W. Russia. It comprises the former governments of Chernigov, Kharkov, Kiev, Poltava, Ekaterinoslav, Kherson, Podolia and Volhynia, and joined the Soviet Union in 1920. The chief rivers are the Dnieper, Dniester, Bug and Donetz, and the main feature of the country is its steppe land. Agriculture is the most important industry, the Ukraine being the principal cereal-growing district of Russia. Maize, barley, wheat and beet-sugar are produced, stock raising is carried on on a large scale, and flour milling, sugar refining, oil pressing, leather and textiles are important industries. The minerals include salt, coal, iron, manganese and mercury, and the metallurgical, chemical and other industries contribute a large proportion of Russia's output. There is considerable hydro-electric development on the rivers. The capital is Kharkov and Odessa is the principal port. Other large centres are Kiev, Dnepropetrovsk and Ekaterinoslav. Area 166,368 sq. m. Pop. (1931) 31,403,200.

Ukulele Small musical instrument. It possesses four strings and is played by plucking them much as a banjo. The instrument belongs to the Hawaiian Islands, from where it was introduced into Great Britain and the United States.

Ulcer Open discharging sore. Some ulcers are of a chronic nature and may arise from local infection or inflammation of the tissues, and some are of a tubercular or syphilitic nature. Bed sores are a form of ulcer arising from continuous friction through being always in one position during illness. Suitable medical treatment is essential in all cases, and in the case of ulceration of the limbs rest is imperative.

Ulex Botanical name for gorse or furze, shrubs of the bean family.

Ullswater Lake of England. It is on the borders of Cumberland and Westmorland, between Keswick and Penrith, and is, perhaps, the most beautiful of the English lakes. It is 7½ m. long. Steamers traverse it, touching at Pooley Bridge, Patterdale and Howtown.

Ullswater Viscount. English statesman. James William Lowther was born April 1, 1855, and educated at Eton, King's College, London and Trinity College, Cambridge. He was called to the bar in 1879, entered Parliament as member for Rutland in 1883, represented Penrith, 1886-1921, and was Speaker of the House of Commons from 1905 to 1921, being created viscount on his retirement. Since then he has served as chairman of many royal commissions, such as those on London government, political honours and electoral reform. He is a trustee of the British Museum.

Ulm City of Germany, in the republic of Württemberg. It is situated on the Danube, at the point where the Blau and the Iller join the main stream, and is 58 m. S.E. of Stuttgart. Across the Danube is New Ulm, in Bavaria. The vast cathedral, with a conspicuously lofty spire, dates from the 14th century. There is a 16th century town hall. Ulm has brass foundries, breweries and other manufacturing establishments. It was originally a free imperial city. Pop. 59,000.

Ulster One of the four provinces of Ireland. It is in the north of the country, and consists of the counties of Donegal, Londonderry, Antrim, Tyrone, Cavan, Fermanagh, Monaghan, Armagh and Down. The area is 8611 sq. m. and Belfast is the provincial capital. The six counties in the north-east form the state of Northern Ireland; the other three—Cavan, Donegal and Monaghan—are in the Irish Free State.

Ultimatum Final demand of any kind. It is used most generally for the final demand that precedes a declaration of war. Thus in Aug., 1914, the British Government issued an ultimatum requesting Germany to respect the neutrality of Belgium.

Ultramontane (From the Latin *ultra*, beyond and *mons*, a mountain). Ultramontanists are those who maintain the supreme authority of the Papacy over the Catholic Church, in all countries, in matters which infringe upon temporal

affairs, *e.g.* appointment to benefices and revenues, as well as in the spiritual sphere, *i.e.* matters of faith and morals.

Ultra-Violet Rays Radiations of a wave-length next to and shorter than the visible rays. They are present in sunlight, and are a source of the beneficial properties of which advantage is taken in sun-bathing. Generated artificially, they are used for treatment of rickets, their beneficial action being due to the formation in the skin of the vitamin which is necessary for the proper formation of bone. *See* SUN-BATHING.

Ulundi Village of Zululand, until 1883 the residence of the Zulu kings. On July 4, 1879, a Zulu army was annihilated by Lord Chelmsford at Ulundi, and after the battle the royal kraal was burned. In 1883 Cetywayo was re-established by the British at Ulundi, but he was driven out by his rival, Usibepu.

Ulverston Market town, seaport and urban district of Lancashire. It is on Morecambe Bay, 26 m. from Lancaster, on the L.M.S. Rly. The industries are coal mining and iron founding. Pop. (1931) 9235.

Ulysses (**Odysseus**). One of the heroes of the Trojan war. Homer's *Odyssey* describes his ten years' adventures on his way home after the destruction of Troy. He blinded the one-eyed cyclops Polyphemus, visited the sorceress Circe and the nymph Calypso, sailed safely between Scylla and Charybdis, resisted the Sirens, and after other adventures reached home.

Umber Brown earth containing iron and manganese oxides. It is used as a pigment by artists. When calcined or burnt it gives a warmer tint than the raw umber.

Umbra Region of complete shadow caused when an opaque body obstructs light. In astronomy it is used for the dark cone that is projected from a planet on one of its satellites on the side away from the sun. The outer region of partial shadow is called the penumbra (*q.v.*).

Umbrella Contrivance for protecting a person from rain or snow. Umbrellas were used by the Chinese and were regarded in the East as a sign of rank. Jonas Hanway, who died in 1786, is regarded as the first man habitually to carry an umbrella in England.

Umbrella Tree (*Magnolia umbrella*). American species of small magnolia tree. The blossoms are white and the long, oval leaves radiate from the end of the flowering branches in a form suggesting an umbrella.

Umbria Ancient and modern district in Italy. The name is derived from the Umbri, the chief Italian tribe before the Roman conquest. Modern Umbria, not entirely co-extensive with the ancient district, contains many manufactories, besides hydro-electric plants, and is touched by the main lines from Rome to Florence and Ancona.

Umpire Person called in to decide an industrial or other dispute. The word is also used for the two men who interpret the rules and decide doubtful points at cricket, and in general control the course of the game. In most other games the term referee is used. The word umpire is employed, however, at the university boat race and other sporting events.

Umtali Town of Rhodesia. It is 170 m. from Salisbury with which it is connected by railway. The town is the distributing centre of a mining and agricultural district and the starting point of important roads. Pop. 2300 (whites).

Una Character in Spenser's *Faerie Queene*. Lovely in person and in character, her name denotes singleness of heart and mind in devotion to all that is true and beautiful. She is, therefore, regarded as the personification of truth.

Unconscious The. Term used in psychology to denote the deep regions of the mind where repressed memories survive and act. It cannot be reached by normal memory, but only by psycho-analysis (*q.v.*), its content being usually repugnant to the conscious mind. Its importance to the individual lies in its effect on everyday behaviour. In his relation to society he is forced to repress his natural instincts, and these, now operating in the region of the unconscious, are responsible for emotional conflicts which express themselves in dreams and as irrational dislikes, fears, inhibitions and physical disabilities. *See* REPRESSION; INHIBITION; SUBCONSCIOUS.

Unconsciousness Complete loss of sensibility. It may be caused in many ways, such as by poisoning, apoplexy, intense cold, loss of blood, violence especially to the head, etc. The patient should receive immediate medical attention and in the meantime should be placed in a horizontal position, the head being on no account raised unless the face is flushed, when cold water may be applied; otherwise, the patient should be kept warm. Any obvious injury may receive suitable first-aid treatment.

Unction **Extreme.** *See* EXTREME.

Undercliff Name used for the coastline of the Isle of Wight between Ventnor and St. Catherine's Point. It is famed for its mild climate and its beautiful scenery. It is about 6 m. long and about 1 m. wide.

Undertaker A contractor. To-day the word is used especially for one who contracts or undertakes to carry out funerals.

Historically the word is used for those who settled in Ireland in the 16th and 17th centuries and undertook to cultivate the land that was granted to them. Other undertakers started negotiations with James I. for a contract to collect the country's revenue, but the proposal fell through.

Underwriter One who takes up or underwrites a policy of insurance. The word is chiefly used for the men, generally members of Lloyds, who insure ships and their cargoes. It is also used for the financial houses and individuals who insure the success of an issue of capital. In return for a certain percentage they undertake to subscribe for such parts of the issue as are not taken up by the public. The commission paid varies with the nature of the security and the conditions prevailing at the time.

Undine Name given in legend to a water sprite. She is soulless, and can obtain a soul only when she becomes the mother of a child after marriage to a mortal. *Undine*, the novel of De la Motte Fouqué, is a story based on this idea.

Undset **Sigrid.** Norwegian novelist. Born in 1882 at Kallundborg, Denmark, she was educated at Christiania. In 1912 she wrote her first successful novel, *Jenny*, which was translated into English in 1917. She became a Roman Catholic after the World War and wrote a novel of historical interest, *Kristin Lavransdatter*, which was translated into English in 1930. She was awarded a Nobel Prize in 1928, and her other novels include, *The Cross* (1927) *The Axe* (1928), *The Son Avenger* (1930), *The Wild Orchid* (1931) and *Ida Elizabeth* (1933).

Unemployment Absence of employment, usually work that provides a livelihood. The conditions of modern industry, mass production, fashion, machinery, the credit system and many other factors have created a great, but varying, amount of unemployment, which presents one of the most formidable problems of the day. No single solution is possible, but something may perhaps be done by stimulating demand and reducing hours of labour. As, however, a perfect equilibrium between production and consumption can never be reached, unemployment is never likely entirely to disappear.

Since the Great War there has been a great increase in the number of unemployed, although this is partly accounted for by the greater fulness and accuracy of the figures kept by the various nations. In Great Britain the figure has only rarely fallen below 2,000,000, and in 1932 it was only a little under 3,000,000, or something like one-fifth of the working population. In 1932 Germany reported over 6,600,000 unemployed. For the United States there are no exact figures, but 10,000,000 and even 12,000,000 were freely mentioned. In 1932 it was stated by the International Labour Office that 30 per cent. of the workers were unemployed. Succeeding years, however, have shown a steady improvement, and in 1935 the total number of unemployed in Great Britain was 1,919,000. The German unemployment figure for 1935 was given as 1,714,000, but this may be misleading. In the United States the number had dropped by 1935 to about 4,000,000.

UNEMPLOYMENT INSURANCE. Since 1911 Great Britain has had a system of insurance against unemployment, and a similar scheme has been in operation in Northern Ireland The contributions payable and the benefits receivable have been altered several times, the last time being as from July, 1934, while the minimum entry age was lowered from 16 to 14 as from Sept., 1934. The scheme applies to all manual workers and to all others who are in receipt of less than £250 a year and are between the ages of 14 and 65, with the exception of two large classes, agricultural labourers and domestic servants. About 13,000,000 persons are insured under the scheme, which is controlled by the Ministry of Labour. The local centres for the payment of benefits are the employment exchanges and the offices of trade unions.

The rates of contribution are per week :

	Insured Person.	*Employer.*
Males	10d.	10d.
,, 18 to 21	9d	9d.
,, 16 to 18	5d.	5d
,, 14 to 16 ..	2d.	2d.
Women .	9d.	9d.
,, 18 to 21 ..	8d.	8d.
,, 16 to 18 ..	4½d.	4½d.
,, 14 to 16 ..	2d.	2d.

The benefits are : Men 17s. per week, and women 15s. per week with smaller sums for those under 21 years old. In addition 9s. a week is paid for a wife or other adult dependent and 2s. for each child.

Owing to the serious increase in unemployment, it was necessary for the state to borrow large sums in order to maintain the benefits, and in 1931 over £100,000,000 had been so borrowed. The Act of 1934 followed reports of a royal commission appointed to investigate the situation and by it the debt was funded, to be repaid at a fixed annual rate. Also it restored the 10 per cent. benefit economy cut of 1931, and granted additional days, increasing benefit in certain cases beyond the 26 weeks previously specified.

Ungava District of Canada. It lies in the N. of Labrador and has an area of 456,000 sq. m. There is much forest land in the S. and rich deposits of iron ore. Lead and copper are also found. There are large numbers of fur-bearing animals with consequent trade in skins. The territory became part of Quebec in 1912.

Uniat Name used for Christian churches that are Greek in practice, but have accepted the authority of the Church of Rome. They are found in various places in the Balkan area and other parts of Europe and Asia Minor. The largest are the Ruthenian and the Armenian.

Unicorn Fabulous animal with head and body of a horse and a long, sharp horn in the middle of its forehead. Its existence is testified to by Pliny, Aristotle and the Bible, but it is probable that it was confused with the rhinoceros. The Scottish royal arms are supported by two unicorns, giving rise to the traditional rivalry with the English lion.

Uniformity Conformity to one pattern or rule. **Acts of uniformity** have been passed from time to time to enforce a set form of religious worship. In England they were passed in 1549, 1552 and 1559. The fourth and last, passed in 1662, ordered all clergymen to be properly ordained, to accept the 39 articles and to use the Book of Common Prayer. Those who refused were expelled from the Established Church and joined the Nonconformists.

Union Act Name of two Acts of Parliament. By the first, passed in 1707, the English and Scottish Parliaments were united. By the second, passed in 1800, the British and Irish Parliaments were united. Each aroused a good deal of opposition in its particular country. The Irish union was partly annulled by the legislation of 1921-22. Another Act of Union was that which in 1907 created the Union of South Africa.

Union Day Annual public holiday in S. Africa. Held on May 31, it commemorates the foundation of the Union of S. Africa in 1910.

Unionist Political party in Great Britain. It originated in 1885 when Gladstone proposed to give Home Rule to Ireland. A number of Liberals, led by the Marquis of Hartington and Joseph Chamberlain, thereupon left the party and called themselves Liberal Unionists because they were determined to maintain the union between England and Ireland. In 1895 they joined the Conservative party in forming a government, and gradually the two parties became one, and the term Conservative was dropped for that of Unionist. After the Great

War when Home Rule had ceased to be a vital question, there was a return to the name Conservative. The name Unionist, however, is still used, and the official name for the Central Association of the party is Conservative and Unionist. *See* CONSERVATIVE.

Union Jack National flag of Great Britain. It is the outcome of the union of the banner of S. George, white with a red cross, for England, the banner of S. Andrew, blue with a white diagonal cross, for Scotland and the banner of S. Patrick, white with a red diagonal cross, for Ireland.

The Union Jack Club is a club for men of the navy, army and air force. It was founded in 1907 and a building was erected in Waterloo Road, London, S.E.1.

Unitarianism Theological term. It denotes belief in one God and is generally used to designate the faith held by those Protestants, who, while denying the doctrine of the Trinity and other beliefs of orthodox Christianity, nevertheless accept the pre-eminence of Jesus Christ as a religious teacher and prophet. English Unitarians trace their origin to the ejection from the Established Church of the 2000 clergy under the Act of Uniformity in 1662. In 1813 the last disabilities from which Unitarians suffered were removed, and since then their faith has flourished in England under the leadership of such men as Martineau, Stopford Brooke and Estlin Carpenter.

United Irishmen A revolutionary society of 18th-century Ireland. Shortly after the French Revolution, malcontents, profiting by a wave of unity which allied Presbyterians of the North with Catholics of the South, sought to introduce French ideas and to procure an independent Irish Republic. Foremost among these were Tone, Russell, Emmet and Tandy, while Lord Edward Fitzgerald agitated on their behalf. This unrest culminated in the rebellion of 1798, which was repressed, after which the organisation was broken up.

United Kingdom Name given in 1800 to the kingdom of Great Britain and Ireland. The parliaments of England and Scotland were united in 1707, and the first parliaments of Great Britain and Ireland met in June, 1801. The latter union was dissolved in 1922, when the Irish Free State was established, and to-day the phrase United Kingdom means the United Kingdom of Great Britain and Northern Ireland, *i.e.* the areas represented in the Parliament at Westminster. *See* ENGLAND, NORTHERN IRELAND, SCOTLAND, WALES.

United Methodist Church. English Nonconformist body. It was formed on July 26, 1907, by the union of three churches which had seceded at different times from the Methodist body founded by John Wesley—the Methodist New Connection (1797), the Bible Christians (1815), and the Methodist Free Church (1857). With the consummation of Methodist Union in Sept., 1932, the United Methodist Church ceased to have a separate existence.

United Provinces Province of India, in full the United Provinces of Agra and Oudh. It was formed in 1902 and since 1921 its chief official has held the rank of Governor. It covers 106,248 sq. m. Lucknow is the capital; other places are Cawnpore, Benares, Allahabad, Agra, Bareilly and Meerut. In it are three native states. The Ganges flows through the province, which is an agricultural area. It is governed by a legislature of 123 members, of whom 100 are elected. Pop. (1931) 48,408,763.

The term United Provinces is also used for those provinces of the Netherlands under the leadership of Holland that revolted against Spain in the 16th century. In 1581 they declared their independence, which was recognised by Europe in 1648 by the Treaty of Westphalia. *See* NETHERLANDS.

United Service Museum. Museum in London belonging to the Royal United Service Institution. It occupies the banqueting hall in Whitehall and contains articles showing the development of weapons, ships and aeroplanes, as well as naval and military relics and models. It is open to the public every day except Sunday.

United States Country of North America. It extends from the Atlantic to the Pacific Ocean, with Canada on the north and Mexico on the south. It has a total area of 3,026,789 sq. m. The population (1930) was 122,775,046, of whom 11,891,143 are negroes, and 2,019,696 belong to other races who are not whites. A few Indians remain, living chiefly on reservations. Washington is the capital, but New York is the principal city. Other places with over a million inhabitants are Chicago, Philadelphia, Detroit and Los Angeles.

The country contains great varieties of climate, but is entirely habitable, and except in certain areas the soil is fertile. In it are parts of the Great Lakes. The greatest river is the Mississippi, with the Missouri and other tributaries, but there are many other great rivers including the Hudson, Delaware, Potomac, Savannah and Colorado. The greatest mountain ranges are the Appalachians in the east and the Rockies in the west.

The United States is rich in natural wealth of almost every kind. It has vast deposits of coal, iron and copper, and much of the world's oil and silver comes from the country. Maize, wheat, cotton, tobacco and sugar are grown on a vast scale. As a manufacturing country it is perhaps the greatest in the world.

The United States consists of 48 states, divided into groups according to geographical position, and differing greatly in size and in other ways. Texas is the largest and Rhode Island the smallest. Several cover over 100,000 sq. m., or twice the size of England. One group in the north-east forms New England.

The possessions of the United States are Alaska, the Philippine Islands, the Hawaiian Islands, Puerto Rico, Guam, the Virgin Islands and some Samoan Islands, as well as the Panama Canal zone. The country is a republic governed by a president elected every four years, and a ministry responsible to a legislature called Congress (*q.v.*). The constitution is a written one, and its terms cannot be altered without considerable difficulty. The country has an army, a navy of considerable size and an air force. The unit of currency is the dollar, and most of the currency is in paper.

History. The United States originated in settlements made by English and Dutch on the Atlantic coast, but in the 17th century the Dutch colonies were acquired by Great Britain. These were in the main independent of each other, but in 1776 a union was formed to resist the claim of Great Britain to tax them. A war followed and in 1783 thirteen of them, hence-

forward known as the United States, declared their independence. A constitution was formed, and in 1788 they elected their first president, George Washington. The country then extended westwards as far as the Mississippi, but gradually further areas were acquired and fresh states entered the union. In 1800 Louisiana was bought from France, and in 1819 Florida from Spain. A war with Mexico, 1846-48, brought the territory in the south into the union, and by the time of the Civil War the land had its present area, though in the west much of it had not taken on the status of states. The last states to join the union were Arizona and New Mexico in 1912.

In 1861 the United States were engaged in a Civil War, in which the northern federal states fought the southern confederate states, who claimed the right to secede and to keep their slaves. Finally the north, with its vastly superior resources, won, the union was saved and the slaves freed. Reconstruction was followed by an era of expansion and extraordinary prosperity, alternating with periods of depression, the most severe of which was in 1930-32. In 1917 the United States entered the Great War on the side of the Allies, and her statesmen had a large share in framing the Treaty of Versailles. She did not, however, enter the League of Nations, the author of which was her president, T. Woodrow Wilson (*q.v.*). In 1932 Franklin Roosevelt (*q.v.*) became president. His government took part in the World Monetary and Economic Conference, called by the League of Nations in 1933. Among Roosevelt's economic difficulties were the vast number of unemployed, deferred payments of war debts by other countries, demands for continuation of the ex-soldiers' bonus, and a budget deficit—in 1934 it was £1,800,000,000. In Sept. of that year Roosevelt appointed a committee to take charge of the broad policies of future legislation of his famous National Recovery Administration (N.R.A.). The Finance Committee of Senate in May, 1935, voted continuation of the N.R.A. for another year, but the Supreme Court decided that unconstitutional power was thereby surrendered by Congress to the President, and in June the N.R.A. chairman resigned. Yet the bill for its extension was passed, although Senator Huey Long spoke in the Senate against it for 16 hours.

Marked opposition, however, had undermined the N.R.A., and President Roosevelt brought forward his New Deal, which was "to give Labour freedom to organise and protection from exploitation, to safeguard and develop the national resources," etc. Its farm programme was put in the hands of the Agricultural Adjustment Administration (A.A.A.), signed by the president Aug., 1935, and despite a declaration of unconstitutionality by the Supreme Court in Jan., 1936, this administration introduced a bill giving it power to make grants to farmers on specified bases.

Universal Word used for a general term in logic. Its opposite is a particular. There are five classes of universal: genus, species, difference, property and accident, but their nature led to great arguments among the scholars of the Middle Ages. "All cats are animals" is a universal; "some cats are black" is a particular.

Universal Language In 1880 a universal language named Volapük was brought forward, and other efforts are Esperanto, invented by Dr. Zamenhof, a Warsaw medical man, in 1887, and Idiom Neutral. Esperanto has made some headway and is practicable as an auxiliary language.

Universe The whole system of created things. Man has always speculated on its nature, extent and the means of its creation. Until the 17th century the earth was considered as the centre, with the sun, moon and stars revolving round it. In 1632, however, Galileo showed that the earth moved round the sun, and the work of Newton and Kepler led to the accurate forecasting of the movement of all the planetary bodies.

The improvement of the telescope led to the discovery of more and more stars, and spectroscopy enabled their distance and constitution to be investigated. Now, astronomers estimate that the universe contains at least 2000 million stars, the nearest being 25,500,000,000,000 m. from the earth, this being also about the average distance separating one star from the next. Many of the elements found on the earth have been detected in the stars, and it is probable that some stars are themselves centres of planetary systems.

The extent of the universe has caused much philosophical difficulty. Einstein's theory of relativity led to experimental proof that light travels in a curved path, which if prolonged far enough, will return to its starting point, and it is in this sense that the universe is now considered finite but boundless. *See* SPACE.

There is some evidence to show that the material bodies of the universe have been created by a slow process of evolution, stars forming by concentration from nebulae, and planets by the cooling of portions of the stars. *See The Mysterious Universe* and other books by Sir J. H. Jeans (*q.v.*).

University Community of teachers and scholars. Salerno, founded in the 9th century for the study of medicine, was the first European university; the revival of legal studies in the 12th century led to the foundation of Bologna, Padua and others, and the schools of dialectic in Paris developed in the 13th century into the Sorbonne. The universities of Central and Northern Europe, including Prague, Heidelberg, Louvain and the first Scottish foundation at St. Andrews, were founded in the 14th and 15th centuries. The earliest English universities were Oxford and Cambridge, in the 12th and 13th centuries, and here colleges were first established as places of residence for students. Trinity College, Dublin, was founded in 1591. In response to modern needs, many other English universities were founded in the 19th and early 20th centuries, London, Manchester and Liverpool being the first.

University Settlement

Community of social workers, having a connection with a university. The present **University Settlement Association** owes its origin to Canon S. A. Barnett, vicar of Whitechapel. In 1884, in an article in the *Nineteenth Century*, he discussed the question of university settlements, and this led to the formation of an association. Barnett, Rogers and Montefiore were the movers in the construction of Toynbee Hall, Commercial Street, Stepney, connected with Oxford University. Barnett was the first warden of Toynbee Hall, which was the forerunner of the many east end social settlements of to-day.

Unknown Warrior Body of an unidentified

soldier killed in the Great War, buried as representing all who fell in the struggle. In Great Britain the unknown warrior was buried in Westminster Abbey on Nov. 11, 1920; in France beneath the Arc de Triomphe in Paris; in the United States in the National Cemetery at Arlington; and in Italy in the church of Santa Maria degli Angeli, Rome.

Unleavened Bread Food eaten by the Jews in commemoration of the Passover and in obedience to the instructions of Moses (Exodus xii. 15). The prohibition of leaven has a ritual significance, which may be associated with the idea that fermentation involves corruption.

Unwritten Law Term used for a principle that is regarded as a law, although it is not included in any legal code. It is an unwritten law, according to one view, that a husband may kill the seducer of his wife without being punished for the offence.

Upas Tree Tree found in Java and in tropical Africa. Its juice contains a poison formerly used by the natives to poison their darts.

Uppingham Market town of Rutland. It is 101¼ m. from London, on the L.M.S. Rly. The chief building is the parish church, and there is an agricultural trade. Pop. 2453.

Uppingham School, founded in 1584, became a leading public school under the headmastership of Edward Thring (1853-87) and has now a fine range of buildings with accommodation for about 500 boys.

Upsala City of Sweden, on Lake Malar. Its university, founded in 1477, is the oldest in Sweden, containing schools for every department of learning, as well as an observatory. Upsala Cathedral, which is French in style, was begun in 1287. Old Upsala dates back to the 9th century, when its heathen temple, made of gold, made it famous. During the Middle Ages, Upsala was a kind of ecclesiastical capital, and it was here, in 1593, that the Synod, which proclaimed the final victory of Protestantism in Sweden, was held. The city was burned down in 1702. There is a broadcasting station (453.2 M., 0.15 kW.). Pop. (1932), 30,741.

Ur Ancient Sumerian city. The biblical "Ur of the Chaldees" (Gen. xi. 31, xv. 7), whence Abram set out on his journey into Canaan, is generally identified with it. It was situated on the left bank of the Euphrates, about 153 m. S.E. of Babylon. The modern name of the mound under which it lay is Mugheir. Excavations were begun in the 19th century and, after the Great War, continuous work was carried on. Since 1922 a joint expedition of the British Museum and the University of Pennsylvania has excavated the mound with remarkable results. The great temple of Nannar, the moon god, (*c.* 2300 B.C) with its *ziggurat* or stage tower, was unearthed, the discovery of other temples and some private houses followed, and then some royal graves (*c.* 3200 B.C.) in which were many objects of gold, silver and semi-precious stones of finest workmanship. In 1929-30 the walls of the city, with a circuit of two and a half miles, were traced.

Ural Range of mountains running from the Arctic to the Caspian Sea, forming a boundary between Europe and Asia. The Ural range is important chiefly for the timber from its densely-wooded slopes, its salt-mines and deposits of gold, platinum, copper, iron and coal. These deposits were originally worked by serfs.

The **River Ural** rises in the Southern Ural Mts., and, flowing past Uralsk, empties itself into the Caspian Sea at Tschapajew.

Uralite Type of rock. Uralite is formed by the changing of rock-masses, and in the process of **uralitisation** secondary hornblende replaces augite. Uralitisation occurs in a rock known as diabase; uralite itself may be said to be an alteration product of diallage, a calcium-magnesium silicate.

Uranium Metallic element, symbol U, atomic number 92, atomic weight 238·14. Uranium was first obtained from pitchblende by Klaproth in 1789; pitchblende still furnishes most of the world's uranium, being U_3O_8, and remarkable in that it contains helium. Uranium is a white, malleable metal which tarnishes slowly in air; it burns to U_3O_8 and decomposes water. It forms two series of compounds, uranous and uranyl. It is chemically related to tungsten and chromium.

Uranus God of Greek legend. He was the son or husband of Ge, the Earth, and was the first King of the Gods. He was the father of Kronos and the other Titans, the Cyclops, Oceanus, Hyperion and the monsters Briareus and Gyges. Legend tells how, hating his children, he imprisoned them in Tartarus. Led by Kronos they rebelled against him and conquered him. He was torn to pieces; the giants sprang from his blood, and Aphrodite from the foam of the sea into which his mutilated limbs were thrown.

Uranus One of the planets, discovered by Sir William Herschel on March 13, 1781; it was first called *Georgium Sidus*, in honour of King George III. Except Neptune, it is the farthest planet from the sun, and the time required for a revolution in its orbit is 84 years. The diameter is four times that of the earth, and the density slightly greater than that of water. It has four satellites, Titania, Oberon, Ariel and Umbriel.

Urban Name of eight popes. S. Urban was Bishop of Rome from 222 to 230. Urban II. (1088-1099) had to contend with the antipope Gilbert of Ravenna, and promoted the First Crusade. Urban III. (1185-1187) also supported the crusaders. After Urban IV. (1261-1264) the son of a shoemaker, and Urban V. (1362-1370), Urban VI. (1378-1389) had to contend with fierce opposition from the French popes. Urban VII. only occupied the papal chair for a short time in 1590. Urban VIII. (Barberini) was ready to wage war on behalf of the papacy, and on his equipping the Castel Sant' Angelo with bronze from the Pantheon, he was satirised as a Vandal thus— *Quod non fecerunt barbari, fecerunt Barberini, i.e.*, "What the barbarians did not do, Barberini has done."

Urban District In England and Wales an area set up for purposes of local government in 1894. Each urban district has a council, elected by the people for three years and presided over by a chairman. The council is responsible for the care of the streets and for sanitary matters; if the district has a population of over 20,000 it is also responsible for elementary education. The urban districts are represented on the county councils.

Urbino Town of Italy. It contains a 15th century palace, which boasts a magnificent arcaded courtyard, a cathedral

and university, also a monument to Raphael, who was born at Urbino. It is the ancient town of Urvinum and was formerly one of the chief centres of art and literature in Italy. During the 16th century majolica pottery was extensively produced at Urbino.

Ure River of Yorkshire. Rising in the Pennine Hills, it flows east and then south-east. During its course of about 70 m. it passes Askrigg and Ripon, near which it joins the Swale to form with it the River Ouse.

Urga City of Mongolia (known as Hurae). It is the Mongol holy city and the residence of the lama known as the "Living Buddha." Urga can be roughly divided into three sections, the Kuren, where the lama resides, the Mongol quarter and the Chinese settlement. The Chinese trade extensively with the Mongols and the Russians in cattle, camels, horses, sheep and milk.

Urial (Orgial or Oriel). Ancient province of Ireland, comprising the present counties of Armagh, Louth, Monaghan and Fermanagh. This province was founded in the early 4th century by the three Collas, who drove out the Ulidians from the province. Numerous cairns and tumuli remain to mark this early province.

Urine Fluid secretion containing waste material abstracted from the blood as it passes through the capillaries in the tissues of the kidneys. In a healthy state urea, uric acid, hippuric acid and sodium chloride are present, but sugar and albumin are absent. The colour, derived from bile pigments, is normally yellow, but may vary considerably. Excess of uric acid tends to the formation of gravel, while the presence of sugar or albumin is indicative of certain diseases.

Urmston Urban district of Lancashire. It is 5 m. from the Central Station, Manchester, and 194 m. from London, by the L.M.S. Rly. Its industries are mainly connected with cotton. Pop. (1931) 9284.

Urquhart Sir Thomas. Scottish author. Born in 1611, he was a member of an old Scottish family. An ardent Royalist, he was knighted by Charles I. in 1641 at Whitehall, and was captured by the Cromwellian army at Worcester, but released after a short term of imprisonment. His writings include epigrams, a trigonometrical treatise, a translation of Rabelais (1653) and a *plaidoyer* in favour of a universal language. He died in 1660.

Ursula Roman Catholic saint commemorated on Oct. 21. Most stories about S. Ursula are ill-founded. According to one legend, she and a body of nuns were slaughtered by the Huns in the 3rd century, when defending their virginity. Other stories say that she led a party of 11,000 virgins from Britain to avoid Maximian's persecution.

Ursulines Religious order. It was established by Angela Merici at Brescia in Italy, for the education of girls and the care of the poor, in 1535. In the 17th century the order was supported by S. François de Sales. The nuns numbered some 20,000 in the 18th century, but have since dwindled. Their patron saint is S. Ursula.

Uruguay Republic of South America. It is situated south of Brazil, fronting the Atlantic, and is divided from Argentina on its western border by the River Uruguay and the Plata estuary. Like the Argentine Pampa, the country consists, for the most part, of a grassy plain with few trees save along the river banks. It is well watered. The Uruguay River is 1000 m. long, and for 100 m. of its length is from 6 to 9 m. wide. The climate is well suited to Europeans, and a large proportion of the population are immigrants from Spain and Italy. Spanish is the principal language used. The country affords excellent pasture ground, and the chief industries are those connected with meat, wool and hides. Meat extracts are manufactured on a large scale, and there are several large refrigerating stations. Uruguay is rich in minerals, which include gold, silver, copper and lead. The capital is Montevideo. Paysandu has important abattoirs.

Originally forming part of a Spanish viceroyalty, Uruguay became a province of Brazil, and in 1825 established itself as an independent republic. The government is vested in a senate and elected chamber of representatives. The president, who is aided by an administrative counsel, is elected for four years. The area is 72,153 sq. m. Pop. (1932) 1,941,398.

Uses in Law In olden times, a man could not dispose of an estate by will: the use was invented to avoid the laws against mortmain by making over the estate to a friend, on the understanding that the original owner should still profit from it. This was found valuable for defeating creditors. In 1536 was passed the **Statute of Uses**, which was not successful in its attempt to counter these methods. This province is now governed by the law of trusts.

Usedom Island of Germany. It forms part of the province of Pomerania, off the Baltic coast. The surface is flat, being covered mainly by moor and marsh. Fishing and agriculture are the industries of the island, which contains some popular watering-places.

Ushant (Fr. *Ouessant*). Island off the coast of Brittany. In area 3900 acres, it is some 15 m. from Finistère, with which it forms a canton. It consists mainly of granite rock and its rugged coasts are made dangerous by fogs and frequent gales. Cereals and potatoes are grown and sheep bred. Fishing is also carried on.

In 1388 the island was ravaged by the British. On "the Glorious First of June," 1794, Admiral Lord Howe was victorious over the French fleet, and in 1778 the English and French fought an indecisive naval action off Ushant.

Ushaw Village of Durham. It is 4 m. from Durham, and has a college for training men for the Roman Catholic priesthood. It was founded in 1804 for the students who had been obliged to leave Douai and is dedicated to S. Cuthbert.

Usk River of Wales. Rising on the border of Brecknockshire and Carmarthenshire, it flows east and then in a southerly direction to the Bristol Channel. It is navigable to Newport and is about 70 m. in length.

Usk Market town of Monmouthshire. On the River Usk, it is 11 m. from Monmouth. There is an old church restored, and also the ruins of a castle, once a royal residence. The place is visited for the fishing.

Usküb (or **Skoplje**). Ancient Turkish town, now in Yugoslavia. It lies on the Vardar, and is the junction of the line from Belgrade and Monastir to Salonica. It occupies a strategic position, and possesses

a large citadel as well as palaces, mosques and a Roman aqueduct. Dying, weaving and tanning are carried on. It was a town of ancient Macedonia, destroyed in 518 by an earthquake, and rebuilt by Justinian. Pop. (1931) 64,807.

U.S.S.R. *See* RUSSIA, SOVIET.

Usury Originally, any premium paid for the use of money; nowadays, the practice of demanding an exorbitant premium or interest. Attempts were made, particularly by the Romans, to provide maximum rates of interest, but they were unsuccessful. Later, usury being condemned by the Church, it was allowed to fall into the hands of the Jews. Borrowing with interest is now world-wide.

Usworth District of Durham. It is 7 m. from Newcastle-on-Tyne, and is a coal mining centre. There is a station on the L.N.E. Rly. Pop. 7985.

Utah State of America. In the west of the United States, bordering on the Rocky Mts., its area is 84,990 sq. m. It contains the Great Salt Lake, with an area of 2000 sq. m., and Utah Lake. The Colorado River runs through it and it contains also the famous Colorado Canyon. Its climate varies with the altitude; the bird life is prolific. It is rich in minerals, chiefly coal and copper, and evaporates salt from the brine deposits.

Utah has been populated from 1811 onwards, and Brigham Young and his Mormons settled in Salt Lake City in 1847. The efforts of Utah to join the Union were long unsuccessful, because of the polygamy of the Mormons. Polygamy was abolished and Utah came into the Union in 1896. Pop. (1930) 507,847.

Uterus Organ in the female of mammals in which the fertilised ovum is developed. In the human race it is a comparatively thick-walled but small organ suspended in the pelvic cavity and capable of considerable expansion to accommodate the developing embryo. It is liable to a number of diseases for which immediate medical attention is necessary.

Utica City of ancient Africa, near Carthage. One of the earliest Phoenician settlements; it was a rival of Carthage and sided with Rome in the Punic Wars. It was successively captured by Vandals Byzantines and Arabs, and emptied by fever in the 8th century. Its ruins are still to be seen.

Utica is also the name of a city of New York State, U.S.A., formerly Fort Schuyler. It lies on the Erie Canal, and is an important manufacturing centre. Pop. (1930) 101,740.

Utilitarianism In ethics a doctrine that finds the basis of morals in utility. Its advocates ask whether or not a certain course of action tends to make mankind happier and better, and by this test they approve or condemn. In England the great exponents of utilitarianism were Jeremy Bentham and James Mill. It formed part of the teaching of John Stuart Mill, and had great influence on the political movements of the 19th century.

Utopia Name of a book by Sir Thomas More. It describes an island state in which the people live in great comfort and happiness, all things being owned in common. It was published in 1516 in Latin and has been translated into English. Since then the word Utopia has been used for any political or social idea that is theoretically excellent, but cannot be put into practice as being too idealistic for ordinary men and women.

Utraquists (Lat. *uter*, both). Name given to those members of the Roman Catholic Church who claim to receive the communion in both kinds. They were found chiefly among the Hussites in Bohemia in the 15th century and were also called Calixtines. *See* CALIXTINES.

Utrecht City and province of the Netherlands. The city is very ancient, being known to the Romans. It was the seat of a prince-bishopric during the Middle Ages, and played a leading part in the struggle of the United Provinces for independence. It contains a fortress, cathedral, and an important university. Cigars and chemicals are manufactured here. Pop. (1932) 156,194.

The **Treaty of Utrecht** (1712-13) terminated the War of the Spanish Succession. Louis XIV., defeated principally by Marlborough, had made repeated overtures for peace, and the preliminaries were signed in London in 1711. By the treaty Philip of Anjou, grandson of Louis XIV., obtained the Spanish throne, the unsuccessful claimant, the Emperor Charles VI., being compensated with the Netherlands and the Spanish possessions in Italy. England gained Gibraltar, Nova Scotia, Hudson's Bay Territory, the undisputed possession of Newfoundland, and commercial privileges in Spanish America. Louis XIV. recognised the Protestant succession to the British throne, and undertook to lend no further aid to the Stuarts.

Uttoxeter Urban district of Staffordshire. It is 15 m. from Stafford and 136 from London, and is a junction with the L.N.E. and L.M.S. Rlys. St. Mary's Church has an old tower, and there is a 16th-century grammar school. There is a trade in agricultural produce, and some manufactures. Pop. (1931) 5907.

Uvula Small extension of the soft palate, hanging down between the tonsils. When abnormally long it may irritate the tongue, causing a cough or repeated attempts to clear the throat, and it is sometimes shortened by surgical means. It is liable to inflammation, which may be treated by an antiseptic gargle.

Uxbridge Urban district and market town of Middlesex. It is 16 m. from London, and is served by the G.W. and Metropolitan Rlys., also by the G.U. Canal. The most interesting building is the inn known as the Old Treaty House, where, in 1645, a meeting was held between Charles I. and representatives of the Parliament. The parish church is an old building restored. There is a market house, a town hall and a corn exchange. Brewing is an industry and the town has an agricultural trade. Here the Royal Air Force has a training centre. Pop. (1931) 31,866.

Uzziah (or Azariah). King of Judah. He succeeded to the throne at 16 (810 B.C.), and reigned for 52 years. He "did that which was right in the sight of the Lord." (2 Chron. xxvi. 6).

VAAL River of S. Africa. It rises in the Drakensberg Mountains in the Transvaal, and flows mainly in a westerly direction to the Orange. It is 500 m. long. For part of its course it is the boundary between the Orange Free State and the Transvaal, which is the country across the Vaal. It is sometimes called the Gariep.

Vacation Term used for school and college holidays. It is also used for the periods during which the law courts do not sit. There are in England four vacations a year, but the one at Christmas and the two in the spring are short. The long vacation lasts about ten weeks. In 1933 it ran from Aug. 1 to Oct. 11. During the long vacation one of the judges attends at the law courts in London to dispose of urgent cases.

Vaccination (Lat. *vacca*, a cow). Protective inoculation, usually in the arm, by transferring the germ of cow-pox (*vaccinia*) to human beings. Jenner, a Gloucestershire surgeon, first practised this process in England about 1796, as a result of paying attention to prevalent local beliefs, but even he did not realise the necessity of revaccination. Nowadays, vaccination is carried out with glycerinated calf lymph. Despite the efforts of anti-vaccinators, legislation was carried out in 1898 to enforce vaccination of children; proof that this was prejudicial to health was necessary if the operation was to be avoided. The rules have since been less strictly enforced. The Act of 1907 allows a parent exemption from the vaccination of offspring if objection is made on conscientious grounds.

Vaccine Lymph derived from vesicles on the udders of the cow. Besides Jenner's inoculation with calf's lymph for small-pox, however, vaccines (or preparations of the dead cultures of the agent causing the disease) are used to counteract fevers, pneumonia, etc.

Vachell Horace Annesley. English novelist and playwright. He was born Oct. 30, 1861, and educated at Harrow and the Royal Military College, Sandhurst. He received a commission in the Rifle Brigade in 1883, but soon abandoned the army for a literary career. In the long list of his novels and plays, *Quinney's*, a dramatised novel, set in an antique shop, is probably the best known and most popular. *An Impending Sword* appeared in 1932.

Vacuum Space devoid of matter. The perfect vacuum is not yet attainable, present methods of exhaustion always leaving some residual gas. A vacuum is a non-conductor of heat and will not transmit sound waves. Heat, light and other electromagnetic radiations are transmitted readily.

The **vacuum tube**, a glass vessel containing a gas or gases at low pressure, is used in science for X-ray work and for experiments investigating radioactivity and the structure of the atom, and commercially for electric-light bulbs, wireless valves and some illuminated signs, the colour of the latter depending upon the gas used.

The **vacuum flask** is a container with a vacuum interspace to prevent the conduction of heat either inwards or outwards. The contents are thus retained for long periods at their original temperature.

The **vacuum cleaner** is a machine for collecting dust and small refuse from floors, carpets, etc., by suction.

Valencia Province and city of Eastern Spain. The city has a very fine harbour, and contains a cathedral and university. Valencia is mentioned by Livy as the settlement of Junius Brutus in 138 B.C., and was later captured by the Visigoths, and by the Moors, of whose Spanish kingdom it was one of the principal towns. To-day it is the third largest city of the republic. Silk, textiles, leather and pottery are among its manufactures, and it exports corn, rice, silk, oranges and other fruits. Pop. (1931) 327,088.

Valencia is also the name of a city of Venezuela. It is a terminus of the Great Railway of Venezuela, and has cotton mills. Pop. (1926) 36,804.

Valenciennes Town of northern France. It is on the Scheldt and is the centre of an important area which embraces coal mines, foundries and forges lining the River Scheldt. It contains a fine museum with works by Watteau, Antoine and Rubens, and a statue of Froissart, the chronicler. It may owe its name to Valentinian, a Roman emperor, and it is certainly an ancient town. In the 16th century it was captured by the Spaniards. Little lace is now made at Valenciennes. Occupied by the Germans during the Great War, the town was retaken by the Canadians just before the Armistice in 1918. Pop. (1931) 42,359.

Valency Combining power of the atoms of chemical elements. Thus if hydrogen is mono-valent, then oxygen is di-valent, for two atoms of hydrogen combine with one of oxygen to form water. Although the valency of hydrogen is unvarying, it was held by Frankland that each atom had a maximum valency, and also various subordinate valencies. Carbon, for example, is tetra-valent, the maximum, in methane (CH_4). Helmholtz regarded chemical affinity as electrical in origin.

Valentia Island off the south-west coast of Ireland. There is a small harbour, and signalling and cabling stations. It is also an important centre for meteorological observations.

A member of the Annesley family was created **Viscount Valentia** in 1621. Arthur Annesley, the 11th viscount, was Comptroller of H.M. Household, 1898-1905, and a Member of Parliament for Oxford, 1895, until his death in 1927. His son Caryl succeeded him. The estate contains 7000 acres in England and Ireland, of which country Viscount Valentia is premier baronet.

Valentine Christian bishop and martyr under the Emperor Claudius, *c.* 270. Tradition keeps Feb. 14 as the date of his martyrdom. The ancient custom of sending valentines or love tokens on this day is a coincidence and is said to be a survival of Lupercalian customs, since the Lupercalia was held at about the same time of year.

Valentinian Roman Emperor (321-375). Rising in military rank, on the death of the Emperor Jovian

in 364 he succeeded him. He was very intolerant in religious matters, but he made wise and useful laws. He divided the empire into east and west, taking the west himself.

Valentinian II. (372-392) was the second son of Valentinian I. Three years after he began to rule he was murdered by Arbogastes, commander-in-chief of his army, and his ex-tutor.

Valentinian III. (419-455), the son of Constantius III., was Emperor of the West, being thus created by Theodosius II., Emperor of the East, in 425. He was weak and vicious, and was overruled, first by his mother, Placidia, and then by the eunuch, Heraclius. By his maltreatment of Bonifacius, he lost Africa to the Empire. In 455 he was killed by Maximus.

Valerian Perennial herbaceous plant (*Valeriana officinalis*) of the order *Valerianaceae*. The leaves are narrow and the broad clusters of tiny pink flowers are borne on stems several feet high. The root is used medicinally for nervous affections. Another variety, the small marsh valerian (*V. dioica*), has minute pink flowers and is found chiefly in boggy places.

Valerian **Publius Licinius.** Roman Emperor (193-260). He was elected by the legions in Rhaetia in 253, after Galba had been murdered. He had a very troubled reign, being threatened on every border. In 260 he marched against the Persians at Edessa under their king, Sapor, was defeated and taken prisoner, and tortured to death.

Valetta The capital of Malta. The main part of the city lies upon a spur of rock, which projects into the middle of a bay, dividing it into two harbours. The streets and houses are mainly of stone. There are many fine public buildings, such as the governor's palace, the opera house, museum, and the old lodges of the Knights of St. John, now used for clubs and offices. The Roman Catholic Cathedral of St. Giovanni, dating from 1576, contains some fine paintings and tapestries. Since the British occupation Valetta has been an important naval and military centre. General want and discontent, consequent upon the Great War, led to serious riots in June, 1919. Pop. 25,000.

Valhalla In Norse legend the great hall of Odin and the dwelling place of the souls of warriors slain in battle. The hall contains 540 great gates, through which they issue daily to engage in battle, returning at nightfall to feast with Odin and the gods.

Valkyrie In Scandinavian mythology, divine maidens who rode through the air, sword in hand, upon swift horses, to do Odin's bidding. They presided over battlefields to determine the course of strife or to select the bravest fighters for Valhalla. Here they ministered for them at feasts, serving them with ale or mead in skulls. Similarly named creatures (*waelcyryean*) were mentioned in early England, but were identified with witches.

Valladolid City and province of Spain. The city is extremely old, and was an ancient stronghold of the Moors, but it has been greatly modernised, possessing fine streets and buildings which set off its cathedral and university. Cervantes lived here, and Columbus died here. Linen, silk, woollen goods, pottery, leather and ironware are among the manufactures. Pop. (1931) 89,342.

Valladolid is also the name of a town of Mexico in Yucatan, founded in 1544, soon after the conquest.

Valleyfield City and port of Quebec. It stands on the south shore of the St. Lawrence, 43 m. from Montreal, and is served by canal and railway. Here are cotton mills. The chief building is the Roman Catholic cathedral, which was destroyed by fire in 1933. Pop. 9215.

Vallombrosa Summer resort of Tuscany, in Italy. Here and in surrounding villages are ancient monasteries, one of which, at La Verna, was founded by St. Francis in 1215.

The **Vallombrosians** are an order of monks founded in 1038 by S. John Gualbert at Vallombrosa; some 60 monks of this order still exist.

Valmy Village in the department of the Marne, France. At Valmy, in Sept., 1792, the Prussians, who were advancing to Paris to restore the dethroned Louis XVI., were heavily defeated.

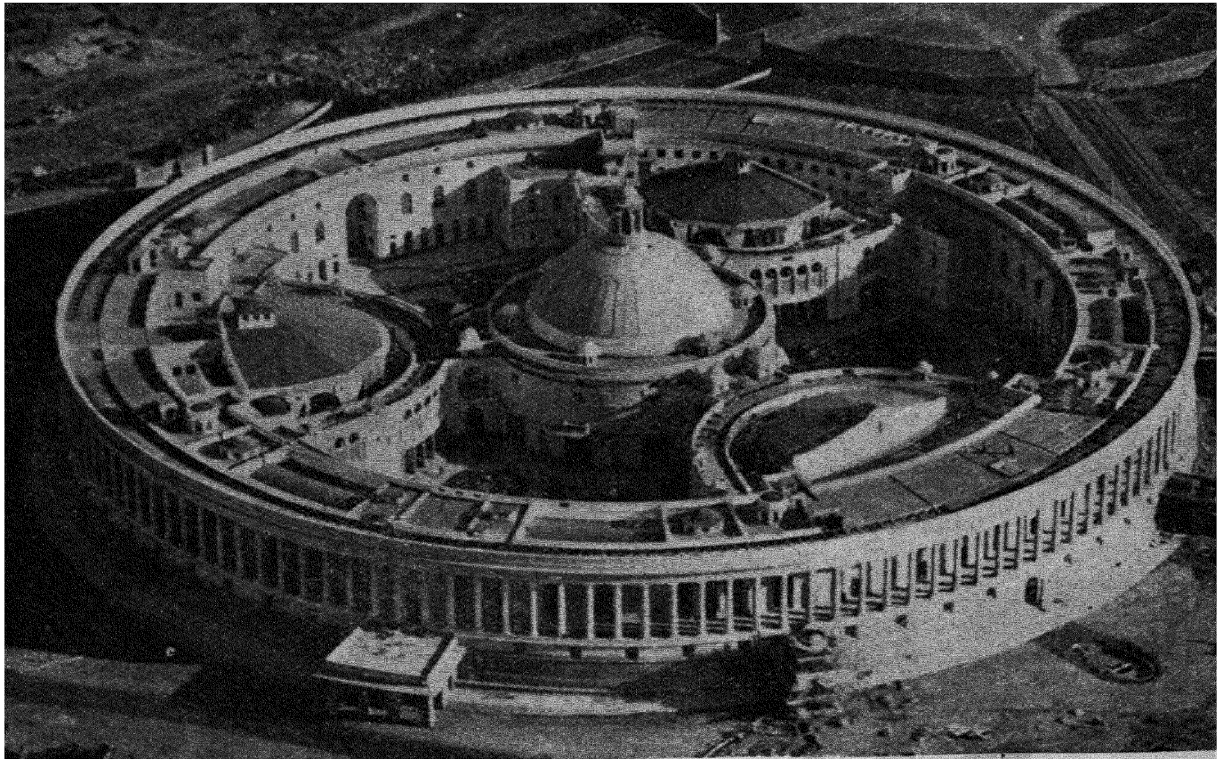
Valois French family, formerly a royal house of France. The name is that of a small town near Valenciennes. The Duchy of Valois formed part of the lands of the dukes of Orleans up to the Revolution. Members of the house of Valois were kings of France from 1328 to 1589. **Marguerite de Valois,** daughter of Henry II. and Catherine de' Medici, married Henry of Navarre, and was one of the best memoir writers of the 16th century. Henri de Valois (1603-76) is famous as a translator of Latin and Greek classics.

Valparaiso Province and city of Chile. The city, which possesses perhaps the most important harbour on the Pacific Coast of S. America, is a port of call for many lines of steamers plying between the United States and Europe. Valparaiso ("Paradise Valley") is most inappropriately named, its streets being narrow and dirty. It has had an eventful history, having been, at various times, captured by the English under Drake and Hawkins and sacked by the Dutch and Spanish. The city lies under the shadow of great volcanoes, and as late as 1906 a large part of it was destroyed. Pop. (1932) 189,117.

Value Term of political economy. It is not quite the same as price, which expresses value only in terms of money. Economists, who use the word a good deal, distinguish between value in use and value in exchange. Such things as water, air, comfort and friendship have a high value in use, but no value in exchange.

In music value is the relative length of a tone signified by a note; in painting it is the relation of one part of a picture to the others with reference to light and shade, but without reference to colour. Philosophers also use the word when referring to the relation of one desire to another.

Valve Contrivance devised for the regulation of the flow of a fluid through pipes, pumps, etc. There are many types of valves, some automatic in action, others regulated by hand or mechanically. Of the automatic type, a simple form is the flap or clack valve used in suction pumps, which consists of a metal plate with leather hinge. A stop valve, operated by hand, is raised by a screw spindle with a handle and passes through a stuffing box to obviate leakage. The slide valve used in steam engines is an example



THE COUNCIL CHAMBER, NEW DELHI

of the mechanically worked type. *See also* THERMIONICS.

Vampire Imaginary monster. The belief in vampires, or blood-sucking ghosts, is a very ancient one, and appears to have emanated from Eastern Europe. A vampire is alleged to be the soul of a dead man, which leaves the body by night in the form of a bat, bird or spider to suck the blood of the living, who slowly decline and die. The corpse of the vampire, however, remains fresh and life-like. The activities of vampires are supposed to be stopped by driving a stake through the corpse. Wizards, witches and suicides become vampires after death.

Vampire Bat Species of bat, of which two inhabiting S. and Central America were discovered by Darwin. It bites horses upon the withers, rendering them unfit for the saddle. The commoner type, *Desmodus rufus*, is some 3 in. in length, reddish-brown, with sharp teeth, and of forbidding aspect.

Van Town, lake and province of Asia Minor. The town, which is populated by Moslems and Armenians, lies about a mile from the lake. It is of ancient origin, dating from about 900 B.C. and contains numerous cuneiform inscriptions.

Lake Van is 5000 feet above sea-level, and contains many islands on which churches and monasteries are situated. The water is undrinkable, containing salts which are evaporated in pans.

Vanadium A rare earth, symbol V, atomic number 23, atomic weight 51.2. Discovered by Berzelius in 1831, the metal, which is of a light colour, belongs to the phosphorous group and has five oxides, V_2O, V_2O_2, V_2O_3, V_2O_4 and V_2O_5 to the last of which it burns in oxygen. It dissolves in nitric acid. Vanadium in small quantities improves the resistance of steel, and is used in the manufacture of motor car engines.

Vanbrugh **Irene.** English actress. The younger daughter of the late Prebendary Barnes of Exeter, she was born in 1872. She started her theatrical career at Margate, as Phoebe in *As You Like It*. She is a leading comedy actress, combining fine technique with great natural charm. Amongst her numerous parts have been Lady Rosamund in *The Liars*, Sophy Fullgarney in *The Gay Lord Quex*, Lady Mary Lazenby in *The Admirable Crichton*, and Belinda (1918). She toured the southern colonies in 1923-25, and again in 1927-29. She played in *The Swan* (1930) and as the Queen in *Hamlet* (1931).

Vanbrugh **Sir John.** English architect and dramatist. He was born in London in Jan., 1664, and educated in France. He became a leading figure in society and as an architect was responsible for the finishing of Greenwich Hospital (1695), Castle Howard in Yorkshire (1702), and Blenheim Palace (1705). As a dramatist, he collaborated in management with Congreve and wrote society plays, notably *The Relapse*, *The Provok'd Wife* (1697), and *The Confederacy* (1705). He died March 20, 1726.

Vancouver City of British Columbia. It stands on the south shore of Burrard Inlet. There is a legend that a Chinese settlement existed near the present site of Vancouver in A.D. 499, but it was not until the Canadian Pacific Railway completed its transcontinental line in 1886 that there was any real growth, and in less than 50 years it has grown to be the largest city in British Columbia. Splendidly laid out, with many large parks, it possesses buildings of the most modern type, and the C.P. Rly. has made it an important port for trading with Japan, China, New Zealand and Australia. It has a broadcasting station, (49.43 M.). Pop. (1931) 245,307.

Vancouver Island of Canada. Off the coast of British Columbia, it was discovered in 1592 by Juan de Fuca, and visited later by Capt. Vancouver and named after himself. It is 275 m. long and has an area of 20,000 sq. m. In 1849 it was proclaimed a British colony. The mainland, in these days, was generally known as New Caledonia. In 1858 the colony of British Columbia was created, and in 1866 the two colonies were united under that name; in 1871 it became a province of the Dominion of Canada. Victoria, the capital of British Columbia, and Esquimalt, a naval station, are both situated on the island, most of which is wooded. There are golf links and facilities for camping and every kind of sport.

Vandals Tribe which first appeared in eastern Germany. In A.D. 400 they began to move westwards, coming into contact with the Goths and Franks. Under Gunderic they crossed the Pyrenees, settling in Galicia and Andalusia; in 428, 80,000 Vandals under Genseric crossed to N. Africa where they slowly ousted the Romans. They formed bands of pirates and in 455 captured Rome by surprise, carrying off valuable treasures. Their cruelty to the Christians gave rise to the word **Vandalism.** Following their defeat by Belisarius, the envoy of Justinian, in 533 near Carthage, they slowly disappear from history.

Vanderbilt American family. The founder, **Cornelius**, was born on Staten Island, N.Y., May 27, 1794. At sixteen he ran a ferry between the island and New York City; this gradually developed into a coastal trade so extensive as to earn for him the nickname "Commodore." Abandoning shipping for railways, then being rapidly built, he acquired enormous and commanding interests. He died Jan. 4, 1877. His eldest son, **William Henry**, born May 8, 1821, acquired further extensive railway control and died Dec. 8, 1855, president of several railways. His eldest son, also W. H. Vanderbilt (1843-1899) followed in the family traditions.

Van de Velde Family of Dutch painters. Of these, **Adrian** (1639-72) excelled in pastoral scenes; he also painted religious subjects. **Jan** (1593-1642) left behind him over 400 engravings. **Willem** (1611-93) painted sea battles for the Dutch Government, accompanying the Dutch fleet during their war with the English. He and his son **Willem** (1633-1707) were later engaged by Charles II. and James I. to paint naval actions. Willem Sen. died in Greenwich, his epitaph recording that he was "a painter of sea fights to their Majesties." Willem Jun. was made court painter, and died in 1707.

Vandervelde **Émile.** Belgian statesman. He was born Jan. 25, 1866, near Brussels. In 1886 he joined the Belgian Labour Party, and soon became its leader. He entered Parliament in 1894. He was a member of the Cabinet during the World-War, and afterwards, as Minister of Justice effected many humanitarian and scientific reforms in the prison system. He was Minister for Foreign Affairs from 1925 to 1927. In 1925

he played an important part in negotiating the Locarno Pact. He has written on labour questions and on Marxism, and with his wife published *Le Pays d'Israel* (1929).

Van Diemen's Land Name given to Tasmania (*q.v.*) by the Dutch explorer, Tasman, who discovered it in 1642. It was renamed in 1853.

Van Dyck Sir Anthony. Flemish painter. He was born at Antwerp on the 22nd March, 1599. After studying under Rubens, he visited England in 1620 and painted a portrait of James I. From 1623 to 1628 he was in Italy painting portraits and religious subjects. Later he executed a series of portraits as engravings which won him fame as an etcher. Returning to England in 1632, he secured the patronage of Charles I., was knighted and appointed painter in ordinary. He painted the portraits of all the Royal Family, and many distinguished members of the court. Most of these pictures are now at Windsor Castle. He married Lady Mary Ruthven in 1639, and died on Dec. 9, 1641.

Vane Sir Henry. English statesman. Born in 1615, and educated at Westminster and Magdalen Hall, Oxford, he was early known for his republican and anti-Church sympathies. In 1635 he left England and became Governor of Massachusetts. He returned two years later and entered Parliament. During the Civil War he was the civil leader — "that in the state which Cromwell was in the field." After a quarrel with Cromwell he was imprisoned. Returning to public life after the Restoration he was beheaded on Tower Hill for high treason on June 14, 1662. He was a promoter of the Solemn League and Covenant, and author of *The Healing Question*.

Vanilla Flavouring material obtained from the seed pod of the vanilla plant (*Vanilla planifolia*). This plant is a native of Central America. It has green flowers and long slender seed pods, and belongs to the natural order of *Orchidaceae*.

Vaporisation Change of matter into the gaseous state. It occurs at all temperatures and continues until the vapour reaches the saturation pressure. Rise of temperature raises this pressure, until it equals the pressure of the atmosphere, when boiling occurs. At still higher temperatures the vapour behaves as a gas. Vaporisation cools the parent liquid and is assisted by a reduction of pressure, as by air in motion; hence the danger of draughts.

Vardar River of Yugoslavia and Greece. It rises in the north of the former country and falls into the sea near Salonika. It is about 200 m. long. There was a good deal of fighting along the Vardar in 1915 and 1918, the French and British here being in conflict with the Bulgarians. In Sept., 1918, the French and Serbians drove the Bulgars before them and entered Üsküb.

Vardon Harry. English golfer. Born at Grouville, Jersey, Aug. 9, 1870, he became professional at Ripon when 20. Between 1896 and 1914 he won the British Open Championship six times, the American Championship in 1900, and the German in 1911. He is the author of *The Complete Golfer* and *How to Play Golf*. Vardon, Braid, and Taylor were known as "the great triumvirate" of British golf.

Varennes Village of France. In the department of Meuse. Here Louis XVI. and his family were stopped in 1791 when they attempted to flee from the country. It is situated on the Aire, and was occupied by the Germans during the Great War.

Variation Term in biology for the degrees of difference in the characters often seen between a parent organism and its offspring, and representing deviations from the normal characters of the stock. Some of these variations are continuous, forming a graded series, others are discontinuous as where very unlike forms suddenly appear. These cases are termed mutations. Some variations are due to environment. Many secondary variations are now known to be due to dissimilarities in the functioning of the ductless glands. The theory of natural selection was based upon the gradual increase in continuous variations, but more recently mutations have been regarded as taking an important part in evolution.

Varicose Veins Dilated veins in the leg. They may be due to constitutional causes or to prolonged standing and walking, tight garters, or muscular strain.

Treatment.—Avoid garters, any pressure on the veins, and much standing or walking; relieve chronic constipation and any liver complaints; wear a light, porous, elastic bandage during the day. In young subjects an operation may be desirable. In the case of **Haemorrhage from the veins**, lay the patient down and raise his leg to a vertical position; apply pressure to the bleeding point with a knotted handkerchief until medical aid is obtained.

Variolite Basaltic rock. It occurs in the tertiary dykes in Co. Down, Ireland, the Point of Sleat in Skye and at Ardnamurchan, Argyllshire. It has a glassy matrix containing numerous fan-shaped, sheaf-like, or radiate aggregations of felspathic fibres, that assume in some types the form of large pea-like spherules.

Varna Bulgarian port. On the Black Sea, it is the third city of the country, ranking after Sofia and Philippopolis. In Varna is the summer palace of the King of Bulgaria. The exports include grain and wine. Varna was the headquarters of the Allies in the Crimean War, and was ceded to Bulgaria by the Treaty of Berlin (1878). Pop. (1926) 60,563.

Varnish Decorative and preserving substance for wood, etc. There are two main kinds. **Spirit varnish**, in which various resinous substances are dissolved in spirit, and **oil varnish** in which oil is the dissolving agent. Shellac, mastic and the like are used for spirit varnishes, while for oil varnishes the more usual resins are amber or copal.

Varnish Tree Tree which flourishes in China (*Aleurites cordate*). The seeds of this tree contain lac, a resinous secretion exuded by certain insects, to which the tree owes its name.

Varus Publius Quintilius. Roman general. He was consul in 13 B.C., and afterwards Governor of Syria. In A.D. 6 Augustus sent him to command the Roman forces in Germany. He was ambushed by Arminius the German chief, and was routed with three legions, whereupon he killed himself.

Vascular System Biological term for the system of channels in animals and the higher plants by means of which nutrient materials are supplied to the various parts, and waste matter, in animals, is removed from the tissues. In man, blood is circulated through

thick-walled arteries by the heart, returning through thinner-walled veins, the two sets of channels being connected by a network of fine capillaries in the tissues.

Vatican Pontifical palace, Rome. In size it is the greatest palace in the world, covering an area of 1151 ft. by 767 ft., and containing over 4000 rooms, 8 grand staircases, as well as numerous courts, gardens and halls. Pope Gregory XI., on his return from Avignon in 1377, chose the place as his residence, and ever since that date it has remained the home of the popes and the centre of the Roman Catholic Church, including within its area all the offices of Papal government.

One pope after another has tried to outdo his predecessors in making this palace the largest and most beautiful in the world. The Sistine Chapel, where the pope is crowned, erected under Sixtus IV., in 1473, is famous for its masterpieces by Michelangelo. The grand corridor of the Vatican Library is the longest room in the world, over a fifth of a mile in length. The library itself is estimated to contain some 220,000 volumes including many ancient manuscripts. Among its treasures is the famous *Codex Vaticanus*, a Greek Bible dating from the 4th century.

The Lateran Treaty between Italy and the Holy See was ratified here in 1929. By it the state of **Vatican City** came into being. The succession of the Papal States was ruled over by the pope until 1870; it has an area of 108 acres in Rome and possesses certain buildings and estates outside its walls. Foreign powers are specially represented at the court of the Vatican, and the city has its own railway station, postage stamps, coinage, flag, etc. It has a broadcasting station (50.26 M., 10 kW. and 19.84 M., 10 kW.). Pop. (1932) 1025.

Vauban **Sebastian le Prestre de.** French soldier and military engineer. Born on May 15, 1633, near Avallon, he served in the French army in Spain, under Condé, and in 1658 he was France's chief engineer under Turenne. He directed thirty-five successful sieges, erected thirty-three forts, and refortified three hundred. After the Peace of Ryswick in 1697, he studied politics, and in 1707 published his *Dime Royal*, a project for equality of taxation. His scheme was condemned by Louis XIV. He died March 13, 1707.

Vaudeville Originally a popular song with topical allusions. Today it describes a play interspersed with dances and songs, usually humorous, which are introduced incidentally.

The **Vaudeville Theatre** is in the Strand, London, nearly opposite Charing Cross Station.

Vaudois Alternative name for the Waldenses *(q.v.)*.

Vaughan **Charles John.** Cleric and schoolmaster. He was born in St. Martin's Vicarage, Leicester, in 1816, educated at Rugby, under Dr. Arnold, and graduated from Trinity College, Cambridge, with high honours in 1838, becoming a Fellow in 1839. After three years as Vicar of St. Martin's, Leicester, he was headmaster of Harrow, 1844-59, then Vicar of Doncaster. From 1869-94 he was Master of the Temple; in 1879 he was made Dean of Llandaff. He died Oct. 15, 1897.

Vaughan **Henry.** British poet. He was born in Breconshire, April 17, 1622, went to Jesus College, Oxford, in 1638, and in 1646 published his first poems, "with the tenth Satyre of Juvenal Englished." He took a medical degree, and practised at Brecon. He published pious meditations, *Silex Scintillans* in 1650-55, and in 1652 *The Mount of Olives*, devotions in prose. In 1678, *Thalia Rediviva, the Pastimes and Diversions of a Country Muse*, which consisted of elegies, translations, and religious poems, was published. He died April 23, 1695.

Vaughan **Herbert.** English cardinal. Born on April 15, 1832, at Gloucester, and educated at Stoneyhurst and Rome, he entered the priesthood in 1854, and became Bishop of Salford in 1872. He was made Archbishop of Westminster in 1892, and became a cardinal a year later. He founded St. Joseph's College for foreign missions at Mill Hill, and was the owner of the Catholic papers, the *Tablet* and the *Dublin Review*. He died on June 19, 1903.

Vaughan-Williams **Ralph.** British composer. Born Oct. 12, 1872, he was educated at Charterhouse and Trinity College, Cambridge, taking his Mus. Bac. in 1894, and his Mus. Doc. in 1901. His works include *A London Symphony*, *A Sea Symphony*, as well as an opera, *Hugh the Drover* (1924), notable songs, hymns and other church music. A new piano concerto was produced in 1933. He was a prime mover in the Leith Hill Musical Festival.

Vault Primarily an arched roof. It is much used in architecture. Groined vaulting is found in Norman buildings and ribbed vaulting is a feature of Gothic architecture. The word came to be used for an underground chamber, owing to its arched roof, and so for the places where wine is stored and the chambers in which dead bodies are buried.

A **vault** also means a leap, and for this purpose a device called the **vaulting horse** is seen in gymnasiums.

Vauxhall District of London. It is on the south or Surrey side of the river in the borough of Lambeth and is a busy industrial district, on the S. Rly. **Vauxhall Park** is an open space and a bridge crosses the Thames here. **Vauxhall Gardens** was a popular pleasure resort from about 1670 until it was closed in 1859. The name is a **variant** of Faulkes Hall, or Fulkes Hall.

Vedas Ancient writings of the early Hindus. The word veda means knowledge, and the ancient Vedas were supposed to be due to divine revelation. The Vedas, which comprise precepts, hymns and poems, have been called the "Hindu Iliad."

Veddas Primitive people of Ceylon: they were the true aborigines. They are now confined to the south-eastern part of the island. Practically dwarfs, they are a shy, harmless folk, dwelling in caves. They are monogamous, a trait very rare in such tribes. Their worship consists of rude dances to scare away demons.

Vegetable General term for plants, and specifically those edible by man or beast. A further distinction can be made between vegetables and fruits. Herbs are a type of vegetable. These are mainly a dwarf perennial plant, such as parsley, mint, marjoram, basil, rue, hyssop and thyme. Other vegetables can be divided into Tap Roots (carrots, turnips, parsnips); Tubers (potatoes, Jerusalem artichokes); Bulbs (onions); Buds (lettuce, cabbage, broccoli); Leaf Stalks (celery, etc.). Gourds, *i.e.*, marrows and

pumpkins, are popularly known as vegetables, but, containing seeds, are properly fruits.

Vegetable Marrow The commonest of the gourds. Marrows demand a warm situation and rich soil. The fruit is of oblong-elliptical shape, of some 9 in. long, though some varieties are some 18 in. in length. When young, they are pale-green, but become light-yellow on ripening.

Vegetarianism Term used for abstaining from eating meat. The word came into use about 1847, and is applied to the practice of living on foods from which fish, flesh and fowl are excluded. Some sects even deny themselves all animal products, such as milk and eggs, and confine their food to nuts, fruits and cereals. The commonest grounds adduced are those of health (in so far as diseases of animals are communicated to consumers of their flesh), economy, and kindness to animals. There are vegetarian societies and restaurants.

Vein Blood vessel which returns impure blood from the capillaries towards the heart, motion of the blood being secured by the pressure of moving muscles and the force from the arterial system. The venous system may be divided into three classes : (*a*) general venous system including facial, jugular, abdominal veins and veins of the thorax ; (*b*) pulmonary veins which emerge from the lungs, bringing back oxygenated blood to heart, (*c*) hepatic portal system which drains blood from the stomach and intestines.

Velasquez **Diego de Silva y.** Spanish painter. He was born June 1599, in Seville, and studied under Herrera and Pachcco. His earliest success was the "Water-Seller." Philip IV. made him his private painter, and he painted many portraits and studies of court life. He visited Italy twice.

Examples of his work are "Christ in the House of Martha," in the National Gallery, and the "Boar Hunt," and portraits of Philip IV. His pictures are admirable in colour and relief, and he is the most powerful and original Spanish painter. He died Aug. 6, 1660.

Vellum Parchment made from the skin of a newly-born calf or kid. Vellum was formerly the recognised surface for writing and was also used in such articles as fans. To-day it is employed in book binding and percussion instruments. As a medium for writing it has been entirely replaced by paper.

Velvet Silk fabric. It is woven with a short, thick pile on one side only. In mediaeval times Genoa was the source of the finest velvet, with some other Italian cities as the next producers. In modern times much of the trade has passed to Lyons. Velveteen, although very similar in appearance, is a cotton fabric, or at best a mixture of silk and cotton.

Vendée Maritime department of Western France. The principal towns are La Roche-sur-Von and Sables d'Olonne, while Poitiers and Maillezais are of historical interest. Wars of the Vendée were counter-revolutionary risings of 1793 in France. Discontented peasants joined by some of the émigrés, succeeded for a while in withstanding the republicans, but they were annihilated at Le Mans (Dec., 1793).

Vendetta Feud between private individuals. It refers to the practice of the relatives of a murdered man taking vengeance on those who killed him, the feud being kept up perhaps for generations. Something of the kind prevailed among the clans in the Highlands of Scotland, and more recently in Italy, especially in Corsica.

Vendôme Town of N. Central France, 20 m. N.W. of Blois. The town contains many fine old churches and was formerly the Gallic Vendocium. The Abbey of the Trinity was one of the most important early Christian Churches, and claims to possess a tear shed by Christ at Lazarus's tomb. Paper and gloves are manufactured at Vendôme. **Louis Joseph, Duc de Vendôme,** was one of the greatest generals of Louis XIV.

Venereal Diseases Diseases arising from infection generally contracted during sexual intercourse, including gonorrhoea, local ulcers and syphilis (*q.v.*). In the two former the attack is localised in the parts affected ; in syphilis the whole system is involved. Immediate medical attention is necessary. Treatment of syphilis by arseno-benzol compounds has been developed with success in recent years. The prevention of, and treatment for, these diseases is receiving the attention of authorities in many countries by the establishment of centres for treatment, provision of properly tested remedies, and by educational means.

Venezuela Republic of S. America. The United States of Venezuela are bounded N. and E. by the Carribean Sea and the Atlantic Ocean, and on the S. and W. by Colombia and Brazil. More than half of the country, south of the Orinoco, consists of tropical forest. The rest is made up of immense grassy plains, known as llanos, while in the more northerly regions are the Andes and the Orinoco area. The valleys of the mountain district comprise some of the most fruitful and most densely populated parts of the republic. The climate varies. The lowlands are very hot ; the hill country is temperate ; and in the Andine regions the cold is severe. The Carribean coastland is cooled by the trade winds. Coffee, cocoa, sugarcane, maize and cotton are grown. The plains produce good pasturage. Forest products include rubber, balata, and vanilla. Among the minerals found are petroleum, asphalt, gold and copper. There are some pearl fisheries. The capital is Caracas, other towns including Maracaibo and Valencia. Spanish is the language used. The population is a medley of European, Indian, and negro blood. A Spanish possession from 1550, Venezuela revolted in 1810 and finally secured her independence in 1830. The area is 393,976 sq. m. Pop. (1930) 3,216,000.

Venice Seaport of Italy, capital of the province of the same name. It is situated on the Adriatic Sea, and, being built on some 80 islets of the lagoon, is raised mostly on piles, while canals are the main thoroughfares.

The ancient republic of Venice was a maritime power of great importance until the capture of Constantinople by the Turks in 1453, and the discovery of the Cape route to the Indies, which diverted trade from the Mediterranean. Its independence came to an end in 1797, when Napoleon gave the city to Austria. In 1866, after the defeat of Austria by Prussia, Venice became part of United Italy.

The city, which is divided by the Grand Canal, has many famous buildings, including the Palace of the Doges, the cathedral of St. Mark, the Bridge of Sighs, numerous Gothic

and Renaissance churches, guildhalls and campanili. Byzantine architecture is a feature of the city. Other notable buildings are the Arsenal, and the libraries including that of San Marco. To the S.E. is the Lido, a famous watering place. The modern harbour is large and well equipped. Industries include the manufacture of glass, for which Venice is famous, tapestry, brocades, laces, etc. Pop. (1931) 256,144.

Venison Flesh of the deer. In olden days it was a popular article of diet, and there was a deer park round most great houses. It is eaten to-day, but to a much smaller extent.

Venizelos Eleutherios. Greek statesman. He was born on Aug. 23, 1864, near Canea in Crete, and educated at Canea, Syra and the University of Athens. He practised as a barrister in Crete. Entering politics, he became a deputy in the Cretan Assembly in 1888, and took part in the Cretan rising in 1896, becoming president of the Assembly in 1897, and Minister for Foreign Affairs. He led another insurrectionary movement in 1901. In 1909 he went to Athens, and became Prime Minister of Greece in 1910. At the outbreak of the Great War his sympathies, contrary to those of his sovereign, were with the Allies, and he resigned in 1915. After the dethronement of King George in 1917, he was again Prime Minister until 1920. He held the office again in 1924, and almost uninterruptedly from 1928 to 1932.

Vennachar Loch in Perthshire. It is near Callander and is 4 m. long. The river Teith flows through it.

Ventilation The means by which a free circulation of air is maintained in houses or other buildings to secure proper healthy conditions. This is secured in houses usually by an adequate room space, open windows, and the draught from fires, etc., the art of ventilation being to ensure free circulation of air and equable temperature without draughts. In factories, mines, crowded halls, etc., where poisonous fumes are present or the oxygen content may become low, systems of ventilation specially studied and built are required. Ventilation is important also for the preservation of perishable goods and other materials.

Ventnor Pleasure resort and urban district of the Isle of Wight. It is 12 m. from Ryde, on the S. Rly. Near the town are St. Boniface Down, Bonchurch and other beauty spots. Pop. (1931) 5112.

Ventriloquism The art of making sounds so that they appear to come from a distance, and not from the speaker's own mouth. The name indicated that this gift was thought to be due to some use of the stomach while breathing. Actually, it results when the mouth is but slightly opened, and only the tip of the tongue moved. Ventriloquism is an ancient art, and it has been suggested that various phenomena, such as oracles and Egyptian speaking statues, owed their explanation to the mastery of this practise by priests.

Venus Goddess of Roman mythology. She was regarded as a representation of beauty and growth in nature, particularly, the Romans considered, as applied to gardens. Her two temples in Rome had the same dedication day, which coincided with the Vinalia Rustica, and gives added significance to the theory that she was especially the goddess of human cultivation. Her identity was eventually merged with that of the Greek Aphrodite, under which form she assumed patronage of human love.

Venus Planet of the solar system having its orbit between the earth and Mercury. It has nearly the same diameter as the earth (7700 miles), its year consists of 224·7 days, and its distance from the sun is 67,200,000 m. Venus is the most brilliant of the planets and exhibits phases like those of the moon, showing, when at its brightest, a brilliant crescent form. Its surface is obscured by dense clouds, but probably the atmosphere is similar to our own. Transits of Venus across the sun are important as a means of measuring the solar parallax, though more efficient means of achieving this object are now available.

Venus's Looking Glass (*Specularia speculum*). Annual herbaceous plant of the order *Campanulaceae*. It is about 12 in. in height with vivid purple flowers and narrow lanceolate leaves, and is easily grown from seed planted in a light sunny position.

Vera Cruz City and seaport on the Gulf of Mexico. It dates from 1520, following the advent of Cortes. The port suffered so severely from the depredations of pirates, that the fort of San Juan de Ulna was constructed on one of the reefs in the bay. Coffee, tobacco, sugar, rubber and minerals are exported. Pop. (1930) 70,000.

Verbena Genus of shrubs, mostly native to America. It ranges in colour from white, rose, carmine to violet and purple, and occurs in clusters of long spiky flowers. It was formerly used in the composition of charms and love-philtres. One variety is known as lemon-grass and yields a fragrant oil.

Verderer (Lat. *viridis*, green). Name used for one who looked after one of the king's forests. To-day verderers are still appointed in the New Forest and the Forest of Dean, where they are the representatives of the commoners of the forest.

Verdi Giuseppe. Italian composer. Born at Roncole, Oct. 10, 1813, after studying at Milan, he produced his first opera, *Oberto*, in 1839. His first success was scored with *Nabucodonoser* (1842) and his most famous contributions to the Italian school of opera are *Ernani* (1844), *Rigoletto* (1851), *Il Trovatore* (1852), and *La Traviata* (1853). *Aida*, produced in 1871, is of a different type, and shows the influence of Wagner. His work is highly dramatic and theatrical, and owes its popularity to this and to its notable rhythm, which makes it particularly effective in performance. He also wrote the great *Manzoni Requiem* in memory of his author friend, Alessandro Manzoni. He died at Milan on Jan. 27, 1901.

Verdict Finding of a jury at a trial. It is pronounced by the foreman after the jury has returned to court from considering the matter. In English law a jury must return a unanimous verdict of either guilty or not guilty, if unable to do this it is discharged and another jury sworn in for a new trial. In Scotland a jury can return an intermediate verdict, one of non-proven.

Verdigris A green deposit formed on copper by exposure to air. Unlike iron rust, it will protect the metal and prevent further corrosion. This deposit is a

basic copper carbonate. Verdigris is used as a paint in dyeing and calico printing. It is used in an ointment for warts. It is an irritant poison, and hence, copper utensils are not frequently used in cooking.

Verdun Town of N.E. France. It was the Roman Verodunum. Its bishopric dates from the 3rd century, and after being destroyed by the barbarians, the town was rebuilt at the end of the 5th century. After the revolution of 1789 the citizens opened the gates of the city to the Germans. It also capitulated to the Germans in 1870. In the Great War Verdun, which was the scene of terrific fighting, suffered heavily.

The town lies upon the Meuse, and is surrounded by a bastioned rampart, pierced by four gates. It possesses a cathedral and its 17th century hôtel-de-ville contains a museum. Its industries include metal founding, manufacture of sweetmeats, machinery, nails, chairs and linen. It lies on a canal, and its canal port has trade in agricultural produce and timber.

Vereeniging Town of the Transvaal. It is on the Vaal River, 50 m. from Johannesburg, and 964 from Capetown, with which it is connected by railway. Near are coal mines. Its industries include brick making and flour milling. Here a great barrage has been built to provide water for irrigation purposes and for generating electric power. Pop. (White) 700.

Being a border town, with the Transvaal just across the river, Vereeniging was chosen for the Peace Conference between the British and the Boers in 1902. The treaty signed on May 31 provided for the annexation by Britain of the two republics, the Boers receiving £3,000,000 as compensation for the burning of their farms.

Verlaine **Paul.** French poet and decadent. Born at Metz, March 31, 1844, he chose French nationality in 1873. He wrote *Poèmes Saturniens* (1865), *Les Fêtes Galantes* (1869) and *La Bonne Chanson* (1870), and then for twelve years led a life of dissipation, broken by illness. In 1881 *Sagesse* appeared, verse showing sweetness and sanity. He afterwards wrote *Amour* (1885), *Bonheur* (1889) and *Parallèlement* (1890). He died Jan. 8, 1896.

Vermeer **Jan.** Dutch painter. He was born at Delft, Oct. 31, 1632. He probably studied under Karel Fabritius, a pupil of Rembrandt. He was master of the Guild of Painters of Delft in 1662 and 1670. He was forgotten until 1866, when he was "discovered" by Theophile Thore, the French critic, and Vermeer is now considered the most perfect in technique of the Dutch masters. Among his works are "Street in Delft," "The Pianist," "The Lace-maker," "The Woman with a Water-Jug." He died Dec. 15, 1675.

Vermicelli Paste of flour obtained from the harder species of wheat. It is pressed through fine tubes into a thin thread-like shape. It is used in soups, or like macaroni as a food stuff.

Vermin Word used for a noxious animal, or one destructive to crops and game. Rats, mice, moles, foxes, polecats and weasels are vermin. In Great Britain, by a law passed in 1919, persons who fail to destroy rats and mice on their land, wherever it is reasonably possible to do so, can be prosecuted and fined. The word is also used for lice, fleas and other insects that infest dirty persons and articles. Persons infested with vermin can be taken to a public station and cleansed if a magistrate's order is obtained.

Vermont State of the United States. One of the New England states, is in the N.E. of the country and its area is 9564 sq. m. Montpelier is the capital. It is almost wholly an agricultural area, and produces a great quantity of maize, wheat, oats and barley. It is also famous for its cattle. Another product is sugar, and a good deal of lumber is cut. The government of the state is under a legislature of two houses; two senators and one representative are sent to Congress. Vermont became a state in 1791. Pop. (1930) 359,611.

Vermouth Liqueur prepared from distilled white wines. It is flavoured with wormwood, oranges and other bitter or aromatic ingredients and sweetened with white sugar. It is made in France, and also in Italy, chiefly in Turin. The Italian vermouth is slightly more potent than the French variety.

Verne **Jules.** French writer. Born at Nantes on Feb. 8, 1828, he went to study at Paris where his talent manifested itself in librettos and comedies. He was inspired on hearing stories from traveller friends, to write the tales of travel for which he is famous. Among the best known are *Round the World in Eighty Days* and *Twenty Thousand Leagues under the Sea.* His novels have been widely translated, and he has done much to popularise scientific knowledge. Owing much to Swift and Defoe, his influence may be traced in the works of Wells and Rider Haggard. He died March 24, 1905.

Vernet Name of a family of French painters. **Claude Joseph Vernet** was born at Avignon, Aug. 14, 1714, and studied art in Rome where he lived for 20 years. Later he worked in Paris for Louis XV. and Louis XVI. and there he died Dec. 3, 1789. His son, **Antoine Charles Horace Vernet**, born in 1758, painted battle scenes for Napoleon, but is best known as a painter of horses. He died in Paris, Nov. 17, 1835. His son, **Emil Jean Horace Vernet**, born in 1789, was also a painter of battle scenes. From 1828-34 he was director of the French school of art in Rome. He died in Paris, Jan. 17, 1863.

Vernier **Pierre.** French scientist. Born at Ornans near Besançon in 1580, his most famous invention, the vernier, consists of a small movable scale, running parallel with a fixed scale of a theodolite or barometer, and is used for measuring a fractional part of one of the equal divisions on the fixed scale. He died in 1637.

Verona Capital of the province of Verona, Italy. Verona is an extremely ancient city. Its cathedral was consecrated in 1187, while it contains numerous palaces, castles and a Roman amphitheatre. It is also rich in paintings and sculptures. The Congress of Verona, held on Oct. 20, 1822, was based on principles laid down by the Treaty of Paris (1815). Here Great Britain, by her policy of non-intervention in Spain, broke away from the Great Alliance of Russia, Prussia and Austria.

Veronal (or **diethylbarbituric acid**). White powder, possessing a bitter taste. As a drug it is used in treatment of heart, lung and kidney diseases and other nervous diseases associated with sleeplessness. Although a very slow poison, its excessive use

has caused many deaths among sufferers from insomnia.

Veronese Paolo. Venetian painter. Born in 1528 at Verona, after working there and in Mantua, he settled in Venice in 1555, where he made wealth and earned fame. He visited Rome in 1563, and that gave greater dignity and grace to his work, which was always rich in colour and noble in design.

His best known work is "Marriage Feast at Cana" now in the Louvre, and others are "The Feast of Simon" and "The Triumph of Venice." He died April 19, 1588.

Ver'onica Christian saint. She is alleged to have been a woman of Jerusalem who, as Jesus was bearing the Cross to Golgotha, offered him her handkerchief to wipe his brow. The image of His face became impressed upon it. She may also have been she whom Christ healed of an issue of blood (Matt. ix. 20).

Veronica Genus of plants, shrubby and herbaceous, of the order *Scrophulariaceae*. The flowers are in all shades of violet, mauve, blue, and white. *Veronica longifolia*, a popular garden variety is about 2 ft. high and bears spikes of blue flowers. *V. spicata*, 18 ins., has varieties bearing rose, blue or white blooms, and another *V. ruprestris* is of dwarf growth, more suitable for the rock garden. *V. chamcedrys*, the germadder speedwell, is the best known of the 16 British species, and is often called Bird's eye, or Cat's eye. The tiny flowers are a brilliant blue. *V. agrestis*, the field speedwell, has small blue blooms with a white lower petal.

Verrocchio Andrea del. Florentine artist. His real name was Cione. He was born in 1435 and worked under Donatello. Though specially distinguished as a sculptor, he was also goldsmith, architect, painter and musician. His most famous work is the bronze equestrian statue of Colleoni at Venice. Leonardo da Vinci was his pupil. He died in 1488.

Versailles French town. It is situated 11 m. S.W. of Paris and is chiefly famous for its royal palace. Erected by Louis XIII., it was enlarged by Louis XIV. The palace is remarkable for its massive proportions and vast extent (on the garden side the façade is 520 yds. long).

Here King William of Prussia was proclaimed German Emperor in 1871. Here too, was signed on June 28, 1919, the **Treaty of Versailles** which fixed the terms of peace after the Great War. It contained 15 parts. Part I. dealt with the Covenant of the League of Nations (*q.v.*); II. and III. with territorial dispositions, Germany losing Alsace and Lorraine to France, several frontier districts to Belgium, part of Schleswig to Denmark, lower Silesia to Poland, the Memel district to Lithuania, while the banks of the Rhine were demilitarised and the Saar basin was placed under an international commission. By Part IV. Germany ceded all her colonial possessions to the chief Allied Powers, and by Part V. her armaments were drastically restricted. Part VII., dealing with penalties remained a dead letter; Parts VIII. and IX. dealt with Reparations (*q.v.*) and finance. Part X. with economic restitution, commercial treaties, shipping, etc.; Part XII. with ports, waterways and railways. Part XIII. provided for the setting up of an international labour organisation. Part XIV. provided for military occupation of the Rhine zone by the Allies. The other parts dealt with prisoners, war graves, aerial navigation and miscellaneous technical points. In Europe Germany lost 27,250 sq. m. and about 6½ millions in population, as well as most of her iron and minerals; abroad she lost 1,128,000 sq. m., with a population of over 13 millions.

Vertebrata A branch of the animal kingdom, comprising mammals, birds, fishes and reptiles, or those creatures with vertebrae or backbone; actually, such a division is faulty, since many invertebrates possess an unjointed rod, the notochord, which is an embryonic spine. Other characteristics are jaws as part of the head, nervous system separated from body cavity, and never more than four limbs disposed in pairs.

Vertigo Dizziness or a sensation of giddiness. It is a symptom of certain ear and general systemic diseases.

Verulam City of Hertfordshire, now called St. Albans. Offa, King of Mercia, built a Benedictine abbey here in 793; it was rebuilt in 1077, and in 1877 was made the cathedral of the newly-formed diocese. St. Albans was the scene of the opening battle of the Wars of the Roses (1455) and of another in 1461. There is a monument to Francis Bacon, Lord Verulam and Viscount St. Albans in S. Michael's church. The present earldom of Verulam dates from 1815.

Very Light Firework that throws a light as a signal, or to illuminate a dark area. It resembles a cartridge and is fired from a pistol. It is named after Samuel W. Very who, in 1877, invented a method of firing coloured balls from a pistol to serve as signals. Very lights were much used during the Great War.

Vespasian Roman emperor. Born Nov. 18, A.D. 9, he served in Britain under Aulus Plautius and reduced the Isle of Wight. He was Consul in 51, governor of Africa in 63, waged war in Judaea in 66. In 69 he was declared emperor and seized Rome from Vitellius. He led a simple life and under his rule literature flourished, while Agricola took North Wales in 78. He died June 24, 79.

Vespers In the Roman Catholic liturgy, the sixth of the seven "hours" which make up the daily office. It is generally recited between the hours of 4 and 6 p.m. The office contains five Psalms, a short lesson, versicle and responses, a hymn, the Magnificat and the prayer of the day. The service is derived from the nocturnal vigil of primitive Christian assemblies. It corresponds to the Evensong of the Anglican Church.

Vespŭcci Amerigo. Italian explorer. Born at Florence, March 9, 1451, he became a provision contractor, and provisioned one or two of the voyages of Columbus. When fifty years old he organised a voyage to the New World by the same route as Columbus. Sailing under the commandar Hojeda, he explored the coasts of Venezuela. His name, Amerigo (America), was given to the two continents through the erroneous belief, fostered by the letters he wrote, that he had reached and discovered the mainland in 1497, the year before Columbus. He died Feb. 22, 1512.

Vesta Roman divinity, identified with the Greek goddess, Hestia. She was worshipped as the goddess of the hearth in a

temple erected by Numa between the Capitoline and Palatine hills. Here the goddess was represented not by a statue, but by the eternal fire kept burning by the **Vestal Virgins**, her priestesses. Their term of office was thirty years, ten of which were set apart for learning the duties, ten for actual ministration, and ten for teaching the neophytes. They were six in number and carried out their duties under the control of the pontifex, who had authority to punish by death the violation of the vow of chastity, which each took on her appointment.

Vestment Ceremonial garment worn by priests, clergymen and others performing religious offices. The use of vestments in Christian churches dates from an early period, but is not directly connected with the vestments of the Jewish priest. The vestments worn by a Roman Catholic priest for Mass are : amice, alb, girdle, stole, maniple, chasuble. In the Anglican Church the vestments are the cassock, the surplice and the stole.

Vestry Room attached to a church, in which vestments are kept. Hence it came to mean a meeting of the ratepayers of a parish held in this room for the transaction of parochial business. The vestry is responsible for the management of church property, the election of church-wardens, etc. It now exists for ecclesiastical purposes only, having been deprived of other functions by the Local Government Act of 1894.

Vesuvius Volcano east of the Bay of Naples, Italy. It stands some 4000 ft. above sea level, but its height varies. At one time it was probably much higher than at present, but during a gigantic eruption the upper half of the cone was blown away. Its volcanic nature was unsuspected by early settlers around its base, until in 79, a tremendous explosion destroyed Pompeii and Herculaneum (*q.v.*). Slight activities have since been frequent until as recently as 1906. An electric railway now plies from Naples to the edge of the crater.

Vetch Plant belonging to the genus *Vicia*, sometimes known as tares. Certain vetches, loosely named, belong to other genera, *i.e.*, horse-shoe Vetch (*Hippocrepis*), and milk-vetch (*Astragalus*). The vetches are reddish-purple, annual herbs and form a valuable forage crop.

Veterinary Surgeons Surgeons specialising in the treatment of domestic animals. To the French belongs the honour of being pioneers in veterinary science. The first veterinary college was established at Lyons, in 1762, and it was a Frenchman, St. Bel, who founded the London College in 1790. To-day the veterinary surgeon has a high professional status, and the growth of the public concern about the health of domestic animals has brought about an increased demand for his services.

Both men and women are eligible for the profession of veterinary medicine. The Diploma of M.R.C.V.S. is the only recognised qualification, and the course of training must be taken at one of the five colleges affiliated to the Royal College of Veterinary Surgeons, viz. : The Royal Veterinary College, Camden Town, London, and the Veterinary Colleges of Edinburgh, Glasgow, Liverpool and Dublin. The course occupies five years, after the passing of a recognised matriculation examination. Veterinary students may also take the university degrees of B.Sc. and D.Sc. in Veterinary Science at the Universities of London, Edinburgh and Liverpool.

While the treatment of farm animals—horses, cows, pigs and sheep—is mainly carried out by men, a few women have taken up the treatment of the smaller domestic animals. There is an unsatisfied demand for highly trained veterinarians for Government services at home and in the colonies, and Government scholarships are available to suitable applicants. All particulars can be obtained from the R.C.V.S., 10 Red Lion Square, London, W.C.1.

Veto Act of forbidding or stopping. It is chiefly used in connection with legislation. In the British Empire the king emperor has in theory the right of vetoing, or refusing to assent to any piece of legislation, but the right has not been exercised since the times of Anne, and is regarded as obsolete. The president of the United States possesses a limited right of veto. The right possessed by the House of Lords and other second chambers of refusing to assent to a measure is not, strictly speaking, a veto.

Vevey Pleasure resort of Switzerland. It is on the north shore of Lake Geneva, 11 m. from Lausanne, and is a calling place for steamers. The buildings include an old tower.

Viaduct Elevated way. It is usually built on arches to carry a road or railway across a valley. An example in London is the Holborn Viaduct. There are a number along the railway lines of Great Britain.

Viaticum In the Roman Catholic church the eucharist as reserved for the dying. The word is also used for a portable altar employed by the priest on these occasions.

Viborg Town of Jutland, Denmark. Its cathedral dates back to 1130, and its museum possesses relics of the Stone, Bronze and Iron Ages. Capital of province of the same name, standing on the Bay or Viborg, Finland. It is the seaport of Karelia and its pleasant scenery attracts tourists from Finland and Leningrad. It has a broadcasting station (291 M., 13.2 kW.). Pop. (1930) 56,295.

Vicar The word meaning a delegate or deputy (Lat. *vicarius*). In the ecclesiastical sense it denotes an incumbent who is the deputy of the rector, the latter being entitled to a share of the emoluments of the incumbency. By an Act of 1868 all incumbents who are not rectors are entitled to be called vicars, if they are duly authorised to officiate at weddings, etc.

Vicar-General Ecclesiastical official. In the Church of England the term denotes the assistant employed by the Archbishop or bishop to help in an ecclesiastical visitation. In the Roman Catholic Church the vicar-general performs the duties of an archdeacon, especially assisting the bishop in matters of jurisdiction.

Vice Tool used for holding a piece of wood or metal firmly. It consists of two jaws and a screw which regulates the jaws, one of which is usually immovable. There are various kinds, among them the swivel vice and the parallel vice. A hand vice is made to hold in the hand and a table vice is fastened to a table. A pin vice is a delicate instrument used by watchmakers.

Vice-Chancellor Deputy of a chancellor. It is chiefly used at the universities where the vice-

chancellor is the acting head, the chancellor being an honorary official. At Oxford and Cambridge the vice-chancellor is the head of a college and he serves for four years. At the newer universities he is appointed for life.

Vicenza Town of Venetia, Italy, at the foot of the Alps. It contains many fine buildings, a town hall or basilica of the Renaissance period, a cathedral dating from the 13th century, and villas of Palladio. Trade in wool, leather, linen, gold and silver goods is carried on at Vicenza, while mulberry trees flourish in the vicinity. Vicenza was formerly Vicetia, and was laid waste by Attila. Mantegna, the painter of "The Crucifixion," was born here. Pop. (1931) 65,161.

Viceroy One who represents the sovereign in one of the countries or districts under his rule. It is applied to the governor-general of India and was the usual term for the lord lieutenant of Ireland until the office was abolished in 1922.

Vichy Town of central France, on the river Allier. Its mineral waters were known to the Romans. There are 34 springs at Vichy, 12 of which belong to the State; those in the environs of the town are brought in by aqueducts. The waters, which have an alkaline taste, and smell faintly of sulphuretted hydrogen, contain a large percentage of sodium carbonate, while some are chalybeate. They are used in treatment of gout and diabetes. Large quantities of the water are bottled and exported.

Victor The title of three popes and two anti-popes. **Victor I.** was bishop of Rome from 190-198, **Victor II.** held sway from 1055-1057, **Victor III.** was proclaimed pope in 1086 against his will, but died in the following year. He was a notable classical writer. **Victor IV.** was a name taken by two anti-popes. The first, Gregorio Conti, was chosen in 1138 as successor to Anacletus II.; the second, Octavian, the Ghibelline anti-pope, was supported by Frederick Barbarossa in 1159 against Alexander III. He died in 1164.

Victor Emmanuel I. King of Sardinia. Born at Turin, July 24, 1759, he was forced to abdicate in favour of his brother Felix in 1821 by a rising of the liberals. He died in Jan. 10, 1825.

Victor Emmanuel II., King of Sardinia, afterwards King of Italy. Born at Turin, March 14, 1820, he gained military distinction at an early age, and after his accession he allied himself with France against Austria. With the help of his army and Garibaldi, and by diplomacy with the help of his minister, Cavour, he was the real creator of a united Italy. As King of Italy he ruled as a strictly constitutional monarch. He died Jan. 9, 1878.

Victor Emmanuel III King of Italy. Born at Naples, Nov. 11, 1869, the son of Humbert I., he came to the throne July 29, 1900. He married Princess Elena of Montenegro in 1896. A man of culture and artistic taste, he ruled constitutionally and well but has had little prominence since the advent of Fascism in Italy. The "March to Rome," Oct., 1922, brought to power the Fascisti, representing a revolutionary movement against the inactivity of post-war Italian statesmen. The leader is Signor Benito Mussolini, who has acquired dictatorial power, militarised the state, and was largely responsible for the Abyssinian war.

Victoria Queen of the United Kingdom of Great Britain and Ireland and Empress of India. She was the only child of Edward, Duke of Kent (fourth son of George III.), and was born in Kensington Palace, May 24, 1819. She succeeded William IV., June 20, 1837, and married her cousin, Prince Albert of Saxe-Coburg-Gotha, in 1840. Her long reign saw more changes—political, social, industrial, scientific—than any other in British history. The Empire was considerably enlarged; the greater colonies achieved self-government; successive reform bills extended the franchise; the Corn Laws were repealed, and Free Trade was adopted. Education was made compulsory; extraordinary advances were made in all domains of science; railways, the telegraph and telephone came into being; penny postage was inaugurated; and many measures for improvement in working class conditions were passed.

Great Britain's interests abroad involved her in several wars. In the East she waged war in China and Afghanistan; her rule in India involved her in the Indian Mutiny, two Sikh wars and two Burmese wars. In Africa outstanding wars were the Zulu wars, the Boer War and the South African War. In Europe she took part in the Crimean War, and British diplomacy played its part in international affairs, especially in the Near East.

Among the queen's prime ministers were Melbourne, Peel, Palmerston, Disraeli, Gladstone and Salisbury. Though as a constitutional monarch she followed the policy indicated by them, she made her influence felt in the political sphere, as well as in social and religious affairs. She celebrated her Diamond Jubilee in 1897 and died Jan. 22, 1901.

Victoria State of Australia. It covers 87,884 sq. m. in the S.E. of the continent and is divided into 37 counties. Melbourne is the capital and the largest city. Other cities are Geelong, Ballarat and Bendigo. It is governed by a parliament of two houses, council and assembly. Members of the council are persons of standing and substance elected for six years; they number 34. Members of the assembly, 65 in number, are elected for 3 years or a shorter period. There is a cabinet responsible to the legislature. The state sends members to a federal parliament which is responsible for some of its affairs. Victoria produces a good deal of wheat, but is more famous for its wool, vast numbers of sheep being kept. A good deal of coal and a little gold are mined. The state has a supreme court of justice and a university. There is a scheme of old age pensions.

Originally part of New South Wales, Victoria became a separate colony in 1851. It became self-governing in 1855 and in 1900 joined the commonwealth of Australia. Pop. (1932) 1,805,298.

Victoria Capital city of British Columbia. Camosun, the site of a former Indian settlement at the southern end of Vancouver Island, was selected in 1843 by the Hudson Bay Company for the erection of a fort to protect its trading, the name being changed to Fort Victoria in honour of the Queen. In 1858 the town grew rapidly, owing to the rumoured discovery of gold, but the rush soon ceased; a healthy and steady growth followed, and in 1866 the city was chosen as the capital of the newly formed province of British Columbia. It is now one of the most beautiful residential cities on the Pacific coast, with a splendid harbour, fine

public and private buildings, and a wonderfully mild climate. Pop. (1931) 38,441.

Victoria and Albert Royal Order of. British order. It was founded in 1865 and is given to women, but there have been no appointments to it since 1901. Members are divided into four classes and are distinguished by the letters V.A.

Victoria Cross Medal bestowed for conspicuous valour in presence of the enemy. It was instituted by Queen Victoria in 1856, and consists of a bronze cross in the centre of which is a lion standing on a crown, and a scroll with the words "For Valour." It is suspended by a plain red ribbon and is worn on the left breast. Any member of the British Army, Navy or Air Force can win it, and it carries with it a small pension. It is a very signal honour, sparingly awarded. Sometimes the cross is awarded to a ship or a regiment, in which circumstances the persons concerned decide among themselves which member of their company shall wear the decoration for them. Thus Captain Alfred Carpenter, R.N., was selected by the crew of the *Vindictive* and the assaulting party on Zeebrugge to wear the cross for them after the famous attack on St. George's day, 1918. In 1929 the King when Prince of Wales gave a dinner in the House of Lord's to all V.C.'s, at which 321 assembled.

Victoria Falls Falls on the Zambesi River in Rhodesia, 800 m. from the sea. They were discovered by Livingstone in 1855. The falls consist of a single drop of 256-343 feet into a vertical chasm at a place where the river is very wide. The water strikes the opposite wall of the chasm, becoming a mass of spray. Passing through a narrow channel, the river enters a tortuous 40 mile course at the bottom of a canyon with almost vertical sides 400 feet high.

Victorian Order Royal. British order of knighthood. It was established in 1896, and its members are divided into five classes. These are Knight Grand Cross (G.C.V.O.), Knight Commander (K.C.V.O.), Commander (C.V.O.) and Members, in two classes (M.V.O.). Women are eligible and if of the rank of knight are distinguished as dames, D.V.O. being Dame Commander. The ribbon is blue with red and white edges and the motto is Victoria.

Victoria Nyanza Lake of central Africa. It is surrounded by Kenya and Uganda on the north, and Tanganyika on the south. The southern end was discovered in 1856 by Speke who also found the northern outlet in 1861. The depth varies, soundings of over 600 feet having been taken. It is 3726 feet above sea level and the area is about 32,000 sq. m. It is the principal source of the White Nile over the Ripon Falls at the north end.

Victory English warship. A wooden vessel, she was launched at Chatham in 1765. In 1803 she became the flagship of Nelson, and in her he fought the Battle of Trafalgar. In 1825 she was paid off, and since then has been in the harbour at Portsmouth as the flagship of the commander-in-chief. Between 1923 and 1928 the *Victory* was restored to her original condition, the money being raised by public subscription.

Victory Medal Allied medal bestowed after the Great War. Any member of the fighting forces who had been on active service during the four years of war was eligible for it, as well as women of the nursing and auxiliary services. The medal is bronze with a rainbow coloured ribbon.

Vicuna (or Vicugna). (*Auchenia vicugna*). Species of llama found in Peru and Chile. Related to the camel, it is smaller, being about two and a half feet in height, and the limbs are slender and graceful. The hair, or wool, is soft and fine in texture, and is of a pale yellowish brown shading to white underneath. The wool is used in the manufacture of a fine cloth which is used for clothing.

Vienna Austrian capital, situated on the Danube. The inner town, surrounded by the Ringstrasse, a beautiful boulevard on the site of the old fortifications, contains the Gothic cathedral of St. Stephen, the Hofburg, formerly the imperial palace, in the Baroque style, and the university, founded 1365. There are also many modern buildings, including the houses of parliament, the town hall, and the Palace of Justice. The cultural centre of S.E. Europe, the city has museums and picture galleries, and its beauty is enhanced by wide parks and gardens.

A leading commercial city, Vienna has an extensive transit trade, and exports luxury goods, chiefly silk and velvet, clothing, gloves, leather goods and jewellery. Besides manufacturing optical instruments, machinery and chemicals, it has a large film industry. An international fair is held yearly.

A Roman garrison town named Vindobona, the city became the capital of the Duchy of Austria in 1137, and the centre of the Hapsburg power in the 14th century. It was besieged by the Turks in 1529 and 1683. In the 18th century it was the chief residence of the Emperors, who built the palace of Schönbrunn, and in 1814 the Congress which resettled Europe after the Napoleonic wars was held there. After the Great War Vienna became the capital of the Austrian Republic. The success of its municipal housing has aroused much attention. It has two broadcasting stations (1237 M., and 517 M., 15 kW.). Pop. 1,865,000.

Vigo Port of N.W. Spain on the S.E. shore of Vigo Bay. The bay extends inland for 20 m., and the town possesses a deep harbour and is well-known for its sardine fisheries, as well as for its flour, paper and saw-mills. Vigo is a port of call for ships plying between Europe and South America. Drake attacked Vigo in 1585 and 1589, while in 1702 Rooke won a great victory in the bay over a combined French and Spanish fleet. Pop. (1930) 53,091.

Viking (Icelandic, *vikingr*, a warrior or rover). Scandinavian adventurer engaged in plundering the coasts of Europe from the 8th to the 10th century.

Vilayet Name used in the republic of Turkey and in districts once under the rule of the sultan of Turkey, for a province. Iraq, for example, is divided into vilayets, each with a capital.

Villars Claude Louis Hector. French soldier and diplomat. Born at Moulins, May 8, 1653, he was responsible for the victories of Friedlinger and Kehl. He fought against Marlborough at Malplaquet, and drove Prince Eugene back to Brussels after the victory of Denain (1712). He concluded the peace of Rastadt (1714) as plenipotentiary of France. In the war of the Polish Succession (1732-34), he was again remarkable for his

military genius. He died at Turin, June 17, 1734.

Villein A term in feudal law, denoting one who held lands by "base or servile tenure." Villeins were intermediate in social status between serfs and freemen, and were attached to the soil. One man in a holding had to work so many days per week for the lord, but in the fourteenth century money payments were often accepted in the place of these services. Villeinage died out in England owing to changing economic conditions in the fifteenth century.

Villeneuve **Pierre Charles Jean Baptist Sylvestre de.** French admiral. Born at Valensoles, Dec. 31 1763, in the Battle of the Nile he commanded the rear division of the French navy and saved it from disaster. After luring Nelson away to the West Indies and back in his pursuit, he was blockaded by him at Cadiz, and in a desperate attempt to vindicate himself, gave battle to Nelson at Trafalgar in 1805, and was defeated. He was a prisoner in England until 1806. He stabbed himself fatally at Rennes, April 22, 1806.

Villeroi **François de Neuville.** French soldier. He was born in Paris, April 7, 1644, was a great courtier, and was made Marshal in 1693. Thoroughly incompetent, he was defeated in the Netherlands, in Italy—where he was taken prisoner by Prince Eugene—and again at Ramillies. Later he was made governor of Lyons, and died in Paris, July 18, 1730.

Villers-Cotterêts Town of the department of the Aisne, near Soissons. The **Ordnance of Villers-Cotterêts** (1539) substituted the use of French for Latin in legal procedure, and was the work of the magistrate, Guillaume Poyet. It had the effect of shortening legal work. The town was the birthplace of the elder Dumas. There was fighting here during the retreat from Mons in 1914.

Villon **François.** French poet. Born in 1431 at Paris, he passed his youth in extreme dissoluteness. Many legends have survived concerning him. His poems, *Les testaments*, strike a lyrical note rare in those times. In them are some delightful ballades and rondeaux. He died about 1463.

Vilna (or Wilno). Province and town of Poland separating Lithuania from West Russia.

A large and ancient town, capital of the province, Vilna is rich in historical association and possesses two cathedrals. It was formerly inhabited by the Lithuanians and, after being seized by Russia and Sweden, was ceded to the former in 1795 by the Partition of Poland. It was in 1831 and 1863 the seat of unsuccessful Polish insurrections against Russia. After the Great War the Lithuanians claimed the town, but the Poles, after some fighting, took possession of it. In spite of the efforts of the League of Nations to obtain a settlement the matter is still a source of friction. Vilna is the centre of the export trade of grain and timber. It has a broadcasting station (563 M., 16 kW.). Pop. (1931) 197,049.

Vimy Ridge Battlefield of the Great War. Situated midway between Lens and Arras, Vimy Ridge played an exceptionally important part in the Great War. In early 1915 the French successfully opposed the Germans at Vimy: in 1916 a Canadian force, by dint of great bravery, took possession of the ridge. This possession was extremely valuable during the stemming of the German onslaught in 1918.

Vincennes Town in northern France, in the department of the Seine. Its castle was once a royal residence, and later a prison in which Henry of Navarre, Condé and Mirabeau were at various times confined. Under Napoleon, the castle was converted into a powder magazine (*See* **Vigny's** famous story *La Veillée de Vincennes*).

A city of Indiana, U.S.A., is called **Vincennes.** It has an old university and was in 1778 captured by the British who renamed it Fort Sackville. Clark recaptured it in 1779.

Vincent Saint and martyr. He was a Spaniard and was ordained at Huesca. In 304 he was put in prison, and at Valencia was tortured to death in 304 by the Roman governor. His feast is on Jan. 22, in the Roman Catholic Church, but he is not in the English Calendar.

Vincent de Paul **St.** French ecclesiastic. He was born on April 24, 1576, at Pouy, France. He was ordained priest in 1600. From 1604 to 1607 he served as a slave in Tunis, having been captured by pirates. On regaining his freedom, he returned to Paris and devoted himself to charitable works, appointing "Confrères de Charité" to serve in various French towns. In 1632 he founded the Mission of the Sisters of Charity. He died on Sept. 27, 1660, and was canonised in 1739.

Vindictive British warship. A cruiser of 5700 tons, she was used in the attack on Zeebrugo on April 23, 1918, to carry the men who landed on the mole. Later, on May 10, she was sunk to block the channel leading into the harbour at Ostend. In April, 1920, the vessel was raised and afterwards broken up. A new *Vindictive*, also a light cruiser, but somewhat larger, was built to replace her.

Vine Climbing plant of the natural order *Vitaceae*. It has sturdy woody stems, which cling by means of tendrils to a wall or any other support. The large leaves have tooth-like edges and the small green flowers are clustered in racemes. The five petals are united above and below, so that the expansion of the stamens throws them off. The berries, or grapes, contain hard seeds.

In colour the grape varies from dark purple to a very light green, almost white. There are many varieties, varying with the soil and other conditions of the particular district. The chief areas for growing the vine are the countries around the Mediterranean Sea, but it is also grown in Australia and South Africa, as well as in parts of America. In England and other countries it will grow under glass, although there are vines growing in the open in sheltered spots. Viticulture is most flourishing in the Rhineland in Germany, in the southern parts of France, in Italy, Spain, Portugal, Hungary, etc.

The vine requires a sunny position and a rich loamy soil dug to a depth of 3 ft. The plants should be cut back each year and well fed with liquid manure. When grown under glass they should be planted in a rich loam mixed with lime rubbish and put in 6 ins. apart. The fruit is liable to attack by an aphis called phylloxera.

Vinegar Sour liquid used for culinary and other purposes. It is acetic acid and is usually made in Great Britain from

malted barley, which is fermented. It can be made from alcoholic liquors and in Europe is made from white wine. In the United States it is made from cider. Fancy vinegars are made by adding tarragon, or chili, garlic or other substances. Aromatic vinegars, used medicinally, contain cinnamon, peppermint and the like.

In addition to its uses in cookery and with salads and fish, vinegar is a base in the manufacture of many sauces and is employed in pickling and for preserving meat and vegetables.

Vinegar Hill Hill in Co. Wexford, Irish Free State. It is near Enniscorthy and was the headquarters of those who rose in rebellion in 1798. They made their camp here and committed outrages in the surrounding country. The British troops surrounded them on June 21, and, after a hard fight, killed or dispersed them.

Vinegar Plant Term applied to a slimy gelatinous mass found on the surface of alcoholic fluids during fermentation. It is composed of filaments of bacteria and fungi which form a floating layer on the fluid. The action of these, the fungi *Mycoderma aceti* in particular, converts the alcohol into vinegar.

Vingt-et-Un Game of cards. It is played by two or more persons and the aim of each player is to get his score as near to 21 as possible without exceeding that number. It is played with the whole pack of 52 cards. The court cards count 10 each and an ace may count either 1 or 11 as its holder wishes.

Vint Card game. It is not unlike bridge. The full pack is used and the player making the highest call declares trumps. Each player bids for the deal independently and the one sitting opposite to the successful caller automatically becomes his partner. The suits rank spades, clubs, diamonds and hearts when calling, but in scoring all are equal. As in bridge there is a trump call, but the scoring is somewhat different. *See* BRIDGE.

Vintage Yearly produce of grapes, the grape harvest. The term is used for the wine made from the grapes of a particular year, as when one speaks of the champagne vintage of 1888. In this sense it is much used by wine merchants.

Vintner Old name for a seller of wine. The **Vintners Company** is one of the twelve great livery companies of the city of London. It has an income of £15,000 a year. Its hall in Upper Thames Street, facing the Thames, was rebuilt in 1929.

Viol Musical instrument. It was the precursor of the violin or little viol. Like it, the viol, which has three, four, five or six strings, is played with a bow.

Viola Musical instrument. To this large type of violin, the part between the bass and second violin is assigned in orchestration. Of its four catgut strings, the third and fourth are covered with silver wire. It is tuned C (second space of bass staff), D, A, G, and is a perfect fifth lower than the violin, and an octave higher than the 'cello.

Violet Genus of herbs of the order *Violaceae*. They are perennials of low growth, seven species being British. The sweet violet, *V. odorata*, is found wild in southern and eastern England. The leaves are broad and heart shaped and the blossoms purple or white. Other varieties include the dog violet, *V. canina* and *V. silvestris*, and the wood violet, whose leaves form a rosette round which the small flowering branches extend. The genus includes the heartsease or wild pansy, *Viola tricolor*, with blooms of purple yellow or white, or a blending of these colours.

Violin Instrument of music. The modern instrument seems to be a development of the ancient viol, a bowed instrument, and owes much to the science and craftsmanship of the 16th, 17th and 18th century Italian schools, among which the Brescia and Cremona schools are the most notable. The variations of the sound-holes represent the different styles of manufacture, but the superiority of the older violins is probably traceable not to superior wood, but to a secret method of preparing the varnish. Essential features of the modern instrument are the four strings, tuned in fifths; the bridge, which was perfected by Stradivari; the catgut, made from lamb's intestines; and the bow, which is of Pernambuco wood, or of American oak in poorer quality bows.

Violoncello Instrument of music. Similar in construction and in all its essentials to the violin, its name signifies small violone, yet it has nothing in common with the violone, which has the flat back and sloping shoulders of the viol. The 'cello has four strings. It is tuned C, G, D, A, an octave lower than the viola, and rests on a spike between the performer's knees, when being played.

Viper Group of venomous snakes of the *Viperidae*, found in Europe, Africa and Asia. The British species is known as the adder (*q.v.*). True vipers (*Vipera*) have a characteristic flattened triangular head and relatively short, thick body. Russell's viper of India causes many deaths each year. The family includes also the rattlesnakes and other venomous species. The horned viper (*Cerastes*) of Africa, a small sand coloured species with short horn-like projections above the eyes, is reputed to be the "asp" of Cleopatra.

Viper's Bugloss (*Echium vulgare*). Annual or biennial herbaceous plant of the order *Boraginaceae*. The tall stem and the leaves are covered with short bristly hairs. The flowers are borne in a long panicle bearing short clusters of crowded blossoms. These are at first purplish-red, changing to a vivid blue as the bloom expands. It grows wild in chalky and gravelly places.

Virchow **Rudolf.** German pathologist. Born Oct. 13, 1821, at Schivelbein, Pomerania, he studied medicine in Berlin, became lecturer at the university there in 1847, and later director of the Pathological Institute. His contributions to pathological science were unrivalled, and those to archaeology and anthropology equally great. He worked incessantly for the improvement of hospitals and asylums, for adequate drainage and pure water, and took an active part in the municipal government of Berlin. He died Sept. 6, 1902.

Virginal Musical instrument. A form of harpsichord, it has one key and is oblong in shape. *See* HARPSICHORD.

Virgil Roman poet. P. Vergilius Maro was born on Oct. 15, 70 B.C. at Mantua, in Cisalpine, Gaul. He had a thorough education and retired to his farm to write. This farm was seized after the Battle of Philippi, but given back to him by Octavian to whom

in gratitude he wrote the *Eclogues*. He was fortunate in the patronage of Maecenas and others, whose munificence gave him the leisure to write the *Aeneid*, a supreme epic poem celebrating the glory of Rome and of the Julian house, and the *Georgics*, his most finished work. He died at Brundisium on Sept, 22, 19 B.C.

Virginia State of the U.S.A. It lies along the Atlantic Ocean, with Pennsylvania on the north and the Carolinas on the south, and covers 42,627 sq. m. The valley of Virginia, enclosed by the Alleghanies and the Blue Ridge range, is extremely fertile, as is also the central plain. Rivers include the Potomac, Rappahannock, York and James. There are many first-rate harbours. Tobacco is very widely grown, as well as maize and other cereals. There are coalfields and granite and slate quarries, and profitable oyster fisheries. The capital is Richmond. The state was named after Queen Elizabeth, and contains the oldest European settlements in the country, the first permanent colonists landing there in 1607. It was one of the 13 original states of the Union and it retains many traces of English influence. It is governed by a legislature of two houses and sends two senators and 9 representatives to Congress. Pop. (1930) 2,421,851.

Virginia Creeper (*Vitis quinquefolia*). Hardy climbing shrub of the order *Vitaceae*. American in origin, it is commonly grown on walls or houses. The leaves are large and green, turning in autumn to vivid scarlet and russet shades. *Ampelopsis veitchii*, a Japanese species, has smaller short stemmed leaves which adhere closely to any wall or support forming a compact thick covering.

Virginia Water Artificial lake in Windsor Park, also the name of a district in Surrey, with a station on the S. Rly. The lake, 1½ m. long, was made from marshland by order of the Duke of Cumberland in 1746. Near it is Fort Belvedere, the residence of the Prince of Wales.

Virgin Islands A group of 100 islands of the West Indies. The majority are barren, sandy or rocky, but maize, coffee, cotton, sugar and indigo are produced. Several are British, and the rest formerly belonged to Denmark and U.S.A. Denmark sold hers to U.S.A. in 1917. The principal town of the British islands is Roadtown. They were discovered in 1494 by Columbus and named after S. Ursula.

Vischer **Peter.** German sculptor. He was born in Nuremberg in 1455, the son of an artist in bronze. Among his best known works are the tomb of Duke Ernest in Magdeburg Cathedral, the shrine of S. Sebald in Nuremberg, and the relief representing the coronation of the Blessed Virgin in Erfurt Cathedral. He died Jan. 7, 1529.

Visconti Famous family, which ruled over Milan for two hundred years. Ottone Visconti was appointed to the Archbishopric of Milan in 1262. He had to drive the rival family of Della Torre out of the city before he could take possession of the see. His nephew Matteo succeeded him. During the 14th century, there was much trouble between the Visconti and the Pope, but they were supreme in Milan, and Galeazzo II. made marriage alliances with Edward III. of England, and John of France. He was a patron of the arts, and established a university at Pavia.

Barnabo and Gian Galeazzo (1347-1402) succeeded him jointly; Gian, who was all-powerful, was made Duke of Milan by the Emperor Wenceslaus, and he founded Milan Cathedral. He was succeeded by his brother Filippo Maria, who died in 1447, the last of the male line.

Viscosity Term in physics applied to the property of matter in a fluid or gaseous state of resisting immediate change of shape or relative motion of its parts. This results, when viscosity is high, in a slow flowing movement of the fluid as in gums, oils and treacle. Liquids vary greatly in their degree of viscosity, which also varies according to the temperature of the substance. A special instrument known as a viscometer is used to measure the viscosity of petroleum, oils and other viscous liquids.

Viscount Title in the peerage of the United Kingdom. It originated in France when the *vicomte* was the deputy of the count. It ranks fourth in the peerage, between earl and baron, although it is the junior of all, as the first viscount was not created until 1446. The oldest existing viscounties are the Irish one of Gormanston dating from 1478, and the English one of Hereford from 1550. It has become the custom to bestow the title of viscount upon all cabinet ministers who are raised to the peerage.

Vishnu In Hindu mythology, a solar god, one of the Supreme Three, together with Brahma and Siva; to-day he is often worshipped as the superior of Brahma. In Vedic books, he is represented as the youth who traverses the world in three strides, the last of which is invisible to man. This symbolises the rising, culminating, and setting sun. To-day he is called the Preserver, and is represented with four arms, holding a club, shell, discus and lotus, and riding upon the Garuda.

Visigoth Branch of the Goths. In the 2nd century the Goths divided themselves into two branches, east and west, called Ostrogoths and Visigoths. The latter moved westward and founded a kingdom in Spain, which lasted till 711. *See* GOTHS.

Visitation **Order of the.** Religious festival in the Roman Catholic and Greek churches. It is held on July 2 and commemorates the visit of the Virgin Mary to Elizabeth as recorded in the Gospels.

The **visitation of the sick** is an office in the Anglican church. It includes provision for special confession and absolution. The service for it is in the prayer book of the Church of England.

Visitor Literally one who visits. In a special sense it is used for a person who is authorised to visit a college or institution to see that it is properly managed. Thus each of the colleges at Oxford and Cambridge has its visitor and the judges of the high court are the visitors of the inns of court. The office is mainly an honorary one, but an occasion for the visitor to exercise his authority may arise at any time. At Oxford and Cambridge the office is held in most cases by a bishop, but occasionally by a nobleman; the Earl of Pembroke is the visitor of Pembroke College, Oxford. Balliol College, Oxford, is the only college that has the right to elect its own visitor.

Vistula River of central Europe. Rising in Czechoslovakia, it flows

through Poland and Prussia and debouches at Danzig. It is about 650 m. in length, and floods, freezing and shifting banks are a serious impediment to navigation. Formerly all German, the possession of the Vistula was a subject of legal dispute at the Treaty of Versailles. The campaign of the San-Vistula was the scene of an unsuccessful attack by Falkenhayn on the Russian troops for the relief of Austria.

Vitamin Group of substances, present in various foods and indispensable to health and growth. Their composition and mode of action is not yet understood, but a number have been differentiated by their chemical and physiological action. Vitamin A, present in cod-liver oil, eggs and liver of many animals, and Vitamin B in lean meat, yeast, eggs, wheat-germs, legumes, etc., are necessary for proper growth. Vitamin C, in green vegetables and citrus fruit juice prevents, or cures, scurvy. Vitamin D, also present in cod-liver oil, is necessary for the proper calcification of bones, its absence causing "rickets."

Vitriol Comprehensive name for various metal sulphates. Zinc sulphate is white, copper sulphate blue and iron sulphate green vitriol. *See* SULPHURIC ACID.

Vittoria City of Spain. In the north of the country. It is 30 m. from Bilbao and stands on the River Zadorra. The chief building is the cathedral and there are others dating from the time when the city was a fortress. Pop. (1931) 40,942.

On June 21, 1813, the British troops under Wellington gained a decisive victory over the French here.

Vittorio Town of Italy. It gives its name to a battle fought near here in Oct., 1918, between the Italians and the Austrians and called the Battle of Vittorio Veneto. It was part of the Italian offensive and began on Oct. 23. By Oct. 31 the Austrians were in retreat.

Vitus Roman martyr. The son of a Sicilian pagan, he perished at Rome in the persecution under Diocletian. In the Roman Church his day is celebrated on June 15. His aid is invoked against various ailments, which include hydrophobia and chorea (St. Vitus' dance).

Viviani **René.** French statesman. Born at Sidi-bel-Abbès, Algeria, Nov. 8, 1863, he became a lawyer, and was elected Socialist deputy for Paris in 1893. In 1906 he became Minister of Labour. In June, 1914, Viviani became Premier and Minister for Foreign Affairs. While returning from Russia with Poincaré, he heard of Austria's ultimatum to Serbia, and withdrew the French forces ten kilometres from the frontier to show his pacific attitude. He was succeeded in 1915 by Briand, but became Minister of Justice, and in 1921 he accompanied Briand to the Washington conference. He was in full sympathy with the League of Nations. He died Sept. 7, 1925.

Vivien Character of the Arthurian legends. Vivien was a lovely enchantress, the mistress of the sorcerer, Merlin. She cast a spell over him, which took away his power, and imprisoned him in a thicket of thorn. She is sometimes called 'The Lady of the Lake," because her palace was set in the middle of a magical lake.

Vivisection Operation performed on a living animal in the interest of medical advancement. The progress of vivisection has been hampered by the propaganda of anti-vivisection societies, despite the good work which vivisection has done. Since the 19th century, strict control has been exercised over vivisectors, making licences and anaesthetics essential, though inoculations were the early method.

Vizier Name formerly used in Turkey and other Mohammedan countries for a minister of state. In Turkey, under the Sultan, the prime minister was known as the Grand Vizier.

Vladivostok Town of the far eastern area of Soviet Asia. It is situated on the Sea of Japan, on the opening known as Peter the Great Bay. The place derives its importance from the fact that it is the Pacific terminus of the Trans-Siberian Railway and from its possession of a good harbour. The town dates from 1860. During the Great War Vladivostok was used as a base for the Czechoslovak troops. Pop. (1930) 107,977.

Vocalion Name given to a type of harmonium. It was invented in the 19th century and was considered to possess greater purity and variety of tone than the ordinary harmonium.

Vodka Name of a spirituous liquor. It is made in Russia by distilling rye or potatoes. It is very potent and at times its manufacture and sale have been forbidden.

Voice Sound from the mouth; utterance or mode of utterance. It is used chiefly for sounds made by human beings in whom the tones of the voice differ, the voices of men being lower than those of women and children, the reason being that the vocal cords are longer. The training of the voice is a matter of great importance to singers and actors, to a lesser extent to clergymen, ministers and other public speakers, and to it a good deal of attention is paid at training colleges.

Voil Loch or lake of Perthshire. It is in the hills, 3 m. from Balquhidder. It is 3½ m. long and the little river Balvag flows through it.

Volapuk Universal language. It was invented by a pastor, Johann Martin Schleyer, at Constance in 1879. It has a vocabulary of about 15,000 words, taken from Latin, English and the Romance languages. The alphabet consists of 26 letters, 8 being vowels and the rest consonants. It has only one declension and one conjugation, and most of the words are monosyllables.

Volcano An opening in the crust of the earth, through which superheated matter is expelled, forming a hill with a crater. The chief volcanic centres are Italy and Sicily (Vesuvius, Etna, Stromboli), the southern Andes, Dutch East Indies and Japan. Volcanoes may be many years in repose, but the longer their repose the greater their violence in eruption. Bandai-san in Japan, previous to its eruption in 1888, had lain dormant for 1000 years. Preparatory phenomena are earthquakes and detonations, and the eruptions are succeeded by dense clouds of vapour which may form brilliant sunsets, and lava (a mud formed by steam and ash or else molten silicates).

Vole Genus of small herbivorous rodents of the *Arvicolidae*. Superficially like rats and mice they have distinctive peculiarities such as short hairy tails, blunt rounded snout, small ears and thick stout body, and

teeth adapted to their diet of plants, grain, etc. The field vole (*Microtus agrestis*) has a short tail, brown fur above and lighter beneath. It damages crops by its burrowing habits. The water vole, 8 ins. long without its tail, has reddish or yellowish-brown fur and lives in a burrow beside a stream.

Volga Russian river. It is 2325 m. in length, rises in the Valdai plateau, and enters the Caspian Sea at Astrakhan. Leningrad is now connected with the Volga by canal, and forms a much more important port than Astrakhan, which is spoiled by sandbars. The Volga tends to destroy its banks and to flood. Steamers now ply between Leningrad and Astrakhan. The sturgeon, esteemed for its caviare, is found in the lower waters of the river.

Volstead Act Term popularly used for the act of Congress that in 1919 made the sale of intoxicating liquor illegal in the United States. It took the form of the 18th amendment to the constitution and is named after one of its promoters. There was a considerable agitation for the repeal of the Act, and the abolition of prohibition in the middle of 1932.

Volt Unit of electromotive force or potential difference (electrical pressure). It is defined as the pressure which, applied to a conductor of 1 ohm resistance, will produce a current of 1 ampère. One volt × one ampère = one watt. *See* AMPÈRE, OHM, WATT.

Voltaire **François Marie Arouet de.** French author, playwright and philosopher. Born at Paris on Nov. 24, 1694, he took the name of Voltaire at the age of 21. Educated by the Jesuits, he soon became known in the literary world. He lived for a short time in England, and later visited Berlin, where he was for a period the close friend and counsellor of Frederick II. After quarrelling with the king he returned to France and spent the remainder of his life at Ferney on Lake Geneva.

As a playwright, his best known works are *Zaire*, *Mérope* and *Mohamet*. In verse his satires and epigrams are still remembered. His best history studies are those of Charles XII. and of the age of Louis XIV. His stories, *Candide* and *Zadig*, and his long epic, *La Henriade*, are also famous.

As a philosopher, he fought against intolerance of all kinds, including religious bigotry. While not a democrat (he believed rather in enlightened despotism), he was a promoter of social reforms of all kinds. His style is an outstanding example of clarity, elegance and purity of expression. He died May 30, 1778.

Voltameter Instrument used for measuring the amount of electrolytic decomposition produced by an electric current. It should be distinguished from a **voltmeter**, which is an instrument for measuring voltage.

Volunteer One who offers his services. The name was given especially to bands of men who volunteered to undergo military training in order to serve their country in case of invasion or war. In England the first volunteers to bear the name were raised during the American War of 1778, and some fifteen years later they were again formed to resist a possible French invasion. The **volunteer force** proper was formed in 1859 and continued with increasing strength until 1908, when it was merged into the territorials. The name persists in such organisations as the **Naval Volunteer Reserve.**

Volvox Genus of flagellate infusorians resembling algae, found in fresh water ponds. The protozoon exists as a colony of one-celled organisms in the form of a hollow sphere, mobile by reason of the two flagella borne by each individual. The sphere has a gelatinous covering through which the flagella protrude. The organisms secrete chlorophyll, and use this substance to manufacture starch in the same manner as plants.

Vomiting of Blood This may be due to internal injury, to poisoning by some corrosive, to varicose veins of the lower part of the gullet, or to disease of the stomach, such as cancer or ulcer.

Treatment—Keep the patient lying on his side, give no food or alcohol, and no ice to suck. Place an ice-bag on the pit of the stomach.

Remember that blood may have been swallowed, as in some cases of bleeding from the lung, and after an operation such as the removal of tonsils.

Voodoo Form of fetish-worship. It is prevalent among the West Indian and American negroes, especially those of Haiti, and is supposed to have been introduced from Africa by slaves. With it are associated snake-worship, and obscene rites involving the use of human blood.

Voronoff **Serge.** Russian surgeon. Born July 10, 1866, he studied medicine in Paris, becoming chief surgeon in the Russian Hospital and later at the Military Hospital there. He is best known for his method of preventing or delaying senility by grafting healthy animal glands into the human body. Among his publications are *Thyroid Grafting* and *Life, the Study of Old Age* and *My Method of Rejuvenation.*

Vorticism A tendency in pre-war art. The vorticists originated in 1913 from a society which included P. Wyndham Lewis and the poet Ezra Pound. Their theory was that modern art should be based on the principles of an industrial civilisation, and that subjects should evolve from the artist's "vortex," or general conceptions of relations of ideas. Vorticism, which had much in common with futurism and cubism, has produced such artists as Lewis and J. Kauffer.

Vos **Marten de.** Flemish painter. Born in Antwerp in 1532, he spent some years in Rome and Venice, where he greatly benefited from Tintoretto's friendship. He painted several of the Medici family and returned to Flanders a celebrity. His later works included several altar pieces, and the two triptychs "The Triumph of Christ" and "The Incredulity of St. Thomas." He died in Antwerp on Dec. 17, 1603. Many of his pictures were destroyed by the iconoclasts.

Vosges Mountains of central Europe, ranging 150 m. along the west of the Rhine from Basle to Mainz. This well-wooded territory has much in common with the Black Forest region. The mountains are rarely more than 3000 ft.; in them rise the Mourthe, Moselle, Sarre and Ill. Notably at Saverne, Ste Odile, etc., the scenery is very picturesque.

A department of France, in which vine-cultivation and arable farming flourish, is also

named Vosges. Gerardiner is a famous summer resort, while Vittel and Contrexeville are notable for their mineral waters. Epinal is the principal town.

Vote Expression of a will or an opinion, especially at an election. Voting is sometimes done by show of hands, as at public meetings, but for important purposes, such as the election of members to parliament and county and other councils, it is done by ballot. Before 1870 open voting was usual at elections for members of parliament. Voting is usually for a man, but it may be a referendum for a cause, *e.g.*, prohibition or Sunday closing.

Each country has its own laws stating who is entitled to vote. The privilege is confined to adults, and for long to men only, but in the 20th century many countries gave to women the right to vote.

A **vote of credit** is a grant of money by the House of Commons without knowing how it will be spent. Such are made in times of emergency, such as at the outbreak of a war. *See* ELECTION.

Vow Solemn promise or undertaking. It is chiefly used in a religious sense. There are examples in the Bible of the taking of vows to do a certain thing, and the custom was popular among knights and others in the Middle Ages. Many of them undertook to abstain from some pleasure, or even necessity, until they had performed a certain act. Members of the religious orders took vows of poverty, chastity and obedience, and those who enter these orders to-day take vows. In the Church of England there is a difference of opinion as to whether vows of this kind should be recognised.

Vryheid Town of Natal. It is 290 m. from Durban, on the railway line to Dundee. It is a mining centre, especially for coal and iron ore. From 1884 to 1888 Vryheid was a little Boer republic. In 1888 it was included in the Transvaal and in 1902 was transferred to Natal. Pop. 3940.

Vrynwy Artificial lake in Montgomeryshire. It was made between 1890 and 1905 in order to supply Liverpool with water. The name is that of a river, a tributary of the Severn, which was used to make the lake. The lake is 5 m. long and the water is taken for 68 m. to Liverpool.

Vulcan Roman god of fire. It is very doubtful that he was the patron of smiths. Augustus' efforts to check the frequent disastrous Roman fires earned him the worship of the people as *Volcanus quietus augustus*. In places where much grain was stored Vulcan's worship became famous.

Vulcanite Modification of rubber. It is made by treating rubber with sulphur, the result being a hard, dark-coloured composition which has a number of commercial uses, especially as an electrical insulator. It is also known as ebonite.

Vulgate Latin version of the Bible. It was prepared by Jerome in the latter part of the 4th century at the invitation of Pope Damacus. In the New Testament the Vulgate was little more than a revision of the existing text, but the Old Testament version was an independent translation from the Hebrew into Latin. It was pronounced authentic by the Council of Trent for use in the Roman Church.

Vulture Name given to birds of prey of the families *Vulturidae* and *Cathartidae*, the latter being American. They resemble the eagles, but almost all have a bare head and neck. The beak is hooked. They feed on dead animals. The black vulture (*Vultur monachus*) and the griffin vulture (*Gyps fulvus*), large birds of the Mediterranean region and S. Europe respectively, belong to the *Vulturidae*. Of the American family may be mentioned the condor and the turkey buzzard (*q.v.*).

Waal Branch of the Rhine, flowing through the Netherlands. The Rhine divides near Arnheim, the Waal being the larger branch which flows through Gelderland and is joined by the Meuse at Gorinchem. It flows into the N. Sea through several mouths. The chief towns on its banks are Nijmeguen and Tiel.

Waddon District of Croydon. It is to the west of the borough, about 11 m. from London, on the S. Rly. Here is the chief air port of London, and there are aerodromes, custom house, repairing shops and large landing grounds.

Wadebridge Urban district and market town of Cornwall. An agricultural centre, it stands on the estuary of the river Camel, 7 m. north-east of Bodmin and 264 from London, by the G.W. Rly. Pop. (1931) 2460.

Wages Money paid for work done. They may be paid by time or by output, *i.e.*, piece work. The standard tends to fluctuate with the question of supply and demand, but no member of a trade union is supposed to work for wages below the minimum rate fixed by his union, lest he should undersell his fellows. In theory wages have some relation to the cost of living.

Wagga Wagga Town of New South Wales. An important junction on the Southern Main Railway, 314 m. from Sydney and on the Murrumbidgee River, it is a business centre for the Riverina, one of the richest agricultural and pastoral districts, with good buildings and well-paved streets lined with avenues of trees. An agricultural show is held annually. Pop. (1931) 9110.

Wagner **Richard.** German composer. Born at Leipzig, May 22, 1813, he took early to writing, but success did not reward him until he had experienced the most straitened circumstances. After he had found a friend in Ludwig II. of Bavaria, he wrote in quick succession *Rienzi*, *Der Fliegende Hollander*, *Tannhauser*, *Lohengrin*, *Der Ring des Nibelungen* (a tetralogy), *Tristan und Isolde*, *Die Meistersinger* and *Parsifal*, mainly legendary in theme. Wagner resided at Bayreuth for a time and died from heart failure at Venice, Feb. 13, 1883. His importance in music is due to his dramatic style, while his harmony, which at first seemed discordant, has opened up the way to others, influencing strongly, for example, Strauss and Debussy.

Wagram Village near Vienna, Austria, which gave its name to the Battle of Wagram, fought July 5 and 6, 1809, between Napoleon and the Austrians under the Archduke Charles. Napoleon concentrated all available cavalry, artillery and man-power for a final effort. Using the island of Lobau, on the Danube, as a fortress, and with the aid of his generals, Davout, Oudinot and Masséna, he split the Austrian army near Wagram, and won the battle, although with tremendous loss.

Wagtail Insectivorous, passerine bird (*Motacilla*) related to the pipits. It is almost entirely limited to the old world. The tail is long and is in lively movement while the bird runs about. The yellow, grey and pied wagtails are common in Britain; the white wagtail is a migrant visitor.

Wahhabi Mohammedan sect. The Wahhabis are followers of Abe-el-Wahab, an Arab reformer who, at the beginning of the 18th century, taught the necessity of complete obedience to the Koran. In 1742 Mahommed Ibn Saud embraced the reform and set about spreading it, with the result that by 1804 the sect had established dominion over Arabia. Their power was broken by Mehemet Ali in 1818 and their chief executed. In the 20th century they came into prominence under the Saud (*q.v.*).

Waihi Town of New Zealand. In North Island, it is 32 m. from Thames, on the rly. line to Auckland. It is famous for its gold mines. Pop. 7000.

Waikato River of New Zealand. In North Island, it is 200 m. long. It flows through Lake Tarpo, and is navigable for about 75 m., before it enters the Tasman Sea. On the river are some fine falls.

Wailing Wall Part of the western wall of the Temple Court at Jerusalem. The name is that given by Gentile observers of the Jewish ritual associated with this place. Part of the wall probably dates from the time of Solomon, and for centuries the place has been regarded by both Jews and Moslems as one of special sanctity. A dispute between these two rival claimants led to an outbreak of violence in Aug., 1929, which was settled by a League of Nations Commission.

Waimati Town of New Zealand. On South Island, it is 130 m. from Christchurch. The industries include flour mills. Pop. 1900.

Wainfleet Town of Lincolnshire. It is 5 m. S.W. of Skegness, and 127 m. from London by the L.N.E. Rly. William de Waynflete, founder of Magdalen College, Oxford, also founded the grammar school here. Pop. 2164.

Wakefield City, county borough and market town of Yorkshire (W.R.). It is also the capital of the west riding. It stands on the Calder, 9 m. from Leeds, on the L.M.S. and L.N.E. Rlys. The buildings include the fine cathedral in the perpendicular style, the parish church until Wakefield was made the seat of a bishop in 1888. The grammar school dates from the 16th century, and on a bridge over the Calder is a beautiful chantry chapel. Chemicals, soap and beer are manufactured and there is a large trade in agricultural produce. Around are coal mines. Pop. (1931) 59,115.

The **Battle of Wakefield** was fought between the Yorkists and the Lancastrians just outside the town on Dec. 30, 1460. The Yorkists were defeated and Richard, Duke of York, and his son, Edward, were among the killed.

Wakefield **Edward Gibbon.** British statesman and colonist. Born May 20, 1796, he was educated at Westminster. After a period of service in the diplomatic service, and a term of imprisonment for abduction, he took part in the colonisation of South Australia, went to Canada as secretary

to the Earl of Durham (1838), and played a large part in the colonisation of New Zealand. He wrote a book on capital punishment (1830), and a *View of the Art of Colonisation* (1849). He died May 18, 1862.

Wake Robin Perennial wild plant (*Arum maculatum*) familiarly known as lords and ladies, cuckoo pint or starchwort. The rootstock is tuberous, and the first leaves arrow-shaped and spotted with purple or black. The flower's stem bears a pale-green folded wrapper which opens in the shape of a monk's cowl. This reveals a purple column round the lower part of which the minute flowers are arranged. As the plant withers, the flowers are succeeded by pale scarlet poisonous berries.

Walcheren Island of the Netherlands. It is in the estuary of the Scheldt and is about 13 m. long. It produces wheat and other cereals. Cattle are reared. the chief places on the island are Middelburg, Flushing and others, which are connected by railway with the mainland.

In 1809 a British expedition was sent to Walcheren, then in the possession of the French. It consisted of about 39,000 men commanded by the Earl of Chatham. They landed in July and captured Flushing, but fever broke out and the survivors were compelled to return before the end of the year.

Waldenses Religious sect. Founded by Peter Waldo, a Lyons philanthropist, about 1114, they denounced the Church of Rome and developed individualism. Persecuted, they disappeared from the South of France, and lived in the valleys of Piedmont, S.W. of Turin, for several centuries.

They were later known as the Vaudois, and became absorbed in the general movement of Protestantism about 1532.

Wales Country or principality of Great Britain. It is to the west of England and has a long coast line on the Irish Sea and Bristol Channel. It is divided into 12 counties, six in North and six in South Wales: Caernarvon and Cardiff are the capitals. It covers 7467 sq. m. For purposes of administration Monmouthshire, which is partly Welsh, is included in Wales.

Wales is famous for its scenery, especially its mountain scenery. In North Wales are Snowdon and other peaks over 3000 ft. high, with magnificent passes and lovely valleys between them. The rivers add much to the beauty of the district. Cader Idris in Merionethshire dominates another district of great beauty, and here, too, the rivers and lakes add much to the charm. In South Wales the mountains and river valleys of Cardiganshire, Brecknockshire and Radnorshire are in their way equally fine. Glamorganshire is an industrial district, but here too are landscapes of great beauty. Finally there is the romantic coast scenery of Pembrokeshire and Carmarthenshire.

Wales has many watering places. Llandudno, Rhyl, Aberystwyth, Barmouth, Tenby and Porthcawl are among the most popular, but there are many others. Inland are several spas, notably Llandrindod Wells. The rivers Severn and Wye rise in Wales and they pass into England; the shorter ones—Dee, Conway, Bovey, Mawddagh, Teify, Towy, Taff, Ogmore and others are wholly Welsh. Bala is the largest lake. This country is served by the G.W. and L.M.S. Rlys. Pop. (1931) 2,247,391, of which 1,225,713 live in Glamorganshire.

The earliest recorded inhabitants of Wales were Celts; they were subdued by the Romans and the Normans, but not completely by any means, and lived in their own way under their own princes for many centuries, carrying on constant war with their English neighbours. They were converted to Christianity in Roman times. In the time of Edward I. Wales was really conquered by England and an English prince was made Prince of Wales. The native rulers disappeared and somewhat later the land was divided into counties. By the Act of Union (1536) English law was made current in Wales, and Welsh representatives were admitted to Parliament.

The Welsh have a language and literature of their own. In the 18th century there was a considerable revival of national feeling. Welsh is taught in the schools over a good part of Wales and a considerable proportion of the people speak both it and English. This national feeling has been kept alive by the Eisteddfod which has been held annually for at least 800 years.

The English Church was for long established in Wales, but in the 18th and 19th centuries the majority of the people became Nonconformists. As the result of a long agitation the church was disestablished and disendowed in 1920. It is now an independent organisation divided into six dioceses, S. Asaph, S. Davids, Llandaff, Bangor, Monmouth and Swansea and Brecon. The Archbishop of Wales is the primate and the synod is the governing body.

The University of Wales, founded in 1893, consists of colleges at Aberystwyth, Bangor, Cardiff and Swansea.

Wales Prince of. *See* EDWARD.

Walking Form of sport. It has been practised more in Italy than elsewhere. The earliest champion walkers were, however, Larner and Webb of Britain. In England, the London-Brighton Walk is still held yearly, and a host of clubs and competitions flourish. Keenness for walking has enjoyed a remarkable vogue in Britain since 1931, being familiarly known as hiking; but it had been for a long time a popular form of recreation in Germany.

Wallaby Species of small kangaroo (*q.v.*) from which it differs only in size and coloration.

Wallace **Alfred Russel.** English naturalist. Born Jan. 8, 1823, at Usk in Monmouth, he travelled extensively and formed his theory of evolution at the same time as Darwin (*q.v.*). On many points he differed from Darwin, particularly in regard to selection in animals. The "Wallace line" is an imaginary line drawn through the Malay Islands, to the north of which exist mammals widely differing from those of the south. Wallace died at Broadstone on Nov. 7, 1913. Among his many books are *Man's Place in the Universe* and *Social Environment and Moral Progress*.

Wallace **Edgar.** English journalist. Born in London in 1875, and brought up by a Billingsgate fish porter, he developed literary tastes while a soldier in S. Africa, and then became a war correspondent, and later dramatic and racing journalist in London. He had an unrivalled acquaintance with the criminal classes, and wrote 150 novels and 14 plays. He died Feb. 10, 1932, in Hollywood, California.

Wallace **Sir Richard.** English art collector. Born in London, July 26, 1818, he spent much of his life in Paris, where he made a wonderful collection of paintings, furniture, armour and bric-a-brac. In 1871 he was made a baronet for services in the siege of Paris, where he died July 20, 1890. Lady Wallace (*d.* 1897) bequeathed his collection to England. It is housed in Hertford House, Manchester Square, London.

Wallace **Sir William.** Scottish national hero. Born in 1270, he was outlawed for killing an Englishman in a quarrel, and, gathering a desperate band round him, drove the English from Scotland in 1297. He was then made Guardian of Scotland and ruled wisely. In 1298 he was conquered by Edward I. at Falkirk, and in 1305 was treacherously handed over to the king, who had him executed, Aug. 22, 1305.

Wallachia Division of Rumania. It lies between the Carpathians and the Danube, the Black Sea and Serbia, and has an area of 30,000 sq. m. and a population of about 3,298,400. It was formerly a Danubian principality.

Wallaroo Seaport of S. Australia. Situated on Spencer Gulf, it is the port for a copper mining district and considerable export trade. The chief industry is copper smelting. Pop. 4020.

Wallasey County borough of Cheshire. It stands on the south side of the estuary of the Mersey, and 206 m. from London, on the L.M.S. Rly. A ferry service connects it with Liverpool. It includes the seaside resorts of New Brighton, Seacombe, Egremont and Liscard and is a residential suburb of Liverpool. Pop. (1931) 97,465.

Wallenstein **Albrecht Wenzel Eusebius von.** German soldier and politician. He was born in Bohemia, Sept. 15, 1583. During the capture of Bohemia by Ferdinand II. he secured territory which he made into his own realm of Friedland. He was Ferdinand's most powerful supporter in the Thirty Years' War. Ultimately, after attaining great power, he was suspected of treachery and dismissed in Jan., 1664, being assassinated on Feb. 25.

Waller **Edmund.** English poet. He was born Mar. 9, 1606 at Coleshill, Buckinghamshire, and was educated at Eton and King's College, Cambridge. He entered Parliament in 1625 and was a member of the Long Parliament until 1643, and sat in Parliament after the Restoration. For his share in a plot to assist Charles I. in 1643 he was fined £10,000 and banished, but was pardoned, and returned to England in 1651. He is chiefly known for the lyrics he wrote to the lady he called Sacharissa, who was Lady Dorothy Sidney. He died Oct. 21, 1687.

Wallflower Perennial flowering plant (*Cheiranthus cheiri*) of the order *Cruciferae*. The original wild variety, introduced into England in the 16th century bears single yellow blooms and is found on ruined buildings in many parts of the country. Cultivated varieties display every shade of red-brown, gold, bronze and purple.

Wallingford Borough and market town of Berkshire. It is on the Thames, 15 m. from Reading, and 51 from London by the G.W. Rly. There are remains of a castle, and a stone bridge crosses the river. Here, in 1153, Stephen concluded a treaty with Matilda, in which it was agreed that her son, afterwards Henry II., should succeed Stephen. Pop. (1931) 2840.

Wallington With Beddington an urban district of Surrey. It is 3 m. S.W. of Croydon, on the S. Rly. *See* BEDDINGTON.

Walloon Race found in certain parts of Belgium and N. France. Their language is a Romance dialect akin to modern French but possessing affinities with the Celtic group. The Walloons are said to number three millions, and resemble their French more than their Flemish neighbours. Many came to England as refugees from the Inquisition. They carried on silk weaving and other industries and have a chapel in the crypt of Canterbury Cathedral.

Wall Pennywort Herbaceous plant (*Cotyledon umbilicus*) of the order *Crassulaceae*. The flowers are borne in a long spike of drooping, greenish white cup-shaped blossoms. Found on dry walls and rocky banks, it flourishes in Devon and the western counties of England.

Wallsend Borough of Northumberland. A colliery centre, it is 4 m. from Newcastle and 272 from London by the L.N.E. Rly. The town is situated at the end of Hadrian's Wall, hence its name. Pop. (1931) 44,582.

Wall Street Street in New York. It is in the older part of the city, near the end of the island. Here is the stock exchange.

Walmer Urban district and summer resort of Kent. It is 3 m. from Deal and 82 from London, on the S. Rly. The castle was built in the 16th century, and is the residence of the Lord Warden of the Cinque Ports. Pop. (1931) 5324.

Walney Island and bathing resort of Lancashire. It is 10 m. long and about a mile wide. In the centre is Vickerstown. The island is part of the borough of Barrow-in-Furness.

Walnut Tree (*Juglans regia*) grown in Britain since the 15th century. From 40 to 60 ft. in height, the massive stem has a smooth grey bark, which furrows and becomes rugged with age. The head is wide and spreading with glossy green leaves, formed of a variable number of lance-shaped leaflets. A green fleshy case encloses the seed, or nut, in its hard, wrinkled shell. The unripened fruits are used for pickling, and a fine oil expressed from the matured nut is employed in paint and varnish making. The ripe nut of the walnut is a popular dessert fruit, and is much used in the making of sweetmeats. It is also pickled for use at the table.

The wood is valuable for furniture and cabinet-making, and was once employed for the fashioning of gun stocks.

Walpole **Horace.** English man of letters. Born Sept. 24, 1717, in London, fourth son of the 1st Earl of Orford, he travelled abroad, after leaving Cambridge, until 1741, and sat in Parliament from 1741-68. He bought a villa at Strawberry Hill near Twickenham in 1748, and rebuilt it as a Gothic mansion and museum. He succeeded to the earldom in 1791, and was the author of *The Castle of Otranto* and many letters. He died March 2, 1797.

Walpole **Hugh Seymour.** English novelist. Son of George Walpole, Bishop of Edinburgh, he was born in

Auckland, N.Z., March 13, 1884, and educated at King's School, Canterbury, and Cambridge. He served with the Russian Red Cross in the Great War, and was awarded the C.B.E. His first book, *The Wooden Horse*, appeared in 1909; it has been followed by many others, the favourites probably being *Mr. Perrin and Mr. Traill*, *The Dark Forest*, *Jeremy*, *The Cathedral*, *Rogue Herries* and *Judith Paris*. *The Cathedral* was dramatised. In 1932 he published *The Fortress*.

Walpole Sir Robert. English statesman. Born Aug. 26, 1676, and educated at Eton and Cambridge, he entered Parliament in 1701 and became Secretary for War in 1708. On the accession of George I., he was appointed Chancellor of the Exchequer. Out of office from 1717 to 1721, his handling of the crisis occasioned by the South Sea Bubble (*q.v.*) brought him back to power. For the next 21 years he was virtually Prime Minister (though the name was not then in use), directing policy and presiding over the cabinet. His Whig principles secured him the support of the Whig landowners, his policy of peace ensured that of the commercial classes. His geniality and commonsense gained him the support of Parliament, which he further secured by bribery. He had, however, to withdraw his only important measure, the Excise Bill of 1733, owing to its principles being misunderstood. He was opposed to the War of Jenkins's Ear and to English participation in the Austrian Succession War, and resigned in 1742. Created Earl of Orford, he died March 18, 1745.

Walpurga English saint. Daughter of a king of the West Saxons, she went as a missionary to Germany, and in 754 became abbess of the Benedictine nunnery at Heidenheim. After her death, about 780, her relics were laid in a cave, whose rock afterwards exuded an oil regarded as miraculous against disease. A church was built there, and became a place of pilgrimage.

Walpurgisnacht is the name given to the eve of S. Walpurga's day, which is celebrated on May 1. On this night, which coincided with an old pagan festival, witches were supposed to meet on the mountains, especially the Brocken (*q.v.*).

Walrus Large marine mammal. It is allied to the seals and has a round head, small eyes, no external ears and a heavy body. It is characterised by the prolongation of the upper canine teeth into tusks. The walrus inhabits the N. polar regions in small herds. Its flesh is eaten by the Eskimos, and the oil, hide and ivory are commercially valuable.

Walsall County, borough and market town of Staffordshire. It is 8 m. from Birmingham and 121 from London by the L.M.S. Rly. The town has long been noted for its saddlery; other industries are the manufacture of hardware, and coal mining. It sends one member to Parliament. Pop. (1931) 103,102.

Walsingham Town of Norfolk. It is on the River Stiffkey, 5 m. from Wells, on the L.N.E. Rly. The parish church is a beautiful building, but the place is best known for its ruined priory, dedicated to Our Lady of Walsingham, a popular shrine in the Middle Ages.

The title of Baron Walsingham has been held since 1780 by the family of de Grey Thomas.

Walsingham Sir Francis. English statesman. Born at Chiselhurst about 1530, and educated in Cambridge and abroad, he soon attracted the notice of Burghley, who sent him on various diplomatic missions. So successful was he in these, that Burghley recommended Elizabeth to appoint him one of her secretaries of state. He was an enemy of Mary Queen of Scots, intercepted many of her letters, and had his spies among her entourage. His activities probably prepared the way for her execution. Knighted in 1577, he died in indigence, April 6, 1590.

Waltham Holy Cross Urban district of Essex, also called Waltham Abbey. It is 13 m. from London on the L.N.E. Rly. The chief building is the church of the old abbey founded here in 1060. The industries are brewing and flour milling. Pop. (1931) 7116.

Waltham Cross District of Hertfordshire. About 13 m. from London on the L.N.E. Rly., it possesses one of the five crosses erected by Edward I. to commemorate the resting-places of the body of Queen Eleanor on its way to burial in Westminster Abbey.

Walthamstow Borough of Essex. It is on the L.M.S. and L.N.E. Rlys., and is a residential suburb of Greater London. It has been a borough since 1929. Pop. (1931) 132,965.

Walton Izaak. "The Father of Angling." He was born at Stafford, Aug. 9, 1593, and after 20 years in business as a linen draper in London, retired in 1644. He married in 1626, Ann Ken, through whom he formed many friendships among the English clergy. His most famous work, *The Compleat Angler* or *The Contemplative Man's Recreation*, was published in 1653. A later edition (1676) contained Charles Cotton's *Second Part of the Compleat Angler*. Walton also wrote *Lives* of Donne, Wotton, Herbert and others. He died Dec. 15, 1683.

Walton Heath District of Surrey. Its station is Tadworth, 23 m. from London by the S. Rly. Walton Heath has a golf course, and at the village of Walton-on-the-Hill is an old church.

Walton-le-Dale Urban district of Lancashire. It is 2 m. from Preston, 230 from London by the L.M.S. Rly, and stands on the Ribble. It is a centre of the cotton industry and has market gardens. Pop. (1931) 12,718.

Walton-on-Thames Urban district of Surrey. It is 5 m. from Kingston, on the S. Rly. Besides its attractive position on the Thames, it has a famous golf course. Pop. 14,647.

Walton-on-the-Naze Urban district and seaside resort of Essex. It is 7 m. from Harwich and 70 m. from London by the L.N.E. Rly. Its importance has been reduced by the inroads of the sea, and in 1798 the parish church was destroyed by the tides. It is a popular seaside resort. Near is Walton Mere, a noted resort of wild duck. Pop. (1931) 3066.

Waltz Round dance. Originating in Germany it was introduced in the 18th century into France, and into England

in 1812. At first much ridiculed, it became very popular, and has survived to the present day, with some variations in time and movement. It is written in ¾ time. The most famous waltz composers were the Viennese composers, Johann Strauss and his brothers.

Walvis Bay Bay and port on the W. coast of Africa, 725 m. from Cape Town. An area of 374 sq. m. round the bay became British in 1878, and was annexed to Cape Colony in 1884. It now forms part of S.W. Africa under the Union of S. Africa.

Walworth District of S.E. London. It forms part of the borough of Southwark. The Browning Settlement is in York Street. Walworth is said to have been the birthplace of Sir William Walworth (*d.* 1385), the Lord Mayor of London, who, with John Standwick, killed Wat Tyler.

Wampum Small bead made of shell. They are used by the American-Indians as money or as ornaments.

Wandering Jew Legendary character who is doomed to wander until Christ comes again. According to one of the old stories, he is thus punished because, as Jesus passed him, bearing the cross, he said, "Get on! Faster!" whereupon Jesus replied, "I am going, but thou shalt wait until I come again." The legend is embodied in a romance by Eugene Sue, and a play by Mr. Temple Thurston.

Wandle River of Surrey. It rises near Croydon and flows through Mitcham to join the Thames. Its length is about 11 m.

Wandsworth Borough of the county of London. It covers an area of 14¼ sq. m., and owes its name to the river Wandle on which it stands. It has a fine common of 183 acres, and a park of 20¼ acres opened in 1903. **Wandsworth Prison** dates from 1851. A bridge built in 1873 provides a roadway to Fulham. There is a Huguenot burial-ground at East Hill dating back to the time when Wandsworth was a haven for refugees of that faith. It sends five members to Parliament. Pop. (1931) 353,101.

Wanganui River and town of North Island, New Zealand. The river rises on Mt. Tongariro and flows into Cook Strait. Small craft can sail up some 140 m. of its 200 m. course. The town is situated 4 m. from the mouth of the river, 134 m. from Wellington. It exports local agricultural produce. Pop. (1932) 27,800.

Wangaratta Town of Victoria, Australia. It is situated at the junction of the Ovens and King rivers, 145 m. by rail from Melbourne. The centre of a fruit district, it has an agricultural showground and is the headquarters of an Anglican bishopric. Pop. 3500.

Wanstead Urban district of Essex. It is served by the L.M.S. and L.N.E. Rlys., and lies on the borders of Epping Forest. It has a park of 200 acres, with lakes and a heronry, secured by the city corporation in 1880. Pop. (1931) 15,297.

Wantage Urban district and market town of Berkshire. It is 60 m. from London and 26 from Reading, and has a station called Wantage Road on the G.W. Rly. The parish church has some features of great interest. In the market place is a statue of Alfred the Great, who was born here. The town has an agricultural trade. Pop. (1931) 3424.

The title of **Baron Wantage** was borne by Robert James Loyd Lindsay. He won the V.C. in the Crimea and was M.P. for Berkshire, 1865-85. In 1885 he was made a peer, but his title became extinct when he died, June 10, 1901.

Wapiti Deer (*Cervus canadensis*) found in N. America. It is larger than the red deer and has very fine antlers. It frequents low ground or woody districts near marshes. The hide makes excellent leather.

Wapping District of London. It is on the N. side of the Thames in the borough of Stepney, and its industries are connected with the docks. The Thames tunnel goes from here to Rotherhithe.

War **Great.** International struggle which raged nearly all over the Old World between Aug., 1914, and Nov., 1918. It began with Austria's attack on Serbia in July, 1914, following the murder of the Archduke Francis Ferdinand at Sarajevo. Russia came to the help of Serbia, and Germany to that of Austria. War was then declared on France, as Russia's ally, and the invasion of Belgium brought Great Britain into the struggle. Germany and Austria, a little later, secured the aid of Turkey and then of Bulgaria, and these four countries formed the group called, from their geographical position, the Central Powers.

France, Russia and Great Britain, the three strongest members of the group called the Allies, with Belgium and Serbia on their side, were also joined by Japan and Italy in 1915, and by Rumania in 1916. Another ally was Portugal, and the last to join the group was the United States in April, 1917. The struggle was on an unprecedented scale. Probably 30,000,000 men were under arms at the same time, and money and munitions were expended to an extent hitherto regarded as impossible.

The main theatres of war were in Europe where, on the Western Front, France and Great Britain confronted Germany, while on the Eastern Front Austria and Germany confronted Russia. The operations on the Italian frontiers may be regarded as an extension of the Western Front, and those in the Balkans, including the Salonika campaign, as an extension of the Eastern one. The Turkish Empire afforded two other theatres, the Gallipoli Peninsula and Mesopotamia. Elsewhere, attacks were made on Germany's colonial possessions. Japan captured Kiao Chow, and those in Africa and the South Seas were taken by the British, including Australian and South African forces, with aid from the French and Belgians. Only in German East Africa was the struggle prolonged or uncertain.

Second in importance only to the struggle on the Western Front was the command of the sea by the British and Allied fleets. Without this the transport of troops and munitions to the various areas would have been impossible. The German fleet was penned in its harbours from which it could only emerge occasionally and by stealth for raids on the British coast, and German ports were successfully blockaded.

On the other hand, the German fleet was not destroyed, nor were its harbours attacked. It remained in being even after the indecisive Battle of Jutland, the one major naval engagement of the war, and this fact had an important bearing on the course of the war. The submarine campaign conducted by the Germans against Allied shipping caused serious losses and grave

anxieties, especially in 1916 and 1917, only narrowly failing to achieve its purpose.

Each year of the struggle had its own features. In 1914 the Germans nearly reached Paris, and the Russians invaded East Prussia and Austria, but both advances were driven back after the opening battles. The chief engagements were on the Marne and the Aisne in the west and Tannenberg in the east.

In the west 1915 was a year of trench warfare, with trenches stretching from the Belgian coast to Switzerland. Attacks were made by the British at Neuve Chapelle and Loos, while the Germans attacked, as in 1914, at Ypres. The British landed on the Gallipoli Peninsula, but withdrew before the end of the year. From India an army was sent to Mesopotamia, but this campaign also failed, though not so completely as that at Gallipoli. Russian successes proved only temporary, and Poland was overrun by Germany. Serbia suffered a like fate, while Italy's attacks on Austria produced small results.

Events of 1916 included the costly British attack known as the Battle of the Somme, the desperate fighting between the French and Germans for the possession of Verdun, and the German conquest of Rumania. Russia was weakening; Italy was making no progress, and the British suffered a serious reverse at Kut in Mesopotamia. Meanwhile the submarine war was being ruthlessly carried on, and allied shipping was suffering severely.

On land the stalemate seemed complete when 1917 opened. The fierce and costly fighting in the west led to no definite result. The year's main events were the entry of the United States into the war and the collapse of Russia, which after a last desperate offensive in July, made peace with Germany at Brest Litovsk early in 1918. After the Italian defeat at Caporetto, British and French troops were sent to that country. The British, however, regained the upper hand in Mesopotamia, and Allenby entered upon his successful campaign in Palestine.

Early in 1918 the Germans, in a last offensive, defeated the British at St. Quentin, and drove back the French to Paris as in 1914; but with American armies in the field a marked change was soon seen. In a series of battles the Allies drove the Germans from the ground they had held for years in France and Belgium, until they were in a position to invade the enemy country. At the same time the Italians defeated the Austrians; the Turkish armies were routed everywhere, and the advances from Salonika crushed the Bulgarians. The enemy one by one called for an armistice, and fighting ended with that granted to Germany on Nov. 11, 1918. Terms of peace were arranged in Paris and embodied in the Treaty of Versailles and in other treaties. *See* AISNE; ARRAS; CAMBRAI; GALLIPOLI; JUTLAND; LOOS; MARNE; MONS; NEUVE CHAPELLE; SOMME; TANNENBERG; VERSAILLES.

War of 1812 War fought between England and the U.S.A. The war, declared by Congress, June 18, 1812, was caused by the rigorous exercise on the part of Britain of her rights of search (under Canning's Orders in Council, 1807) over neutral (in this case American) vessels. At sea the Americans were generally successful, but not in the famous duel between the Shannon and the Chesapeake, June, 1813, while three expeditions against Canada were complete failures. In 1814 a British force under Ross captured Washington and burnt the White House, but a second contingent under Pakenham was repulsed at New Orleans in Jan., 1815, by Andrew Jackson, with great loss. The peace previously concluded by the Treaty of Ghent (Dec., 1814) did not appear to give the victory to either side.

Waratah Australian shrub (*Telopea speciosissima*) of the order *Probeoceae*. It is one of the national emblems of Australia. The tubular crimson or scarlet flowers are borne in terminal clusters.

Waratah Town of New South Wales. On the N. Rlv., 4 m. from Newcastle, of which it is a suburb, and 107 from Sydney, it is a popular residential area. Steelworks employ many thousands. Fruit is grown in the surrounding district.

Waratah Town of Tasmania. About 90 m. due W. of Launceston and about 120 m. by rail, it was formerly the centre for the tin mines at Mt. Bischoff, now almost abandoned.

Warbeck Perkin. Native of Tournai who posed as Richard, Duke of York, the younger of the princes said to have been murdered in the Tower by Richard III. Recognised by Charles VIII. of France, and supported by the emperor Maximilian, he landed in Kent in 1495 and was accepted at the Scottish court by James IV. Surrendering at Beaulieu, Hampshire, in 1498, on a promise of pardon, he was imprisoned. He escaped, was retaken and hanged at Tyburn, Nov. 23, 1499.

Warbler Insectivorous bird of the family *Sylvidae*, related to the thrushes. Among British species are the garden warbler (*Sylvia hortensis*); Dartford warbler (*Melizophilus* or *S. undata*); whitethroat (*S. communis*); blackcap (*S. atricapilla*); chiffchaff (*Phylloscopus rufus*); wood warbler (*P. sibilatrix*); reed warbler (*Acrocephalus streperus*); sedge warbler (*A. phragmitis*).

Ward Term used for a person under 21 who is in the guardianship of some older person. Orphans who have inherited money are usually wards. *See* GUARDIAN.

Ward In England and Wales a division of a city, borough or urban district. It sends representatives to the council, each ward usually electing three members. The wards were created when the boroughs were reformed in the 19th century, except in the city of London where they are old and bear old names, *e.g.*, Candlewick and Portsoken.

Ward Artemus. Pen-name of Charles Farrar Browne, American humorous writer. He was born at Waterford, Maine, April 26, 1834. In 1858 he published a description of an imaginary menagerie in the *Cleveland Plaindealer*. He followed this with a series of humorous letters, remarkable for their quaint spelling and the sound sense hidden under a comic style. He then spent three years as a lecturer and panorama showman, and, coming to England in 1866, died there March 6, 1867.

Ward Sir Joseph George. New Zealand statesman. Born in Melbourne, April 26, 1857, he entered politics in 1887 as Liberal member for Awarua. He held office in the departments of customs, industries and commerce, marine, railways; was Postmaster-General and Colonial Secretary, 1899-1906; Prime Minister, 1906-12; Minister of Finance in the National War Cabinet, 1915-19; and

represented New Zealand at the Peace Conference, 1919. Created a baronet in 1911 he was again Premier, Dec., 1928-May, 1930. He died July 8, 1930.

Ward Mary Augusta. English novelist. Born June 11, 1851, at Hobart, Tasmania, in 1872 she married Thomas Humphry Ward. She began by writing for *Macmillan's*, and then wrote a children's story, *Milly and Olly*, 1881; followed by *Miss Bretherton*, 1884, and a translation of Amiel's *Journal Intime*, 1885. Later she wrote the three novels for which she is most famous, *Robert Elsmere*, 1888; *David Grieve*, 1892; and *The Marriage of William Ashe*, 1905. She founded the Passmore Edwards Institute, now known as the Mary Ward Settlement, in Tavistock Place, London, W.C., and died March 24, 1920.

Warden Word often used to denote a watchman or guardian, but used in England also for a head official, *e.g.*, warden of a university settlement or of a college. The chief officer of the Stannaries of Cornwall has the title of Lord Warden, as has the Governor of Dover Castle. In mediaeval times the lords warden were powerful nobles who guarded the English borders against Scotland and Wales.

Wardmaster Officer in the royal navy. A few are commissioned officers and others warrant officers.

Ward Room Room in a battleship used by the senior officers for meals, etc. The captain takes his meals in his own cabin, but the other officers down to the lieutenants use the ward room. Junior officers use the gun room.

Ware Urban district of Hertfordshire. It is 2 m. from Hertford, on the River Lea and on the L.N.E. Rly. There is a Roman Catholic training college, St. Edmund's. The town has breweries and brickfields, and a considerable trade in malt. The Great Bed of Ware, formerly at the Saracen's Head Inn, has been removed to Rye House near Hoddesdon. Pop. (1931) 5949.

Wareham Borough of Dorset. It is on the Frome, 10 m. from Poole and 121 from London, on the S. Rly. The churches of S. Mary and S. Martin are both old, and in S. Mary's is the coffin of Edward the Martyr. There are some ancient British earthworks. Pop. 2057.

War Graves Burial places of those who fell in the World War. The largest number are in France; others being in Belgium, Italy, Greece, Egypt and Palestine. The War Graves are cared for by a permanent commission, and each country has set aside a sum to provide for their maintenance.

Warkworth Village of Northumberland. It is 32 m. from Newcastle, on the L.N.E. Rly. There are extensive ruins of an old castle of the Percys; these include the Lion Tower, the great hall and the chapel. The church is Norman. An old bridge crosses the river to Amble; on it is a fortified gateway.

Warminster Urban district and market town of Wiltshire. It is 9 m. from Trowbridge, stands on the Wyelye and is served by the G.W. Rly. It is an agricultural centre, and has some small manufactures. The church of S. Denys is of interest. Pop. (1931) 5176.

Warmley Village of Gloucestershire, on the Somerset coalfield, 5 m. from Bristol and 123 from London.

War Museum Collection in London illustrating the Great War. It was opened in 1920 at the Crystal Palace, and in 1924 was removed to Imperial Institute Road, S. Kensington, and in the winter of 1935-36 to Lambeth Road, S. E. 1. It includes naval and military trophies and relics, ordnance, small arms and ammunition, ships and other models, works of art and photographs. There is also a library of 60,000 books.

War Office Department of the British Government. It is responsible for the control of the army. Its head is the Secretary of State, who is a politician and a member of the Cabinet. He is assisted by a parliamentary, a financial and a permanent secretary, as well as by a large military and civilian staff. Established in the time of Charles II., it has been several times reorganised, notably in 1903. Originally at the Horse Guards in Whitehall and then in Pall Mall, it is now in a new building in Whitehall completed in 1906.

Warrant Legal document which gives a person power to perform an act, or alternatively a document giving a person authority to fill an office or function. Much of the government of the country was carried out by **Royal Warrant** in the days when the king's power was greater and not accurately defined. There exist also **Judicial Warrants**, giving power of arrest and detention before trial, seizure of property, search of houses and buildings. **Financial and Commercial Warrants** are used by the National Treasury and many big business houses for payment of dividends. **Appointments by Warrant** are made in the services. Officers appointed by warrant and not by commission are termed "warrant" officers.

Warrant Officer Class of officer in the British navy and army. They are appointed to their position by warrant. In the navy they rank between the commissioned officers and the men, and are electricians, engineers, masters-at-arms, shipwrights, telegraphists, warrant-masters, writers and others. In the army, regimental sergeant majors and master gunners are usually warrant officers. There are also warrant officers in the air force.

Warrenpoint Seaport and urban district of Co. Down, N. Ireland. It is on Carlingford Lough, 6 m. from Newry. Steamers run from here to Liverpool. Pop. 1900.

Warrington County borough and market town of Lancashire. It stands on the Mersey, 18 m. from Liverpool and 182 from London, and is reached by the L.M.S and C.L. Rlys. The fine old parish church contains some interesting memorials and the town hall was once a manor house. Cotton, hardware, soap and glass are among the manufactures. Pop. (1931) 79,322.

Warrnambool Town and seaport of Victoria. It is 166 m. by rail from Melbourne. It has a good harbour: shipping is the chief industry. Pop. (1931) 8,200.

Warsaw Capital of Poland. It is picturesquely placed on the left bank of the Vistula, about 400 m. E. of Berlin. The religious, as well as the political capital, it has a Roman Catholic and a Greek Orthodox archbishop. The walls which surround the city are entered by eleven gates. Among the

nany fine churches are the Roman Catholic Cathedral of S. John, dating from the 13th century; the Lutheran Church and those of Holy Cross and S. Andrew.

The Orthodox Alexander Nevski cathedral, a modern building begun in 1894, was pulled down after the Great War. The university, which dates from 1861, has a fine library. There is a large Jewish colony in the suburb of Praga. Warsaw superseded Cracow as the Polish capital in 1609. It is an important industrial centre, wool and woollen goods being the chief manufactures. There is railway communication with Vienna, Leningrad, Moscow and elsewhere. It has two broadcasting stations (1411 M., 120 kW., and 214.3 M., 1.9 kW.). Pop. (1931) 1,178,211.

Wart Papillary growth of the skin. The flat variety occurs mostly in children. The long, pendulous variety occurs on the chin, neck, or scalp of adults. Warts may appear in crops, suddenly, and as suddenly disappear. In adult life they are sometimes due to repeated irritation, and are often of a tubercular or cancerous origin. Treatment is by some caustic such as glacial acetic acid, applied once daily on the pointed end of a match, or by X-rays.

Wartburg Hill in Thuringia. It is near Eisenach, and on it is a castle, until 1918 a residence of the Duke of Saxe-Weimar. In the original castle, built about 1200, was held the famous contest of the Minnesingers described in *Tannhäuser*. In 1521 Luther found a refuge here.

Wart Disease Disease which attacks potatoes, affecting both tubers and leaves. Large excrescences, resembling cauliflowers, are formed which gradually become quite black. Small blackish warts appear near the eyes of the younger tubers, increase in size and sometimes completely cover the potato. The spores may be dormant in the soil for four or five years.

Wart Hog Genus of African pigs (*Phacochoerus*) with two species. The boar has four large tusks, and at each side of the face are large wart-like pads. *P. africanus* is found over most of the continent; *P. aethiopicus* in the S.E. regions.

Warwick Borough and market town of Warwickshire, also the county town. It is 21 m. from Birmingham and 98 from London, and is reached by the G.W. and L.M.S. Rlys., the latter station being at Milverton. The chief building is the castle built in the 14th century, one of the most perfect existing specimens of its age.

The seat of the Earl of Warwick, it possesses a priceless collection of works of art and stands in a large park. S. Mary's Church, a fine building with a lofty tower, contains the Beauchamp Chapel with its famous tombs. Leycester's hospital, an almshouse of the 14th century, is regarded as one of the finest of its kind in the country. Two of the town gates, each with a chapel, still stand. Leamington and Guy's Cliffe are beauty spots near. Pop. (1931) 13,459.

Warwick Earl of. English soldier called the King Maker. Born Nov. 22, 1428, son of Richard, Earl of Salisbury, Richard Neville became Earl of Warwick by his wife's inheritance. For his success at the battle of St. Albans (1455) he was rewarded with the captaincy of Calais. At Northampton (1460) he took Henry VI. prisoner, placing Edward IV. on the throne in 1461. In 1464, Edward married secretly, in opposition to Warwick, who ultimately was forced into revolt. In 1470 he landed from Calais with the Lancastrians, and restored Henry VI. to the throne, but the next year Edward returned, and Warwick was killed at Barnet, April 14, 1471.

Warwickshire County of England. In the centre of the country, it covers 902 sq. m. Warwick is the county town, but Birmingham is much the largest city. Other cities or boroughs are Coventry, Leamington, Rugby, Stratford-on-Avon, Sutton Coldfield, Nuneaton and Tamworth. Around Birmingham and Coventry are great industrial areas, but elsewhere the land is pastoral. The county contains the forest of Arden and among its places of interest are Kenilworth, Edge Hill and Meriden. The Avon and the Tame are the chief rivers. It contains the dioceses of Coventry and Birmingham, and sends four members to Parliament. Pop. (1931) 1,534,782.

The **Warwickshire Regiment**, the 6th of the line, dates from 1684. It is a royal regiment, and its depot is at Warwick.

Wash The. Arm of the North Sea. It lies between the counties of Lincoln and Norfolk. Its area is about 22 m. by 15, but this is continually being reduced as land is reclaimed. The Great Ouse, Nen, Welland and Witham flow into the Wash. Its ports are Boston and King's Lynn, both somewhat inland.

Washington Urban district of Durham. In a coal mining district, it is 6 m. from Sunderland, and 260 from London, by the L.N.E. Rly. Pop. (1931) 16,989.

Washington State of the United States. It is in the extreme N.W. of the country with a coastline on the Pacific Ocean and Canada to the N., and covers 69,130 sq. m. Olympia is the capital, but Seattle, Spokane, Tacoma and other places are much larger. The chief industries are the growing of wheat and other cereals; fruit farming on a great scale, and the rearing of cattle, sheep and pigs. Much coal is mined. There are large forest areas and a number of reservations for the Indians. The state has a legislature of two houses, and sends two senators and six representatives to Congress. Pop. (1930) 1,563,396.

Washington Capital city of the United States. It is 136 m. from Philadelphia and 226 from New York, on the Potomac River, and is served by several railway lines. The land on which it stands is federal territory called the district of Columbia, 638 sq. m. in area, surrounded by the state of Maryland.

Washington was founded about 1790 as the seat of government, and contains a great number of public buildings. Chief among them is the Capitol, finely situated on a hill and famous for its magnificent dome. It was begun in 1818 to replace one burned by the British in 1812, and contains accommodation for the two houses of Congress. At the other end of Pennsylvania Avenue is the White House where the President lives. Washington has four universities—Georgetown, Columbian, George Washington and Howard. The Lincoln Memorial was erected in 1922; the Washington Monument was begun in 1848. Many of the inhabitants are in the public service and there is a large negro element. The industries

are concerned chiefly with printing and publishing and the preparation of foodstuffs. Across the Potomac, crossed by a fine bridge, is the Arlington National Park and the national cemetery. Pop. (1931) 486,869.

Washington George. American soldier and statesman. Born near Fredericksburg, Virginia, Feb. 22, 1732 he inherited the estate of his half-brother at Mount Vernon in 1752 and became a prominent tobacco planter. Between 1753 and 1758 he saw military service against the French. Elected a member of the House of Burgesses in 1758, in 1770 he came to the front as a champion of colonial liberties. As a Virginian representative to the Continental Congress of 1774 he did not favour American independence, but in 1775 he was chosen to command the colonial forces. In 1776 he succeeded in occupying Boston, but was driven out of New York. Victories at Trenton and Princeton, however, gave new life to American resistance. Defeated in 1777 at Brandywine Creek, he wintered at Valley Forge, fought an indecisive battle at Monmouth in 1778, and in 1781 received the surrender of Cornwallis at Yorktown. In 1787 as representative of Virginia he presided at the Federal Convention in Philadelphia and in 1788 was chosen first President of the United States. Cautious and painstaking as President, he was re-elected against his will in 1792, and in 1797 retired to his estates, where he died Dec. 14, 1799.

Washington Booker Taliaferro. Negro educationalist. He was born on a Virginian plantation in 1858, the son of a slave, and educated at the Hampton Institute where he became a successful teacher. In 1881 he was selected as the head of Tuskegee College, Alabama. Beginning in a broken-down shanty, at the end of 20 years he saw the institute firmly established with over 1000 pupils. He died Nov. 14, 1915.

Washington Treaty of. International treaty signed at Washington. At the invitation of the United States a conference met at Washington towards the end of 1921, and was attended by representatives of the United States, the British Empire, France, Italy, Japan, the Netherlands and Portugal. It dealt mainly with two subjects, China and the limitation of naval armaments. Great Britain, the United States, Japan and France, signed a treaty on Dec. 13, 1921, in which they agreed to respect mutually "their rights in relation to their insular possessions and insular dominions in the region of the Pacific Ocean." On Feb. 10, 1922, these four powers and Italy signed a treaty which limited the size of their navies. The United States kept 18 capital ships; the British Empire, 22; and Japan, 10. In future no capital ship was to be larger than 35,000 tons.

Wasp Hymenopterous insect of the *Vespidae* and other families, including both social and solitary genera. Social wasps of the genus *Vespa* are represented in Britain by a half-dozen species. The colony is begun by a female (queen) of the previous summer's brood, who lays eggs in a few cells made of pulped wood fibre, situated in a burrow made in the ground. The colony is added to, and in due course males and workers appear, then females nurtured in larger cells, who are the "queens." Certain of the latter survive the winter and carry on the race.

Wassermann reaction. Bacteriological test for syphilitic infection. It is based on a method, developed earlier, which demonstrated the presence in blood serum of compounds produced in blood for protective purposes against invading germs. It was adapted by Wassermann specially for detecting invasion by the germ of syphilis.

Wastwater Lake of Cumberland. It lies under Scafell and is the wildest of the English lakes. On one side the Screes rise almost perpendicularly from the water. To the N. is Wasdale Head, a great centre for climbers.

Watch Portable timepiece. It consists of a case and framework which contains a main-spring and apparatus for winding; a train of wheels with hands and face; an escapement, and a balance-wheel and hair-spring. The first watch was made by Peter Hele in Nuremberg about 1500.

Watch Portion of time, during which sailors are on duty The **first watch** extends from 8 P.M. to midnight; the **middle watch** from midnight to 4 A.M.; the **morning watch** from 4 A.M. to 8 A.M.; the **forenoon watch** from 8 A.M. to 12 noon; the **afternoon watch** from 12 noon to 4 P.M.; the **first dog-watch** from 4 P.M. to 6 P.M.; and the **second dog-watch** from 6 P.M. to 8 P.M.

Watchet Urban district and port of Somerset. It is 17 m. N.W. of Taunton and 160 m. from London by the G.W. Rly., and is situated on the Bristol Channel. There is a harbour for the fishing. Pop. (1931) 1936.

Water Colourless liquid, a chemical compound of hydrogen and oxygen, with the chemical formula H_2O. When pure it is clear, tasteless and chemically neutral. Its freezing and boiling points under normal atmospheric pressure are used as standards in measuring temperature, defining 0° C. (32° F.) and 100° C. (212° F.) respectively. It reaches its maximum density at 4° C. and expands on freezing (which causes the bursting of pipes), while when converted into steam it expands about 1700 times. It is a poor conductor of heat and electricity, and has the highest known specific heat (*q.v.*). Water covers 72 per cent. of the area of the earth, forms two-thirds by weight of the human body, and is indispensable to the existence of life.

Apart from the many uses to which it is put by man, and its rôle in promoting the growth of vegetation, it is, as water vapour, an important constituent of the atmosphere. By the pressure exerted when freezing it disintegrates rocks, and as rain, rivers and sea it erodes land surfaces. It is harnessed for the development of water power, and as steam is the basis of the steam engine; its virtual incompressibility and its power as a liquid of transmitting pressure equally in all directions are adaptable for use in engineering. It has been adopted as the standard for measurements of specific gravity and specific heat, and is used universally as a solvent. *See* ICE, STEAM, WATER POWER, HYDRAULICS.

Waterboatman (or **Boatfly**). Insect of the family *Notonectidae*, found in ponds in Great Britain. It swims upside down, propelling the body through the water with long strokes of its hind legs, which, when still, extend sideways like oars in a boat. The insect lives on water larvae and worms, and lays its eggs in the stems of water-plants.

Waterbuck Type of antelope (*Cobus ellipsiprymnus*). It lives in swamps and boggy places in S. and E. Africa, travelling in herds. Its colour is greyish-brown.

Water Bug Name loosely applied to hemipterous insects which are common in ponds. These include the water boatman or boatfly (*q.v.*), water scorpion (*q.v.*), and the water measurers or skaters.

Water Chestnut (or Jesuit's nut). Water plant (*Trapa natans*), of the order *Onagraceae*, a native of Central Europe. The four petalled white flowers are borne in the floating leaves, which form a rosette on the stem.

Water Colour Method of painting. Water colour paints are mixed with some adhesive substance and applied with water, and are supplied either in cakes or in tubes. The art is of considerable antiquity and is still the most popular method for sketching and other rapid work. Moreover more delicate effects can be obtained in water colour than in oils. Of the British school J. M. W. Turner may be regarded as the supreme master in water colour, with David Cox and John Sell Cotman as his successors.

Water Cress Edible perennial aquatic herb (*Radicula nasturtium*) of the order *Cruciferae*. It inhabits brooks and streams in Europe and parts of Africa and Asia, and is cultivated shallow in beds fed by running water for use as a salad.

Waterford County of Munster, Irish Free State. In the S. of the country, it covers 708 sq. m., and has a coastline of about 50 m. Waterford is the county town. Other places include Dungarvan, Youghal and Lismore. The chief rivers are the Suir and the Blackwater. The surface is hilly, but the soil is not unfertile. Butter and eggs are produced, and the fisheries are valuable. Pop. (1926) 51,915.

Waterford Borough and river port of Waterford, Irish Free State; also the county town. It stands at the junction of the rivers Suir and Barrow, 94 m. from Dublin by the G.S. Rlys. There are two cathedrals. Reginald's Tower is said to date from the 10th century. The industries include shipping, bacon curing and a trade in livestock and dairy produce. At one time the city was famous for its glassware. Pop. (1926) 26,647.

The title of **Marquess of Waterford** has been borne by the family of Beresford since 1789. The eldest son of the marquess is called the Earl of Tyrone.

Water Gas Gas made by forcing steam through incandescent coke or anthracite. Carburetted, it is mixed with coal gas for lighting, and it is also used as furnace fuel.

Water-Glass Popular name for sodium silicate. It is made by fusing together soda ash and clean sand under strong heat. It is so called because, though it looks like glass, it is soluble in water. Its most common use is for preserving eggs for domestic use.

Waterhouse **Alfred.** English architect. He was born in Liverpool, July 19, 1830, and practised first in Manchester and then in London. He designed the Natural History Museum, S. Kensington; the town hall, Manchester; University College, Liverpool; St. Paul's School, London; and Girton College, Cambridge. He was made A.R.A. in 1878, and R.A. in 1885. He died Aug. 22, 1905.

Water Hyacinth Perennial South American aquatic plant (*Eichhornia crassipes*) of the order *Pontederiaceae*. It is a native of tropical regions, floating on the rivers, and is grown as a hot-house plant. The handsome violet flowers appear in clusters.

Water Lily Aquatic plant of the order *Nymphaeceae*, found in temperate to tropical regions. Mostly with broad large floating leaves, and red, yellow or white flowers, they range from the common British white (*Nymphaea alla*), and yellow (*Nuphar luteum*) lilies to the giant Brazilian lily (*Victoria regia*), with leaves over a yard across.

Waterloo Village of Belgium. It lies about 11 m. to the S. of Brussels and gives its name to a battle fought there between the British and their allies, and the French on June 18, 1815. This was the culminating engagement in a campaign often called the campaign of Waterloo.

The army of Napoleon, who had escaped from Elba, came into touch with the allied forces near Brussels. On the 16th there were two indecisive battles at Quatre Bras, where a mixed force of Dutch, Belgians and British drove back the French, and at Ligny, where the Prussians were forced to retreat, thus widening the gap between them and the British. The British under Wellington fell back to Waterloo, followed by the French. In the battle which began on 18th, the British held the Château of Hougoumont, in spite of furious attempts to dislodge them, and the French cavalry charges. The arrival of the Prussians under Blücher turned the scale, and the French took to flight. The battle finally ended Napoleon's attempt to regain the French throne; he surrendered to the British on board the *Bellerophon*, July 15, 1815, and was sent a prisoner to St. Helena.

Waterloo Station in London. On the S. side of the river, it is the headquarters of the S. Rly. It was opened in 1848, and until the changes of 1921 was the headquarters of the L. & S.W. line. It was rebuilt in 1921-22, and with its 21 platforms is the largest of the London termini. There are connections by tube railways to all parts of London.

Waterloo Suburb of the city of Sydney, New South Wales. It includes Zelland and Rosebury, and has 25 m. of streets. Pop. 12,500.

Waterloo Bridge Bridge over the Thames in London. It connects Wellington Street, Strand, to Waterloo Road. Built from designs by John Rennie, it was opened in 1817, and named in memory of the battle. It consists of nine arches. In 1924 the bridge began to give way, and in 1925 it was closed for repairs; a temporary bridge being built alongside for the traffic. It was proposed to build a new bridge, and the London County Council accepted the idea. There was, however, a good deal of opposition, and in 1932 the House of Commons refused to vote the necessary money. The L.C.C. proceeded with the work, which is now (1936) nearing completion.

Waterloo Cup Chief coursing event in Great Britain. The race for it is held each year in Feb., on the flats at Altcar near Liverpool. It dates from 1836. The Waterloo Purse and the Waterloo Plate are other coursing events.

Waterloo -with-Seaforth. Urban district and seaside resort of Lancashire. It is on the Mersey 4 m. N.W. of Liverpool and 207 from London by the L.M.S. Rly. Pop. (1931) 31,180.

Water Mark Any distinguishing device stamped in the substance of a sheet of paper. It is done when the paper is in a wet and pulpy condition. Some of the old water marks are very elaborate designs. They serve, especially in the case of paper used for bank and currency notes, as a protection against forgery.

Water Mite Tiny aquatic parasite (*Hydrachna*) of the order *Acarina*. It lives on water-beetles and similar insects.

Water Ousel (or Dipper). Bird (*Cinclus aquaticus*) of the *Cinclidae* common in parts of Britain. It is brown to slate coloured above, and white beneath. The length is 7 in. The water ousel frequents quick running streams, and dives to the bed to seek its food, aquatic insects and their larvae. Its feet are specially adapted to grip stones.

Water Polo Ball game played by swimmers. The game consists of propelling an inflated rubber ball into a goal. The pitch is 30 yds. long by 20 yds. wide. About seven minutes each way are played, and the players on each side are 3 forwards, 1 half, 2 backs and 1 goalkeeper. A London Water Polo League was formed in 1889.

Water Power Energy obtained from moving or falling water. Water has been used for many centuries to drive the wheels that provide power for mills where flour, paper and other commodities are produced, and many of these mills may be seen on the banks of rivers in England.

The introduction of electricity led to a great increase in the use of water power, as it was found that it could be employed to drive turbines to generate electricity. In this way the water power, hitherto only local in its results, can be made to provide power at great distances from its site. The power from the falls at Niagara, for instance, is taken great distances, and that of the Shannon is used over most of the Irish Free State. The power is obtained from the force of the falling water and is increased by forcing this through a narrow aperture. The electricity generated is used for lighting and power purposes.

It is estimated that the world's developed water power is 34,575,000 h.p., and the potential supply is 459,000,000 h.p. To this total the United States with 13,571,530 and Canada with 4,556,000 are the largest contributors. Other countries in which a good deal of water power is used are Italy, 2,300,000, France, 2,000,000, Norway, 1,900,000, Switzerland, 1,850,000, Sweden, 1,350,000, Germany, 1,100,000, and Spain, 1,000,000. The British Isles has 250,000, developed, and a potential supply of 850,000 h.p.

Waterproofing Treating of a surface so as to render it resistent to the penetration of water. Fabrics are often coated with rubber, naphtha being used as the solvent. Proofing with oil is another common method. The process called rain-proofing depends on the deposition on the fibres of the fabric of an insoluble precipitate of some such chemical as alum. A special close weave is employed.

Water Scorpion Hemipterous insect (*Nepa cinerea*) of ponds and other stagnant waters. It has a flat, thin body, furnished with a tail-like breathing tube, which is protruded from the water when the insect takes in air. This tube and the large curved, pincer-like fore-legs give it its name.

Watershed Ridge of land separating the head-waters of two different river systems. In mountainous areas the watershed is generally well defined, but not in comparatively flat tableland, where head-streams of two or more distinct rivers may arise in one common swampy area.

Water-Snake Popular name of several different aquatic serpents. (1) A harmless colubrine serpent of the *Tropidonotus* or related genus, found in America and Europe. (2) An E. Indian fresh-water, fish-eating homalopsoid serpent. (3) A wart-snake. (4) A sea-snake or hydrophid.

Waterspout Meteorological phenomenon occurring at sea, associated with violent cyclonic storms of very small diameter. From the lower surface of a central cloud, a funnel-shaped projection approaches the sea, a mass of spray from the sea becoming involved, forming a column which is, however, composed principally of raindrops.

Water Thyme Water weed (*Elodea canadensis*), with long jointed stems which root at every joint. It increases rapidly, causing congestion in streams and canals.

Waterville City of Maine, U.S.A. It is about 20 m. from Augusta, on the Kennebec River. Water power from falls on the river is used in manufacturing cottons and woollens. The city is the seat of Colby College, a Baptist institution. Pop. (1930) 15,454.

Water Violet Water plant (*Hottonia palustris*) of the order *Primulaceae*. The long roots are suspended in the water and the thick branching stems are tufted with feathery leaves which are submerged. The flower stem rises about a foot above the water bearing whorls of salver-shaped flowers, white or lilac, with a yellow centre.

Watford Borough and market town of Hertfordshire. It is situated on the Colne, and is served by the L.M.S., Met., and Bakerloo Rlys. and numerous bus and coach services. A large residential district, its parish church contains memorials of the Essex family. There are chocolate and cocoa factories and other manufactures, and brewing, milling and printing works. The London Orphan Asylum is situated here. Pop. (1931) 56,799.

Wath-upon-Dearne Market town and urban district of Yorkshire (W.R.). It is 7 m. S.E. of Barnsley, and 164 from London by the L.N.E. Rly. It is on the South Yorkshire coalfield and is served by a canal. Pop. (1931) 13,653.

Watling Street Roman-built road which ran from Dover to Wroxeter. It is in some places used to-day.

Watson **Sir William.** English poet. He was born at Burley-in-Wharfedale, Aug. 2, 1858. In 1880 he published a volume of poems called *The Prince's Quest*, and between 1890 and 1928 a considerable quantity of verse, including *Wordsworth's Grave*, *For England*, *Sable and Purple* and *The Muse in Exile*. Collected editions of his works appeared in 1898 and 1906. He was knighted in 1917 and a national presentation was made to him in 1930. He died on Aug. 12, 1935.

Watt **James.** English inventor. He was born at Greenock, Jan. 19, 1736, going in 1754 to Glasgow, where later he was appointed mathematical instrument maker to the university. His experiments gradually led to the evolution of the modern steam engine, his crowning achievement being the invention of the governor. In 1774, in partnership with Matthew Boulton, he produced an engine, vastly superior to Newcome's pumping engine. He died Aug. 19, 1819.

Watteau **Antoine.** French painter. He was born at Valenciennes in Oct., 1684, and studied at the Academy, of which he became a member in 1717. He excelled as a painter of pastoral scenes, fêtes galantes, etc., and was supreme in both design and colour. He died July 18, 1721.

Wattle Twig, flexible rod or hurdle. By plaiting them together the twigs are made into fencing. At one time they were used for building houses known as wattle and daub buildings.

Another wattle is one of the acacias that grow in Australia. Sprigs of it are worn on Australia Day.

The wattle bird is found only in Australia. It is named from the wattle or fleshy excrescence seen under the throat.

Watts **George Frederick.** English painter and sculptor. He was born in London, Feb. 23, 1817, spent three years studying in Italy, and exhibited at the Royal Academy in 1837. His "Caractacus led in Triumph Through Rome" won a prize of £300 in 1843. A host of famous people sat to him, and there is a collection of his symbolical pictures in the Tate Gallery. His statuary includes "Physical Energy," a replica standing in Kensington Gardens. He received the Order of Merit in 1902, and died July 1, 1904.

Watts **Isaac.** English hymn writer and divine. He was born in Southampton, July 17, 1674, educated in London, and in 1702 became minister of the Independent Church in Mark Lane. In 1712 he went to stay with Thomas Abney at Theobalds, and remained with the family until his death, Nov. 25, 1748. His numerous hymns include "O God our help in ages past," "When I survey the wondrous cross" and "Jesus shall reign where'er the sun."

Wave Disturbance of equilibrium in a body or medium, having motion and direction in itself, but not involving the particles of the medium permanently in its forward motion. Thus in water the wave progresses, but the water itself has an oscillatory motion only, the energy communicated to and producing the wave being yielded up when the wave reaches the shore. The oscillatory motion may be along a straight line or (usually) a closed curve, and may be perpendicular to the direction of motion of the wave (as in wireless waves, in which the electric and magnetic components are also perpendicular to each other) or in the same direction (as in sound) or a combination of both (as in surface waves in liquids). Sound waves travel through matter as a medium; wireless, heat, light waves, the gamma rays of radium, X-rays and cosmic rays have been conceived as waves travelling through the ether (*q.v.*), having the same form and velocity, but differing in wave length from metres to a ten-millionth of a millimetre.

Wave motion can be represented graphically by an undulatory line, varying in form with the nature of the wave, and **wave length** (λ) is the distance from one crest to the next on this line, being connected with the velocity of the waves (v) and their frequency (n) in corresponding units by the formula $v = n\lambda$. In broadcasting, each station has a definite wave-length assigned to it by an international body. *See* LIGHT; SOUND; BROADCASTING.

Waveney River of East Anglia. It rises in Norfolk and forms part of the boundary between this county and Suffolk, passing by Bungay. It is navigable for the lower part of its length of 50 m. and flows into the estuary of the Yare.

Waverley Abbey Ruined abbey near Farnham, Surrey, on the River Wey. It was the earliest Cistercian house in England, being founded by William Gifford, Bishop of Winchester, in 1128. Little now remains of the original buildings. The house was dissolved in 1536. Sir Walter Scott is thought to have taken the name of his first novel from Waverley Abbey.

Wax Word used originally for beeswax, but now extended to other substances having similar properties. At ordinary temperatures, waxes are more or less hard, but they become soft when warmed. They are insoluble in water, slightly soluble in alcohol, and readily soluble in ether, chloroform and in the fixed and volatile oils. They are either vegetable or mineral waxes, and include spermaceti, derived from the sperm whale, Chinese wax, and paraffin wax obtained from mineral oils. Waxes are used in the making of candles, ointment, polishes, etc.

Waxbill Small bird of the order *Estrildinae*, related to the weaver birds (*q.v.*). Waxbills are found in Africa, Australia and parts of Asia. They have wavy, translucent, often vividly-coloured bills.

Wax Flower Australian climbing evergreen shrub (*Hoya carnosa*) of the order *Asclepiadaceae*. It has a twining stem, fleshy and somewhat oval leaves and pinky-white, waxy flowers. It is largely grown as a hot-house plant.

Wax Palm Palm tree (*Corypha cerifora*) of tropical S. America. Its trunk is coated with wax, which is removed and used for candles, etc. Another wax palm is *Ceroxylon andicola*, a native of Colombia.

Wax Tree **(or American Gamboge.)** Shrub (*Vismia guianensis*) of tropical S. America, also known as the gutta-gum tree. It exudes a resinous juice with similar properties to that of Garcinia, the gamboge of Siam. It belong to the order *Hypericaceae*, and is cultivated as a hot-house plant, bearing yellow flowers in clusters.

Waxwing Bird (*Ampelis garrulus*) of the order *Ampelidae*. It breeds in the extreme north of Europe and is a winter visitant to Britain. It is about 7½ in. long,

with a short, stout body. The plumage is brownish-grey and crested head and throat are black, the wings and tail black with white and yellow marking. The secondary wing feathers and sometimes the tail feathers have wax-like vermilion tips.

Waxwork Effigy executed in wax, usually an imitation of a real person. In the 18th century exhibitions of wax figures of famous or notorious personages became popular at fairs or holiday resorts. Madame Tussaud's exhibition in London originated in Paris in 1780.

Wayland the Smith In German mythology, a sort of demi-god, the son of Wade, the sea-giant. He was apprenticed to Mimir, the famous smith, and became a master craftsman under the tuition of the dwarfs. Wayland Smith's cave, in Berkshire, mentioned in *Kenilworth*, is, in English folk-lore, his forge.

Wayleave Legally a permission granted by the owner of property. It allows a person to go upon land for a particular purpose and at reasonable hours. It is chiefly used in connection with the mining of coal and the payment for it approximates to a royalty (*q.v.*).

Ways and Means Committee of. Term used in parliamentary procedure. When the House of Commons is dealing with the methods of raising money proposed by the Chancellor of the Exchequer, it is a committee of ways and means. At such times the Chairman of Committees, not the Speaker, presides.

Waziristan Mountainous region of the North-West Frontier Province of India. Under British influence, it is divided into three parts—the Tochi Valley and northern and southern Waziristan. The Waziri tribes are fierce and warlike, and it was not until a motor road was driven through their territory after the World War that order was continuously maintained.

Weald The. Name of a district in Kent and Sussex. It is the remains of a great forest known as the Andredsweald, in which iron ore was smelted in Roman and Anglo-Saxon times and earlier. It lay between the North and South Downs and stretched through Sussex to the eastern coast of Kent. The name is now confined to the eastern part of Sussex and the western part of Kent.

Wealdstone Urban district of Middlesex. It is 11½ m. from London, by the L.M.S. Rly. and is a residential district. Pop. (1931) 17,001.

Wealth Riches or material possessions. To economists it is a term embracing only such objects as have utility and can be exchanged. The creation and distribution of wealth is one of the main subjects with which political economy deals, and the first great book thereon is Adam Smith's *Wealth of Nations* (1776). National wealth depends ultimately on intangible and unestimable assets such as sunshine, rainfall, rivers, etc., apart from its tangible assets. But these cannot be taken into account in estimating a country's resources. There are four general methods of computing national wealth—(1) from data gained from the taxation of incomes; (2) from annual taxation of capital; (3) from taxation of capital at intervals; (4) by a method of inventory. None of these methods, however, is free from imperfections. The national wealth of Great Britain in 1926 was estimated at about 20,000 million pounds.

Wear River of Durham. It rises in the Pennines and enters the North Sea at Sunderland. Barges can go up as far as Durham. The Wear flows through some very beautiful scenery and is 65 m. in length.

Weasel Small carnivorous mammal (*Mustela nivalis*) of the *Mustelidae*. It is related to the polecat, marten, etc. It is a native of Europe, parts of Asia, and N. America. The body is about 6 in. long, the pelt being reddish-brown above and white below. It preys on rats, mice and small game. In more northern regions the winter coat is white.

Weather State of climate at a given time. It comprises the sum total of the results of temperature, pressure, rainfall, winds, condition of the atmosphere, relative presence or absence of clouds, duration of sunlight, etc. Weather forecasts are made from reports received from meteorological stations, home and foreign. These enable the probable future weather to be predicted with a varying degree of accuracy. *See* CLIMATE, ISOBAR, METEOROLOGY.

Weatherboard Protective outer covering of a building. It is usually specially adapted to shed water by forming lapped joints with the boards above and below. The word is also a nautical term denoting that side of a vessel which is towards the weather and wind.

Weathercock Wind indicator. Usually it consists of a thin piece of metal or wood affixed to a vertical rod on which it is pivoted by any change of wind. Designs are various, but the most popular one is a cock, hence the term weathercock.

Weaver River of Cheshire. Rising in the hills near the borders of Shropshire it flows N. to join the Mersey near Frodsham and between there and Northwich, it has been connected with the Trent and Mersey Canal. Nantwich and Northwich stand on it and its chief affluent is the Dane. The river is about 50 m. long.

Weaver Bird Small bird which constructs a nest of woven grass. Some, such as the *Philatacrus* of S. Africa, make a common nest in which each pair has a separate cavity with its own entrance. Others make separate bottle-shaped nests, some adding clay to increase the weight and check the swaying.

Weaving Act of interlacing threads so as to form a fabric. It is essential to the making of all fabrics, whether tapestry or material of silk, linen, woollen or cotton. The weaving is done on looms; the early looms were worked by hand, but to-day power looms are practically universal.

Weaving was practised in China, Egypt and other countries of antiquity, as it was later in Greece, where the classic instance is Homer's references to Penelope weaving and unweaving her threads. In the Middle Ages the weavers of the Netherlands became famous and greatly influenced the craft in England, Germany and elsewhere.

Webb Sir Aston. English architect. He was born in London, May 22, 1849 and soon came to the front in his profession. He designed the Victoria Memorial, the Admiralty Arch and the new front of Buckingham Palace. He also restored the

Church of S. Bartholomew the Great. He became R.A. in 1903, was knighted in 1904, was appointed K.C.V.O. 1914, G.C.V.O. 1925, and from 1919 to 1924 was President of the Royal Academy. He died Aug. 1, 1930.

Webb Matthew. English swimmer. He was born at Dawley, Shropshire, Jan. 18, 1848, and entered the mercantile marine. When a boy he showed extraordinary powers as a swimmer. He swam the Channel in 1875, then an unprecedented feat. On July 24, 1883, he attempted to swim the Niagara River below the falls but was drowned.

Weber Carl Maria von. German composer. He was born at Eutin in Holstein, Dec. 18, 1786. His father influenced his choice of career, and he studied in 1798 under Michael Haydn at Salzburg, in which year he published *Six Fughettas*. He studied singing and composition, and in 1800, he set Sternberg's opera *Das Waldmädchen* to music, and it was produced at Freiburg. He composed *Peter Schmoll* (1801), and studied two more years in Vienna. He later wrote *Rübezahl*, *Sylvana*, and in 1822 his greatest opera, *Der Freischutz*, which was performed in London in 1824. He wrote an opera, *Oberon*, and conducted it at Covent Garden, London, but died during his visit, June 5, 1826.

Webster John. English dramatist. He was born, probably in London, about 1580, and became a member of the group of writers which included Drayton, Dekker and Heywood. Of his plays the best known is *The Duchess of Malfi*. He died in 1625.

Webster Noah. American lexicographer. He was born at Hartford, Connecticut, Oct. 16, 1758, and was educated at Yale. His reputation rests upon his *Dictionary of the English Language*, published in 1828, which has become a standard work. He died May 28, 1843.

Weddell Sea Bay of Antarctica. Discovered by James Weddell in 1823, it lies between W. Antarctica and Coats Land. Shackleton's ship, the *Endurance*, was crushed and sunk by the ice here in 1915.

Wedgwood Josiah. English potter. He was born at Burslem, July 12, 1730, and came of a family whose members had been potters for generations. After being apprenticed to his brother in 1744, and becoming a partner of Thomas Whielden, he began work on his own account in 1759.

He improved the cream-coloured earthenware, and called it Queen's Ware, and later, inspired by discoveries of ancient Greek and Roman vases, made classic shapes, with figures raised upon them. He was active in the improvement of turnpike roads, and the construction of the Trent and Mersey Canal. The works which he founded at Hanley, were called Etruria, and are still owned by his descendants. He died Jan. 3, 1795.

Wedmore Village of Somerset. It is 4 m. S. of Cheddar and gave its name to the treaty made here in 878 between King Alfred and Guthrum the Dane, after the Battle of Ethandune, according to which the Danes obtained possession of the country north of Watling Street.

Wednesbury Borough and market town of Staffordshire. It lies 8 m. from Birmingham and 121 from London, on the G.W. and L.M.S. Rlys. Manufactures include stoneware and pottery, and there are iron and coal industries. Pop. (1931) 31,534.

Wednesfield Urban district of Staffordshire. It is 2 m. N.E. of Wolverhampton and 126 from London, by the L.M.S. Rly. The inhabitants are chiefly engaged in the manufacture of hardware. Pop. (1931) 9333.

Weed Name given to any uncultivated plant growing in cultivated ground. Weeds distribute their seeds quickly and widely, and spread persistently. Apart from choking the desired crops, they harbour insects, and are in many cases poisonous to animals. The chief weeds of Great Britain include thistle, dock, dandelion, plantain and cowbane.

Weedon Village of Northamptonshire. It is 8 m. from Northampton and 69 from London, on the L.M.S. Rly. Here are the buildings of the army School of Equitation.

Weetslade Urban district of Northumberland. A colliery centre, it is 5 m. from Newcastle-on-Tyne. Pop. (1931) 7736.

Weevil Beetle of the division *Rhynchophora* of the order *Coleoptera*. Weevils are characterised by the prolongation of the head into a snout, with the mouthpiece at the apex. Vegetable feedors, they are often injurious to crops, such as maize, wheat, barley and rice. Other species attack apple-blossom, palms and stone fruits.

Weights and Measures

See STANDARDS DEPARTMENT.

Wei-hai-wei Former naval and coaling station on the N.E. coast of the Chinese province of Shantung. It has an area of 285 sq. m., a harbour and a walled city, of which the pop. is 147,000. At certain seasons of the year the climate is very cold, but cereals, vegetables and fruits are grown, most of the natives being either fishers or farmers.

In 1930 Wei-hai-wei was returned to China after a British occupation of thirty-two years.

Weimar Capital of Thuringia. Till 1919 the capital of the duchy of Saxe-Weimar, it is on the left bank of the River Elbe. Under the Duke Charles Augustus and his successors, it was a centre of liberalism and of German art, and many famous men lived here, including Goethe, Schiller, Herder and Wieland. The city has some interesting churches, the former palace and numerous memorials of Goethe, including the house where he lived from 1782-1832.

The constitution of the new German Republic was drawn up and signed by the Constituent Assembly at Weimar in 1919. Pop. 45,957.

Weir Baron. British engineer. Born May 12, 1877, William Weir entered the family engineering firm in Glasgow. During the Great War he held various offices connected with munitions, and in 1918 took office as Secretary of State for Air, holding the post until the following year. He was knighted in 1917 and raised to the peerage in 1918. In 1919 he was chairman of the Advisory Board of Civil Aviation, and in 1932 attended the Imperial Economic Conference at Ottawa as an adviser to the British Government.

Weismann August. German biologist. He was born at Frankfort-on-the-Main, Jan. 17, 1834, and became Professor of Zoology at Freiburg, after which he turned his attention to biology. In 1882 he published *Studies in the Theories of Descent*.

but is best known as the author of the germ-plasm theory of heredity, which denies the transmission of acquired character. Many of Weismann's works have been translated into English. He died in Baden Nov. 6, 1914.

Weisshorn Mountain of Switzerland. It is near Zermatt, and is popular with climbers. It is 14,800 ft. high and was first climbed in 1891.

Welbeck Abbey Seat of the Duke of Portland. It is situated 4 m. from Worksop in Nottinghamshire and is one of the most famous properties in the Dukeries, standing in a vast park which is part of the old Sherwood Forest. The existing house is mostly 17th century, but it is built on the site of a Premonstratensian abbey of the mid-12th century. It came into the possession of the 5th Duke of Portland in 1734. There are extensive underground rooms and tunnels.

Welding Joining together pieces of metal by hammering while at a sufficiently high temperature to be in a soft state. This was formerly done by a forge, but electric welding is now largely used. This takes two main forms—resistance, and heating by the electric arc. Ordinary metals, such as iron and tin, can easily be welded in a forge, but modern alloys can only be welded by the electric and oxy-acetylene processes.

Welfare State or condition of doing well; the enjoyment of health and prosperity. The word is used to-day for a department in large works that looks after the health and fitness of the workers. This is generally in charge of a superintendent and in many firms includes provision for games of various kinds. It also includes provision for treating accidents or slight illnesses and many welfare departments employ a trained nurse.

Well Artificial excavation that brings fluid, usually water, from between the rock or soil through which it penetrates. Wells are usually circular in shape, and are often lined with brick or concrete, which serves to keep out any pollution which might enter from the top layers of earth. The best wells in Europe are in chalk, and the poorest in igneous rocks.

Artesian Wells are a method of obtaining underground water by sinking a bore of comparatively small diameter through impervious strata to tap supplies in water-bearing strata below. The water is frequently at such a pressure as to enable it to reach the surface.

Welland River of England. It rises in Northamptonshire, which it divides from Leicestershire and Rutland. It flows then through Leicestershire to the Wash, passing by Spalding and Market Deeping. It is 70 m. long.

Welland Town of Ontario, Canada. On the Welland Canal, it has many industries, and lies in the centre of a fine fruit district. The canal, completed in 1932, connects Port Dalhousie on Lake Erie and Port Colborne on Lake Ontario. It is 26¾ m. long, 300 ft. wide at the top, and has 8 locks, permitting vessels of 25 ft. draught to pass from above Montreal to Port Arthur, 1215 m. distant. Pop. (1931) 10,709.

Wellesley Marquess of. English statesman. Richard Colley Wellesley was born in Dublin, June 20, 1760, and became Governor General of India in 1797, greatly extending British power and influence. Criticism led to his recall in 1805, but his policy was later vindicated. He was Foreign Secretary, 1809-12, and Lord Lieutenant of Ireland, 1821-28, when he abolished many abuses. He withdrew from public life in 1835 and died Sept. 26, 1842.

Wellingborough Market town of Northamptonshire. It had a church in the 10th century, and a market in 1201. It derives its name from the chalybeate springs which formerly were there. The staple industries are the manufacture of leather and lace. Some iron ore is found, and smelting, iron founding and brewing are carried on. Pop. (1931) 21,221.

Wellington Urban district and market town of Shropshire. It is near the Wrekin, 10 m. from Shrewsbury and 142 from London and is reached by the L.M.S. and G.W. Rlys. There is a trade in agricultural produce. Pop. (1931) 8185.

Wellington Urban district and market town of Somerset. It is on the river Tone, 150 m. from London, on the G.W. Rly. The parish church dates from the 15th century and there is an old almshouse. The town has some manufactures. On the Blackdown Hills, which are near, is a memorial to the great duke. Pop. (1931) 7128.

Wellington Capital of New Zealand. Situated on an excellent land-locked harbour at the south of North Island, the city is modern, with ample electric power. Among the important buildings are Parliament House, University College, and the National Museum. There are a number of parks and recreation grounds. Wellington is the chief port and business centre, and is connected with Auckland in the north, and with Napier on the east coast by rly. Pop. (1931) 143,000.

Wellington Town in New South Wales. It is on the Macquarie River, 255 m. from Sydney on the north-west main line and is the centre of an agricultural and pastoral district, while copper occurs in the neighbourhood. The Wellington Caves contain interesting fossil remains. Pop. 4600.

Wellington Duke of. English soldier and politician. Born in Dublin, April 29, 1769, a younger son of Lord Mornington, Arthur Wellesley was educated at Eton and entered the army in 1787. In 1796 he went to India, where, in his brother's governor-generalship, he was the victor in the Maharatta War of 1803. Returning to England in 1805, he was elected M.P. for Rye and in 1806 was Irish Secretary. In 1808, he was sent to the Peninsula and won the Battle of Vimeiro. Given full command after the Battle of Corunna (*q.v.*), he drove the French from Oporto, and in July, 1809, won a victory at Talavera, for which he received a peerage. Forced now to fight defensively, he withdrew to the lines of Torres Vedras, ravaging the country so as to starve the French. In 1812 he took Ciudad Rodrigo and Badajoz, won a great victory at Salamanca and entered Madrid. In 1813 he overwhelmed the French at Vittoria, and in 1814 at Orthes. He was now made Duke of Wellington and ambassador at Paris, and in 1815 won his greatest victory at Waterloo (*q.v.*). Together with Castlereagh, he represented the United Kingdom at the Congress of Vienna. Returning to politics, he became premier in 1828. He favoured Catholic emancipation, but opposed parliamentary reform and resigned in Nov., 1830. He was Foreign Secretary under Peel, 1834-35, and minister without portfolio

1841-46. He died at Walmer Sept. 14, 1852, and was buried in St. Paul's Cathedral. *See* WELLESLEY; PENINSULAR WAR.

Wellingtonia (*Sequoia gigantea*). Giant evergreen tree of California of the order *Coniferae*. The timber is hard, red and close-grained.

Wells City and market town of Somerset. It is 20 m. from Bristol and 120 from London, on the G.W. Rly. The chief building is the cathedral of the diocese of Bath and Wells, famed for its west front, its lady chapel, its crypt and its curious clock, dating from the 14th century. The choir and chapter house are very fine. S. Cuthbert's is a notable church. The bishop's palace is surrounded by a moat and the deanery is a fine old house. The Vicar's Close, with a chapel at the top, is picturesque, and in the recreation ground is the bishop's barn of the 15th century. Pop. (1931) 4833.

Wells Urban district and seaport of Norfolk. It is 23 m. from King's Lynn and 147 from London, by the L.N.E. Rly. There is a harbour and a little shipping. Pop. (1931) 2505.

Wells **Herbert George.** English writer. Born at Bromley, Kent, Sept. 21, 1866, after graduating from the Royal College of Science in 1888, he taught, until, in 1893, he became a journalist, publishing his first novel, *The Time Machine*, in 1895. His work falls roughly into three classes. Of his novels, *Kipps* (1905) is acclaimed his masterpiece. In this, as in *Love and Mr. Lewisham* (1900) and *The History of Mr. Polly* (1910), he describes the romance of the lower middle class. Other major novels are *Tono Bungay* (1909), *Mr. Britling Sees It Through* (1916) and *The World of William Clissold* (1926). His scientific romances include *The Invisible Man* (1897), *The Food of the Gods* (1904), *The Island of Doctor Moreau* (1896) and *The First Men in the Moon* (1901). Among his general works, the more important are *First and Last Things* (1908), *New Worlds for Old* (1908), *The Open Conspiracy* (1928), *The Outline of History* (1920), *The Work, Wealth and Happiness of Mankind* (1932) and *The Shape of Things to Come* (1933). As a novelist he is open to the criticism that he fails to shed the robe of the reformer for that of the untrammelled artist, while his work in general suffers from hasty judgment, impatience at the gradual nature of change and a tendency to override the convictions of others. Nevertheless he has exercised a profound influence on his generation as an able exponent of the application of scientific method on a universal scale.

Welsh Harp Reservoir near Hendon. The name is taken from those of two inns, new and old, on the Edgware Road. It is a popular pleasure resort.

Welshpool Borough and market town of Montgomeryshire. An agricultural centre, it is 15 m. south of Oswestry and 172 from London, by the G.W. Rly. Pop. (1931) 5637.

Welsh Poppy Hardy perennial species of poppy (*Meconopsis cambrica*). The delicate pale green segmented leaves grow in a tuft from the root, and the pale yellow or orange flowers rise on tall, erect stems.

Welsh Rabbit Cheese dish, wrongly termed rarebit. The cheese is grated, mixed with butter and a little milk, seasoned, spread on buttered toast and toasted. Frequently a little beer or stout is added.

Welwyn Rural district of Hertfordshire. It is situated 5 m. from Hatfield, on the L.N.E. Rly., 22 m. from London. The Garden City, planned in 1920, between Welwyn proper and Hatfield, is a progressive community with its own station on the L.N.E. Rly. Welwyn is now a centre of the film industry. Pop. (1931, Garden City) 8585.

Wem Market town and urban district of Shropshire. It is 11 m. from Shrewsbury, on the L.M.S. Rly. The parish church has a Norman tower. The chief industries are a trade in cattle, milling and tanning. Pop. (1931) 2157.

Wembley Urban district of Middlesex. It is 8 m. N.W. of London, on the L.M.S and Underground Rlys. It is a residential district, but it is best known for its exhibition grounds and stadium. Here the British Empire Exhibitions were held in 1924 and 1925 and in the stadium, which holds 125,000 people, the finals for the association football cup are played. Pop. (1931) 48,546.

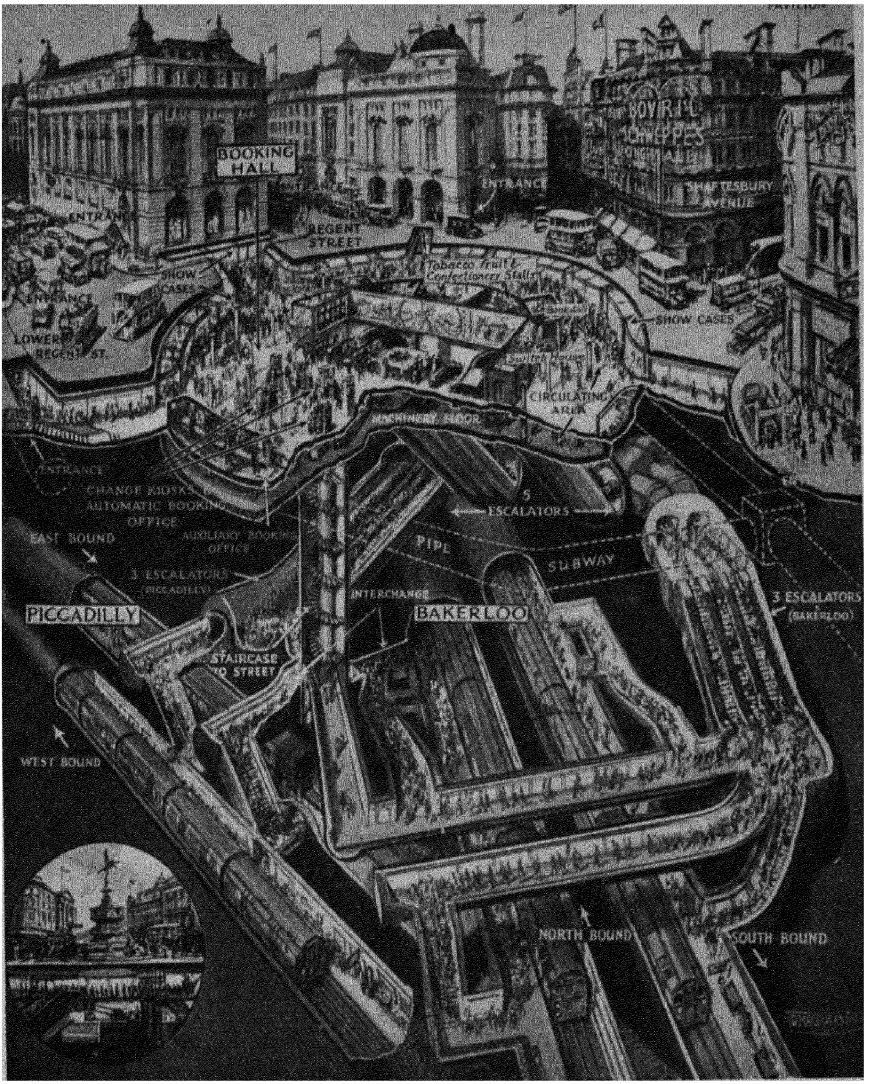
Wemyss Parish of Fifeshire, Scotland, which includes the villages of East and West Wemyss, Buckhaven, Methil and Innerleven. It is on the Firth of Forth. Wemyss Castle, deriving its name from the archaic caves, or weems, in the neighbourhood, was the scene of the first meeting between Mary Queen of Scots and Darnley. Pop. (1931) 26,619.

Wemyss **Earl of.** Title of the Scottish owners of the "schire" of Wemyss in Fifeshire since the 12th century. There was a Sir John of Wemyss and Methil in 1239, and a Sir John who was created a baronet of Nova Scotia in 1625, Lord Wemyss of Elcho in 1628 and earl in 1633. Hugo Richard Wemyss Charteris (*b.* 1857) the 11th earl, succeeded to the title in 1914. The earl's eldest son is called Lord Elcho.

Wenceslaus German King and King of Bohemia. The son of the Emperor Charles IV., he was born at Nuremburg Feb. 26, 1361. Elected German King in 1376, he became paramount in Germany and Bohemia on his father's death in 1378. He disregarded German affairs and ruled Bohemia well, but quarrelled with the nobles. In 1394 he was captured but, released under threats from the German princes, failed to restore peace in Germany and was declared deposed in 1400. Quarrelling with his brother, Sigismund of Austria, he was captured in 1402 and held prisoner for two years, after abdicating in Bohemia. In 1404, however, he was released and regained his authority in Bohemia. His later years were disturbed by the troubles caused by the death of John Huss. He died at Prague, Aug. 16, 1419.

Wendover Market town of Buckinghamshire. It is 33 m. from London, on the L.N.E. Rly. The parish church has been restored and there are some half-timbered houses. Until 1832 Wendover sent two members to Parliament.

Wenlock Borough of Shropshire. It is on the Severn, 14 m. from Shrewsbury and 148 from London, with a station—Much Wenlock—on the G.W. Rly. The guildhall dates from the 16th century. There are remains of an abbey. The borough includes Much Wenlock, Madeley and Broseley. It has an agricultural trade, and around are



[*Topical.*

A TRIUMPH OF MODERN ENGINEERING

The new tube station at Piccadilly Circus, showing the busy network of tunnels, tubes and escalators under the heart of the West End of London.

coal and iron stone mines. Wenlock Edge is a famous beauty spot. Pop. (1931) 14,152.

The title of **Baron Wenlock** has been borne since 1839 by the Family of Lawley. The **Wenlock series** is the name given by geologists to the middle division of the Silurian rocks.

Wentworth English family tracing its descent from William Wentworth of Yorkshire, who died 1308. Its most important members were Strafford and Rockingham (*q.v.*). The barony of Wentworth held by the family descended from 1667 in the female line and so passed by marriage to the Earls of Lovelace till 1906, when it again passed to the female line.

Wentworth **Woodhouse.** Seat of Earl Fitzwilliam in Yorkshire (W.R.) about 5 m. from Rotherham. Originally the home of the great Earl of Strafford, it was rebuilt about 1740, and added to in 1806. It is a magnificent building with a south frontage of 660 ft., and has a deer park of 1500 acres.

Werewolf Mythical being in folk-lore. It was supposed to be a person transformed into a wolf in form and appetite, either temporarily or permanently. Sometimes the transformation was supposed to be the result of witchcraft, in other cases "the wolf" was a form assumed at will, generally to satisfy the craving for human flesh.

Wergild Among the Teutonic races, the value set upon a man's life, or the amount payable by the family of a man-slayer to the family of the slain, to avoid a blood-feud. It varied in value from 40 pence for a slave to £24 for a freeman, and proportionately more for a noble or king.

Weser River of Germany, formed by a union of the Fulda and the Werra at Minden. It is 300 m. long and flows mainly north until it enters the North Sea as an estuary. It is a busy commercial highway as far as Bremen, and canals connect it with other waterways. Bremerhaven is the great port near its mouth. The Aller is its chief tributary.

Wesley **Charles.** English hymn-writer. He was born Dec. 18, 1707, and was educated at Westminster School and Christ Church, Oxford. He helped his brother, John, to found the Methodist movement. In 1735 he went to Georgia but returned to England in the following year. He took part in evangelistic work, but is known to-day as one of the greatest hymn writers of the 18th century. His best known hymn is *Jesus, Lover of my Soul.* He died March 29, 1788.

Wesley **John.** English divine. He was born at Epworth, Lincs., where his father was rector, on June 17, 1703. After an education at Charterhouse and Christ Church, Oxford, he took orders in 1725. Returning to Oxford in 1729 as tutor in Lincoln College, he joined a group of undergraduates who had received the nickname of "Methodists" because of their strict adherence to a religious way of life. On his return from a mission to Georgia, he took the lead in a similar society which met near Moorfields, London, and began his campaign of field-preaching, which continued unbroken for half a century. He gathered his followers into "classes" under the direction of "leaders" and placed them under the government of a Conference of Ministers. At his death, March 2, 1791, they numbered a hundred thousand.

Wesleyan **Methodist Church.** Non-conformist denomination. The Wesleyan Methodists were the original body founded in 1739 by John and Charles Wesley. The constitution is Presbyterian in character, consisting of local quarterly meetings and district synods, both subordinate to the annual conference, which has supreme legislative and judicial power. The separate existence of the Wesleyan Methodist Church ceased in Sept., 1932, on the re-union of the Wesleyan Methodists with the Primitive Methodists and United Methodists.

Wessex Kingdom of the West Saxons. It was established in the 6th century by the Saxon invaders of England. It covered the district south of the Thames between Sussex and Devon, with its capital at Winchester. Its first kings were Cerdic and Cynric, who were succeeded by others, usually vassals of Northumbria or Mercia.

In 802 Egbert became King of Wessex and in a few years was overlord of England. He and his successors, one of whom was Alfred the Great, are known as kings of England, of which Wessex was, in the 9th century, the most powerful state. To-day Wessex is used as a general term for the counties of Dorset, Hampshire and Somerset, the district made familiar by the novels of Thomas Hardy.

West **Benjamin.** Anglo-American artist. Born at Springfield, Pennsylvania, Oct. 10, 1738, he settled in London in 1763. George III. was his patron for forty years. Among his most famous works are "Death of General Wolfe," "The Black Prince at Poitiers," and "Christ Healing the Sick." He died March 11, 1820.

West Bridgford Urban district of Nottinghamshire. It lies to the south of the city of Nottingham, from which it is separated by the River Trent, and of which it is really a residential suburb. The chief building is the church of St. Giles. Pop. (1931) 17,821. East Bridgford is a village, 7 m. away.

West Bromwich County borough and market town of Staffordshire. It is situated on the Tame, 6 m. from Birmingham, on the G.W. Rly. Its manufactures include machinery, tools and metal work, and there are foundries and smelting furnaces. Other industries are brick making, tar distillation and the manufacture of washing powders. It sends one member to Parliament. Pop. (1928) 81,281.

The football club, **West Bromwich Albion,** founded in 1879, won the first division championship in 1920, Association Cup in 1888 and 1892 and Cup and League in 1931.

Westbury Urban district and market town of Wiltshire. It stands on the Biss, and is a junction on the G.W. Rly. The town has a trade in farm produce and some manufactures.

Westcott **Brooke Foss.** English divine. Born near Birmingham, Jan. 12, 1825, and educated at King Edward's school and at Cambridge, he took orders in 1851, and was an assistant master at Harrow, 1852-69. He then became Canon of Peterborough and Professor of Divinity at Cambridge and in 1883 Canon of Westminster. In 1890 he became Bishop of Durham. He helped to revise the New Testament, and wrote *The History of the New Testament Canon,* 1855, and *The History of the English Bible,* 1868. After twenty-eight years' work, Westcott and Dr. Hort published *The New Testament in Greek,* 1881. He died July 27, 1901.

West Drayton Village of Middlesex. It is 13 m. from London, by the G.W. Rly., on which it is an important junction. It is part of the urban district of Yiewsley and West Drayton. Pop. (1931) 13,057.

Westerham Market town of Kent. It is 5 m. from Sevenoaks, and 26 from London, on the S. Rly. James Wolfe was born at the vicarage here, and lived at the house now called Quebec House. Westerham Hill (809 ft.) is the highest point in Kent. Pop. 3050.

Western Australia State of Australia. It occupies all the western area. The centre is largely unexplored, settlement being mostly near the coast. The discovery of the rich goldfields near Coolgardie about 1892 played an important part in the progress of the state. Wheat growing is an important export industry, but more intensive forms of agriculture, *e.g.* fruit and wine production, are developing. The wool clip is considerable, while the southern part has valuable hard-wood forests. Perth, the capital, is connected by rail with areas north and south and, through Coolgardie, with the Transcontinental Rly. In 1930 there was a movement favouring secession from the Australian Commonwealth and a deputation was sent to the British Government, who referred the matter to the Federal Government of Australia. Area 975,920 sq. m. Pop. (1932) 422,495.

Wester-Wemyss Baron. British sailor. Rosslyn Erskine Wemyss was born, April 12, 1864 and entered the navy. He was promoted full admiral in 1919, having served as commander-in-chief in the East Indies, and Egypt, as First Sea Lord, and as a member of the War Cabinet. He was created baron in 1919. In 1929 he was placed on the retired list.

Westgate-on-Sea Watering place of Kent. It is 2 m. from Margate, on the S. Rly., and is a health resort noted for its bracing air.

Westhoughton Urban district of Lancashire, about 5 m. from Bolton, it is 202 m. from London, by the L.M.S. Rly. It is in a coal mining district and has cotton manufactures. Pop. (1931) 15,592.

West Ham County borough of Essex. It is bounded by the Thames and the Lea, and is a residential district of the working classes and an industrial area. It has a park of 80 acres. The inhabitants are employed in the railway shops at Stratford, at the docks, and in the factories of the neighbourhood. Pop. 294,086.

West Indies Fertile tropical islands, discovered by Columbus. They form a chain from Florida and Mexico to Venezuela, enclosing the Caribbean Sea, being the peaks of a submerged mountain range. Martinique and St. Vincent possess volcanoes which were active in 1902. The western islands, except for the Bahamas, are large, the eastern ones quite small, except for Trinidad. First colonised by Spain, they have been the scene of much strife among various nations. They now comprise the republics of Dominica, Cuba and Haiti, and dependencies of the U.S.A., France, the Netherlands and Great Britain. Area about 100,000 sq. m.

Westinghouse George. American engineer. He was born at Central Bridge, N.Y., Oct. 6, 1846, and at 18 was assistant engineer in the navy. In 1872 he patented his famous air-brake, which acts automatically in case of accident. It was quickly adopted on practically all railways. In 1912 he was awarded the Edison gold medal for certain electrical achievements. He built dynamos for the Niagara Falls power plants and for the London Metropolitan Rly. He died March 12, 1914.

West Kirby Watering place of Cheshire. It is in the Wirral Peninsula, 8 m. from Birkenhead on the River Dee, and besides being a popular resort is also a residential district for Birkenhead. Pop. with Hoylake (1931), 16,628.

West Lothian *See* LINLITHGOWSHIRE.

Westmeath County of the Irish Free State. In the province of Leinster, it has an area of 709 sq. m., is a limestone country, and has some fine loughs, notably Lough Ree on the Shannon. The Royal Canal cuts across Westmeath providing easy access to Dublin. The county is agricultural, dairy farming, and some woollens and linens are manufactured. The chief towns are Athlone and Mullingar. Pop. (1926) 56,796.

The **Earldom of Westmeath** was created in 1621. Anthony Francis Nugent (*b.* 1870) the 11th earl, succeeded to the title in 1883.

Westminster City and borough of the county of London. It is about a mile to the E. of the city, with which it is connected by the Strand and the Embankment. It occupies a considerable area to the north of the river and includes many buildings of note and much valuable property, making it the richest of the London boroughs. Therein, in addition to the Abbey and the School, are the Houses of Parliament, the government offices, St. James's and Buckingham Palaces, theatres, restaurants, hotels and clubs, as well as the National Galleries. Other buildings include the City Hall, the Middlesex Guildhall, the Wesleyan Central Hall and Burlington House. The Roman Catholic Cathedral is a fine structure. In the city is Hyde Park, and its thoroughfares include Piccadilly, Whitehall and Trafalgar Square. Westminster Bridge crosses the river here. Westminster was at one time notorious for its slums, but much clearance work has been done. Westminster grew up around the Abbey and the palace of the early kings. In 1540 it was made a city, and in 1547 began to send two members to Parliament. In 1888 it became one of the boroughs of the county of London. Pop. (1931) 129,535.

Westminster Duke of. British title held since 1784 by the family of Grosvenor. Hugh Richard Arthur Grosvenor, 2nd Duke of Westminster was born Mar. 19, 1879, of the ancient Cheshire family of Grosvenor, and was educated at Eton. He succeeded to the title on the death of his grandfather in 1899. He served with distinction in the Boer War, as A.D.C. to Lord Roberts, and also in the Great War. The family seat is Eaton Hall, near Chester.

Westminster Statute of. Act passed in 1932 by the Parliament of the United Kingdom and the parliaments of the self-governing dominions of the British Empire. It deals with the relations between them, which are now on the basis

of absolute equality. By it the parliament at Westminster ceases to have any right to revise the legislation passed by the other parliaments, which can legislate in matters that concern them, even if such are outside their territory. In the case of discrepancies between the legislation of the United Kingdom and that of the parliament of any of the Dominions, the law passed by the latter shall not therefore be invalid. The statute also declares that no alteration shall be made in the laws affecting the succession to the throne without the consent of the Dominion parliaments.

Westminster Abbey Church in Westminster, one of the finest Gothic buildings in the world. In full the Collegiate Church of S. Peter, it was originally the church of a Benedictine abbey founded before the Norman Conquest. The oldest parts of the building are Norman, with perhaps a little Anglo-Saxon, but the main structure dates from the 13th and 14th centuries. In the 15th century Henry VII.'s chapel was built, and Wren designed the western towers, completed in 1740. An extensive scheme of restoration was carried out after the Great War.

The west front, the choir, the nave and the north transept are magnificent in their beauty and proportions, but the gem of the building is Henry VII.'s chapel, the chapel of the Order of the Bath. The abbey contains the tombs of many sovereigns, statesmen, poets and others, and a large number of memorials. The tomb of the Unknown Warrior (*q.v.*) is near the western end of the nave. There are many chapels, notably the Chapel of S. Edmund with his shrine and the Warrior's Chapel, opened in 1932. In the south transept is the Poets' Corner. Adjoining the church are the cloisters and the Chapter House, in which the House of Commons sat for nearly three centuries before 1547. The Jerusalem Chamber is part of the deanery. The abbey is the coronation place of the sovereigns and in it is the coronation chair. The oldest part is the Norman undercroft, and excavations in 1931-32 unearthed fragments of the earliest building. The abbey is governed by a dean and chapter and is outside the authority of any diocesan bishop.

Westminster Hall This was originally built by William Rufus and finished in 1099. Its timbered roof was added in 1394. The immense span of the roof (67 ft.) which has no intermediate supports, marked a notable step forward in roof design and building. In the present century the roof was seriously marred by the destructive work of the "death watch" beetle, and extensive repairs were carried out and completed in 1922. The hall was the scene of many famous trials, including those of Richard II., Charles I., and Queen Caroline.

Westminster School Public school in London. In full St. Peter's College, it has a long and close connection with the Abbey, although the legal tie between the two was severed in 1868. The Abbey is still the school chapel and the boys have certain privileges on great occasions. It dates from 1339 or earlier, but the present foundation is one of 1561. The buildings, around Little Dean's Yard, include the school hall, once the dormitory of the monks, the dining-hall and several houses, including Ashburnham House, once the residence of the Ashburnham family. There is also a science building in Great College St.

The playing fields are in Vincent Square, and there is also a ground at Grove Park, bought in 1932. The boys number about 370, of whom about 150 are boarders. Those on the foundations, 50 in number, are called King's Scholars. A Latin play is given every Christmas, with topical prologue and epilogue, and the pancake is tossed on Shrove Tuesday.

Westmorland North-western county of England. It has a land area of 790 sq. m. and contains a great part of the Lake District and magnificent mountain scenery (Helvellyn, 3118 ft.). The lakes include Windermere, part of Ullswater, Grasmere and Haweswater. There is little agriculture, as the climate is cold and wet, and sheep-rearing and dairy-farming are the chief occupations. There is some slate and granite quarrying. The chief towns are Kendal and Appleby. Pop. (1931) 65,398.

The Earldom of Westmorland has been held by the family of Neville and Fane since 1397 and 1624 respectively. Vere Anthony Francis S. Clair Fane (*b.* 1893) the 14th earl, succeeded to the title in 1922.

Weston-super-Mare Pleasure resort and urban district of Somerset. It is on the Bristol Channel, 15 m. from Bristol, and 137 m. from London, and is reached by the G.W. Rly. Steamers go to Cardiff and other places on the Bristol Channel. Near are the two islands of Flat Holme and Steep Holme and on the mainland is Brean Down, a sanctuary for wild birds. Pop. (1931) 28,555.

Westphalia District of Germany. It lies to the S.E. of the Netherlands and on the east side of the Rhine. In 1180 it was made into a duchy, and was ruled by the electors of Cologne until 1803. In that year it was given to Hesse-Darmstadt, and in 1815 to Prussia. From 1807-13 there was a kingdom of Westphalia, its king being Jerome Buchaparté. To-day it is a province of Prussia, famous for its coal and iron mines and its industrial activity. Munster is the capital and in the province are Essen, Dortmund, Dusseldorf and other manufacturing towns.

Westphalia Treaty of. Peace signed on Oct. 24, 1648, which ended the Thirty Years' War (*q.v.*). By its provisions France gained Alsace and the recognition of her sovereignty over Metz, Toul and Verdun, Sweden gained Western Pomerania, Bremen and Verden. The independence of Switzerland and the United Provinces and the sovereignty of the remaining states within the Empire were recognised. Religious toleration was granted to Calvinists as well as Lutherans in Germany. The treaty marks the failure of the Austro-Spanish attempt to restore Roman Catholicism universally in Central Europe, and is the starting point of French domination in Europe.

West Point Training college for officers for the army of the United States. It stands on the right bank of the Hudson River, 50 m. from New York. It dates from 1802 and the buildings are in extensive grounds.

Westport Seaport, urban district and market town of Co. Mayo, Irish Free State. It is on Clew Bay, 10 m. from Castlebar, by the G.S. Rlys. There is some shipping and an agricultural trade. Pop. (1926) 3488.

Westport Port of New Zealand. Situated on the west coast of South Island, 57 m. from Greymouth, it is the centre of an extensive coal area, with which it is connected by rail. The trade is principally a coastal one in coal. Pop. 7000.

West Virginia State of the United States. In the east of the country, it lies to the west of Virginia and covers 24,282 sq. m. Charleston is the capital, but Huntingdon and Wheeling are both larger. It produces much wheat, maize and oats as well as tobacco and apples. Oil and coal are mined on a large scale. It is governed by a legislature of two houses and sends two senators and six representatives to Congress. The state has a university at Morgantown. Pop. (1930) 1,729,205.

Westward Ho! Holiday resort of Devonshire. It is on the north coast, 3 m. from Bideford, its station on the G.W. Rly. It is part of the urban district of Northam.

Wetherby Market town of Yorkshire (W.R.). Situated on the Wharfe, it is about 12 m. N.W. of Leeds and 191 m. from London, by the L.N.E. Rly. It is an agricultural centre, and brewing is carried on. Pop. 2300.

Wetterhorn Mountain of Switzerland. It is in the Bernese Oberland near Grindelwald and is 12,165 ft. high. It was first climbed in 1844.

Wexford Borough, market town and seaport, also the county town of Co. Wexford, Irish Free State. It stands on the estuary of the Slaney, 87 m. from Dublin, on the G.S. Rlys. Fishing, distilling and brewing are carried on. Objects of interest are the old bull ring and the ruins of the castle. Pop. (1926) 11,879.

Wexford County of Leinster, Irish Free State. In the S.E. coast of the country, it has a coastline, both on the east and the south, totalling about 90 m. Wexford is the county town; other places are Enniscorthy, New Ross, Ferns and Gorey. There are several good harbours. The surface is hilly, but on the whole the land is fertile. The Slaney and the Barrow are the principal rivers; agriculture and fishing the staple industries. The county's area is 900 sq. m. Pop. (1926) 95,848.

Wey River of Hampshire and Surrey. Rising in Hampshire near Alton, it flows N. through Surrey until it joins the Thames near Weybridge. It is 35 m. in length.

A stream in Dorset called the Wey rises near Upwey and flows into the English Channel at Weymouth.

Weybridge Urban district of Surrey. It is situated on two rivers—the Wey and the Thames—19 m. from London, on the S. Rly. It is principally a residential district, being near several good golf courses and only a few miles from Brooklands, the station for which is known as West Weybridge. There is a fine, open common. Pop. (1931) 7359.

Weygand **Maxime.** French cavalry general. He was born at Brussels, Jan. 21, 1867. Throughout the Great War he was the assistant and trusted adviser of General Foch. He conducted a successful campaign against the Bolsheviks in Poland in 1920 and liberated Warsaw. In 1923-26 he was High Commissioner in Syria, in 1930 Chief of the General Staff.

Weyman **Stanley John.** English author. He was born at Ludlow, Aug. 7, 1855, and was educated at Shrewsbury and Christ Church, Oxford. He became a barrister, but devoted most of his time to writing, and in 1889 published *The House of the Wolf*. Other historical novels followed, including *A Gentleman of France, Under the Red Robe, Shrewsbury, The Castle Inn, Ovington's Bank* and *Queen's Folly*. He died April 12, 1928.

Weymouth Seaport and market town of Dorset. It lies 8 m. from Dorchester, on the S. and G.W. Rlys. It was popularised as a watering place by George III. It has considerable coastal shipping traffic, and there is a regular steamboat service to the Channel Islands. Pop. (with Melcombe Regis) 21,982.

Whales Order of mammals inhabiting the sea. They are divided into *Archaeoceti*, the fossilised whales, *Mystacoceti*, whalebone whales and *Odontoceti*, toothed whales, which include sperm and bottle-nosed whales, and dolphins. They vary in length between four and a hundred feet. They are warm-blooded, breathing through lungs, having no scales, reproducing and feeding their young like land mammals.

WHALING. Early whaling was carried out by means of harpoons, flung by men in small boats, but now a Svend Foyn gun is used, which is mounted in the forecastle of a whaling ship. When the gun is fired, a harpoon capped by an explosive is released, which explodes three seconds after reaching the whale.

Whaling is carried on in the Falkland Islands and the Arctic and Antarctic Oceans. Blubber is now stripped by machinery, and the carcasses are used for oil and fertiliser.

Whalley Village of Lancashire. It is 32 m. from Manchester and 8 from Blackburn, on the L.M.S. Rly. The parish church was once that of a Cistercian abbey of which some remains still exist. Pop. 1378.

Wharfe River of Yorkshire. It rises on the moors in the north-west of the county and joins the Ouse at Cawood. It passes by Ilkley and Wetherby and has a length of 60 m. The picturesque district through which it flows is called Wharfedale.

Wheat Grain of the genus *Triticum*. It bears a dense four-sided spike and the flowering glumes may be bearded or beardless. Within the glumes are the florets, each of which bears a grain which is the edible part of the grass. This is a cereal, the most important food of temperate climates, and next to rice the most largely used of any grain. When ground it yields a fine white flour which is made into bread, cakes, pastry, etc. Many varieties of wheat are cultivated. The most important is *Triticum sativum*. It will grow in almost every climate and the yield per acre is as high as 60 bushels. It is rich in starch. Bran is produced from its coating. It is liable to attack by rust, bunt and other diseases. Wheat has been widely grown for food since prehistoric times. In the 19th century experiments resulted in a great improvement in its quality; the introduction of new fertilisers added to its productivity and varieties were evolved that will grow on soils previously regarded as unsuitable. The result was a glut of wheat which was very pronounced in 1932, and in 1933 an international Wheat Conference was held in London, with the object of establishing a balance between the production and consumption of wheat.

In 1931 the world's wheat crop amounted to 545,000,000 quarters; the largest producers were Russia, the United States, Canada, India, Argentina, France, Australia and Italy. The British production was 5,000,000 quarters and the consumption 30,000,000, leaving 25,000,000 to be imported. The estimated world production for 1934 is 633,000,000 of 480 quarters. In 1917, to encourage the growing of wheat in Great Britain, an Act of Parliament fixed a minimum price, but this scheme was abandoned in 1921. In 1931, when the country adopted protection for home industries, the question of the growth of wheat was again in the foreground. The policy adopted was that every miller should be required to use a quarter of home-grown wheat and, after the conference at Ottawa, a quarter of Empire-grown wheat. A wheat commission was set up and to this every miller and every importer of wheat must pay 10s. 8d. per cwt. of his output of flour. These payments, which began on July 23, 1932, secure a minimum price for British wheat.

Wheatear Small bird (*Saxicola aenanthe*) allied to the stonechat and the whinchat. It is found in the northern parts of Europe, Asia and America, chiefly on waste land. It is seen in England during the summer. Bluish-grey on the back, the bird has a light buff breast, and a white rump which is very noticeable in flight.

Wheatley Urban district of Oxfordshire. It is 8 m. from Oxford and 48 from London by the G.W. Rly. Pop. (1931) 1269.

Wheatstone **Sir Charles.** English inventor. Born near Gloucester in Feb., 1802, he was appointed Professor of Experimental Philosophy in 1834 at King's College, London, where he investigated the properties of sound, light and electricity. In conjunction with W. F. Cooke he patented, in 1837, a system for giving signals in distant places by means of electric currents. In 1838 he invented the stereoscope. He was elected F.R.S. in 1837, was knighted in 1868, and died Oct. 19, 1875.

Wheel Circular disc or frame revolving on an axis, calculated to further motion and also used for mechanical purposes. Wheels in the earliest vehicles were round discs cut out of solid wood. This type of wheel still exists in primitive countries. Various types of wheels are used in modern mechanics, including the excentric wheel, that is, a wheel having its axis not in the centre. A form of torture known as **breaking on the wheel** formerly existed in many countries, prisoners being laid on a wheel and their limbs broken by the executioner with an iron bar.

Wheel Lock An early kind of gun-lock in which sparks were struck from a flint, or piece of iron pyrites, by a revolving wheel.

Whelk Sea fish with a spiral shell. Whelks are found over a wide area stretching from the North Atlantic to the Bay of Biscay, and from the coast of America to Siberia. The whelk is carnivorous and eats living and dead shell fish. It is caught in wicker pots and by dredging.

Whernside Mountain of Yorkshire. It is on the moors in the north-west of the county. It is 2414 ft. high and is best ascended from Giggleswick.

Whewell **William.** English scientist and philosopher. Born at Lancaster, May 24, 1794, and educated at Trinity College, Cambridge, in 1838 he became Professor of Moral Theology at Cambridge, in 1841 Master of Trinity and president of the British Association, and in 1855 Vice-Chancellor of the University. He wrote on astronomy, physics, philosophy, architecture, and many other subjects. He died March 6, 1866.

Whey Watery part of milk. It is separated from the curd usually in the process of cheese making.

Whickham Urban district of Durham. It is 3½ m. from Gateshead. The industries are connected with steel and chemicals. Pop. (1931) 20,782.

Whig English political party. The name, originating in Scotland, was connected in the 17th century with Presbyterianism and therefore rebellion, and became current in England in 1679 during the struggle to exclude James, Duke of York, from the throne. It was applied to those who urged the waiving of the hereditary succession in the national interest. The opponents of the Whigs were the Tories (*q.v.*). The party supported the Hanoverian Succession and enjoyed undisputed political power between 1714 and 1760. At the end of the century it espoused the cause of political and social reform, and in the early 19th century developed into the Liberal party. *See* LIBERAL.

Whinchat Small bird (*Saxicola rubetra*). It resembles the stonechat, but is distinguished from it by white streaks on the head and neck. It visits England in the summer and lays its eggs in nests on the ground.

Whinstone Scottish term for any basaltic or unstratified rock.

Whip English parliamentary official. Abbreviated from the "whipper-in" of a hunt, the name denotes a member of a political party, chosen by its leader, whose special duty it is to secure the attendance of all members of his party on necessary occasions. The name is also used for the summons calling members to attend on these occasions. The Whips must always be present at debates, and in a position to inform their leader of the state of the House.

Whippet Breed of dog, used for coursing and racing. It resembles the greyhound, but is smaller, and was probably derived by crossing terriers and Italian greyhounds.

Whippingham Village of the Isle of Wight. It stands on the Medina, about 4 m. from Newport. Near is Osborne House, a favourite residence of Queen Victoria. Pop. 2033.

Whip-poor-will Nightjar (*Antrostomus vociferus*) of N. America. It is 9 to 10 ins. long, with brown plumage mottled with black and cream. There is a white band at the throat, and at the base of the bill are a number of stiff elastic bristles. The name is derived from the characteristic call, uttered only at night.

Whipsnade District of Hertfordshire. It is 34 m. from London and 3 from Dunstable. Formerly part of the Ashridge estate, it was bought in 1927 by the Zoological Society and laid out as a zoological garden where many of the animals live in the open air.

Whip-snake Snake of the genus *Dryophis*. It is a native of India and Malaya, and its long, slender shape facilitates tree climbing.

Whisky Spirit made by the distillation of the fermented extracts from malted or unmalted cereals, potatoes or any starch yielding material. The best whisky is made from unmalted barley, but it can be made from malted barley, or a mash of barley with oats, rye or wheat. The liquid must be kept in wooden casks before it is ready for drinking. In Great Britain there is a duty of £3 12s. 6d. per proof gallon on whisky.

Whist English card game. It originated from a combination of several older games, probably about 1621, and was so called because it needed silence and concentration. It is played by four persons, two sides of two partners each, with a full pack of 52 cards equally divided, the last card dealt being turned up, and declared trumps. A game consists of seven points, each trick above six counting one towards the score.

Whistler James Abbott McNeill. American artist. Born at Lowell, Mass., July 10, 1834, he studied art in Paris, later settling in London. His numerous etchings include, "The Thames Set," "The Venice Sets," and "The Paris Set," while of his many portraits the two outstanding ones are, "The Artist's Mother," and "Portrait of Carlyle." He died July 17, 1903.

Whitby Urban district, market town, seaport and pleasure resort of Yorkshire (N.R.). It stands at the mouth of the Esk, on the North Sea, 30 m. from Scarborough and 244 from London, on the L.N.E. Rly. The chief object of interest is the ruined abbey on the cliffs. Founded by King Oswiu, it has associations with S. Hilda and Caedmon and is now national property. The town is famous for its jets. Fishing is an important industry. On Dec. 16, 1914, the town and abbey were damaged by a German bombardment. Pop. (1931) 11,441.

Whitchurch Village of Middlesex, now part of the urban district of Wealdstone and Edgware. It is famous for its church where Handel was organist from 1718 to 1721.

Whitchurch Urban district and market town of Shropshire. It is 19 m. from Shrewsbury and 171 from London, on the G.W. and L.M.S. Rlys. Brewing is an industry and there is an agricultural trade. Pop. (1931) 6016.

Whitchurch Town of Hampshire. It is 7 m. from Andover and 59 from London, on the S. and G.W. Rlys. The parish church possesses a curious Saxon stone. The town has an agricultural trade. Pop. 2461.

White Sir George Stuart. British soldier. Born in Whitehall, Co. Antrim, July 6, 1835, he was educated at Sandhurst, and served in the Indian Mutiny, Afghan War (during which he gained his V.C.), Egypt, Burma and Baluchistan. In 1893 he succeeded Lord Roberts as commander-in-chief in India. In the South African War he held Ladysmith for 119 days until relieved by Lord Roberts, March 1, 1900. He died June 24, 1912.

White Gilbert. English naturalist. Born at Selborne, Hampshire, July 18, 1720, he was educated at Basingstoke and Oxford. He is remembered chiefly by his *Natural History and Antiquities of Selborne*, published in 1789. He died June 26, 1793.

White Henry Kirke. English poet. He was born Mar. 21, 1785, the son of a Nottingham butcher. He entered a lawyer's office, but abandoned this career to become a clergyman and went to St. John's College, Cambridge. Shortly after he died of consumption, Oct. 19, 1806. Kirke White attracted attention by his volume of poems published in 1803, but is better known to-day, as the author of the hymn, "Oft in danger, oft in woe."

White Arum South African plant (*Richardia*) of the order *Araceae*, popularly known as the arum lily. The leaves are arrow-shaped, and the white spathe or mantle enfolds a central column round which the minute yellow blossoms are clustered. The British cuckoo pint, or wake robin, is of the same family.

Whitebait Fry of sprats and herrings, taken in bag-nets at the mouth of the Thames and in other estuaries, during the months March to August.

Whiteboys Agrarian association formed among the Irish peasantry about 1760. It aimed at redressing their grievances against their landlords, and resisting the collection of tithes. They wore white shirts, in which they went on night raids.

Whitechapel District of London. It is to the east of the city in the metropolitan borough of Stepney, and is largely inhabited by Jews. S. Mary's and S. Jude's are its chief churches. Here are Toynbee Hall and the Whitechapel art gallery. It has stations on the D. and E.L. Rlys.

White City Name given to an exhibition ground at Shepherd's Bush, London. It was opened in 1908 and a number of exhibitions were held there, except during the war period (1914-18) when it was used for military purposes. It possesses a track for greyhound racing. In 1932 a cinder track was constructed for athletic meetings.

Whitefield Urban district of Lancashire. It is 6 m. from Manchester and 193 from London by the L.M.S. Rly., and is a centre of the cotton industry. Pop. (1931) 9107.

Whitefield George. English religious leader. Born at Gloucester Dec. 16, 1714, at Oxford he met John and Charles Wesley, already engaged in evangelistic work. He received Deacon's Orders in 1736, then went to America to join Wesley, who was establishing missions there. After his return he preached in the open air with such success that he spent much of his life as a travelling preacher. His Calvinistic views led to a breach with the Wesleys, but he received great support from others, who built him a chapel in London. He made seven evangelistic trips to America, dying there, Sept. 30, 1770.

Whitefish Fish of the genus *Coregonus*. It is related to the salmon, and found chiefly in large inland lakes. It is a native of N. America and the cold to temperate regions of Europe and Asia. The pollan, the vendace, and the gwyniad are British species.

White Flag Sign of truce or surrender. A white flag, or something white used as a substitute, is recognised in all civilised armies as a flag of truce, or as a sign of surrender, when flown over a place, position, or body of men.

Whitehall Street of London. It runs from Charing Cross to Parliament Street, and in it are some of the Government offices. Old Whitehall Palace, now the

United Services Institute and Museum, was designed by Inigo Jones, and from the banqueting hall Charles I. walked out to his execution in 1649. The original Whitehall was built by Henry VIII. and was burned down in 1698. In the middle of the thoroughfare is the Cenotaph erected in memory of those who fell in the Great War.

Whitehaven Borough, seaport and market town of Cumberland. It is 303 m. from London, on the L.M.S. Rly. There is a good harbour from which coal, pig-iron, ore and steel are shipped. The industries include coal and iron mining, shipbuilding, etc. In 1915 the town was bombarded by a German submarine. Pop. (1931) 21,142.

White Hellebore Perennial coarse herb (*Veratrum album*) also called false hellebore. A native of Europe, it has long vertical leaves and panicles of white flowers on the upper portion of the stem. The rootstock is poisonous, yielding veratrin, a substance used medicinally in muscular and cardiac affections.

White Horse Figure of a horse cut in chalk on a hillside. There are several such in England. The most famous is near Wantage in Berkshire in the Vale of the White Horse. The figure is 374 ft. high and according to tradition commemorates the victory of Alfred over the Danes. There are other figures of the kind near Weymouth and at Bratton, and several other places on the Wiltshire hills.

White House Official residence of the president of the United States. It is at Washington and has been used for its present purpose since 1800.

White Lead Carbonate of lead. A dense white powder, it is insoluble in water, but is easily dissolved in dilute nitric acid or acetic acid. It is made by an elaborate process, thin sheets of lead being placed in earthenware pots containing dilute acetic acid and then packed round with special tan and left to stand for several months. The process produces a substance which is baked, ground and dried, and used in the manufacture of paint. The manufacture of white lead is a hazardous occupation owing to the risk of poisoning, and laws have been passed to protect the health of its workers.

White Sea Branch of the Arctic Ocean. It lies between the peninsulas of Kanin and Kola, and is over 300 m. long. Through its chief port, Archangel, it is connected with the Caspian and Black Seas by canal, but owing to ice it is only open to shipping in the summer.

Whitethroat Migratory bird of the family *Sylviidae*. The larger whitethroat (*Sylvia cinerea*), is 5½ to 6 in. long, with greyish or reddish brown plumage above, and white to buff beneath. The lesser whitethroat (*S. curruca*) is 5¼ in. long. Both are common summer visitants to Britain.

Whitgift John. English prelate. He was born at Great Grimsby about 1530, and educated at Wellow Abbey, near Grimsby, St. Anthony's School, London, and Cambridge, where he became Fellow of Peterhouse in 1555. He was ordained in 1560, became Dean of Lincoln in 1571, Bishop of Worcester in 1577, and Archbishop of Canterbury in 1583. He vigorously supported Queen Elizabeth's policy of religious uniformity. He died Feb. 29, 1604.

Whithorn Burgh and seaport of Wigtownshire. It is on the Irish Sea, 11 m. from Wigtown, on the L.M.S. line. There are ruins of a priory and the town was the seat of a bishopric before the Reformation. It has a trade in cattle. Pop. (1931) 951.

Whiting Marine food fish (*Gadus merlangus*) related to the cod. It is usually 1½ lb. or so in weight, and is esteemed for the table. The whiting-pout, an allied species of W. European waters, has a deeper body and has a barbel on the chin.

Whitley John Henry. English politician. He was born in Halifax, Feb. 8, 1866, and educated at Clifton College and London University. He represented Halifax as a Liberal from 1900 to 1928, and was Speaker, 1911-1928. On his retirement he was awarded the Order of Merit. He was chairman of the committee on Relations between Employer and Employed in 1916. From this developed the Whitley Councils, an attempt to satisfy the claim of organised labour to a measure of control in industry. In 1929 he was appointed chairman of the Royal Commission on Indian Labour, and in 1930 chairman of the B.B.C. He died on Feb. 3, 1935.

Whitley Bay Pleasure resort of Northumberland. It stands on the North Sea, 2 m. from Tynemouth, on the L.N.E. Rly. It has fine sands, pleasure gardens and other attractions for visitors. The urban district is known as Whitley Bay and Monkseaton. Pop. (1931) 21,210.

Whitlow Inflammation of the finger, especially round the nail. Hot fomentations should be applied to the finger, and the whitlow should be opened by a doctor to allow the escape of pus.

Whitman Walt. American poet. Born at West Hills, Long Island, N.Y., May 31, 1819, he left school early, and tried various occupations before he turned to literature. His *Leaves of Grass* and a prose work, *Specimen Days*, are the extent of his writings, but they made him the most vital literary force in America. He died March 27, 1892.

Whitstable Urban district and pleasure resort of Kent. It is on the estuary of the Thames, 6 m. from Canterbury, on the S. Rly. The chief industry is oyster fishing. There is a small harbour, and coasting trade, but the place is better known as a seaside resort for Londoners. Pop. (1931) 11,201.

Whitsunday Feast of the Christian Church. It is celebrated six weeks after Easter Sunday, in memory of the descent upon the disciples of the Holy Ghost. It is also called Pentecost, the name given in the early days of the Church to the whole fifty days following Easter.

Whittier John Greenleaf. American poet. He was born in Haverhill, Mass., Dec. 17, 1807, the son of a struggling farmer. To his schoolmaster, Joseph Coffin, he owed his deep love of nature. For a time he was a journalist, but poetry claimed him, and his ballads, *Barclay of Ury* and *Barbara Frietchie* rank high. He belonged to the Society of Friends, and his poems reflect much of the Quaker spirit. It is in the spiritual and mystic spheres, as in *My Psalm*, that he excels. He died Sept. 7, 1892.

Whittington Richard. Mayor of London. Born in Gloucestershire about 1358, at thirteen he arrived in

London to seek his fortune. He became apprenticed to Sir John Fitz-Warren, a mercer, eventually marrying his daughter. He was Mayor in 1398, 1406, and 1419, was knighted by King Henry V., and died in 1423. The story of his leaving London in despair, the sound of Bow Bells calling him back, may be considered true, but his cat is a creature of legend.

Whittlesea Urban district of Cambridgeshire. It is in the Isle of Ely, 95 m. from London and 5 from Peterborough, on the L.N.E. Rly. Around it is the land that was formerly Whittlesea Mere, the largest sheet of water in England. Pop. (1931) 8299.

Whitwood Urban district of Yorkshire (W.R.). It is about 9 m. south-east of Leeds, and stands on the Calder. Coal mining is its chief industry. Pop. (1931) 6196.

Whitworth Urban district of Lancashire. It is 3 m. from Rochdale, and 200 from London by the L.M.S. Rly. Pop. (1931) 8360.

Whitworth **Sir Joseph.** English engineer. Born at Stockport, Dec. 21, 1803, he was educated privately. In 1833 he established a tool-making business in Manchester, and devoted himself to the manufacture of precision tools and improvement of lathes, planing and drilling machines, etc. He perfected a system of standard measures and gauges, and devised methods for securing greater accuracy in rifles and cannon. His works were eventually united with Armstrong's of Elswick. He died Jan. 22, 1887.

Whooping-cough Disease affecting the respiratory organs. It is characterised by fits of convulsive coughing, accompanied by the peculiar sound known as a "whoop." It frequently occurs in childhood, and occasionally in adult life. It has a period of incubation of from two to ten days, and the first stage is similar to catarrh. This lasts about fourteen days, when the coughing increases, and the "whoop" begins, lasting generally for about two months, and becoming gradually less fierce. There is no special treatment, but fresh air and sunshine are beneficial.

Whortleberry Name sometimes used for the bilberry (*q.v.*).

Whymper **Edward.** British mountaineer. Born in London, April 27, 1840, for some years he continued his father's wood engraving business in Lambeth. His greater fame rests on his mountaineering feats. After seven vain attempts, he was the first to reach the summit of the Matterhorn, in July, 1865. He later explored Greenland and visited the Andes and the Canadian Rockies, leaving several works recording his experiences. He died Sept. 16, 1911.

Whyte-Melville **George John.** English novelist. Born June 19, 1821, he was educated at Eton, entered the army in 1839, and saw service in the Crimea. He then devoted himself to writing, most of his books dealing with sport. His first novel, *Digby Grand*, appeared in 1853. He was killed while hunting, Dec. 5, 1878.

Wick Burgh, seaport and market town of Caithness; also the county town. It stands on the east coast, 200 m. from Thurso and 729 from London, on the L.M.S. Rly. There is a good harbour, the place is a centre of the herring fishery, and from here steamers go to the Orkney and Shetland Islands. Nearby are the relics of Wick Castle, called the Old Man of Wick. Pop. (1931) 7548.

Wicken Village of Cambridgeshire. It is 7 m. from Ely, and has an interesting old church. Near is Wicken Fen, a sanctuary for insects and the property of the National Trust. It covers 640 acres and was taken over in 1928.

Wicklow County of the Irish Free State. In the province of Leinster, it has a coastline on the Irish Sea. Its area is 781 sq. m. Wicklow is the county town; other places are Arklow and Bray. The surface is mountainous and much of it is devoted to sheep rearing. Minerals are worked. Noted beauty spots are the vales of Avoca and Glendalough. The highest mountain is Lugnaquillia, over 3000 ft. high. Pop. (1926) 57,591.

Wicklow County town and pleasure resort of Co. Wicklow, Irish Free State. It stands at the mouth of the river Vartry, 28 m. from Dublin, on the G.S. Rlys. There is some shipping. Pop. (1926) 3025.

The title of **Earl of Wicklow** has been held since 1793 by the family of Howard. The earl's eldest son is called Baron Clonmore.

Widdecombe Village of Devonshire. It is 3 m. from Ashburton and, being on Dartmoor, is called Widdecombe-on-the Moor. It is famous for its church, one of the largest in the county and called the cathedral of Dartmoor, and for the song, "Widdecombe Fair," which commemorates its annual fair.

Widgeon A species of wild duck (*Anas penelope*), which abounds in Europe and Northern Asia. The drake has a chestnut head and neck, cream forehead, grey flanks, and green and black wings. It has a cry which sounds like "whew-duck."

Widnes Borough of Lancashire. It is on the Mersey, 12 m. from Liverpool, and is served by the L.M.S. and C.L. Rlys. There are large docks on the river. The chief industry is the making of alkalis and soap, while another is copper smelting. A transporter bridge crosses the river here. Pop. (1931) 40,608.

Wiesbaden City, spa and pleasure resort of Germany. It is beautifully situated among the Taurus Mts. near the Rhine, 5 m. from Mainz, on the main railway line from Cologne to Frankfort. There are beautiful gardens and other attractions. The place is much visited by persons wishing to drink its medicinal waters, and there is a fine kurhaus. Before 1872 Wiesbaden was famous for its gaming tables. From 1815 to 1866, when it became Prussian, the city was the capital of Hesse-Nassau. The city has a trade in wine. Pop. (1930) 151,961.

Wig Artificial head of hair, which is worn for ornament, disguise, or as a symbol of office. Wigs were known in the early days of Egypt, Greece and Rome. In the sixteenth and seventeenth centuries periwigs developed from the simple simulation of real hair to elaborate, curled coiffures. They died out gradually, and are now confined almost entirely to members of the legal profession, as part of their official costume.

Wigan County borough and market town of Lancashire. It is 18 m. from Manchester and 194 from London, on the

river Douglas. It is served by the L.M.S. Rly. It has cotton mills, clothing factories and engineering works, and around are coal mines. Pop. (1931) 83,357.

Wight Isle of. Island off the south coast of England. It covers 147 sq. m., and is separated from the mainland of Hampshire by the Solent and Spithead. It is chiefly a holiday resort, and is famed for its quiet beauty and its mild climate. Newport is the capital and around the coast are Ventnor, Freshwater, Cowes, Ryde, Shanklin, Sandown and other watering places. It has a railway system centring on Newport, and is reached by steamers from Portsmouth, Southampton and Lymington. The island contains Carisbrooke Castle, Osborne House, the Undercliff, Brading, and other places of beauty or historic interest. It has its own county council, but for some purposes is in the county of Hampshire. It is in the diocese of Portsmouth. The island has its own governor. Pop. (1931) 88,400.

Wightman Cup Trophy at lawn tennis. It is competed for each year by women players from Britain and the United States.

Wigston Urban district of Leicestershire. It is 95 m. from London and 4 from Leicester, and is a junction on the L.M.S. Rly. It is called sometimes Wigston Two Steeples because it has two fine parish churches. The making of hosiery is the main industry. Pop. (1931) 11,393.

Wigton Urban district of Cumberland. It is 12 m. S.W. of Carlisle, and 311 from London by the L.M.S. Rly. There are breweries and tanneries. Near was the Roman station of old Carlisle. Pop. (1931) 3521.

Wigtown Burgh and seaport of Wigtownshire, also the county town. It stands on Wigtown Bay and has a station on the L.M.S. Rly. The town has a memorial to two martyrs, women who were drowned in the Solway because they were Covenanters. Pop. (1931) 1261.

Wigtownshire County of Scotland. In the south-west of the country, it is part of the district called Galloway. It covers 487 sq. m., and has a long coastline on the Irish Sea. Luce Bay and Loch Ryan almost cut it into two. Wigtown is the county town, other places are Stranraer, Portpatrick, Newton Stewart, Whithorn and Glenluce. The rivers include the Cree and the Luce. In the west is the peninsula called the Rhinns of Galloway and the county includes several islands. Cattle and sheep are reared, and milk and butter produced. Pop. 29,299.

Wigwam Anglicised form of an Algonkian phrase denoting a conical hut made of wooden poles lashed together at the top, and covered with bark. It is used generally for any of the houses, or skin tents (properly called tepees) of the North American Indians.

Wilberforce Samuel. English prelate. The third son of William Wilberforce, the slavery abolitionist, he was born in Clapham, London, Sept. 7, 1805, and educated at Oxford. Ordained in 1828, he was appointed rector of Brightstone, Isle of Wight, Canon of Winchester in 1840, Dean of Westminster in March, 1844, and Bishop of Oxford the same year. In 1869 he was translated to Winchester. He was killed July 19, 1873, while riding near Dorking.

Wilberforce William. English philanthropist. Born in Hull, Aug. 24, 1759, he was educated privately and at Cambridge. In 1780 he was returned to Parliament for Hull. Shortly afterwards he was converted to Evangelical Christianity and, in 1788, soon after meeting Thomas Clarkson (*q.v.*), he began his long and arduous fight for the abolition of slavery against formidable opposition, both within the House and without. The bill for abolition finally passed, March 25, 1807, Wilberforce took an active interest in many philanthropic schemes. He died July 29, 1833, and was buried in Westminster Abbey.

Wild Jonathan. English criminal. Born at Wolverhampton about 1682, he came to London, where in association with other criminals he built up a connection as receiver of stolen goods. He employed numbers of thieves, each one being allotted his special sphere. He was hanged May 24, 1725.

Wilde James. British pugilist. Born at Craig Treharris, Glamorgan, May 12, 1892. He held the flyweight championship of the world, though 14 lbs. under the regulation weight. Since 1922 he has only acted as referee.

Wilde Oscar O'Flahertie Wills. English author. Born in Dublin, Oct. 15, 1856, he was educated at Dublin and Oxford. While still at college he laid the foundation of the aesthetic cult ("Art for Art's sake"), satirised in Gilbert and Sullivan's *Patience*. Among his plays are *Lady Windermere's Fan*, *A Woman of No Importance*, *The Importance of Being Earnest*; among his novels, *The Picture of Dorian Gray*, and *Lord Arthur Savile's Crime*. In May, 1895, Wilde was sentenced to two years' imprisonment for immoral practices, subsequently retiring to Paris, where he died Nov. 30, 1900.

Wilfrid English saint. Born about 634, he became a monk at Lindisfarne and was soon influential in Northumbria. About 665 he was made Bishop of York, but he was soon at variance with Theodore, Archbishop of Canterbury. For a time he lived in Compiègne, but in 668 he returned to Northumbria, and was restored to his see, only to be driven out by King Egfrith. In 685 he was again restored, but was again expelled in 691. He died at Oundle in 709. Wilfrid built churches at Hexham, Ripon and York.

Wilhelmina Queen of the Netherlands. She was born at the Hague, Aug. 31, 1880, the only child of William III. by his second marriage. She succeeded to the throne, Nov. 23, 1890. She married on Feb. 7, 1901, Henry Wladimir Albert Ernst, Duke of Mecklenburg-Schwerin. On April 30, 1909, she gave birth to a daughter, Princess Juliana.

Wilhelmshaven Seaport of Germany. It stands on the North Sea, 41 m. from Bremen. Before the Great War it was Germany's chief naval base on the North Sea, with accommodation for docking and repairing the largest warships. In 1919 the fortifications were dismantled and the harbour works fell into disuse. The port was created in 1853 and named after William I., King of Prussia.

Wilkes John. English politician and journalist. He was born in London in 1727. Though a man of dissolute character, he was instrumental in arousing the nation to the need for Parliamentary reform,

and in establishing the right of the Press to discuss public affairs. In 1764 he was expelled from Parliament and outlawed for a libel contained in his paper, *The North Briton*. He was three times returned to Parliament as member for Middlesex in 1768 and 1769, but he was not allowed to take his seat until 1774. He was Lord Mayor of London in 1774. He died Dec. 26, 1797.

Wilkie Sir David. Scottish painter. Born Nov. 18, 1785, in 1806 he settled in London, where his "Village Politicians" and "Blind Fiddler" gained him his R.A. in 1811. In rapid succession came his portrait of Sir Walter Scott, "Card Players," "Rent Day," "Reading the Will," and a host of pictures depicting humble life. His best known work was "Chelsea Pensioners listening to the news of Waterloo." He died June 1, 1841.

Will Document by which a person called the testator disposes of property on death. By English law wills must be in writing and all signatures of the testator witnessed by two persons. The witnesses should be persons who have no interest in the will. In Scots law a will need not be witnessed if it is in the handwriting of the testator. The will of a sailor at sea or of a soldier on active service need not be in writing.

No person under 21 years of age can make a will. A will becomes invalid if a later will is made or if the testator marries. A will can be altered by the addition of a codicil. In cases where a good deal of property is at stake, and several persons are interested in it, then the will should be drawn up by a solicitor. A will must name one or more executors or trustees, whose duty it is to have it proved and to carry out its provisions. The property of persons who die intestate, or without making a will, is dealt with by taking out letters of administration. *See* EXECUTOR.

Willenhall Urban district of Staffordshire. It is 3 m. from Wolverhampton and 122 from London by the L.M.S. Rly. Here are metal manufactures. Pop. (1931) 21,147.

Willesden Urban district of Middlesex. It is 6 m. to the north-west of the city. Here is a great junction on the L.M.S. line. The urban district includes Cricklewood, Brondesbury and Harlesden. Pop. (1931) 184,410.

Willett William. English builder. Born in Sept., 1856, at Farnham, Surrey, he was well-known in London as a builder of beautifully-designed houses, but he is famous for his Daylight Saving scheme, which was first put into operation in England in 1916. He died March 4, 1915. *See* DAYLIGHT SAVING.

William I. King of England, surnamed the Conqueror. He was born in 1027, the natural son of Robert II., Duke of Normandy, and succeeded to the dukedom in 1035. He invaded England in 1066, landing at Pevensey on Sept. 28, and defeating the English army under King Harold at Senlac, near Hastings, on Oct. 14. After his coronation at Westminster at Christmas, 1066, he had to quell insurrections in various parts of the country and later in Normandy. He carried out a complete survey of his English realm, the results of which are preserved in Domesday Book (*q.v.*). He died Sept. 9, 1087.

William II. King of England, generally known as William Rufus. He was born about 1058, the third son of William the Conqueror. He gained military successes in Normandy and Scotland, but his cruelty and profligacy earned for him the hatred of his subjects, and there was little sorrow when he was found dead in the New Forest with an arrow in his breast, Aug. 2, 1100.

William III. King of Gt. Britain. He was born, Nov. 4, 1650, the posthumous son of William II., Prince of Orange and Mary, daughter of Charles I. of Gt. Britain. Appointed captain-general of the Dutch forces when he had scarcely reached manhood, he carried on the struggle of the Dutch against Louis XIV. with gallant determination. In 1677 he married Mary, daughter of James II. of Britain. In 1689 after the deposition of James II. (*q.v.*) he and Mary became joint sovereigns of Britain, his main object in accepting the crown being to ensure British participation in the War of the Grand Alliance (*q.v.*). The expenses of the war necessitated the institution of the National Debt in 1695. His last years were occupied with negotiations concerning the Spanish Succession (*see* SPAIN), and war had just been declared when William died March 8, 1702.

William IV. British king. He was born on Aug. 21, 1765, the third son of George III. and Charlotte Sophia, of Mecklenburg-Strelitz. After a term of service in the navy, he was created Duke of Clarence in 1789 and became Lord High Admiral of England in 1827. After a twenty years' association with Mrs. Jordan (their children bearing the name of Fitzclarence), he married Adelaide of Saxe-Meiningen, but had no issue. He succeeded George IV. on the throne in 1830. The Reform Act of 1832 was the outstanding measure of his reign. He died June 20, 1837.

William I. King of Prussia and German Emperor. Born March 22, 1797, second son of Frederick William III., King of Prussia, he received a military training and took part in the final campaigns of the Napoleonic Wars. Conservative in his views, he supported repression of the revolutionary movement of 1848. In 1861 on the death of his brother, Frederick William IV., he became king. Autocratic in temper, and a believer in military power, he worked in harmony with Bismarck (*q.v.*) in carrying out the policy which led to the formation of the German Empire. During the Franco-Prussian War he was in command of the Prussian forces and was present at the victories of Gravelotte and Sedan. He was proclaimed German Emperor at Versailles, Jan. 18, 1871, and died at Berlin, March 9, 1888.

William II. German Emperor and King of Prussia. He was born at Berlin, Jan. 27, 1859, the eldest son of the Crown Prince Frederick (afterwards Frederick III.) and of Victoria (eldest daughter of Queen Victoria). He married on Feb. 27, 1881, the Princess Augusta Victoria of Schleswig-Holstein, by whom he had six sons and one daughter. When he became German Emperor, June 15, 1888, he had received a thorough military training, but his character was markedly immature and overweening. Within two years of his accession Bismarck was dismissed, and the Emperor went ahead, sometimes very imprudently, with his policy of expanding Germany's power. At the beginning of the Great War he directed operations in person, but later retired into the background.

On Oct. 9, 1918, he abdicated and crossed the Dutch frontier to reside at Doorn Castle.

William the Silent. Prince of Orange-Nassau. Born in Nassau April 25, 1533, he was favoured by the Emperor Charles V., and Philip II. made him stadtholder (governor) of Holland, Zeeland and Utrecht. In 1567 he espoused the cause of the Netherlanders against Spanish domination, and of Protestantism against Roman Catholicism. He failed, largely through religious dissensions, to unite all the Netherlands provinces into one independent state, but in 1579 the Union of Utrecht established the seven Protestant United Provinces. He was killed by an assassin July 9, 1584.

Williams Sir George. Founder of the Young Men's Christian Association. Born at Dulverton, Somerset, Oct. 11, 1821, he went to London in 1841, and eventually became partner in the drapery firm, Hitchcock and Williams, St. Paul's Churchyard. He took an active interest in religious work, and on June 6, 1844, twelve men met in his bedroom and founded the Y.M.C.A. (*q.v.*). He was knighted in 1894, and died at Torquay, Nov. 6, 1905.

Williamsburg City of Virginia. It is 47 m. from Richmond, on the James River. Here is William and Mary College, founded in 1693, the second oldest in the country. Founded in 1632, it is the oldest municipality in the United States, and was capital of Virginia from 1698-1779. In 1928 it was decided to restore it so that it will appear as it was in the 17th and 18th centuries. In May, 1862, there was an indecisive battle here during the Civil War. Pop. 30,000.

Williamstown Town and seaport of Victoria, part of the municipality of Melbourne. It is 5 m. from Melbourne on the estuary of the Yarra Yarra River. It has accommodation for shipping and there are shipbuilding yards, railway shops, engineering works and canning factories.

Willington Urban district of Durham. A coal mining centre, it is 4 m. from Bishop Auckland and 249 from London by the L.N.E. Rly. Pop. (1931) 9197.

Willoughby Sir Hugh. English adventurer. Born about 1500, he served against the Scots in the time of Henry VIII., being knighted in 1544. In 1553 he was appointed commander of a fleet of three ships, sent out to find the north-east passage. With two of his ships he reached Lapland, where he died of scurvy in 1554.

Willoughby de Eresby

Peregrine Bertie. English soldier and statesman, famous for his many diplomatic and military services to Queen Elizabeth, he was born Oct. 12, 1555, at Lower Wesel, Cleves, during the temporary absence from England of his parents. From 1582 onwards, he was sent on various diplomatic missions to Denmark, which he accomplished successfully. In 1586 he routed the Spaniards at Zutphen, in the engagement that cost Sir Philip Sidney his life. He also served in France and Scotland. He died June 25, 1601.

Willow A tree or shrub, belonging to the botanical family *Salicaceae*, and varying in height from a few inches to 120 feet. The leaves are longer than broad. The flowers are borne on catkins, which appear before the leaves. Male and female catkins grow on separate trees, and cross-pollination is effected by insects and the wind. Willow is used as timber and wood pulp, and for wicker and basket-making. The timber of one variety is used for making cricket-bats, the wood of the female tree being preferred for this purpose.

Willow Pattern Ware. Chinaware bearing a design which copies the original blue china of Nanking. It was introduced into English porcelain by Thomas Turner of Caughley, about 1700. The blue is printed under the glaze. The scene depicted is a Chinese one, in which three men, according to a legend, are crossing a bridge, in pursuit of two runaway lovers, who have escaped, and changed themselves into two doves, who fly freely above them.

Wills Family of English tobacco manufacturers. The founder was Henry Overton Wills (1761-1826), who married Anne Day, daughter of a tobacco manufacturer, and gradually obtained a controlling interest in the business. From this beginning grew up the Imperial Tobacco Co. (of Great Britain and Ireland) Limited, formed in 1901, and uniting many competing firms. His grandson, Henry William Wills (born Sept. 1, 1830, died Jan. 29, 1911) became the first Baron Winterstoke. Others were, Sir Edward Payson Wills, Bart. (1834-1910), and Sir Frederick Wills, Bart. (1838-1909). Their united benefactions to Bristol were very large. Gilbert Alan Hamilton Wills, 1st Baron Dulverton (born March 28, 1880) is now president of the Imperial Tobacco Co.

Wilmington Village of Sussex. It is 6 m. from Eastbourne, and is famous for the figure of a man cut in the chalk on the hillside. This is 240 ft. high and is called the Long Man of Wilmington.

Another Wilmington is a city and seaport of Delaware, U.S.A. It is 26 m. from Philadelphia and has many industries. The Swedish church here, erected in 1698, is one of the oldest buildings in the country. Pop. (1930) 106,957.

Wilmslow Urban district of Cheshire. It is 6 m. south-east of Stockport, and 177 m. from London, by the L.M.S. Rly. The town stands on the Bollin. Pop. (1931) 9760.

Wilson Sir Henry Hughes. British soldier. He was born at Edgeworthstown, Co. Longford, Ireland, March 5, 1864, and educated at Marlborough and Sandhurst. He served with distinction in Burma and South Africa. In the Great War he was Assistant-Chief of General Staff to Lord French. In 1918 he was made Chief of Imperial General Staff in London, and a member of the War Cabinet, and was created a baronet in 1919. He entered Parliament in Feb., 1922, and criticised the Government's Irish policy. On June 22, 1922, he was murdered on his own doorstep.

Wilson Thomas Woodrow. American president and statesman. Born at Staunton, Virginia, Dec. 28, 1856, he was educated at Princeton and Johns Hopkins Universities, becoming President of Princeton in 1902. In 1910 he resigned, having been elected Governor of New Jersey. In 1912, owing to a split in the Republican vote between Roosevelt and Taft, he was elected President of the Republic. At the outbreak of the Great War he favoured neutrality, and

he was re-elected in 1916 on the slogan, "He kept us out of the war." The continued ruthless submarine campaign, however, forced Wilson to join the Allied cause in April, 1917. He took a leading part in the peace negotiations, and suggested the formation of the League of Nations. The rejection of the Versailles Treaty by the U.S. Senate and his own rejection in the presidential contest of 1920, however, led to his complete retirement from public life, and he died Feb. 3, 1924. Wilson's lofty idealism, combined with his inability to realise his own political weaknesses, and his unwillingness to listen to the advice of others, make his career one of the greatest tragedies of modern times.

Wilton Borough of Wiltshire. It stands on the Wylye, 2 m. from Salisbury on the S. Rly. It gives its name to a kind of carpet made here. Here is Wilton House, the magnificent seat of the Earl of Pembroke, designed by Inigo Jones. The house is memorable for its association with Shakespeare and Sidney. Pop. (1931) 2193.

Wiltshire County of England. In the south of the country, it is wholly inland. It covers 1375 sq. m. There are hills in the north and in the south is Salisbury Plain. The county also contains Savernake Forest. Salisbury is the county town; other towns are Swindon, Marlborough, Calne, Chippenham, Wilton, Devizes, Pewsey, Malmesbury and Warminster. The rivers include two Avons, the Nadder and the Kennet. The county is an agricultural area and supplies much milk to London. Sheep are also reared in great numbers. It contains Stonehenge and other places of beauty and interest. Notable houses are Longford Castle and Bowood. Pop. (1931) 303,258.

The **Wiltshire Regiment** was originally the 62nd and 99th Foot, raised in 1756 and 1824 respectively. They are called the Springers. The depot is at Devizes. The **Wiltshire Yeomanry** is the senior of its kind in the army.

Wimbledon Borough of Surrey. It is 8 m. from London, on the S. and District Rlys. It is famous for its common, a fine open space covering 1000 acres, and for its lawn tennis ground, the headquarters of the game where, in June, the championship matches are played. On the common is a Celtic earthwork called Caesar's Camp. Pop. (1931) 59,920.

Wimborne Market town and urban district of Dorset. It is 6 m. from Poole, on the S. Rly. It is famous for its collegiate church, called the Minster, a large and magnificent building with a Norman central tower. It has a library of chained books. Its trade is agricultural. Pop. 3895.

Wimborne **Viscount.** English title held by the family of Guest. In 1880, Sir Ivor Guest, a son of Sir Josiah Guest, who had made a large fortune from his ironworks in South Wales, was made a baron. His son, Ivor Churchill Guest, was born on Jan. 6, 1873, and educated at Eton and Trinity College, Cambridge. From 1900-10 he was a Liberal M.P., and from 1915-18 he was Lord Lieutenant of Ireland. He was made a baron in 1910, four years before he succeeded his father as Baron Wimborne. In 1918 he was made a viscount

Wimereux Pleasure resort of France, 4 m. from Boulogne. There is good bathing. During the Great War the British forces had large hospitals here. Pop. 1498.

Winchcombe Market town of Gloucestershire. It is 6 m. north-east of Cheltenham, and 114 m. from London, by the G.W. Rly. There is a fine church, and nearby is Sudeley Castle, built in the 15th century. Pop. 2741.

Winchelsea Town of Sussex. It is 8 m. from Hastings and 74 from London, and is reached by the S. Rly. It was a Cinque Port and a flourishing place until the sea receded and left it inland.

There have been two earlier Winchelseas. The older one was destroyed by the sea in the 13th century; it was 3 m. to the south-east of the present site. The newer one was built about 1300 by Edward I. in 40 squares, but in little over a century it too began to decay.

The title of **Earl of Winchelsea** has been held since 1628 by the family of Finch-Hatton. Since 1681 it has been united with the earldom of Nottingham. The earl's eldest son is called Viscount Maidstone.

Winchester City and market town of Hampshire; also the county town. It is on the Itchen, 66 m. from London, on the S. and G.W. Rlys. The chief building is the cathedral, notable for its long nave, its west front, and its historic monuments. In the Shire Hall, which is part of the old castle in which the kings lived, is the so-called table of King Arthur. Other buildings are the modern Guildhall, and Wolvesey Castle restored as a residence for the bishops. Two of the old gates still stand. They are the West Gate, in which is a museum, and King's Gate, over which is a church, S. Swithins, leading into the close. Near the city is the Hospital of St. Cross founded in 1136 for poor old men. The picturesque group of buildings includes a beautiful church. In the refectory, ale and bread are distributed each day to visitors.

Winchester has an agricultural trade and is a military centre, the depots of the rifle regiments being here. The diocese has been divided into three, Guildford and Portsmouth being the others. Until 1918 the city was separately represented in Parliament. Of Roman origin, it was the capital of Wessex, and for about 200 years before the Norman Conquest was the capital of England. Pop. (1931) 22,969.

Winchester **Marquess of.** English title, the oldest of its rank, borne since 1551 by the family of Paulet. Sir William Paulet was the first holder. The 5th marquess was the defender of Basing House for Charles I., and the 9th marquess was made Duke of Bolton in 1689. In 1794, when the 6th Duke of Bolton died, his dukedom became extinct, but the marquisate passed to a descendant of the earlier Paulets.

Winchester College English public school. It was founded by William of Wykeham in 1382, and on it the English public school system has been modelled. It is controlled by a corporation of wardens and fellows. The boys are divided into scholars and commoners. The scholars live in college, the commoners live in houses near. The chapel and other buildings erected in the 14th century are still used, but there are extensive modern ones. The school motto is *Manners makyth man.*

Wind Air in natural motion. Winds are caused by differences of atmospheric pressure, in turn produced by temperature differences. Air flows to a low-pressure region from one where a higher pressure exists. Wind

force is measured according to the Beaufort scale :

No.	Wind	Velocity in m. per hour
0	Calm	0
1	Light Air	2
2	Light breeze	5
3	Gentle breeze	10
4	Moderate breeze	15
5	Fresh breeze	21
6	Strong breeze	27
7	Moderate gale	35
8	Fresh gale	42
9	Strong gale	50
10	Whole gale	59
11	Storm	68
12	Hurricane	Over 75

See TRADE WINDS.

Windermere Lake of Westmorland, the largest in England. It is 10½ m. long and covers about 6 sq. m. The Leven takes its water to Morecambe Bay. There is a station at Lakeside on the south, and steamers go along it, touching at Bowness and Waterhead.

Windermere Urban district of Westmorland. It is near the east side of the lake of the same name, 4 m. from Ambleside, and is the terminus of a branch line of the L.M.S. Rly. The parish church has some old paintings. The urban district includes Bowness on the lake. Pop. (1931) 5701.

Windflower Name by which the wood anemone (*Anemone nemorosa*) is popularly known. *See* ANEMONE.

Windhoek Capital of the South-West Africa Protectorate. It is 170 m. by railway from Walvis Bay. It was entered by British forces in May, 1915, when the colony was captured from the Germans.

Windlass Device for raising weights. It consists of a revolving cylinder round which the hauling rope is wound by turning a cranked handle.

Windmill Machine which uses the energy of the wind to perform work. The best-known kind is a building with sails attached, the action of the wind on the sails producing a torque, from which power is transmitted to perform work. They are now used in the form of steel sail windmills, largely to pump water for rural use, and in Great Britain as generating plants for electricity.

Window Opening in the wall of a structure that admits light and air. There were windows in houses in the 9th century, B.C., although the Greeks dispensed with them and built their houses around courtyards. The Romans were the first to glaze windows. The Church has played a great part in the development of windows. In Europe, the type known as **French windows**, high and narrow, and opening inwards, was superseded in England by the double-hung type, in which the lower and upper sashes could be moved, but this again has given place to the older casement type, opening out. In many large, modern buildings, "metal" windows, with frames of pressed steel, are used, which give a maximum of light and air.

In the Orient, there is very little glazing, the space being filled usually by intricately latticed wood. In China and Japan, the windows are covered by paper or shell, and are arranged to slide into a case, fitted on the outside of the wall.

Windsor Borough and market town of Berkshire. It is on the Thames, 22 m. from London, and is reached by the S. and G.W. Rlys. It includes the village of Old Windsor, 2 m. to the south-east. Bridges connect it with Eton. Windsor is a popular boating centre and has associations with Shakespeare. Pop. (1931) 20,284.

Windsor City and port of Ontario, Canada. It is situated on the left bank of the Detroit River, immediately opposite Detroit. The two towns are connected by a suspension bridge, and a vehicular tunnel nearly a mile long. Windsor is an important centre both for the manufacture of motor vehicles, and for railways connecting with American systems by means of car ferries. Pop. (1931) 63,108.

Windsor Borough of Nova Scotia, Canada. An attractive residential town, 46 m. from Halifax, it is situated in a district famous for its apples. It is the seat of the oldest Colonial university, King's College. In the neighbourhood are vast deposits of gypsum. Pop. 3500.

Windsor House of. Name of the British royal family. King George V. is regarded as the founder of the House of Windsor, having, in 1917, abandoned for himself and his family all German titles, together with the dynastic name of Saxe-Coburg-Gotha. The members of the royal family are King Edward VIII., Queen Mary, the Duke and Duchess of York and their two daughters, the Princesses Elizabeth and Margaret Rose; the Princess Mary and her husband, the Earl of Harewood, and their two sons, Viscount Lascelles and Hon. David Lascelles; the Duke and Duchess of Gloucester; and the Duke and Duchess of Kent and their infant son.

Windsor Castle Chief residence of the British sovereign. It stands above the town of Windsor, from which there are two entrances. The first castle was built by William I., but the present one dates from the 14th century, with additions made in the 18th and 19th. It contains some magnificent rooms and a priceless collection of works of art. The gem of the building is St. George's Chapel, a Gothic edifice restored in 1922-23. The keep, or round tower, is in the centre of the castle, and the grounds cover 12 acres. Around is the home park, and beyond that the great park covering 3 sq. m. The state apartments, round tower, stables, St. George's Chapel and Albert Memorial Chapel are open to the public when the royal family are away.

Windward Islands Group of islands in the West Indies. They belong to Great Britain and are the southern part of the Lesser Antilles. The group consists of Grenada, St. Vincent, St. Lucia and the Grenadines. There is a governor for the islands, living at St. George's, Grenada, but they are otherwise independent of each other. Each has its own government except that there is a court of appeal for the group. The islands cover 516 sq. m., and the pop. is (1931) 186,299, *See* GRENADA, ST. LUCIA, LEEWARD ISLANDS, etc.

Wine Fermented juice of the grape. It varies in colour from a pale yellow to the darkest red. Beverage wines are made from ripe grapes, and the juice allowed to ferment naturally, without interference. Fine wines are from perfect grapes, perfectly fermented, and possess "quality." Fortified wines contain a certain proportion of spirit distilled from wine, added to raise the alcoholic

strength. Still wines are those which have been allowed to lose their carbon dioxide during the process of fermentation, and sparkling wines have been kept bottled up until used, when the gas escapes in bubbles.

There are vineyards in various parts of the world, including South Africa and Australia, but the finest and most numerous are those in the Mediterranean basin. France produces over a thousand million gallons every year.

Wineland Name, often called Vinland, given by the Scandinavian seamen to a part of North America which they visited in the 10th century. It was so named by Leif Ericsson because of the grapes found there. The exact locality is doubtful; some think it was Newfoundland and others New England.

Wingate Town of Co. Durham. A colliery centre, it is 9 m. from Durham and 248 from London, by the L.N.E. Rly. Bricks are made here. Pop. 11,424.

Wingfield Sculls Chief sculling race in England. It is rowed every July on the Thames, from Putney to Mortlake, 4¼ m. The winner is the amateur sculling champion of England.

Winnington-Ingram Arthur Foley British ecclesiastic. Born Jan. 26, 1858, in Worcestershire, he was educated at Marlborough and Keble College, Oxford. He held a curacy at Shrewsbury, 1884-85, and then became private chaplain to the Bishop of Lichfield. In 1889 he became chaplain to the Archbishop of York and the Bishop of S. Alban's. In 1895 he became Rector of S. Matthew's, Bethnal Green, and in 1896 rural dean of Spitalfields. He was Canon of S. Paul's Cathedral and Bishop Suffragan of Stepney, 1897-1901, and was made Bishop of London in the latter year. His books include *The Sword of Goliath* (1926), *Holiday Recollections of a World Tour* (1928).

Winnipeg City and capital of Manitoba, Canada. Situated about half-way between the Atlantic and the Pacific Oceans, and 60 m. north of the United States boundary, it stands at the confluence of the Assiniboine and Red Rivers, on the site of Fort Garry, a Hudson Bay trading post, having in 1870 a population of 215. It is now the capital of the province of Manitoba and the third largest city in Canada. It is a city of beautiful and substantial houses and wide streets, and is provided liberally with parks and squares. It has the largest grain market on the American continent. There are many grain elevators and flour mills, besides other industries. It has two broadcasting stations (48.8 M., 3.5 kW., and 25.6 M., 2 kW.). Pop. (1931) 217,587.

Winnipeg Lake and river of Canada. The lake, situated 40 m. north of Winnipeg City, is 260 m. long, with an average width of 30 m. It receives the Saskatchewan, the Winnipeg and the Red Rivers, and empties into the Nelson River.

Issuing from the Lake of the Woods, the Winnipeg River flows north-west into Lake Winnipeg. The largest power plants in Manitoba have been built on its banks, and supply 310,000 horse-power to the City of Winnipeg and many industrial areas in Central Manitoba. Other plants being constructed have an additional capacity of 225,000 horse-power.

Winnipegosis Lake of Manitoba and Saskatchewan. Lying to the west of Lake Winnipeg, it is about 120 m. long, and is connected by Waterhen River with Lake Manitoba, which in turn connects through the Dauphin River with Lake Winnipeg.

Winnowing Process of driving off or separating chaff from grain, by means of a fan. This is sometimes done by hand, as in primitive countries, and sometimes by machinery.

Winsford Urban district of Cheshire. It stands on the Weaver, 4 m. from Middlewich, on the L.M.S. Rly. The chief industry is the mining of salt and there are chemical works. Pop. (1931) 10,997.

Winslow Market town of Buckinghamshire. An agricultural centre, it is 6¼ m. south-east of Buckingham, and 54 m. from London, by the L.M.S. Rly. Pop. 1532.

Winter Berry Shrub (*Ilex verticillata*) of eastern N. America, also known as the black alder. The leaves are toothed, and the small white flowers appear in early summer, followed by scarlet berries. A medicinal preparation is obtained from the bark.

Winter Cherry Hardy herbaceous plant (*Physalis*) of Chinese origin. It has tall stems, oval leaves and white blossoms. After the petals drop the orange-coloured calyx becomes enlarged and distended, its appearance giving the plant its familiar name of Chinese lantern.

Wintergreen Genus of small herbaceous evergreen plants (*Pyrola*) of the order *Ericaceae*. *Pyrola rotundifolia*, a British species, has small round leaves at the base of the plant and white flowers. The American wintergreen, or chickenberry (*Gaultheria procumbens*), is a low-growing, aromatic plant, with white flowers succeeded by red berries. Oil of wintergreen, used for flavouring and also in unguents for external application, is obtained from the leaves. A synthetic preparation of methyl salicylate, which is its chief property, is often used under the same name.

Winter Sports Recreations such as skating, ski-ing, tobogganing, and ice-hockey, which are enjoyed in winter in regions covered with snow. The chief centre for winter sports in Europe is Switzerland, where the season lasts from December to May, in the highest parts. Winter sports are included in the programme of the Olympic Games. Winter sports are held also in the United States, Canada, Norway, Sweden and Austria.

Wire Threads of metal. Several metals are used in its manufacture, but commercial wire is chiefly of copper, iron or steel. It is made by drawing the material through dies, and is used for a great variety of purposes. Wire ropes are in general use and the development of electricity has created a great demand for insulated wire. Wire is also used for fencing purposes and for musical instruments.

Wireless Telegraphy and Telephony. Method of communication by means of electro-magnetic waves. The telegraphic systems include spark and continuous wave, the signals, in morse, being produced by a key or other apparatus used to interrupt the radiated wave train. Telephony is achieved by using the microphone to modulate a carrier wave. It became practicable with the invention of the thermionic valve.

Marconi constructed a workable wireless signalling apparatus in 1895, and his system was investigated by the British Government the following year. The navy successfully used the system in 1898, and in 1901 trans-Atlantic signalling was achieved. Tuning, invented by Lodge in 1897, was practically applied by Marconi. The first detectors were of the coherer type invented by Branly in 1890. Later the crystal was employed. Fleming's diode valve (1904) and de Forest's triode (1906) made possible enormous advances, the latter especially in its inventor's amplifying arrangement (1907). A feed-back arrangement was devised by Franklin in 1913, and Meissner's use of regeneration to utilise the valve as generator of oscillations (1913) marked another forward stage. Trans-Atlantic telephony was effected in 1915 by the Poulsen spark system (Arlington, U.S.A. to Paris). In 1919 Canada, and in 1924 Australia, were reached from Britain (Marconi system). Commercial telephone links with New York (1927) and Sydney (1929) followed in due course, as did the natural development of long distance ship-to-shore speech. Now it is possible to speak to most of the countries of the world, and new developments of the radio telephone service are constantly being made.

In 1928, while external telephony services were retained, the British Government transferred certain other wireless interests to an *ad hoc* merger of cable and wireless telegraphy firms. *See* BROADCASTING, MICROPHONE, WAVE.

Wireworm Larva of the click-beetles (*Elsteridae*). It is about 3 in. in length, and yellow in colour. The body is hard, cylindrical and shining, giving it the name of "wireworm." It has three pairs of jointed legs and very powerful jaws. Wireworms are very general feeders, living on the roots of plants, and scarcely any crop of fruit or vegetable is immune from their attack.

Wirksworth Market town and urban district of Derbyshire. It is 13 m. from Derby, on the L.M.S. Rly. Pop. (1931) 3911.

Wisbech Borough, market town and river port of Cambridgeshire. It stands on the Nen, 15 m. from King's Lynn, A canal connects it with Cambridge. The town is the centre of a market gardening district in the Isle of Ely. Pop. (1931) 12,005.

Wisby City and seaport of Sweden, often called Visby. It is on the Island of Gottland, 150 m. from Stockholm. In the Middle Ages it was one of the wealthiest and busiest of the Hanseatic towns. The city walls and towers are practically intact. The port has a good modern harbour and still does a considerable trade. Pop. (1930) 10,467.

Wisconsin State of the United States. In the north of the country, it lies in the angle formed by Lakes Superior and Michigan. It is 56,066 sq. m. in extent, and has about 10,000 sq. m. of lake water. Madison is the capital, but Milwaukee is much the largest city. The state is noted for its dairy farms. Maize, oats and barley are widely grown. Iron ore is mined. Wisconsin is governed by a legislature of two houses. It became a state in 1848. Pop. (1930) 2,939,000.

Wisdom Book of. A book of the Apocalypse. It was probably written between 150 B.C. and 30 B.C., and falls into three parts: (*a*) in which the author argues that as far as the righteous are concerned, death is not the end; (*b*) which portrays Wisdom; and (*c*) a historical retrospect written to show the evil results of idolatry.

Wiseman Nicholas Patrick Stephen. English Cardinal. Born at Seville, Spain, Aug. 2, 1802, he was educated at Ushaw College, near Durham, and at the English College at Rome, where he became Professor of Oriental Languages, and Rector in 1828. Consecrated as a bishop in 1840, after work in England, in 1850 he was made Cardinal Archbishop of Westminster. Wiseman's pastoral aroused fears in England of "papal aggression," but his admirable *Appeal to the English People*, and his subsequent tact and moderation enabled him to outlive the hostility engendered by his pastoral. He was the founder, in 1836, of the *Dublin Review*. He died Feb. 16, 1865.

Wisley Village of Surrey. It is 3¼ m. from Weybridge, on the Portsmouth Road. Here are the gardens of the Royal Horticultural Society.

Wistaria Genus of leguminous climbing shrubs (*W. chinensis*). The Chinese kidney bean, it is a popular variety for growing on walls, trellis or garden arches. The soft blue flowers grow in long drooping racemes. Another variety is *W. japonica*, which is a white variety.

Wit Happy expression of associations between ideas or words not usually connected, so that it produces an amusing surprise. It is a neat turn of speech, and depends for its effect on readiness of application. It is more intellectual than humour, implying, as it does, a swift perception of the incongruous.

Witan Short name for the witenagemot, an assembly of the wise that met in England in Anglo-Saxon times. Its members were called together by the king when he wanted advice. He made grants of land and took decisions of importance after taking counsel with "the witan of my people." It consisted of members of the royal family, the archbishops, bishops, abbots, and thegns. It lasted until the Norman Conquest, when it was replaced by the feudal Great Council.

Witch (and Witchcraft). Woman who practised sorcery, and was supposed to have dealings with the devil. In medieval times, witches were generally women more knowledgeable than the others of their village, who foretold the future, and practised white magic—the gathering and brewing of herbs to cure people, with benisons chanted over them; or black magic, when these things were done to work harm. Witches usually had "familiars"—supposedly the devil in the disguise of a dog, cat or toad. Whole villages were under the spell of these witches, and practised rites in February, May, August, and November, when sacrifices were made to the old pagan gods, and there was dancing, with much excitement and emotion. Witches and witchcraft were sternly put down from the 15th century by all zealous members of all the Christian Churches, and witches were hanged, burned, and drowned.

Witch Hazel (or Winter Bloom). North American shrub (*Hamamelis virginica*), resembling the hazel, with oval leaves and clusters of autumn and winter blooming yellow flowers. The bark and leaves have an astringent property, and are used for various medicinal preparations.

Witham River of England. It rises in Rutland, passes into Lincolnshire, and flows to the Wash near Boston. It is 70 m. long, and on it are Boston, Grantham and Lincoln. It is navigable to Boston.

Witham Urban district of Essex. It is 38 m. from London, by the L.N.E. Rly, on which it is a junction. Here is an old church and some picturesque houses, including the Spread Eagle Inn, which dates from the 14th century. There is an agricultural trade. Pop. (1931) 4357.

Witney Urban district and market town of Oxfordshire. It stands on the Windrush, 10 m. to the west of Oxford, on the G.W. Rly. It is a centre of the blanket manufacture. The fine old parish church is partly Norman, and there is a butter cross in the market place. Pop. (1931) 3409.

Witt **Jan de.** Dutch statesman. Born at Dort in 1625, as leader of the wealthy bourgeois he combined with the nobles to oppose William II. of Orange, and later the young prince (afterwards William III.). Appointed Grand Pensionary of Holland while the Dutch were at war with England, he concluded peace in 1654. Again in 1667 he negotiated peace with England by the Treaty of Breda, and next year brought about the Triple Alliance between England, Holland and Sweden. Louis XIV.'s invasion of the United Provinces brought about his fall and the return of William of Orange to power. With his brother Cornelius he was attacked by the mob and beaten to death, Aug. 20, 1672.

Witton Gilbert Village of Durham. It is on high ground 3½ m. N.W. of Durham City. Here in the 13th century, Gilbert de la Leq built a hospital of which all that remains is a decorated window in a farmhouse near the church of S. Michael, which was rebuilt in 1867.

Witwatersrand District of the Transvaal. It is generally known as the Rand, and is famous for its gold mines. There has been a university of this name at Johannesburg since 1922.

Wiveliscombe Urban district and market town of Somerset. It is 9 m. from Taunton and 152 from London, on the G.W. Rly. There is an agricultural trade. Pop. (1931) 1262.

Woad Herbaceous plant of the family *Cruciferae*. It grows in England on chalky soil and has yellow flowers. The juice derived from the root leaves was used by the ancient Britons to stain themselves blue.

Woburn Market town of Bedfordshire. It is 15 m. from Bedford. Here is Woburn Abbey, seat of the Duke of Bedford. Built about 1756, it contains a priceless collection of works of art and stands in a park of 2400 acres. There was once a Cistercian house here, but since 1547 the estate has belonged to the Russells.

Wodehouse **Pelham Grenville.** English humorist and playwright. Born at Guildford, Oct. 15, 1881, he was educated at Dulwich. For some years he was on the staff of the *Globe*. Since 1902, when he published *Pothunters*, at least one work has come from his pen every year. He is part author of 30 plays, among them *Kissing Time* and *Leave it to Psmith*; among his stories are *Psmith in the City*, *Piccadilly Jim*, *The Inimitable Jeeves*, *Hot Water*, and *Right Ho, Jeeves* (1935).

Woden *See* ODIN.

Woffington **Margaret.** Irish actress. She was born in Dublin, Oct. 18, 1718, and made her London debut at Covent Garden in 1740. Her chief successes were in the parts of male characters (*e.g.*, Sir Harry Wildair in *The Constant Couple*), and those of society ladies (*e.g.*, Lady Betty Modish). She was familiarly known as "Peg" Woffington, and acted with David Garrick at Drury Lane. Retiring in 1757, she died Mar. 28, 1760.

Woking Urban district of Surrey. It is on the Wey, 24 m. from London, and is reached by the S. Rly. Near are Brookwood with its cemetery and crematorium, the ruins of Newark Priory, and Worplesdon. Pop. (1931) 29,927.

Wokingham Borough and market town of Berkshire. An agricultural centre, it is 7 m. from Reading, and 37 from London by the S. Rly. Pop. 7294.

Wolf Wild member of the dog family. Found in all northern countries, its colour is usually grey, and its size and thickness of fur become less the farther south the animal lives. Wolves run down their quarry and are killers of sheep, but when hunting in packs can overcome deer and antelopes. Wolves have been extinct in Great Britain for 200 years, but France still has occasional raids, and they abound in Russia and in the Rocky Mountains.

Wolf **Hugo.** Viennese composer. He was born at Windischgratz (Styria) March 13, 1860, and studied music at the Vienna Conservatorium. His work was done under the handicap of dire poverty and towards the end of his life of brain disease, which culminated in insanity. His fame as a composer rests on his songs, which number nearly 500. He died Feb. 22, 1903.

Wolfe **James.** English soldier. The eldest son of General Edward Wolfe, he was born in Westerham, Kent, Jan. 2, 1727. He took part in the battles of Dettingen, Culloden and Laffeldt. In 1758, after a siege of seven weeks, he captured the fortress of Louisburg, N.S. His crowning achievement was the taking of Quebec, Sept. 13, 1759. Having scaled the heights in the dead of night, he routed the French under General Montcalm, the result being that Canada, in 1760, became a British possession. Both Wolfe and Montcalm lost their lives in the encounter, and both are commemorated on the site of the battle.

Wolfhound Name given to species of dogs used to hunt the wolf. The Irish, the borzoi and the Alsatian wolfhounds are examples.

Wolfram Ore from which tungsten is extracted. It is found in Malay, Spain, Australia and Colorado, and is a mixture of iron tungstate ($FeWO_4$) and manganese tungstate ($MnWO_4$).

Wollaton Village near Nottingham. It is 3 m. to the west of the city and has coal mines. Here is Wollaton Hall, built in 1580-90, an outstanding example of Elizabethan domestic architecture. In 1924 it was bought by the city of Nottingham. The hall was preserved, but part of the park of 790 acres was sold for building.

Wollongong Seaport and pleasure resort of New South Wales. It is on the coast, 50 m. to the south of Sydney, with which it is connected by rail-

way. There is a harbour from which coal is shipped. Pop. (1931) 10,800.

Wolseley Garnet Joseph Wolseley, 1st Viscount. English soldier. Born in Ireland of English stock, June 4, 1833, he served in Burma in 1852, in the Crimea, Indian Mutiny, China, Canada (Riel's rebellion, 1870), and Ashanti, 1873-74. For his success at Tel-el-Kebir he was made baron in 1882. His mission to relieve General Gordon (1884-85) unfortunately failed. He was made viscount in 1891, field-marshal in 1894, and was commander-in-chief, 1895-1900. In 1903 appeared his *Story of a Soldier's Life*. He died March 26, 1913, his title passing to his daughter.

Wolsey Thomas. English cardinal. He was born at Ipswich about 1471, son of a grazier, and, after studying at Oxford, became a royal chaplain in 1506. His rise under Henry VIII. was rapid, in 1514 he became Bishop of Lincoln and Archbishop of York, and in 1515 he was made cardinal. Appointed Chancellor the same year, he did valuable administrative work, while as the king's chief adviser in his foreign policy of balancing the rival powers of France and Spain, he was one of the leading European diplomatists. He used some of his great wealth to found the college of Christchurch, Oxford, and to build Hampton Court. His failure to obtain for Henry a divorce from Catherine of Aragon was the beginning of his downfall. In 1529 he was deprived of his chancellorship and was later arrested for high treason. He died on the way to trial, Nov. 29, 1530.

Wolsingham Town of Co. Durham, 23 m. S.W. of Newcastle and 255 from London, by the L.N.E. Rly. It has steelworks and woollen mills. Pop. 3500.

Wolstanton Urban district of Staffordshire. It is a mile from Newcastle-under-Lyme, and is a centre of the pottery industry. Pop. (1931) 30,528.

Wolverhampton Borough and market town of Staffordshire. It is 13 m. from Birmingham and 123 from London, on the G.W. and L.M.S. Rlys. The town is a centre of the hardware manufacture; it has also engineering works, railway shops, and makes motor-cars and motor-cycles. Pop. (1931) 133.190. Races are held in the town, and the Association football club, **Wolverhampton Wanderers**, won the Association Cup in 1893 and 1908.

Wolverhampton Henry Hartley Fowler, 1st Viscount. English politician. Born at Sunderland, May 16, 1830, he became a solicitor, and in 1880 was elected Liberal M.P. for the borough. In 1884-85 he was under-secretary for the Home Department, and in 1886 Financial Secretary to the Treasury. He was President of the Local Government Board, 1892-94, and Secretary for India, 1894-95. In 1898 he was knighted. From 1905 to 1908, when he was made a viscount, he was Chancellor of the Duchy of Lancaster. He died Feb. 15, 1911, and his son, **Henry Ernest Fowler** (b. 1870), became the second viscount.

Wolverton Urban district of Buckinghamshire. It is on the Great Ouse, 52 m. from London, and is an important point on the L.M.S. Rly., which has works at New Wolverton. Pop. (1931) 12,870.

Woman Suffrage Exercise of the vote in parliamentary and municipal elections by women. Advocated in the middle of the 19th century by Cobden, Mill, and Disraeli, the societies formed to promote it were united in a National Union in 1887 under Mrs. Henry Fawcett. In 1903 the Women's Social and Political Union was formed under Mrs. Pankhurst (*q.v.*), and soon developed militant tactics. In 1906 the Liberal party came into power under Asquith, who was a violent opponent of the cause. **Suffragettes**, as women suffragists were called, heckled members of Parliament, and held demonstrations. They were sent to prison, and went on hunger-strike. During the World War they showed such ability and unsuspected powers of citizenship, that in 1916 a conference decided that women over 30 years old who were householders, wives of householders, should be allowed to vote, and this was passed by Lloyd George's Government in June, 1917. In 1918 the Act making women eligible to sit in Parliament was passed, and in 1919 Viscountess Astor was the first to take her seat. In 1928 a Bill was passed giving complete political equality to women.

In all the Dominions, except South Africa, women suffrage is in force, and in most countries, except France, Italy and Spain.

Wombat Australian marsupial. Wombats have large flat heads, small eyes, sharp teeth and a vestigial tail. They have short, stout legs, with broad, naked-soled feet. Usually they are brownish-grey in colour, with short fur, and a naked muzzle. Shy and gentle, they sleep during the day in holes and burrows, and at night go out in search of food, which consists of grass and roots.

Wombwell Urban district of Yorkshire (W.R.). It stands on the Don, 7 m. from Rotherham, on the L.M.S. Rly.; it is also served by a canal. It has coal mining and iron working industries. Pop. (1931) 18,365.

Wood Solid part of trees and plants, the source of their mechanical strength, used also to transport water and dissolved salts from the roots to the growing parts. Commercially it is classified into wood and timber (*q.v.*). Timber is wood of large dimensions only: wood includes thin branches, twigs, etc., used for making baskets and brooms, soft, light wood used for insulation, floating buoys etc., and pithy woods used in making solar topees. Timber is of two kinds—soft woods, derived from conifers, and hardwoods produced by dicotyledonous trees such as oak, ash, beech, teak, etc. Both varieties are much used structurally. In addition, soft woods are used in the manufacture of wood pulp and paper, artificial silk and other cellulose industries, while the finer hardwoods are used for cabinet-making, carving, etc. *See* CELLULOSE, LUMBER.

Wood Mrs. Henry. English novelist. Born at Worcester, Jan. 13, 1814, she married in 1836, and afterwards lived mostly in France. She wrote a temperance story, *Danesbury House*, in 1860, and her best known novel, *East Lynne*, in 1861, which was translated into several languages, and dramatised. Other books include *The Channings* (1866), and the *Johnny Ludlow* tales which appeared in 1868, in the *Argosy* magazine, which she owned. She died Feb. 20, 1887.

Wood Sir Henry Joseph. English conductor. He was born in London, March 3, 1869, and since 1895 has conducted the Queen's Hall Promenade concerts, and since 1897 the Sunday orchestral concerts in London.

He has also conducted the Norwich, Sheffield, Birmingham and other musical festivals, and has not only raised the standard of musical taste in England but has secured a hearing for many modern composers, British or foreign. He was knighted in 1910.

Wood Sir Howard Kingsley. English politician. Born in 1881, he started active life as a solicitor, and served for some years on the L.C.C. Unionist M.P. for Woolwich West since Dec., 1918, when he was knighted; he was Parliamentary Secretary to the Ministry of Health, Nov., 1924 to June, 1929, and in Nov., 1931, became Postmaster General. He is an authority on insurance and housing.

Woodbridge Urban district and market town of Suffolk. It is 8 m. N.E. of Ipswich and 79 from London by the L.N.E. Rly., and is an agricultural centre. Pop. (1931) 4734.

Wood-Carving Process by which wood is hand-cut by sharp tools for ornamental purposes. It has been practised from the 8th century in Japan and China. Wood-carving was general among the Moors, who used it for ornamented windows, frameworks, mosaic ceilings and floors. The negroid races carve mostly gods and fetishes, and some household utensils. Gothic, Renaissance, and modern wood-carving has been used to a great extent to decorate churches.

Woodchuck Name applied to a species of marmot. It is found in parts of the United States, and is known also as the ground hog. *See* MARMOT.

Woodcock Wild bird (*Scolopax rusticola*) found in many parts of Europe and Asia. It has a long bill which is used in digging for insects. It is grey, buff or mottled black in colour. The bird nests in a hollow on the ground and moves about at night. It is about 14 in. long and is very like the snipe. A wild bird, it is shot during the season and is regarded as a table luxury. A smaller woodcock is found in North America.

Woodford Urban district of London. It is 11 m. from London, on the L.N.E. Rly., on the outskirts of Epping Forest. A residential district for Londoners, it includes the areas called Woodford Wells and Woodford Green. Pop. 23,946.

Wood Green Urban district of Middlesex. It is 5 m. from the City of London, by the L.N.E. Rly. Pop. (1931) 54,190.

Woodhall Spa Urban district of Lincolnshire. Known for its mineral springs, it is 6 m. S.W. of Horncastle and 130 from London, by the L.N.E. Rly. Pop. (1931) 1372.

Woodlouse Small crustacean of the *Isopoda*. It feeds on decaying vegetation, coming out at night from damp crevices, under stones, etc. The body has seven segments, each with a pair of legs, and for protection the common woodlouse (*Oniscus*) can roll itself into a ball.

Woodpecker Climbing birds of the family *Picidae*. The feet are adapted to arboreal life, the toes being directed two forward and two backward, and the long, barbed and sticky tongue is employed to get insects out of crevices in the bark, etc. The nest is made in a deep hole dug in the tree trunk. A common British species, the green woodpecker (*Picus viridis*) is about 12½ in. long, the plumage olive green, yellow to grey on rump and under parts. The head and nape of neck are crimson, with a black cheek. Others found less abundantly in Britain are *Dendrocopus major* and *minor*, the greater and lesser spotted woodpeckers, 9 in. and 6 in. in length respectively.

Woodruff Wild herb (*Asperula odorata*) of the natural order *Rubiaceae*. The slender erect stems, about 12 in. in height, bear whorls of bright, smooth leaves, placed one above another, and surmounted by a flowerhead of very small funnel-shaped white blooms. The plant has little fragrance until gathered and dried, when it gives out a scent resembling that of new-mown hay.

Woodrush Genus of perennial plants (*Luzula*). They have short, grass-like leaves, with a hairy edge, and clusters of brown flowers borne in small sprays. The hairy woodrush has clusters of chestnut-brown flowers, the leaves only slightly haired. The great hairy woodrush (*L. maxima*) is of larger growth, with large cymes of pale flowers. Other varieties include the field woodrush (*L. campestris*), and the mountain species (*L. spicata* and *L. arcuata*).

Wood Sorrel Perennial wild herb (*Oxalis acetosella*). It is native to the British Isles. The rootstock is creeping, the heart-shaped leaves grow in threes, resembling the clover leaf. The five-petalled flowers are borne singly and are white, veined with soft purple or pink. The seed capsule at the slightest touch discharges the seeds forcibly for some distance.

Woodstock Borough of Oxfordshire. It is 72 m. from London and 8 from Oxford, on the G.W. Rly. The place is famous for its association with the palace built by Henry I. This has now disappeared. Gloves are made in the town, near which is Blenheim (*q.v.*). Pop. (1931) 1484.

Woodstock Town in Ontario. It is on the Thames, in a splendid agricultural district, has a population of 11,000.

Wood Swallow Genus of insectivorous birds (*Artamus*). They are natives of Australia, Polynesia, India, and islands in the Indian Seas. The conical beak is somewhat curved and sharp-tipped, the tail short, and the wings long. They are swift in flight and very fearless.

Woodworm Larvae of certain beetles, so called because it feeds on wood. To destroy the worms, brush the wood with a solution of formalin. Carbolic acid and paraffin are also recommended. Another method is to fumigate the affected piece of furniture.

Wookey Village of Somerset. It is a mile from Wells, in the Mendip Hills. Here is the Wookey Hole, a cave 500 ft. long, in which the river Axe rises.

Wool Coat of sheep. It is one of the most important textile fibres. Most of the wool used is of one year growth, which is often washed on the sheep, and then sheared. It is then sent away, sorted according to fineness, scoured and dried by hot air; and finally teased to make it loose.

Wool manufacture was established in Britain by the Romans, to clothe the army of occupation. Through the Middle Ages successive kings introduced Flemish weavers into England, and discouraged the exportation of raw wool. Until the end of the 18th century, when the cotton trade developed, the woollen industry

was by far the most important in the country. Australian and South African wool is very important, the merino sheep of Spain having been introduced into those countries about the beginning of the 19th century. To-day the great British woollen industry has its chief centres in Yorkshire, especially at Bradford, Dewsbury and other places in the neighbourhood, which is known as the "heavy woollen district," but it is also carried on in a number of towns in the west and south. Both masters and men have strong unions and organisations for dealing with wages and other questions. The industry is protected by a tariff on imported woollen goods, introduced in 1931 and revised in 1932. In 1931, to help to relieve the depression, an Imperial World Fair was held in Bradford, which with its merchants and brokers is the English wool metropolis.

The world's annual output of wool (1932) is about 1,600,000 tons, of which Australia produces 400,000 tons. This is chiefly sold in Sydney, which is the greatest wool mart in the world.

Other producing countries are Russia, the United States, Argentine, South Africa and New Zealand. The British output, though excellent in quality, is quite small.

Wooler Town of Northumberland. In an agricultural district, 15 m. from Berwick-on-Tweed, it is picturesquely placed on the edge of the Cheviot Hills.

Woolley **Frank Edward.** English cricketer. Born at Tonbridge, May 27, 1887, he joined the Kent team as a professional in 1906. A left-handed batsman, his style of play is remarkably attractive, and he has been a very useful bowler. In seven seasons he has taken over 100 wickets for Kent, and he is one of the few batsmen who have scored over 100 centuries. In 1928 he scored 3352 runs. Woolley has played for England against Australia and has been to Australia several times. His batting average for 1935 was 41.76.

Woolmer Forest District of Hampshire. It is near Alton, and stretches into Sussex. At one time it was Crown property.

Woolsack Seat in the House of Lords on which its president, the Lord Chancellor, sits, originally a sack of wool.

Woolwich Borough of the county of London. It lies to the south of the Thames, 9 m. from the city on the S. Rly. It includes a small area on the north bank of the river, as well as the districts of Plumstead and Eltham. The chief object of interest is the royal arsenal, dating from the 17th century. Woolwich is also the headquarters of the Royal Artillery and has barracks, near which is the Royal Military Academy for training officers for the artillery and engineers. A steam ferry and a tunnel for foot passengers connect the two sides of the river. Pop. (1931) 146,944.

Woolworth **Frank Winfield.** American merchant. Born near Rodman, N.Y., April 13, 1852, after two failures he opened a 5, 10, and 15 cent store in New York City. In a few years he had hundreds of branches all over the States, and by 1912 had grown rich enough to erect the Woolworth Building in New York, at that time the highest commercial building in the world. His stores have spread over England and Scotland and are to be found in several Continental capitals. He died April 8, 1919, worth $27,000,000.

Worcester City and market town of Worcestershire, also the county town. It stands on the left bank of the Severn, 22 m. from Birmingham and 120 from London, and is reached by the G.W. and L.M.S. Rlys. The chief building is the cathedral with a magnificent central tower. Other old buildings include the Tudor Commandery, the old churches of S. Helen and Holy Trinity, remains of a castle, etc. King's School is an old foundation and there are some old houses on the Cornmarket. The chief industries are the making of gloves, boots, vinegar and sauces. The porcelain works, established in 1751, are celebrated. There are also engineering works and it is an agricultural centre. Pop. (1931) 50,497.

The **Battle of Worcester** was fought just outside the town between the English and the Scots, Sept. 3, 1651. The English under Cromwell crossed the river and made their way into the city, which the Scots were defending. This was soon in their possession and Charles II. became a fugitive.

Worcester City of Massachusetts. It is on the Blackstone River, 45 m. from Boston, and on several lines of railway. Here is Clark University. Pop. (1930) 193,311.

Worcestershire County of England. Wholly inland, it is one of the midland shires and covers 716 sq. m. The Malvern, Cotswold, Lickey Clent and other hills are in the county. The chief rivers are the Severn, Avon, Stour and Teme. Worcester is the county town; other places are Dudley, Stourport, Stourbridge, Kidderminster, Droitwich, Evesham and Malvern. In the north is part of the Black Country and some of the suburbs of Birmingham, but elsewhere it is agricultural. The county is famous for its plums, apples and other fruit also for its hops. Wheat and other cereals are grown. Pop. (1931) 420,156.

The **Worcestershire Regiment** is the old 29th and 36th Foot. It dates from 1694, and has a fine record of service including the Great War. The depôt is at Worcester.

Wordsworth **William.** English poet. Born at Cockermouth, Cumberland, April 7, 1770, he was educated at Hawkshead and St. John's College, Cambridge. In 1790 he visited the continent and he spent a year in France where he sympathised with the Revolution. *An Evening Walk* and *Descriptive Sketches* (1793) opened his poetic career, and *Lyrical Ballads*, produced with S. T. Coleridge in 1798, established his name. After a visit to Germany, 1798-99, he settled at Grasmere, Westmorland, and in 1802 married Mary Hutchinson. In 1813 he settled at Rydal Mount where he remained till his death, April 23, 1850. In 1843 he had succeeded Southey as poet laureate.

One of the greatest of English poets, his finest work was done before 1807, including the *Ode to Duty* and the *Ode on Intimations of Immortality*, but he published up to 1835, many of his finest sonnets falling in the later period. Other notable poems are *The Prelude*, a spiritual autobiography, *Tintern Abbey*, the *Sonnet Composed on Westminster Bridge* and *Sonnets Dedicated to Liberty*.

Wordsworth's sister, **Dorothy Wordsworth** (1771-1855), who lived with him, left some valuable *Journals*, and is believed to have assisted the poet in his studies of nature and rustic life.

Workhouse British institution in which paupers are maintained. In England it is controlled under regulations passed by the Ministry of Health. The inmates are strictly disciplined, and, unless aged and infirm, work for what they receive.

Workington Borough and seaport of Cumberland. It stands at the mouth of the Derwent, 34 m. from Carlisle and 320 from London, on the L.M.S. Rly. The chief industry is coal mining; there are also iron and steel works. Pop. (1931) 24,691.

Workmen's Compensation

In Great Britain a system by which workmen or their families receive compensation for death or accident during employment. The employers usually cover their liability by insurance, and insurance policies for householders usually include insurance against accidents to servants.

The law is contained in a measure passed in 1925 which consolidated the earlier acts. It applies to all manual workers, and to other workers provided they receive not more than £350 a year. To succeed in a claim the worker, or his representative, must prove that the accident from which he suffered was not due to his own negligence. There are elaborate rules for calculating the amount that shall be paid. It may be as high as 50 per cent. of the man's earnings, but may never exceed £1 10s. a week. If the worker is killed a sum not exceeding £600 may be paid to his dependants. In 1930 £5,875,348 was paid out in compensation, the number of cases being 444,880. The largest amounts went to coal miners.

Works Office of. English Government Department. It is under the control of a First Commissioner, all the secretaries of state, and the President of the Board of Trade. Its main duty is the maintenance of the royal palaces and governmental buildings, and parks open to the public. It also has control and care of ancient monuments.

Worksop Borough and market town of Nottinghamshire. It is 146 m. from London and is reached by the L.N.E. and L.M.S. Rlys. The church with its Norman nave is a fine building. At one time there was a priory here and of it there are some remains, including the lady chapel restored as a war memorial. Worksop College is a public school for boys. Worksop has a cattle market and manufactures of chemicals and agricultural implements. Pop. 26,286.

Worm Name applied loosely to many unrelated organisms with a long thin body. Thus there are the silk worm, ship worm, lob-worm, blind worm, earth worm, tape-worm, marine and freshwater worm, thread worm, and other parasites infesting man and animals.

Worm In mechanics, a screw thread on a shaft which engages the teeth of a gear wheel. A common application is in a reduction gear, the worm being the driving member and causing the worm wheel to rotate at a slower speed than the driving speed, according to the gear ratio. *See* GEAR.

Worms German city. It is situated on the Rhine in the republic of Hesse. One of the most ancient towns of Germany, it is the scene of the Niebelungenlied story. In the struggles between the Church and the Holy Roman Empire, the powerful bishops of Worms supported the Church against the citizens, who favoured the emperors. It possesses a fine Romanesque cathedral of the 12th century and is now important because of its manufactures and vine-cultivation. Pop. 47,015.

Wormwood Herbaceous perennial plant (*Artemisia absinthium*) with strongly aromatic properties. It varies from 1 to 3 ft. in height, the stems are rough and branching, the silky leaves are segmented and flat at the edge. The flowerhead is composed of drooping racemes of small yellow flowers, seed being developed from the outer ones only. It is common to many countries and grows wild in some localities in the British Isles.

Wormwood Scrubs District of London. It is about 6 m. to the west of the city, on the N.L. Rly. Here is a large open space and a prison.

Worsborough Urban district of Yorkshire (W.R.). A colliery centre, it is 3 m. S. of Barnsley, and 173 from London by the L.N.E. Rly, Dovecliffe being its station. Pop (1931) 12,397.

Worth Charles Frederick. English costume designer. He was born in Bourne, Lincolnshire, in 1825. In 1846 he went to Paris, spending 12 years in a silk house. In 1858, in partnership with a Swede named Dobergh, he began dress designing. He secured the patronage of the Empress Eugénie, and through her of the fashionable world, thus becoming the arbiter of French fashions. He died March 10, 1895.

Worthing Borough and watering place of Sussex. It is 61 m. from London and 8 from Brighton, on the S. Rly. There is a fine parade and several public gardens, with tennis courts, bowling greens, etc. In 1932 the erection of a new town hall was begun. In 1929 the area of the borough was extended by the inclusion of Goring and other outlying areas. Pop. (1931) 46,230.

Woundwort Family of herbaceous plants (*Stachys*) of the labiate order. The common hedge woundwort (*S. sylvatica*) has rough hard branching stems, toothed heart-shaped leaves and is densely covered with soft bristles. The flowers grow in whorls of six or more round the stem and and are purplish red or rich crimson, two-lipped, with white on the elongated under lip.

Wrangel Island in the Arctic Ocean. It lies off the coast of Siberia and is administered by Canada.

Wrangler Word used for a class of graduates at Cambridge University. It was given in the Middle Ages to one who took part in the disputations that were then the tests of knowledge. Later, until 1909, it was given to one who took a first class in the first part of the mathematical tripos. The **senior wrangler** headed the list and the rest were numbered in order of merit. Alphabetical class lists were adopted in 1909.

Wrath Cape of Sutherlandshire. The most north-westerly point of Great Britain, it is over 500 ft. high. On it is a lighthouse.

Wrekin Hill in Shropshire. It is 2 m. from Wellington and is 1335 ft. high.

Wren Small song bird (*Troglodytes parvulus*). It is a native of European and Asiatic countries, and is common in

Great Britain. The feathers are shaded brown, the short tail erect and the movements quick and restless. The domed nest has an aperture at the side, and is lined with feathers, hair or wool. The yellowish white eggs are spotted with light brown, and usually number 6 or 8.

Wren **Sir Christopher.** English architect. He was born at East Knoyle, Wiltshire, Oct. 20, 1632, and educated at Westminster and Oxford, where he showed great aptitude for mathematics and science. From 1657 onwards he lectured for several years in Oxford and London on astronomy. Pembroke College, Cambridge, and the Sheldonian Theatre, Oxford, were both designed by him. After the Great Fire of 1666 he built a new S. Paul's Cathedral, and furnished plans for over 50 other churches that had been destroyed. He also drew up elaborate plans for the improved rebuilding of the entire city. He was knighted in 1672, died Feb. 25, 1723, and was buried in S. Paul's Cathedral.

Wrestling Form of athletics. Wrestling was a favourite pastime among the Greeks and Romans and formed a regular feature of the Olympic Games. The art of Ju-Jitsu, which differs considerably from wrestling, in that it seeks to defeat an opponent by disablement if he fails to yield, has also been practised by the Japanese from the earliest times. In Catch-as-catch-can contests England has met with little success in recent years, but the formation of a National Wrestling Association has prevented the decay of the sport in this country.

Wrexham Borough and market town of Denbighshire. It is on the little River Clwyedog, 12 m. from Chester and 183 from London, and is reached by the G.W. and L.M.S. Rlys. Brewing and malting are the principal industries. Pop. (1931) 18,567.

Wright **Orville.** American aviator. He was born at Dayton, Ohio, Aug. 19, 1871. With his brother, Wilbur (*d.*, 1912) he succeeded, after years of experimenting, in making the first flight in a heavier-than-air machine, Dec. 17, 1903, at Kitty Hawk, North Carolina. The brothers, on Sept. 12, 1908, established a second record by remaining in the air for 75 minutes in an improved aeroplane. In 1909 the French Academy awarded Orville a gold medal, and in 1917 he was made Major, U.S.A. Aviation Corps.

Wright **Whitaker.** English financier. He was born Feb. 9, 1845, studied chemistry, and went to the United States in 1866 as an assayer. During his 23 years there, he made and lost three fortunes, chiefly in mining. Returning to England he floated several companies. The crash, in 1900, of the largest, the London and Globe Finance Corporation, caused widespread ruin, and Wright was charged with publishing false balance sheets. Convicted, Jan. 26, 1904, he swallowed cyanide of potassium after hearing the sentence pronounced.

Wrington Village of Somerset. It is 16 m. from Bristol and 134 from London, by the G.W. Rly.

Wrinkles Ridges or furrows on the face or forehead. Though caused largely by old age, wrinkles may be increased by unhygienic factors such as malnutrition, the abuse of tea, coffee, alcohol and tobacco, constipation, worry, ill-temper, and lack of fresh air. An astringent lotion or a facewash made from a piece of Paschki's Paste about the size of a hazel nut and rubbed up in 1 quart of water may lessen the intensity of the wrinkles; such drastic methods as operative removal should never be employed.

Wrist Joint in the human body by which the hand is united to the arm. The anatomical name is the carpus. It has an anterior, a posterior and two lateral ligaments. The wrist is liable to dislocation. **Wrist drop,** in which the hands hang down when the arms are outstretched, is a form of paralysis, frequently due to lead and alcohol poisoning.

Writ Document issued by a court of law ordering someone to do something. Almost all law cases of importance, except criminal cases, begin with the issue of a writ by the plaintiff on the defendant. Certain fees must be paid and the writ served on the defendant in person or given to his solicitors.

Writs are also issued for the election of members of the House of Commons. These are sent by the Speaker to the mayors, high sheriffs, provosts and others, ordering them to arrange for the election of a member, in some cases two, by a certain date.

Writer's Cramp Affliction due to excessive use of the pen. It is also found among persons who play the piano or violin, compositors, tailors, and others who use the hands a good deal. It begins as cramp and after a time the muscles refuse to act. Great pain accompanies an attempt to do so; in serious cases paralysis results. The only cure is complete rest for the hands, but massage and electrical treatment are helpful.

Writing Forming letters and words by pen or pencil; also the act of literary composition. The earliest kind of writing was done by carving ideographs or pictures, each representing an idea, on stone, bone or other hard material. This may have been in existence as early as 4000 or 5000 B.C., and developed forward through the cuneiform and hieroglyphic writing as used by the Assyrians and Egyptians. The invention of papyrus made writing easier, and in course of time the cursive form became general. European alphabets were derived from the Phoenician. Small as well as capital letters were used, and cursive script spread over a good part of Europe. To make the signs the quill pen came into use, and the invention of paper gave a great impetus to writing. In the 19th century the steel pen largely supplanted the quill, and the ability to write, hitherto confined to a minority, became general.

Much of the handwriting of the Middle Ages, which was done almost entirely by monks, was extraordinarily beautiful, and the tradition of good calligraphy persisted into the 19th century. Before the invention of printing did away with the need for writing books and the like by hand, a different script in which abbreviations were greatly used was employed for these. After the invention of the steel pen the quality of the handwriting deteriorated, but soon the invention of typewriting made it unnecessary for most business purposes, although it is still used to some extent for legal documents.

Wrotham Urban district of Kent. It is 30 m. from London by the S. Rly. Pop. (1931) 4510.

Wroxeter Village of Shropshire. It is on the Severn, 6 m. from Shrewsbury. It is chiefly known as occupying the site of the Roman city of Viroconium.

Wryneck Bird of the woodpecker family. It is insectivorous and its name is derived from its habit of twisting its neck about in feeding. It is 7 in. long, the plumage being grey above, mottled and streaked with black, the under parts yellowish with darker arrow-like markings.

Wuchang City and river port of China. It is on the Yang-tse-Kiang, opposite Hankow, and is a great trading centre, with manufactures of various kinds. Its population is included in that of Hankow (*q.v.*).

Württemberg Republic of Germany. It is in the south-west of the country, between Switzerland, Bavaria and Baden, and covers 7536 sq. m. Stuttgart is the capital; other places are Ulm, Heilbronn and Esslingen. Agriculture is the principal occupation and the vine is largely grown. The rivers include the Neckar and the Danube, and a part of the Black Forest and the Jura Mts. are in the state. There is a good deal of forest land.

Since 1918 Württemberg has been a republic. It is governed by a diet or landtag of 80 members elected by universal suffrage for 4 years, and a small ministry under a president. For several centuries after 1250 Württemberg was ruled by its counts and dukes. In 1805 it was made a kingdom, and in 1871 joined the German Empire. The kingdom lasted until 1918. Pop. (1925) 2,580,225.

Würzburg City of Bavaria. It is situated on the Main, and is an ancient city with a Romanesque cathedral and a university founded in 1552. There is a vast 18th century palace, at one time the residence of the powerful prince bishops, later the property of the King of Bavaria. The city, which became finally Bavarian in 1815, is in the midst of some of the finest vineyards in Germany. Its manufactures include machinery, scientific instruments, pianos and tobacco. Pop. 89,910.

Wyandot Tribe of North American Indians. They were found in Canada early in the 17th century and later lived in the valley of the Ohio.

A breed of domestic fowl is called the Wyandotte. It was first bred in America. In colour the breeds are white and black and the hens are good for both laying and sitting.

Wyat Sir Thomas. English diplomat and poet. Born about 1503, he was a favourite of both Henry VII. and Henry VIII., and was sent on several foreign missions. He also gained renown by his poetry. He died Oct. 11, 1542.

His son, also named Thomas, was born about 1520, and saw military service on the Continent between 1544 and 1550. Later he co-operated with the Duke of Suffolk, father of Lady Jane Grey, was taken prisoner, and executed April 11, 1554.

Wycherley William. English dramatist. He was born about 1640 at Clive, near Shrewsbury. He went to Oxford, leaving without a degree, and entered the Middle Temple. He began to write plays early, among them, *The Country Wife* (coarse, but excellently constructed), *Love in a Wood* (a comedy), *The Plain Dealer*, and *The Way of the World*. He died Jan. 1, 1716.

Wychwood District of Oxfordshire. It lies near Charlbury, between the Rivers Evenlode and Windrush, and was once a forest, a name which it still retains, although little of the original forest remains.

Wycliffe John. English Reformer. Born near Hipswell, Yorkshire, about 1324, he became Master of Balliol College, Oxford, about 1360, and in 1374 was presented to the rectory of Lutterworth, which he held till his death. A scholar and theologian, he attacked the abuses in the Church, particularly the worldly power and evil lives of the clergy. He also denied the doctrine of transubstantiation, but as he was supported by John of Gaunt, he escaped condemnation for heresy. The first complete translation of the Bible into English is associated with his name. The forerunner of the Protestant reformers, he influenced considerably the teaching of John Huss (*q.v.*). His followers were called Lollards and their preaching fomented the popular discontent which showed in the Peasants' Revolt of 1381. He died Dec. 31, 1384.

Wye Name of three rivers of Great Britain. The most famous rises in Montgomeryshire on Plinlimmon and flows through Radnorshire and then into England, where, after passing through Herefordshire, it divides that county from Wales. It is 130 m. long, and enters the estuary of the Severn at Chepstow. It passes by Hereford and Monmouth and receives the waters of the Elan, Lugg, Monnow and other rivers. The scenery in the Wye valley is regarded as among the most beautiful in the country.

Another Wye is in Derbyshire, being a tributary of the Derwent, and another is a northern tributary of the Thames.

Wye Village of Kent. It is 10 m. S.W. of Canterbury, and 61 from London by the S. Rly. Here are the South-Eastern Agricultural College and a racecourse.

Wykeham William of. English bishop and chancellor. Born at Wickham, Hampshire, in 1324, he became surveyor of royal castles under Edward III. In 1367 he was appointed Bishop of Winchester and Chancellor. He founded New College, Oxford, in 1380, and in 1388-1394, Winchester School. Between 1394 and 1404 he was responsible for considerable building at Winchester Cathedral, and was buried there in 1404 in the chantry he had built.

Wymondham Market town of Norfolk. It is 10 m. from Norwich and a junction on the L.N.E. Rly. Pop. 4810.

Wynberg District of Capetown. It is on Table Mountain, 8 m. from the city. It is famous for its vines.

Wyndham Sir Charles. English actor. Born in Liverpool, March 23, 1837, he studied medicine and surgery, and served as army surgeon in the American civil war. On his return to England he acted with Irving and Ellen Terry. His most famous impersonation was David Garrick, in Robertson's play (1886). He opened Wyndham's Theatre in 1899, the New Theatre in 1903, and made six successful tours in America. He was

knighted in 1902, and died in London, Jan. 12, 1919.

Wyndham George. English statesman and writer. He was born in London, Aug. 29, 1863, and educated at Eton and Sandhurst. He served through the Sudan campaign of 1885. In 1887 he became private secretary to Arthur Balfour, and in 1889 he was elected unopposed as M.P. for Dover, a seat he held until his death in Paris, June 6, 1913. He held the post of Chief Secretary for Ireland during the difficult years 1900-1905. In his leisure moments he wrote for the *National Observer* and the *New Review*, also valuable monographs on Shakespeare and Ronsard.

Wyoming State of the United States. It is in the west of the country and covers 97,914 sq. m. Cheyenne is the capital. In the state is the Yellowstone National Park. The soil is poor, but irrigation has done something to improve it. Many sheep are reared and a good deal of coal and oil are mined. The state has a university and an agricultural college. There is a large Indian reservation. Wyoming, which became a state in 1890, is governed by a legislature of two houses. Pop. (1930) 225,565.

Xanthippe Wife of Socrates. She was noted for her peevishness and ill-temper. Some say that Socrates married her in order to mortify his spirit by her continual nagging.

Xanthus City of Lycia. It was on the River Xanthus, about 8 m. from its mouth. It was twice destroyed, first by Harpagus, the Persian, in 546 B.C.; then by M. Junius Brutus in 42 B.C. After this second destruction it was not restored.

Xanthus was another name for the River Scamander in Troas.

Xavier Francis. Spanish missionary and saint. He was born at Xavero, at the foot of the Pyrenees, on April 7, 1506, and was one of the seven original members of the Society of Jesus, founded by Ignatius Loyola in 1534. His missionary activities included work in India and the E. Indies, 1541-47; a mission to Japan, 1549-51; and another to China, where he died, Dec. 2, 1552. He was canonised in 1621.

Xenocrates Greek philosopher. He was born at Chalcedon in 396 B.C. and became a disciple of Plato, whom he accompanied (361) to Syracuse. In 339 he succeeded Speusippus as President of the Old Academy—a position which he held till his death in 314. In philosophy he modified the Platonic system by introducing the Pythagorean doctrine of numbers.

Xenophon Athenian soldier and writer. Born about 435 B.C., he was a pupil of Socrates, and one of the 10,000 Greeks who fought in the army of Cyrus of Persia. On his return to Greece, he entered the service of Agesilaus, King of Sparta, and fought for the Lacedaemonians against the Athenians at Coronea, 394 B.C. He then retired to Scillus, near Olympia, where he wrote his *Anabasis*, in which he tells the story of the march of the Ten Thousand. His *Cyropaedia*, professing to be a description of the boyhood and training of Cyrus, is an essay embodying his ideas on education; while his brilliant dialogue, the *Symposium*, gives us a picture of Socrates and his table-talk. He died at Corinth about 355 B.C.

Xerxes King of Persia, 485-465 B.C. Son of Darius I., he led the second Persian expedition against Greece in 480 B.C. The Persians defeated the Greeks at Thermopylae, and were then defeated on sea at Salamis. A further defeat at Plataea in 479 led Xerxes to abandon his attempt to conquer the Greeks. He was assassinated in 465 B.C.

X-Rays (or Röntgen Rays). Invisible penetrative rays discovered by W. K. Röntgen in 1895. Produced by passing an electric current of high potential through a vacuum tube, the rays penetrate many substances opaque to light, and, by their effect of casting a shadow of bony parts, are of great value in the diagnosis of fractures, joint disorders, etc. Irradiation by the Röntgen rays is a method of treating cancerous growths, skin disorders, etc. They have been investigated and used extensively in science, notably in the examination of crystal structure.

Xylene Name of one of three isometric hydrocarbons ($C_6H_4(CH_3)_2$), of the benzine series. They are found in coal and wood tar, and can also be made artificially. Commercial xylene, which contains all three forms, is used as a solvent, and in the making of aniline dyes.

Xylophone Percussion instrument, frequently used in orchestras. It consists of a series of wooden staves in the form of a half cylinder, at intervals of a semitone. It is played with small wooden hammers and has a range of two or three octaves.

YACHTING Racing or cruising in yachts. Before the 19th century yachts were few and most were owned by royalty, though the Royal Cork Yacht Club dates from 1720, and matches were sailed at Cowes in 1780. The Royal Yacht Squadron, then the Yacht Club, was established at Cowes in 1812. In 1851 the *America* won a cup given by the Royal Yacht Squadron, the cup passing to the New York Yacht Club and becoming "The America Cup," for which Sir Thomas Lipton five times challenged unsuccessfully with his five *Shamrocks*. Yacht racing entered on a great era from 1870-80, but then declined till 1892, when another great period set in, witnessing the building, among others, of the King's famous cutter, *Britannia*, built for Edward VII., then Prince of Wales. International rules were first introduced in 1906, and the ideal of a combination of habitability and speed in yachts was introduced. The present international rules date from 1920. The principal regattas in the British Isles are held at Cowes, Ryde, Torquay, Plymouth, Lowestoft, Harwich, Belfast and elsewhere. Much yachting is done on the Norfolk Broads and rivers, and many regattas are held every year.

Yak Ungulate bovine mammal (*Bos grunniens*) of Tibet and neighbouring regions. Kept for its milk and flesh, and used as a beast of burden, the yak also occurs in the wild state. A heavy, bulky animal with short legs, it has long shaggy hair which hangs like a fringe from hips, shoulders and under parts, and forms a tuft to the tail. The male stands about 5½ ft. at the shoulders.

Yakutsk Socialist republic of Soviet Asia. It has an area of 1,457,068 sq. m. and a pop. of 308,400 (1931). It borders the Arctic Circle, with a coastline on the Arctic Ocean. The republic is autonomous and was founded in 1922. The capital is Yakutsk, with a pop. of 10,513. Fur-bearing animals abound in the forests, and furs are among the principal exports. Cereals are grown in the S. and gold is mined in the hills.

Yale **Elihu.** Indian administrator. He was born in or near Boston, Mass., April 5, 1648, of English parentage. His family returned to England in 1652, and in 1672 Yale went to India in the service of the E. India Company. He returned to London in 1699, having made a fortune by private trading. His name is chiefly remembered in connection with **Yale University**, established in 1701 in Newhaven, Conn., and named after him in recognition of his gifts. He died July 8, 1721.

Yalu River of Asia. It rises in Manchuria and flows into the Yellow Sea. It is 300 m. long and partly navigable.

Yam Genus of tropical climbing plants of the order *Dioscoraceae*. Natives of the E. Indies, yams are largely cultivated in the W. Indies and China. The stems are long, thin and trailing, and the large tuberous roots form a valuable food.

Yangtse-kiang River of China. It rises in Tibet and flows mainly E. through China, falling into the sea just N. of Shanghai. The great river of central China, it is some 3,500 m. in length and drains an area of 700,000 sq. m. It is navigable by small steamers to Tchang, and by large ones to Hankow, 700 m. up. Anking, Nanking and Chinkiang are ports near its mouth.

Yare River of Norfolk. It rises near E. Dereham, and flows for 60 m. in an easterly direction past Norwich to the North Sea at Yarmouth. A few miles from its mouth it unites with the Waveney to form Breydon Water.

Yarmouth County borough, watering place and market town of Norfolk, called in full Great Yarmouth. It stands at the mouth of the River Yare, 19 m. from Norwich and 122 from London, and has stations on the L.N.E. Rly. Gorleston, although in Suffolk, is part of the borough. The principal buildings are the large parish Church of S. Nicholas, the modern town hall and the tollhouse—now a library museum—of the 14th century. There are remains of the cloisters of a monastery and the town walls, while the Blackfriars tower and the fishermen's almshouses are very old. The town has associations with Nelson, to whom there is a memorial on the Denes. Yarmouth was bombarded by German ships on Nov. 3, 1914, April 25, 1916, and Jan. 14, 1918. Pop. (1931) 56,769.

Yarmouth Seaport of the Isle of Wight. It is at the mouth of the Yar at the extreme W. of the island. It has a station on the S. Rly., and from here steamers go regularly to Lymington. There is an interesting castle. The place is a yachting centre, and a regatta is held in August. Pop. 900.

Yarmouth Seaport of Nova Scotia, Canada. At the S.W. extremity of Nova Scotia, 218 m. from Halifax, it is a favourite summer resort, affording opportunities for deep-sea fishing. Fur farming and lumbering are carried on in the vicinity. Pop. (1931) 7055.

Yarrow Perennial plant (*Achillea millefolium*) of the order *Compositae*. The leaves are slender and segmented, presenting a delicate feathery appearance. The large flower head is made up of numerous smaller flower heads of pink or white blossoms with a yellow central disk. It is common in the British Isles in meadows and waste land from June onwards.

Yarrow River of Scotland. It rises in the county of Selkirk, and at the town of Selkirk falls into Ettrick Water. It is 14 m. long, and on its banks are Newark Castle and other border strongholds. It is famed for its beautiful scenery.

Yaws Tropical disease, occurring in the East and West Indies, Africa, America and South Pacific Islands. It is accompanied by a very troublesome ulceration. It is highly contagious and is spread by flies. Arseno-benzol compounds have proved useful, but segregation of patients for proper treatment and strict sanitary measures imposed by authority are necessary.

Yeadon Urban district of Yorkshire (W.R.). A centre of the textile industry, it is 6 m. N.E. of Bradford. Pop. (1931) 7671.

Year Unit of time marked by the revolution of the earth in its orbit round the sun. The solar year is 365 days, 5 hours, 48 minutes, 49·7 seconds. The sidereal year, calculated somewhat differently, is 19 minutes longer. For practical purposes the year may be taken at 365¼ days. It is therefore fixed at 365 days with an extra day every fourth year, which is called a leap year. The leap years are those which are divisible by four without remainder. To correct the discrepancy caused by the odd seconds, every year that is divisible by 100, but not by 400, is a year of 365 not 366 days.

The arrangements follow the Gregorian Calendar which was introduced in 1582, and has been adopted throughout the civilised world, although Russia only took it up in 1917 and Greece in 1923. In this calendar the years are calculated from the birth of Jesus Christ which was termed Anno Domini (*i.e.*, The year of Our Lord 1) and written A.D. 1, the years before that event being numbered backwards as B.C. (Before Christ). The Jewish Calendar dates from the supposed creation of the world. Their year begins in Sept., and Sept. 21, 1932, is the first day of 5694. The Mohammedan Year is one of 354 or 355 days only, consequently it loses some days each year by comparison with the Gregorian dates. Year 1 to the Mohammedan is A.D. 622 and year 1350 falls within the Christian year 1932. Until 1752 the legal year in England was from March 25 to March 25. The ecclesiastical year is from advent to advent.

Yeast Minute fungi of the *Saccharomyces*. In the presence of sugar the yeasts form the enzyme known as zymase, which promotes fermentation, decomposing the sugar into alcohol and carbon dioxide. Yeast is used in brewing, baking, and the manufacturing of vinegar. *See* FERMENTATION.

Yeats **William Butler.** Irish author. Born in Dublin, June 13, 1865, he studied art first, but at 21 abandoned it for literature. A prolific writer of plays as well as verse, he is best known by *The Countess Kathleen, The Land of Heart's Desire* and *Deirdre. The Winding Stair and other Poems* appeared in 1933. Collected editions of his works were published in 1908 and 1926. In 1923 he was awarded a Nobel Prize for literature. His interest in the formation of the Irish Theatre brought him into contact with Lady Gregory, and led to the foundation of the Abbey Theatre, Dublin, in 1904, of which he is a director. In 1922 he was made a senator of the Irish Free State.

Yellow Fever Disease prevalent in tropical and semi-tropical countries. The fever is due to a variety of mosquito, and the disease begins with severe shivering and pains accompanied by a high temperature. The skin becomes yellow as in jaundice, and there is often vomiting and other symptoms. An injection of serum often produces good results, but rest and careful nursing are essential to recovery.

Yellow-hammer Bunting (*Emberiza citrinella*) of N. Europe. It is common in Britain, and is 6½ in. long, the plumage yellow-brown above, with streaks of darker brown. The head and under parts are mainly yellow, with brown streaks, while the rump and wing coverts are edged with reddish-brown.

Yellowhead Pass of the Rocky Mountains between the provinces of Alberta and British Columbia.

Yellow River Name sometimes given to the Chinese river, Hwang-ho (*q.v.*).

Yellow Sea Branch of the Pacific Ocean. It lies between China, Manchuria and Korea, and in it are the gulfs of Chihli, Korea and Liau-tung. Its greatest width is about 400 m. The name is due to the vast quantity of yellow mud brought down by the Hwang-ho (*q.v.*).

Yellowstone River of the United States. It rises in the Rocky Mts. in Wyoming, and flows through the Yellowstone Lake and a wonderful canyon to the Missouri. It is about 1000 m. long, with some fine falls. The river gives its name to the **Yellowstone National Park.** This is in Wyoming and covers 3350 sq. m. Opened to the public in 1872, it is a mountainous area. There are several lakes in the park, but it is best known for its geysers and hot springs. It is mainly forest, but there are good roads through it, and it has several hotels.

Yemen District of Arabia. It is in the S.W. of the country with a coastline on the Red Sea. Its area is 75,000 sq. m., and it is governed by an imam. Sana is the capital. The country is very mountainous, but produces coffee, wheat, millet and barley. Oats and hides are exported. Pop. 3,500,000.

Yen Japanese silver coin. The country's monetary unit, its value is nominally 2s. ¼d., and it is divided into 100 sen.

Yenisei River of Asia. It rises in the mountains of Mongolia, and flows across Siberia into the Arctic Ocean. It is 3000 m. long and enters the sea by an estuary. Its course is almost due N.

Yeoman Word meaning a countryman. It refers both to tenant farmers and to farmers who own the land they till.

The **Yeomen of the Guard** are a permanent military corps in attendance on the sovereign. Instituted in 1485 as his personal bodyguard, their duties are now purely ceremonial. Their picturesque dress dates from Tudor times. Their headquarters are at the Tower of London. *See* BEEFEATERS.

Yeomanry Branch of the British Army. Officers and men are volunteers, and the force serves as a reserve for the cavalry. First organised in 1794, each county has its own regiments, which are called out for a period of training each year. The men provide their own horses and receive a small payment. In 1914 there were 55 regiments of yeomanry, and most were sent to one or other of the theatres of war. A force of mounted men called the Imperial Yeomanry was raised for service during the war of 1899-1902 against the Boers.

In 1908 the yeomanry regiments were included in the Territorial Force and in 1921 a number of them were converted into artillery units. Fourteen regiments of yeomanry remain, the senior being the Royal Wiltshire.

Yeovil Borough and market town of Somerset. It is 23 m. E. of Taunton and 125 m. from London, on the Southern and G.W. Rlys. Situated on the Yeo it manufactures gloves and has an agricultural trade. Pop. (1931) 19,078.

Yew (*Taxus baccata*). Evergreen tree of the order *Coniferae*. Varying from 15 to 50 ft. in height, it is of spreading growth. The branches start from the short, massive bole, within a few feet from the base, and

extend almost horizontally. The twigs are many and thickly leaved ; the leaves long and curved, of a glossy dark-green above and pale underneath. The wax-like vivid red berries are cup-shaped with a central seed. The wood is hard and elastic, and is commercially valuable to-day.

Yezidis A religious sect found in certain parts of Mesopotamia, Persia, etc. They are commonly called "devil-worshippers," but their beliefs reveal affinities with Mohammedanism and (Nestorian) Christianity. Though hated and despised by their neighbours, they are a peaceful, cleanly and industrious people.

Yiddish Dialect of Hebrew spoken by the Jews. It contains a very large German element, and is extensively used in the east end of London.

Yggdrasil A mystical ash tree which in Norse mythology typifies existence. It binds together heaven, earth and hell by means of its three roots, which stretch respectively, one to the realm of the gods, one to the frost giants, and the third to the underworld of death.

Ynishir District of Glamorganshire. It is on the S. Wales coalfield, 4 m. from Pontypridd and 170 m. from London, by the G.W. Rly.

Yoga A Hindu word derived from the Sanskrit meaning "union." It is the name of a system of Hindu philosophy which seeks to effect the emancipation of the devotee's soul through union with the universal spirit by means of meditation and the mortification of the body. Its disciples are known as Yogis.

Yokohama Seaport and city of Japan. It stands on Tokyo Bay, on the island of Honshu, 15 m. by rail from Tokyo. It possesses a large harbour equipped in the most modern fashion, and from it a great deal of silk, coal, etc., are exported. Yokohama has been a treaty port since 1859. On Sept. 1, 1923, great damage was done by an earthquake, but this has been repaired. In 1927 the city boundaries were extended. Pop. (1930) 620,306.

Yonge **Charlotte Mary.** English author. She was born at Otterbourne, near Winchester, Aug. 11, 1823. *The Heir of Redclyffe* (1853) brought her not only fame but enough money to provide the schooner *Southern Cross* for Bishop Selwyn's Melanesian mission. *The Daisy Chain* (1856) yielded enough to build a missionary college in Auckland, N.Z. She published 120 books, and for 47 years edited the *Monthly Packet*. She died March 24, 1901.

Yonkers City of New York State. It is on the Hudson to the N. of the city of New York, of which it is practically a suburb. It has a number of industries. Pop. (1930) 134,646.

York City and market town of Yorkshire, also the county town. It is on the Ouse, 188 m. from London, and is reached by the L.M.S. and L.N.E. Rlys. One of the oldest cities in England, York is full of buildings of interest, the finest being the cathedral or minster of St. Peter, one of the finest Gothic churches in England. It is famous for its stained glass, its vast front, its three noble towers, its chapter house, and its bells. Associated with it are the treasurer's house, the library, and St. William's College. Other old buildings are the guild hall and no fewer than 21 churches, among them Holy Trinity in Goodramgate, St. Michael-le-Belfry, St. Helen's, St. Margaret's, St. Michael's, St. Mary's Senior and All Saints. The Merchant's Hall and the King's Manor may also be mentioned. Clifford's Tower is a relic of the castle.

The city, first known as Eboracum, was at one time the greatest Roman settlement in Britain, and has considerable Roman remains. Of the medieval city, the walls and gateways still stand, and there are ruins of an abbey and hospital. The mansion dates from the 18th century. The schools include St. Peter's, one of the oldest in England, and Bootham, maintained by the Society of Friends. Modern buildings are the Art Gallery, Assize Court, and two museums. Skildergate and other bridges cross the river. York is a great railway junction and an important military centre. The industries include railway works, cocoa factories, printing works, flour mills, etc. It sends one member to Parliament. At Earswick, a suburb, a model village has been built.

York was made the seat of a bishop in 627 ; it has had an archbishop since 732, his province covering the north and north midlands of England. His palace is at Bishopsthorpe. The city is governed by a lord mayor, a dignity given to York in 1389. Pop. (1931) 84,820.

York **House of.** Branch of the British Royal Family. It traces its origin back to Edward III., through his third son Lionel, Duke of Clarence, and his fifth son, Edmund, Duke of York. Richard Plantagenet (killed, 1460), the father of Edward IV. and Richard III., was the head of the house, and he claimed the crown in opposition to Henry VI., who assented to an Act by which Richard's two sons secured the succession. Latterly the title, Duke of York, has generally been held by the second son of the reigning monarch.

York **Duke of.** Richard, Duke of York, was born Sept. 21, 1411, the only son of Richard, Earl of Cambridge and Anne Mortimer, being thus descended on both sides from Edward III. He was Protector of England during the mental incapacity of Henry VI., and it was his claim to the succession, involving the setting aside of Henry VI.'s son, Edward, that started the Wars of the Roses. He was killed at the Battle of Wakefield, Dec. 30, 1460. His claim descended to his eldest son, who became king as Edward IV. in 1461.

York **Duke of.** Frederick Augustus, second son of King George III., was born in London, Aug. 16., 1763, and on Feb. 27, 1764, was elected to the bishopric of Osnabruck, in order to draw its huge revenues. In 1784 he was created Duke of York. In 1793 and 1799 he commanded English contingents against the French, but failed ignominiously. He did good work, however, in carrying out reforms in the army at home. He died Jan. 5, 1827, and is commemorated by a column, with his statue on the top, at the end of Waterloo Place, London.

York **Duke of.** H.R.H. Prince Albert Frederick Arthur George, Duke of York, Earl of Inverness and Baron Killarney, K.G., K.T., P.C., the second son of H.M. King George V., was born at York Cottage, Sandringham, Dec. 14, 1895. He is Rear-Admiral of the Fleet in the Royal Navy (June 3, 1932), Air Vice-Marshal in the Royal Air Force (June 3, 1932), and Colonel-in-Chief of several regiments. On April 26, 1923, he married Lady Elizabeth Bowes-Lyon, daughter of the Earl of Strathmore,

and has two daughters, Elizabeth and Margaret Rose. He takes a keen interest in all social matters affecting the welfare of the people.

York House Royal residence in London. It forms part of St. James's Palace. It was the London House of Edward VIII. when Prince of Wales, and is now that of the Duke and Duchess of York.

Yorkshire County of England, the largest in the land. In the N. of the country, it covers 6077 sq. m. between the Humber, Durham and Lancashire. It is divided into three ridings N., E. and W. York is the county town; but each riding has its own capital, these being respectively Northallerton, Beverley and Wakefield.

Yorkshire contains some peaks of the Pennines and the Cleveland Hills. The chief rivers are the Ouse and its tributaries, Wharfe, Aire, Nidd, Swale, Ure, Don and Derwent. In the N. are the Tees and the Esk. The county has many large cities and towns, Sheffield, Leeds, Bradford, York, Wakefield, Hull, Doncaster, Huddersfield, Halifax, Barnsley, Keighley and Middlesbrough among them, and many smaller ones with much historic interest, such as Pontefract, Richmond, Ripon, Beverley and Selby. The watering-places include Scarborough, Whitby, Bridlington and Redcar. Harrogate is an inland spa. Yorkshire was famous for its Cistercian Abbeys; Fountains and Kirkstall are outstanding examples.

The county contains a great industrial area which centres around Sheffield, Leeds and Bradford, and is known for its coal mines and woollen mills. Around Doncaster a new coalfield has been developed in the 20th century. There are also industrial areas around Hull and Middlesbrough, but elsewhere in the E. and N. Ridings agriculture remains the dominant industry. The county is in the arch-diocese of York; it also contains the dioceses of Ripon, Wakefield, Sheffield and Bradford. It sends 26 members to Parliament, apart from those sent by the cities and boroughs. Pop. (1931) 3,208,828.

Yorkshire is famous for its cricketers and its horses. The county cricket club has for years been one of the strongest in the country, and the county has horse-breeding establishments and race meetings, the most notable race being the St. Leger at Doncaster.

A number of regiments are recruited in Yorkshire. The E. Yorkshire, the old 15th Foot, has its depot at Beverley. The W. Yorkshire, the old 14th Foot, has its depot at York. Both were raised in 1685. The **Yorkshire Regiment**, officially called the Green Howards, dates from 1688. It was the 20th of the line, and the depot is at Richmond. The **Yorkshire Light Infantry** and the **York and Lancaster Regiment** both have their depots at Pontefract. The former, known as the King's Own, is the 51st and 105th of the line. The latter is the old 65th and 84th Foot.

Yorkshire Terrier Small toy terrier derived from the Scottish terrier. It has long straight, silky hair, steel blue on the back, tan on the under parts, the legs and head being a light fawn. The nose is black.

Yorktown American township. It is situated on the York River in Virginia, U.S.A. Here Lord Cornwallis was forced by famine to surrender to Washington in 1781.

Yosemite National park in the United States. It is in the middle of California, on the western slopes of the Sierra Nevada, some 200 m. to the E. of San Francisco. It covers 1512 sq. m., and is a scene of wild magnificence. In it is the **Yosemite Valley**, enclosed by granite rocks and a river called the Merced, which makes a number of remarkable falls. One of these, the **Yosemite Falls**, descends 2500 ft. in three leaps. The valley is 7 m. long.

Youghal Seaport and market town of Co. Cork, Irish Free State. It stands on the estuary of the Blackwater, 27 m. from Cork, and is reached by the G.S. Rlys. There is a fine old church, and here is Myrtle Grove, a house once occupied by Sir Walter Raleigh. Youghal has a good harbour, a trade in agricultural produce and some fishing. Pop. (1926) 5339.

Young **Brigham.** American Mormon leader. Born at Whittingham June 1, 1801, he joined the Mormon sect in 1832 and became its prophet and president in 1844. He organised the settlement of the Mormons in Utah in 1847, and was the founder of Salt Lake City. He died in Salt Lake City on Aug. 29, 1877, being survived by 17 wives and about 50 children.

Young **Francis Brett.** British novelist. Born in 1884, the son of a doctor, he was educated at Epsom College and the University of Birmingham, where he took a medical degree. During the Great War he served with the R.A.M.C. He has written novels, some plays and several volumes of poems. His novels include *The Crescent Moon*, *Woodsmoke*, *Cold Harbour*, *My Brother Jonathan*, and *Jim Redlake*. In 1932 he published *House Under the Water*, in 1934 *This Little World*, and in 1935 *White Ladies*.

Young **Owen D.** American financier. Born Oct. 27, 1874, in New York State, for a time he practised law in Boston, and in 1912 became connected with the General Electric Co. In 1924 he was a member of the committee that inquired into the ability of Germany to pay reparations, and for a short time he was Agent-General for Reparations. In 1929 he was a member of a similar committee, and on this occasion he put forward the scheme which was adopted, and is known as the **Young Plan**. *See* REPARATIONS.

Young Men's Christian Association. The Young Men's Christian Association (National Headquarters: Gt. Russell St., W.C. 1.) was founded in 1844 by (Sir) George Williams to unite young men in an endeavour to improve themselves physically, mentally and intellectually. The value of its good work was generally recognised during the war. In the United Kingdom there are (1932) 814 branches with a membership of 118,430, while the U.S.A. have 1435 centres with a membership of 1,011,144.

The **Young Women's Christian Association** (London Head Offices: 16-22 Great Russell St., W.C. 1.) was formed in 1855 with similar objects to those of the men's association. It has a British membership of 35,000 with 358 centres.

Younghusband **Sir Francis.** British soldier and explorer. Born in India, 31st May, 1863, he entered the army, becoming Lt.-Colonel in 1903. He has explored the mountains between Kashmir and China and accompanied the British mission to

Tibet in 1902. Among his many books of the countries he has explored are *Heart of a Continent* (1898), *India and Tibet* (1912), and *The Epic of Everest* (1927). He was made K.C.I.E. in 1904 and K.C.S.I. in 1917.

Youngstown City of Ohio, U.S.A. It is 64 m. from Cleveland and is an industrial centre. Pop. 170,002.

Yo Yo Popular game for one person. Introduced from the United States, it became popular in Great Britain in 1932. It consists of a rounded piece of wood, divided into two parts and attached to a string. The game involves delicate control of the wood, rolling and unrolling it on the string.

Ypres Earl of. English soldier. John Denton Pinkstone French was born at Ripple, Kent, Sept. 28, 1852. After four years in the navy, he joined the army in 1874. As major-general he commanded a cavalry division in the Boer War. He became Chief of Imperial Staff in 1912, and Field-Marshal in 1913. From 1914 till December, 1915, he commanded the British Army on the western front, and was created Viscount on resigning. From 1918-21 he was Lord-Lieutenant of Ireland, and received an earldom on resigning. He died May 22, 1925.

Ypres Town of Belgium. Lying on the small River Yperlee, it was originally a rival to Bruges and Ghent, and its silk and lace goods were everywhere celebrated. It suffered severely in the Great War, and at the end of the war nothing remained of the town. Since 1918, from temporary hostels around the Menin Gate, the town has been completely rebuilt. The famous old Cloth Hall and churches have been restored, and a garden city has replaced the ancient working quarters.

There were three **Battles of Ypres** during the Great War. The first took place in Oct. and Nov., 1914, and represented the defence of the Channel ports against the Germans under Falkenhayn. Although the Germans failed to break through, some 55,000 Britishers lost their lives. The Ypres battle of April-May, 1915, was notable for the first use of poison gas by the Germans, but once recovered from the initial shock, the Allied troops gave little ground. The third battle of June, 1917, formed part of the Allied offensive in Flanders. Although mud seriously impeded the tanks, the Allies succeeded in capturing the whole range of heights between Armentières and Passchendaele, without, however, dislodging the Germans from the coast.

Ysaye Eugène. Belgian violinist. Born at Liège, July 15, 1858, he studied under his father and Massart, and later under Wieniawski and Vieuxtemps. Between 1879 and 1889 he appeared in Germany, Paris and London, and in 1886-98 was violin professor at the Brussels Conservatoire. He conducted Beethoven's *Fidelio* at Covent Garden in 1907, and played sonata concerts with Raoul Pugno. His most famous piece was the sonata dedicated to him by Lekeu. He went to America during the war, and conducted the Cincinnati Orchestra. Returning in 1922, he wrote the opera *Peter the Coalminer*. He died May 12, 1931.

Yser River of Belgium. It rises in N. France, and flows into the North Sea at Nieuport. The **Battle of the Yser** occurred in October, 1914. For a while the Germans, repelled at Dixmude, appeared unlikely to get through the Belgian line, but the Belgians were finally forced to open the Nieuport Sluices. The Germans could not advance through the flooded territory, and the coast was saved.

Ystradgynlais Village of Brecknockshire. A colliery centre, it is 13 m. from Swansea, 210 m. from London by the G.W. Rly.,

Yucatan District of Mexico. It is a peninsula, 400 m. long, in the S.E. of the country, covering some 55,000 sq. m. On it are extensive remains of the civilisation of the Mayas.

Yugoslavia Kingdom of Europe, before 1929 called the kingdom of the Serbs, Croats and Slovenes. Its nucleus is the kingdom of Serbia, to which other areas were added after the Great War, although its boundaries were not officially settled until 1924. It thus includes Montenegro, as well as Bosnia, Herzegovina and other districts formerly under Austrian rule. The area is 94,220 sq. m., and it has a coastline on the Adriatic Sea. Belgrade is the capital; Zagreb or Agram is the next largest place. The ports include Sisak, Split and Kotor, and the country has by treaty a free zone at Salonika. Belgrade is a great river port. Much of the land is mountainous. It is well watered by the Danube and its tributaries. The population (1931) is 13,930,918.

Yugoslavia is an agricultural country. Wheat, maize and hemp are the chief crops and many cattle and sheep are reared. Much land is covered with forests. Coal, iron ore and lead are mined.

The kingdom is governed by a king and a ministry responsible to a legislature of two houses, a senate and a chamber of deputies of 305 members elected by all adults. The people belong chiefly to the Serbian Orthodox and Roman Catholic churches. There is an army recruited by compulsory service, and a small navy. The country has a national bank, and the dinar is the unit of currency.

The first king of the new kingdom was Peter of Serbia, who was succeeded in 1921 by his son, Alexander I. In Jan., 1929, Alexander suspended the constitution and ruled for two years as a dictator. In 1931 there was a return to constitutional government, but only in a modified form. In Oct., 1934, King Alexander, on his way to an important conference in Paris, was assassinated at Marseilles. He was succeeded by his young son, Peter II. (b. 1923), with Prince Paul as First Regent.

Yukon Territory and River of Canada. The territory is the most N.W. one of Canada. It has an area of 207,000 sq. m. In 1901, owing to the discovery of gold at Klondike, the population was 27,000; in 1931 it had declined to 4100. The capital is Dawson, with 975 people as compared with 2500 during the gold rush. There is an abundance of big game, and there are huge forests. The river, some 2000 m. long, is navigable for 3 months in the year for large steamers from its mouth in the Bering Sea.

ZADKIEL Name taken by Richard James Morrison. Born on June 15, 1795, he was a sailor, but is better known as an astrologer. He founded in 1831 *The Herald of Astrology*, still issued every year as *Zadkiel's Almanac*. He died April 5, 1874.

Zaghlul Saad. Egyptian nationalist, generally known as Zaghlul Pasha. Born in 1852, he was arrested for his share in the rebellion of Arabi Pasha. Later he was called to the Bar and took office as Minister of Education, then of Justice. His nationalist activities caused his deportation in 1921, but later he returned, and was Prime Minister in 1924. He died Aug. 23, 1927.

Zagreb (or Agram). Capital of Croatia, Yugoslavia, on the Sava river, situated among mountains but amid fertile land. The older part has narrow winding streets, and contains a 15th century Gothic cathedral. A newer area of wide streets, public parks, etc., is the business and industrial centre, possessing also many churches, schools and a university. Many manufacturing industries are carried on. Pop. (1931) 185,581.

Zaharoff Sir Basil. G.C.B. (1919); G.B.E. (1918); Hon. D.C.L., Oxford; Grand Cross of Legion of Honour. Financier and politician. Born at Mughla, near Constantinople, Oct. 6, 1849, of Russian and Greek parentage, he dealt in cloth and armaments, and became a millionaire. He gave enormous sums of money to Greece during the Great War, and to various relief funds. He was consulted by Allied statesmen at the Paris Conference and he has founded chairs of aviation and of literature in England, Russia and France.

Zama Numidian town, situated about 75 m. S.W. of Carthage. The decisive battle, in which Scipio Africanus Major defeated Hannibal in 202 B.C. and ended the Second Punic War, leaving 20,000 Carthaginians dead on the field and taking another 20,000 prisoner, takes its name from this place, though it was actually fought on the River Bagradas, some miles to the west.

Zambesi River of Africa. It rises in Angola and flows across the continent, mainly eastward, until it falls into the Indian Ocean by a great delta around Chinde in Mozambique. Much of its course is in Rhodesia and on it are the Victoria Falls. It is 1600 m. long; its chief tributary is the Shiré and it is navigable for 400 m.

Zamora Niceto Alcala. President of the Spanish Republic. A lawyer by profession, he was originally a monarchist in politics. In April, 1930, he drew up a scheme for a Conservative Republic, and on the overthrow of the monarchy in 1931 became first president.

Zangwill Israel. Jewish writer. He was born in London of poor parents, Feb. 14, 1864, and studied at London University. He became famous through the *Children of the Ghetto*, written at the request of the Jewish Publication Society of America for a story depicting Jewish life among the poorer classes. He wrote novels, plays and pamphlets, made several successful lecture tours in America, and was interested in the Zionist movement. He died Aug. 1, 1926.

Zante One of the Ionian Islands. It belongs to Greece and produces currants and olives. The chief town is called Zante. Pop. 40,500.

Zanzibar Island and seaport of East Africa. A British protectorate, it lies off the coast of Tanganyika, 25 m. from Dar-es-Salaam. It is 53 m. long and covers 640 sq. m. The town is on the west coast of the island and has a very fine harbour. The chief product is cloves, which are sent all over the world. Copra and sugar are also exported. The protectorate includes the adjoining island of Pemba.

In the 19th century Zanzibar was an Arab state under a sultan, whose lands included a large area on the mainland. In 1890 it was declared a British protectorate, but the sultan retained his position on the island. Great Britain is represented by a resident, and there are two councils, executive and legislative. Pop. (1931) 137,741.

Zealand Island of Denmark. It lies between the Great Belt and the Sound, and covers 2680 sq. m. On it are Copenhagen and Elsinore. *See* DENMARK.

Zebra Striped animal of the horse family (*Equidae*) of the *Perissodactyla*. The zebra is a native of Africa and resembles the ass in the shape of its ears, its tufted tail and erect mane. The tawny coat is striped with black on the head, limbs and body, the under parts being greyish. *See* QUAGGA.

Zebu Domesticated animal of the ox family. It is found in India and other parts of Asia and is used as a draught animal. About the size of a bull, the animals are horned and have a hump on the back. In colour they are white or grey.

Zebulon Israelitish tribe, named after the sixth son of Jacob and Leah. The tribal territory lay north-east of the Plain of Jezreel, and was very fertile. Many warriors were of this tribe, specially mentioned in the "Song of Deborah" for its prowess in war.

Zechariah Hebrew minor prophet. A contemporary of Haggai, he shared with him the task of inducing the people to undertake the rebuilding of the Temple. The first part of the book which bears his name fits exactly into this historical setting and may be dated 520-518 B.C. The last six chapters were probably written by another hand at a post-exilic date.

Zedekiah Last King of Judah (597-586 B.C.). The younger son of King Josiah, he was placed on the throne by Nebuchadnezzar, as his tributary. In 588 he joined in a revolt against Babylon. After a siege of a year and a half, Jerusalem was taken by Nebuchadnezzar, and Zedekiah was carried captive to Babylon.

Zedoary Herbaceous East Indian plant (*Curcuma zedoaria*) with aromatic tuberous root-stocks. A warm, bitter drug with tonic properties is prepared from the tubers. Another species, *C. longa*, provides turmeric, a yellow powder used for pickling and in curry powder.

Zeebrugge Town and seaport of Belgium. It is on the coast, 8 m. from Bruges, at the mouth of the canal that links that city with the sea. Zeebrugge is the terminus of a ferry service with Harwich and has some shipping. There is a harbour protected by an immense mole.

In Oct., 1914, the Germans took Zeebrugge and made it a submarine base. On April 23, 1918, a British force under Capt. A. B. Carpenter in H.M.S. *Vindictive* attacked the port, blocked up the entrance to the harbour and damaged the defences.

Zeehan Town of Tasmania. It is 25 m. from the coast at Macquarie Harbour and is a railway junction. The chief industry is the smelting of the silver and lead that are mined in the vicinity. Pop. 3000.

Zeeland Province of the Netherlands. It is in the S.W. of the country and includes Walcheren and other islands. It covers 708 sq. m. and Middelburg is the capital.

Zeeman **Pieter.** Dutch physicist. Born May 25, 1865, he became Professor of Physics at Amsterdam in 1908. The **Zeeman effect**, discovered by him, which assisted in the development of the modern conception of atomic structure, refers to the fact that in a strong magnetic field, each line in the spectrum of an element is split up into components.

Zenana Women's apartments in a Hindu household, equivalent to the Mohammedan harem.

Zend Avesta Parsee religious books. It is a collection of sacred lore, containing astronomy and medicine as well as moral precepts and prayers addressed to spirits good and bad. Traditionally ascribed to Zoroaster, the original copy is supposed to have been destroyed when Persia was invaded by Alexander, or at the time of the Arabian conquest.

Zeno Founder of the Stoic philosophy. Born at Citium, in Cyprus, probably early in the 4th century B.C., he went to Athens, where he eventually started his own school in the *stoa poikilê* or painted porch, whence the name Stoic. His philosophy of temperance and moderation earned him the respect of all Athenians. The date of his death is unknown.

Zenobia Queen of Palmyra. She married Odenatus, who shared the Roman Empire with Gallienus, and on the death of her husband she made it her ambition to elevate Palmyra to pre-eminence in the Eastern Roman Empire. She took the name Augusta and claimed to be Queen of the East. Her subjugation of Egypt caused the Emperor Aurelian to lead an expedition against her in A.D. 271. She was captured and allowed to retire to Tibur, where she died.

Zephaniah Hebrew minor prophet. He appears to have prophesied in the reign of Josiah, King of Judah (639-608 B.C.), before the great reformation of 621 B.C. (2 Kings xxiii, 4). The burden of his book is the near approach of a day of judgment.

Zeppelin Type of airship invented by Ferdinand, Count Zeppelin, a German. He was born at Constance, July 8, 1838, and became a soldier. He fought in the American Civil War and for his own country in 1866 and 1870-71, after which he retired. After many years of research and effort, he produced his first airship in 1906. From his plans many others were built for the German government, and during the Great War they were employed for raiding purposes. Owing to their size and for other reasons they were not a conspicuous success, and a number were destroyed by the Allied airmen. The Count died March 8, 1917. After the Great War, a monster zeppelin, called the **Graf Zeppelin**, was built. In 1929-30 it voyaged round the world, and in 1931 and 1932 it visited England. *See* AIRSHIP.

Zermatt Pleasure resort of Switzerland. It is 22 m. by railway from Viège and stands over 5000 ft. high. From it the Matterhorn and the Monte Rosa can be climbed.

Zerzura Oasis in the Libyan desert. Long regarded as a lost land, it was discovered by an expedition in April, 1932. It is some 300 m. to the west of Wadi Halfa on the Nile.

Zetland **Marquess of.** English traveller. Born June 11, 1876, Lawrence John Lumley Dundas succeeded his father as second marquess in 1929. Educated at Harrow and Cambridge, he has travelled extensively in the far east. He was Governor of Bengal, 1916-22. He has been president of the Royal Geographical Society and the Royal Asiatic Society and is chairman of the National Trust.

As a writer Lord Zetland is better known under his previous title of Earl of Ronaldshay. He has written many books on the far east, the best known being *India—a Bird's Eye View*. He has also written the authorised *Life of Lord Curzon*, and in 1932 a *Life of Lord Cromer*.

Zeus The principal god in the Greek pantheon. The chief seat of his worship was Mt. Olympus in Thessaly. He appears in two guises: as a very human, amorous being, constantly suffering criticism from his wife, Hera, and as the all-powerful "Father of gods and men."

Ziggurat Building in Babylonia and Assyria. It is a temple built in a series of stages. The ruins of a famous one have been excavated at Ur.

Zimbabwe Ruins in Rhodesia. They are 17 m. from Victoria and are evidently part of a fortress. They were discovered in 1868 and examined some years later, when carvings and vessels were found. They are the relics of a race, possibly Bantu, with a high degree of culture and were in some way connected with the gold mines.

Zinc (or **Spelter**). Chemical element, with the symbol Zn, atomic number 30, and atomic weight 65.38. A bluish white metal, with a melting point of 786° F., it is found chiefly as the carbonate calamine (*q.v.*) and the sulphide, zincblende. It is used for the plates of electric batteries and for roofing, galvanising, etc. Applied as a protective coat to iron it prevents rusting. Alloyed with copper it forms brass, and there are other commercial alloys. The chloride is used as a flux for soldering. Salts of zinc are used extensively in medicine and as reagents.

Zinnia Genus of the order *Compositae*. They are perennial herbs, natives of the Southern U.S., from which popular garden forms have been developed with flowers of white, yellow, red, purple and many intermediate colours. They are easily grown in summer in good well-drained soil.

Zinoviev **Gregory.** Russian Communist. He was born Sept., 1883, his real name being Grigory Evseyevich, and

became a journalist. For some years he was connected with revolutionary newspapers. In 1915 he helped to found the Third International, of which he became president four years later. A letter to British Communists purporting to be from him was published in the British press in 1924 and had far-reaching effect. He was expelled from his party in 1927, but readmitted the following year.

Zion Mount. One of the hills on which Jerusalem was situated. Actually Zion is the southern portion of the eastern hill on which the temple was built. The name, which is frequently personified, is variously applied, being used for the whole hill, for Jerusalem itself, and for the Jewish people.

Zionism Jewish nationalist movement. In 1897 the Zionist organisation was established "to create for the Jewish people a home in Palestine secured by public law," but not till 1921 was the definite step taken of setting up in Palestine a national home for the Jews. There are two branches to the Zionist organisation. One is concerned with the administration of the national fund for the purchase of land in Palestine; the other stresses the importance of the national home as a centre of Jewish culture.

Zirconium Chemical element; symbol Zr, atomic number 40, atomic weight 91. One of the rare earth elements, it is found in zircon and is used in the manufacture of tool steels.

Zither Musical instrument, the cithara of the Greeks. It consists of a shallow sound chest, shaped like a bottle. A number of strings, often as many as 42, are stretched over the frame, but four or five melody strings, which are of metal and are plucked by the player, form the main part of the instrument. The zither is still played in certain parts of Switzerland and Germany.

Zlin Town of Czechoslovakia. It is in Moravia, about 50 m. to the east of Brno. It was an agricultural centre when, about 1894, Tomas Bata erected a factory for manufacturing boots. Others were built as his business grew, until the place became an industrial town of some size with schools, hospitals and other public buildings. Pop. (1930) 21,584.

Zodiac Belt of the heavens following the path of the sun. It extends 8° each side of the ecliptic, and was anciently divided into twelve parts, each with an appropriate sign and the name of the constellation which then occupied that division of the belt. On account of the precession (*q.v.*) of the equinoxes the constellations no longer inhabit the divisions bearing their names, and the division of Aries, the first, is now occupied by the constellation of Pisces, the last of the twelve. The twelve signs of the zodiac are: Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricornus, Aquarius and Pisces. *See* ECLIPTIC, SUN.

Zoetrope Mechanical toy. It consists of a rotating drum open at the top. In it are placed, around its inner periphery, strips of paper with figures of men, etc., thereon. By turning the cylinder the images are seen through slots in the upper side, and apparently they are in motion.

Zogu Achmet. King of the Albanians. He was born in 1893 and educated in Constantinople. After serving in the Austrian army during the Great War, he became Minister of the Interior (1920), then Minister for War (1921), and later Prime Minister (Dec., 1922). He was elected President of the Albanian Republic, Feb. 1, 1925, and proclaimed king Sept. 1, 1928.

Zola Emile. French author. He was born in Paris, April 2, 1840. Leaving school early, he engaged in journalism with but indifferent success. He showed greater aptitude for story-telling, his *Contes à Ninon* (1864) being a collection of charming tales. *L'Assommoir*, dealing with drunkenness, created a sensation. Among other works are: *Une Page d'Amour*, *La Joie de Vivre*, *L'Oeuvre*. Most of Zola's tales are distinctly unconventional, an exception being an idyllic story, *Le Rêve*. In 1898 he successfully espoused the cause of Captain Dreyfus, in his letter to *L'Aurore*, beginning *J' accuse*. He died Sept. 29, 1902.

Zollverein German customs union. It was formed gradually between 1819 and 1834 under the leadership of Prussia and was one of the most powerful of the forces making for a united Germany. It includes all the states of the German republic and its object is to secure a uniform rate of customs duties throughout them.

Zoological Gardens Enclosure in which wild animals live in order that they may be seen. In England the chief garden is in Regent's Park, maintained by the Zoological Society, which has also a park at Whipsnade, where the animals live in the open air. Many large cities have zoological gardens, among these being Paris, Berlin, Washington and Edinburgh. A notable garden is the one near Hamburg founded by Carl Hagenbeck.

Zoology Study of living animals. Its chief branches are morphology, dealing with form and structure; anatomy, which investigates the position and relation of organs and parts; embryology, dealing with development from the ovary to maturity; and physiology which treats of the organs of nutrition, reproduction and the nervous system.

Another department of zoology deal with the classification of animals. The classification now accepted is that of Gegenbaur who makes nine sub-kingdoms. They are protozoa, coelenterata, vermes, echinodermata, arthropoda, brachiopoda, mollusca, tunicata and vertebrata.

Zoroaster Religious teacher, also known as Zarathustra. He lived about 800 B.C. and founded a religion which was the faith of the Persians from the sixth century B.C. to the seventh century A.D. His followers are now represented in India by the Parsees. He taught a lofty monotheism in marked contrast to the idolatry of his age, as well as an ethical doctrine of kindness and charity. To other faiths he displayed a large-hearted tolerance. The worship of fire, as the symbol of good, plays a prominent part in Zoroastrian ritual, while charred wood and darkness are taken to represent evil.

Zouave Soldier in the French army. The name is that of a tribe in Algeria from whom a regiment for service with the French was recruited in 1831. The Zouaves were officered by Frenchmen, but after a time Frenchmen also formed the rank and file, the recruiting of Arabs having stopped. They retained their picturesque Moorish dress.

Zuider Zee Sea of the Netherlands. It covers about 1200 sq. m. and is an opening of the North Sea, with which

it is connected by several channels between the Texel and other islands. It is a fishing ground, and a canal connects it with the North Sea at Ymuiden. It was formed in the 13th and 14th centuries, when the sea flooded over the land. It contains a number of islands and its waters are very shallow.

A good deal of land has been reclaimed from the Zuider Zee since the 17th century. In 1920 work was begun on a further project of reclamation. This involved the building of a dam or dyke, nearly 20 m. long, across the entrance from North Holland to Friesland, utilising the Island of Wieringen. In May, 1932, the dam was completed and some 800 sq. m. were reclaimed.

Zululand Country of South Africa. It has a coastline on the Indian Ocean and its area is 10,425 sq. m. The land is chiefly inhabited by Zulus, a tribe who possessed a powerful kingdom in the 19th century. Between them and the Boers there was perpetual dissension, and in 1879 there were also serious difficulties with Britain, the result being the Zulu War in which the British met with disaster at Isandhlwana and Rorke's Drift. At Ulundi, however, on July 4, 1879, the Zulus were defeated and their king, Cetewayo, was made prisoner. Zululand was then annexed and in 1897 was made part of Natal.

Zürich Lake of Switzerland. It is 25 m. long and covers 34 sq. m. The waters are carried by the River Limmat to the Aar.

Zürich City of Switzerland. It is situated at the northern end of the Lake of Zürich, 41 m. from Lucerne. There are a number of old churches and some fine modern ones; of the former may be mentioned the cathedral, associated with Zwingli, the Wasser Kirche and the Frau Münster. The town hall dates from the 17th century. Zürich is a great educational centre. It has a university, a valuable library and a polytechnic school, and here is the Swiss National Museum and a building called the Ruhen, in which is a collection associated with Pestalozzi. Two fine bridges cross the Limmat. A great manufacturing centre, Zürich produces silk and cotton fabrics, machinery, etc. Pop. (1930) 249,820.

Zutphen Town of Holland. At the confluence of the Rivers Yssel and Berkel, 18 m. N.N.E. of Arnhem, it has withstood many sieges, especially during the struggle of the Netherlands against Spanish domination in the sixteenth century. After the **Battle of Zutphen,** in 1586, it was captured by the Spaniards, but recovered by Maurice of Orange in 1591. It trades in grain and timber, and has tanning, weaving, oil and paper industries. Pop. 19,586.

Zwingli **Ulrich.** Swiss reformer. Born Jan. 1, 1484, he was educated at Berne and Basel and became a priest. In 1516 he settled at Einsiedeln and in 1518 at Zurich, where he denounced the sale of indulgences and other abuses of the Church of Rome. He married and in other ways broke away from the old faith. Under his direction the citizens accepted the reformed teaching and Zürich became a Protestant centre. In 1531 the canton of Zurich became involved in a war with other cantons and in a battle at Kappel, Zwingli, who was with the troops as a chaplain, was killed Oct. 11, 1531.

Zygote Term used in biology. It is the cell which results from the fusion of two others (gametes), and from which a new individual develops.

FAMOUS CHARACTERS
IN PROSE, POETRY AND TRADITION

A supplementary glossary of the characters, famous in literature, tradition and myth, to whom frequent reference is made in the literature and press of the day. Characters who also appear in history or who require full encyclopædic treatment will be found in their proper place in the body of the work.

Absolute Sir Anthony. From *The Rivals* (Sheridan). A hot-tempered, overbearing, yet generous old English gentleman, father of the hero, Captain Absolute.

Acres Bob. From *The Rivals* (Sheridan). A swashbuckling coward, rival of Captain Absolute for the hand of Lydia Languish (*q.v.*). A braggart whose bravery "oozed out of his fingers' ends" when put to the test.

Adams Parson. Simple country curate from Fielding's *Joseph Andrews*. His ignorance of the ways of the world and his absentmindedness put him in many embarrassing situations.

Admirable Crichton From *The Admirable Crichton* (Barrie). The perfect butler who, when his lord's yachting party is wrecked, masters the situation and successfully woos the Lady Mary, only to revert to his humble position after the rescue of the party.

Aguecheek Sir Andrew. Lank and simple knight, the constant companion of Sir Toby Belch (*q.v.*) and butt of many of his jokes. From *Twelfth Night* (Shakespeare).

Alan-a-Dale Appears in Scott's *Ivanhoe*. The minstrel among the outlaws of Robin Hood.

Alice From *Alice in Wonderland* and *Through the Looking Glass* (Lewis Carroll). A little girl who, by falling down a rabbit-hole, reaches a strange land of nonsensical people and animals.

Ancient Mariner Hero of S. T. Coleridge's poem, *The Rime of the Ancient Mariner*, who brings a curse on himself and his shipmates by shooting the Albatross.

Aramis *See* MUSKETEERS, The Three.

Ariel From *The Tempest* (Shakespeare). A spirit of the air who, when caught in a pine tree, was liberated by the Duke Prospero, whose servant he became in gratitude.

Artful Dodger Nickname given to the young thief, Jack Dawkins in *Oliver Twist* (Dickens). He was the apt pupil of Fagin the Jew (*q.v.*) to whom he introduced the young Oliver.

Ashton Lucy. From *The Bride of Lammermoor* (Scott). Although betrothed to Edgar, Master of Ravenswood, she is tricked into a marriage with the Laird of Bucklaw, whom she subsequently murders.

Athos *See* MUSKETEERS, The Three.

Backbite Sir Benjamin. From *The School for Scandal* (Sheridan). A scandal-monger whose cynicism and malignity wrongly gave him the reputation of being a witty man-of-letters.

Balfour David. Young Scots hero of *Kidnapped* (Robert Louis Stevenson). He makes a famous journey across Scotland during the Jacobite risings. He also appears in *Catriona* by the same author.

Barkis Bashful suitor of David Copperfield's nurse Peggotty. He proposed marriage in the famous phrase, "Barkis is willin'."

Beatrice Heroine of *Much Ado About Nothing* (Shakespeare). She marries Benedick (*q.v.*).

Another Beatrice was the beautiful Florentine, beloved of the poet Dante, and inspiration of his *Divine Comedy*.

Bede Adam. Hero of George Eliot's novel of this name. He is a village carpenter, in love with Hetty Sorrel, a vain, weak girl. The simple nobility of his character comes out in his fidelity to her in trouble.

Bedivere Sir. One of King Arthur's Knights of the Round Table, who is alone with the king at his death and throws the sword Excalibur into the lake. He appears in Tennyson's *Morte D'Arthur*.

Belch Sir Toby. From *Twelfth Night* (Shakespeare). The rollicking, tippling companion of Sir Andrew Aguecheek (*q.v.*).

Benedick Hero of Shakespeare's *Much Ado About Nothing*. Although he has vowed to remain a bachelor, he admires and fights many battles of wit with Beatrice (*q.v.*), and successfully woos her.

Ben Hur Central figure of Lew Wallace's novel of the same name, a stirring tale of gladiatorial combats, chariot-racing and the Roman government of the Jews in the time of Christ.

Bennet Elizabeth. Heroine of Jane Austen's novel of Victorian upper-middle-class life—*Pride and Prejudice*.

Bindle Cockney furniture remover, the hero of many humorous exploits and practical jokes. From *Bindle* and other books by Herbert Jenkins.

Boniface From *The Beaux' Stratagem* (Farquhar). Landlord of a highwayman's inn at Lichfield, and renowned for his convivial welcome.

Bottom Nick. Athenian weaver, the chief comic character in Shakespeare's *Midsummer Night's Dream*, whose head is changed to that of an ass, in which guise he is loved by Titania, who is under the influence of a herb administered by Puck (*q.v.*).

Bovary Madame. Weak and romantically-minded heroine of Gustave Flaubert's *Madame Bovary*. The wife of a doctor in a country village, she believes herself a great lover, and ruins both her husband and herself by her infidelity and extravagance.

Bowling Tom. Sailor uncle of the hero of *Roderick Random* (Smollett).

Brown Father. Roman Catholic priest whose hobby is criminology. He appears in Chesterton's *The Wisdom of Father Brown*, etc.

Brown Tom. Typical English schoolboy, the hero of Thomas Hughes's story *Tom Brown's Schooldays*. He appears later as a youth in *Tom Brown at Oxford*.

Buffalo Bill Fictitious hero of numerous boys' stories of Wild West adventure, based on the real life of William Frederick Cody, a daring horseman who toured England and America with his circus of cowboys and Indians.

Bumble Mr. Blustering, self-important and tyrannical beadle of the workhouse, from *Oliver Twist* (Dickens).

Buzfuz Serjeant. From *The Pickwick Papers* (Dickens). Counsel for Mrs. Bardell in her breach of promise action against her lodger, Mr. Pickwick (*q.v.*). A fussy, conceited lawyer.

Caliban From *The Tempest* (Shakespeare). An ugly, mis-shapen monster who is the slave of Prospero.

Candide Hero of Voltaire's novel of that name. A man who preserves an optimistic and indifferent attitude towards life, though sorely tried by misfortune and affliction.

Carmen Beautiful gipsy girl. Heroine of Bizet's opera *Carmen*, and of the French novel by Prosper Mérimée.

Carton Sydney. Dissolute hero of *The Tale of Two Cities* (Dickens), whose love for Lucy Manette prompts him to take her lover's place under the guillotine.

Chadband The Rev. Mr. From *Bleak House* (Dickens). An oily hypocrite who uses his position as a minister to impose upon people.

Charley's Aunt From the farce of the same name by Vernon Thomas. She is ludicrously impersonated by an undergraduate friend of Charley when the real aunt visits him in college, with humorous results.

Cheeryble Edwin and Charles. Two brothers from *Nicholas Nickleby* (Dickens). The personification of benevolence in business.

Christian Hero of Bunyan's *Pilgrim's Progress*. An allegorical character whose journey towards the Celestial City is the subject of the story.

Christopher Robin Little boy whose adventures in the nursery with his toys—including Winnie the Pooh, a teddy-bear—form the subject of poems and stories by A. A. Milne in *When We Were Very Young*, etc.

Copperfield David. Hero of Dickens's novel of this name, believed to be autobiographical.

Cordelia Youngest daughter of King Lear (*q.v.*) in Shakespeare's tragedy. She is the supreme type in literature of unselfish love and devotion.

Cuttle Captain. Old, one-armed ship's-captain in Dickens's *Dombey and Son*, whose use of the phrase, "When found, make a note of," is notoriously frequent.

Coverley Sir Roger de. Old-time English country gentleman, created by Richard Steele and Joseph Addison in essays appearing in *The Spectator*.

Cressida Faithless heroine of Shakespeare's *Troilus and Cressida*. She is taken prisoner in the Trojan War and breaks her troth to Troilus by taking as her lover Diomed, her captor. She also appears in Chaucer and other writers.

Crichton The Admirable. *See* ADMIRABLE CRICHTON.

Crummles Vincent. Touring actor from *Nicholas Nickleby* (Dickens). He is the manager of the company, the husband of the tragedienne, father of the much-billed "Infant Phenomenon," and for some time employer of the hero of the novel.

Crusoe Robinson. Shipwrecked sailor whose adventures on an uninhabited island are told in Defoe's *Robinson Crusoe*.

Daddy Long-Legs From Jean Webster's *Daddy Long-Legs*. A kindly but unknown gentleman, so called by the heroine, his ward, whose letters from school form the major part of the book. He eventually marries her.

D'Artagnan Brilliant and witty Gascon swordsman and adventurer, the hero of Alexandre Dumas's romances, *The Three Musketeers*, *Twenty Years After*, etc.

Deans Jeanie. Heroine of *The Heart of Midlothian* (Scott), who makes an arduous journey to London to obtain a royal pardon for her sister Effie, imprisoned for the murder of her illegitimate child.

Desdemona Ill-fated heroine of Shakespeare's *Othello*. She is murdered by her husband, whose doubts as to her fidelity have been aroused by Iago (*q.v.*).

Dick Mr. Harmless half-wit from *David Copperfield* (Dickens). His efforts to write a book are thwarted by his inability to keep out a reference to the head of Charles I., and by pauses for flying kites.

Dinah From *Uncle Tom's Cabin* (H. Beecher Stowe). The coloured cook to the St. Clair family.

Dishart Gavin. Hero of Barrie's *The Little Minister*. A young Presbyterian clergyman who falls in love with a beautiful gipsy girl and afterwards discovers that she is a titled lady in disguise.

Dogberry Amusing and talkative constable from Shakespeare's *Much Ado About Nothing*. He continually mixes words, *e.g.*, "Comparisons are *odorous*."

Doone Lorna. Heroine of *Lorna Doone*, by R. D. Blackmore. By birth a lady, she is brought up by the Doones, a band of outlaws living on the wilds of Exmoor. She eventually marries John Ridd (*q.v.*).

Dracula Count. Central figure of *Dracula*, Bram Stoker's novel of the supernatural. The chief of the Vampires, he sucks the blood of healthy human beings, who in turn become vampires.

Drummond Bulldog. Amateur criminal investigator created by "Sapper" (H. C. McNeile) in his series of

detective novels beginning with *Bulldog Drummond*.

Easy Mr. Midshipman. Hero of Captain Marryat's sea story of the same name.

Em'ly Little. Tragic figure in *David Copperfield* (Dickens). She elopes with Steerforth, who quickly deserts her. Her old uncle, Daniel Peggotty, searches the world for her. At last they are reunited and settle in Australia.

Esmeralda Beautiful gipsy dancer from Victor Hugo's *The Hunchback of Notre Dame*. She delights the crowds in the Paris streets, but eventually, in spite of the efforts of Quasimodo (*q.v.*) she is tragically put to death.

Everyman Character representing the whole human race, who first appeared in the medieval morality plays.

Eyre Jane. Governess heroine of Charlotte Brontë's *Jane Eyre*. She goes to teach the child Adèle at Mr. Rochester's mysterious home, falls in love with her master and eventually marries him.

Fagin Despicable Jew who acted as receiver to thieves and was a professor of crime in Dickens's *Oliver Twist*. He is executed as an accessory after a murder.

Faithful From Bunyan's *Pilgrim's Progress*. He accompanies Christian on his journey from the City of Destruction, but is taken up to heaven in a chariot of fire at Vanity Fair.

Falstaff Sir John. Fat, bibulous old knight in Shakespeare's *Henry IV*. His amorous adventures are related in *The Merry Wives of Windsor*, and his death is reported in *Henry V*.

Fatima Last and loveliest of the wives of Bluebeard. The timely arrival of her brothers saves her from sharing the fate of his other brides.

Fauntleroy Little Lord. From the novel of this name by Mrs. Burnett. Born in America, he falls heir to the English earldom of Dorincourt.

Finn Huckleberry. Titular hero of Mark Twain's novel. His amusing adventures during the slavery troubles are also recounted in *Tom Sawyer* (*q.v.*).

Flanders Moll. Notorious woman, a harlot and a jailbird, who dabbled in every type of crime and finally reformed. Her adventures are recorded by Defoe in *The Fortunes of Moll Flanders*.

Ford Mistress. One of Shakespeare's *Merry Wives of Windsor*. She and her husband delight in ridiculing Falstaff (*q.v.*).

Forsytes The. Family created by John Galsworthy in *The Forsyte Saga*, *A Modern Comedy*, *On Forsyte 'Change*, etc. It covers more generations and treats the individuals (*e.g.*, Soames) in greater detail than perhaps any other family record in English literature.

Frankenstein Medical student who creates a living man from limbs and organs of bodies collected from graves and mortuaries. The monster has a short life, in which it terrorises the countryside and almost murders its creator. From the novel, *Frankenstein*, by Mrs. Shelley.

Friar Tuck Jovial member of Robin Hood's band of outlaws.

Friday Man. Savage, from *Robinson Crusoe* (Defoe). He becomes servant to Robinson Crusoe.

Fu-Manchu Dr. Picturesque oriental criminal, with a subtle western polish and culture. He appears in Sax Rohmer's *The Devil Doctor*, *The Mystery of Dr. Fu-Manchu*, etc.

Gamp Mrs. Sarah. From Dickens's *Martin Chuzzlewit*. A large and garrulous nurse, invariably carrying an umbrella and alluding to her imaginary friend Mrs. Harris.

Gargantua From the novel of the same name by Rabelais. A giant with a huge appetite and an unquenchable thirst, founder of the somewhat unecclesiastical Abbey of Thélème.

Giant Despair Christian's captor and lord of Doubting Castle; from Bunyan's *Pilgrim's Progress*.

Gil Blas Well-born and highly educated young man, in whom modesty and morality are sorely lacking. The adventurer hero of Le Sage's novel of Spanish gay life.

Gilpin John. London tradesman whose famous breakneck ride on horseback is described by Cowper in a narrative poem of the same name.

Goodfellow Robin. *See* PUCK.

Gradgrind Thomas. From Dickens's *Hard Times*. A calculating, uncharitable owner of a hardware shop who finds no place in life for finer feelings.

Gray Dorian. From Oscar Wilde's novel *The Picture of Dorian Gray*. A handsome, accomplished young man who does not show the marks of his dissipation as the years pass. The change, however, takes place on a mysterious portrait of himself.

Greatheart Mr. From Bunyan's *Pilgrim's Progress*. He guides Christian's wife and children towards the Celestial City, following on the steps of Christian (*q.v.*).

Griselda Personification of meekness, virtue and long-suffering in a wife. She is the heroine of a story told by the Clerk in Chaucer's *Canterbury Tales*.

Guinevere Faithless wife of King Arthur who banishes herself in remorse for her love of Sir Lancelot (*q.v.*). She appears in Tennyson's *Idylls of the King*, and throughout Arthurian legend.

Gulliver Lemuel. Hero of Swift's satire, *Gulliver's Travels*. He is shipwrecked in Lilliput, the land of dwarfs, and subsequently meets strange adventures with giants in Brobdingnag, and among the Houyhnhms.

Hamlet Prince of Denmark and hero of Shakespeare's *Hamlet*. He avenges his father's death by killing the king, his uncle, goaded on by the ghost of the dead king. He is in love with Ophelia (*q.v.*).

Handy Andy Blundering Irishman, the humorous hero of Samuel Lover's novel of the same name.

Hardcastle Miss Kate. Daughter of a country squire, she becomes a domestic in order to win the love of a bashful suitor, Marlow. She is the heroine of *She Stoops to Conquer* (Goldsmith).

Harold Childe. Intellectual but jaded man of the world who travels through Europe; from *Childe Harold's Pilgrimage* (Byron).

Harris Mrs. Imaginary friend of Mrs. Gamp (*q.v.*) in Dickens's *Martin Chuzzlewit*.

Heep **Uriah.** Sycophantic, **cringing** clerk, always emphasising his "'umbleness" while scheming against his employers. From Dickens's *David Copperfield.*

Hiawatha Traditional character in the folk-lore of the North American Indians. He is the hero of Longfellow's poem of the same name.

Holmes **Sherlock.** Conan Doyle's famous detective who elucidates mysteries by scientific deduction. As an antidote to crime he plays the violin, smokes his pipe and drugs himself with cocaine injections. He appears in *The Hound of the Baskervilles,* etc.

Hook **Captain.** Pirate chief from J. M. Barrie's *Peter Pan.* He is pursued by a crocodile, of which he is warned by the loud ticking of a clock it has swallowed.

Horatio Loyal friend of the Prince in Shakespeare's *Hamlet.*

Hyde **Mr.** Baser half of the dual personality of Dr. Jekyll (*q.v.*). From R. L. Stevenson's *The Strange Case of Dr. Jekyll and Mr. Hyde.*

Iago Villain of Shakespeare's *Othello.* An ensign in Othello's army, he fabricates an intrigue between Cassio and Desdemona (*q.v.*) in order to arouse the Moor's jealousy.

Imogen Heroine of Shakespeare's *Cymbeline.* Her fidelity to Posthumus, her husband, is proved in spite of the scandalous whisperings of the villain, Iachimo.

Iseult **(or Isolde).** Heroine of Wagner's opera *Tristan and Isolde,* who also appears in poems by Tennyson, Swinburne and Arnold. She is a legendary beauty for love of whom Sir Tristram (*q.v.*) dies of grief.

Ivanhoe Favourite knight of Richard the Lion Heart, and hero of Scott's *Ivanhoe.* He is in love with the beautiful Saxon girl, Rowena.

Jackson **Peter.** Cigar merchant, hero of Gilbert Frankau's novel of the same name. He is a city business man who finds romance in ordinary married life.

Jaques A lord attendant upon the banished duke in *As You Like It* (Shakespeare), renowned for his extreme melancholy.

Jarvie **Bailie Nicol.** Glasgow magistrate in Scott's *Roy Roy,* who disguised a real, generous nature with an air of vain self-importance and brusqueness.

Jeames **de la Pluche.** Humorous character created by W. M. Thackeray in a series of articles contributed to *Punch.* A footman whose successful speculations gave him money enough to find a place in society.

Jeeves Perfect manservant, "the cream of gentlemen's gentlemen," whose humorous adventures are told by P. G. Wodehouse in *The Inimitable Jeeves, Very Good, Jeeves,* etc.

Jekyll **Dr.** Brilliant and noble doctor who discovers a drug capable of changing his personality. Under its influence he becomes the criminal and dissolute Mr. Hyde. Unable at last to return to his true nature, he commits suicide. From *The Strange Case of Dr. Jekyll and Mr. Hyde* (R. L. Stevenson).

Jingle **Alfred.** Plausible rascal and jailbird from Dickens's *Pickwick Papers.* Mr. Pickwick tries to reform him, being much imposed upon during the process.

Jones **Tom.** Hero of Henry Fielding's masterpiece, *Tom Jones.* His high spirits, love of adventure and gallantry lead him into many escapades, not always creditable.

Jorrocks **Mr.** Humorous country sportsman, hero of *Handley Cross,* by R. S. Surtees. He also appears in *Jorrocks' Jaunts and Jollities.*

Jude Fawley Central figure of Thomas Hardy's tragic novel, *Jude the Obscure.* A working man with a passion for knowledge, his efforts to become a scholar are frustrated by his circumstances.

Juliet Heroine of Shakespeare's *Romeo and Juliet.* The lover of Romeo, the son of her family's enemies, she is placed in the family tomb under a drug and apparently dead, and on waking discovers the dead Romeo by her side, whereupon she commits suicide.

Karenina **Anna.** Heroine of Tolstoi's novel of the same name. She is a beautiful and passionate woman who marries an old man. She forsakes him for her young soldier lover and in the end commits suicide.

Kettle **Captain.** Hero of numerous sea stories by C. S. Cutcliffe Hyne. A typical English merchant sailor, abounding in courage, resource and good spirits.

Kim Hero of *Kim,* by Rudyard Kipling. He is an orphan boy who begins life in the Bazaar at Lahore and finally makes an adventurous and amusing journey to Benares with a lama from Tibet.

Kipps From H. G. Wells's novel of that title. He is a shop boy who finds fortune and romance amongst the buffetings of business and bourgeois society.

Lady of Shalott **The.** Beautiful maiden in Tennyson's poem of this name, who brings a curse upon herself by looking away from the magic thread she is weaving, to gaze upon Sir Lancelot riding down to Camelot.

Lady of the Lake **The.** Beautiful enchantress dwelling in the mere in Arthurian legend. From Tennyson's *Idylls of the King.* Another Lady of the Lake is the woman outlaw, Ellen Douglas of Loch Katrine, heroine of Scott's poem of the same name.

Lancelot **Sir.** Knight of the Round Table, with whom King Arthur's queen, Guinevere (*q.v.*) fell in love.

Languish **Lydia.** Sentimental young lady in *The Rivals* (Sheridan). She is in love with Captain Absolute (*q.v.*).

Lear Aged King of Britain who, having delegated his royal authority to them, is driven insane by the perversity of his two elder daughters, but comforted by his youngest, Cordelia. From Shakespeare's *King Lear.*

Learoyd **Jock.** Yorkshireman from Rudyard Kipling's *Soldiers Three.*

Leigh **Amyas.** Hero of Kingsley's *Westward Ho,* who sails to the Indies in pursuit of the Spanish captor of his love. He takes part in the rout of the Armada.

Little Billee Hero of *Trilby,* by George Du Maurier. He is one of a trio of Bohemian artists in the Latin Quarter of Paris. Another Little Billee is the hero of Thackeray's sea ballad of the same name.

Little Dorrit Girl born and reared in the prison where her

father was serving a sentence for debt. She is the heroine of Dickens's *Little Dorrit.*

Little John One of Robin Hood's Merry Men, so called, ironically, because of his immense stature.

Little Minister *See* DISHART.

Little Nell From Dickens's *Old Curiosity Shop.* A child of model behaviour and worldly-wise ways, who accompanies Grandfather Trent on his travels.

Lochinvar Hero of a ballad in *Marmion* (Scott). He is a young highland lord who snatches his love from the feast on the eve of her marriage to a rival.

Lothario Dashing adventurer and handsome profligate, hero of Nicholas Rowe's *The Fair Penitent.*

Lovelace From Richardson's tragedy, *Clarissa Harlowe.* He is a libertine who betrays the love of Clarissa.

Lumpkin Tony. Simple but good-hearted country squire delighting in practical jokes, from Goldsmith's *She Stoops to Conquer.* He is the step-brother of the heroine, Kate Hardcastle (*q.v.*).

Lupin Arsène. Gentleman burglar who sent his prospective victim his visiting-card. He is the hero of Maurice Le Blanc's *Exploits of Arsène Lupin.*

Mab Queen of the fairies. She appears throughout English poetry from Ben Jonson to Shelley.

Macbeth Scottish thane who, fired with ambition fanned by his wife and the prophecies of three witches, murders King Duncan in Glamis Castle and becomes king. He is killed in battle by Macduff. From *Macbeth* (Shakespeare)

Macduff Thane of Fife who avenges the murder of his wife and children by Macbeth (*q.v.*) in a hand-to-hand combat. From *Macbeth* (Shakespeare).

Macheath Captain. From John Gay's *The Beggar's Opera.* A handsome highwayman who escapes from prison with the help of Lucy Lockit, but finally marries her rival, Polly Peachum (*q.v.*).

Mad Hatter The. Amusing character encountered by Alice and prominent at the Mad Tea Party, in Lewis Carroll's *Alice in Wonderland.*

Maid Marian Heroine of the Robin Hood legends. She was a noble lady who joined the outlaw band.

Malaprop Mrs. Aunt of Lydia Languish (*q.v.*) in Sheridan's *The Rivals.* She is continually misusing words; hence the term "malapropism."

Malvolio Conceited steward in the service of the Countess Olivia. He is led to believe that she is in love with him by a trick of Sir Toby Belch (*q.v.*) and Sir Andrew Aguecheek (*q.v.*).

Marguerite Simple maiden betrayed by Faust in her love for him. She is the heroine of Goethe's opera, *Faust,* and loses her reason after killing her own child.

Marmion Hero of Scott's poem of the same name, celebrating the Battle of Flodden.

Marner Silas. Weaver and reputed miser, the hero of George Eliot's *Silas Marner.* Unpopular with the villagers of Raveloe, he loses his hoard mysteriously, but is consoled and eventually becomes popular after his adoption of a foundling girl.

Meg Merrilees From *Guy Mannering* (Scott). A mad fortune-teller who loses her life in an attempt to restore the abducted Harry Bertram.

Merlin Magician of the legends of King Arthur, himself bewitched by the Lady of the Lake (*q.v.*). He appears as a minstrel in Celtic folk-lore. He figures in Tennyson's *Idylls of the King.*

Micawber Mr. Wilkins. Optimist who fails in every enterprise, but still expects something to turn up. From Dickens's *David Copperfield.*

Minnehaha Indian name, meaning "laughing-water" or "waterfall," given to the bride of Hiawatha (*q.v.*) in Longfellow's poem.

Moses From Oliver Goldsmith's *Vicar of Wakefield.* He was the simple son of Dr. Primrose (*q.v.*) and exchanged a horse for a gross of green spectacles.

Mowgli Hero of *The Jungle Books* (Kipling). A little Hindoo boy who lives with the animals, and has learnt their language. As a baby he was suckled by a she-wolf that had lost her cubs.

Musketeers The Three. They were Porthos, a vain, merry, fat man; Athos, the aristocrat and eldest of the three; and Aramis, who was educated for the church, to which eventually he turns. They are companions of D'Artagnan in Dumas' *The Three Musketeers, Twenty Years After, The Vicomte de Bravelonne,* etc.

Nemo Captain. From *Twenty Thousand Leagues Under the Sea,* by Jules Verne. He is the captain and navigator of a mysterious submarine ship called the *Nautilus.*

Newcome Colonel. Exemplary character from *The Newcomes* (Thackeray). He loses his fortune but maintains his upright moral bearing.

Nickleby Nicholas. Hero of Dickens's novel of the same name. A boy of good parentage who seeks his own fortune, he is assistant in a Yorkshire school, member of a theatrical touring company, and finally gets a post in business in London.

O'Flynn Father. Jolly Irish priest of Donegal, celebrated in the popular song, "Father O'Flynn," by Alfred Perceval Graves.

Ogilvy Margaret. Beautiful Scotswoman from Barrie's book of the same name. The character, based on the author's mother, is a touching tribute to her.

Old Bill Humorous soldier in Great War journalism, created by Bruce Bairnsfather in his sketches and cartoons.

Old Mortality Eccentric old man in Scott's novel of the same name. He spent his time restoring tombstones and monuments.

O'Malley Charles. From Charles Lever's novel of the same name. A dragoon, hero of an Irish regiment.

O'More Rory. Celebrated in the song by Samuel Lover, which was suggested by the hero of the author's novel of the same name.

Ophelia Daughter of Polonius and heroine of Shakespeare's *Hamlet.* She loses her mind because of the apparent madness and cruelty of Hamlet towards her. Her body is found floating down a stream.

Orlando Young noble who meets and falls in love with Rosalind in the

Forest of Arden; from Shakespeare's *As You Like It*.

Ortheris Staaley. Nimble-witted Cockney who appears in many stories by Rudyard Kipling. One of the *Soldiers Three*, whose heart goes out to every dog he sees.

Othello Moorish general in the Venetian army, the hero of Shakespeare's tragedy *Othello*. He marries the fair Desdemona (*q.v.*) whom he kills out of jealousy. He then takes his own life.

O'Trigger Sir Lucius. Humorous Irish adventurer, friend of Absolute in *The Rivals* (Sheridan).

Page Mistress. Wife of a gentleman of Windsor who helps in a plot to ridicule Falstaff (*q.v.*). She is the mother of "sweet Anne Page," from Shakespeare's *The Merry Wives of Windsor*.

Pamela Heroine of Richardson's *Pamela*. She is a maiden of model virtue who resists temptation and finally marries her would-be seducer and reforms him.

Pangloss Doctor. Poor scholar full of learned quotations. He becomes tutor to Dick Dowlas in George Colman's comedy, *The Heir at Law*. Another Dr. Pangloss is a figure in Voltaire's *Candide* (*q.v.*).

Pantagruel Gross but erudite son of Gargantua (*q.v.*). He is the boisterous hero of Rabelais' *Gargantua and Pantagruel*, and is usually in the company of the drunken rake, Panurge.

Panza Sancho. Stolid, faithful squire to Don Quixote. He rides behind him on a donkey, making mere commonsense remarks with the air of a wit. From Cervantes' *Don Quixote*.

Parsifal (or Sir Perceval). Leader of the knights of the Holy Grail. He appears in Arthurian legend and is the hero of Wagner's opera, *Parsifal*.

Partington Mrs. Eccentric creation of B. P. Shillaber. She tried to sweep away the Atlantic Ocean with her mop.

Patterne Sir Willoughby. Central figure in *The Egoist*, by George Meredith. His overweening egotism obscures his good qualities, causes him to be jilted by two women of his own rank, and leads him to marry a woman of humbler position.

Peachum Polly. Beautiful and virtuous lady-love of the highwayman Macheath (*q.v.*) in John Gay's *Beggar's Opera*.

Pecksniff Mr. Rogue who appears to be a pious architect. From Dickens's *Martin Chuzzlewit*.

Peggotty Clara. Nurse to David Copperfield (*q.v.*), and sister of Daniel Peggotty, an old Yarmouth fisherman. She marries Barkis (*q.v.*). From Dickens's *David Copperfield*.

Peregrine Pickle Dissolute, vulgar and hot-headed practical joker. He is the hero of Smollett's *The Adventures of Peregrine Pickle*.

Peter Pan Boy who will not grow up. He is the half-elf, half-human hero of Sir J. M. Barrie's play of that name.

Pew Sinister blind man, habitué of the Admiral Benbow Inn, whose approach was signalled by the tapping of his stick. From Stevenson's *Treasure Island*.

Pickwick Mr. Fat, genial president of the Pickwick Club, in Dickens's *Pickwick Papers*. He is the ingenuous hero of many amusing adventures.

Pistol Insubordinate ensign of Falstaff (*q.v.*). A bullying rascal who marries Dame Quickly (*q.v.*). He appears in Shakespeare's *Henry IV.*, *Henry V.* and *The Merry Wives of Windsor*.

Poirot Hercule. Dapper little Belgian detective-hero of Mrs. Agatha Christie's crime novels. He appears in *The Murder of Roger Ackroyd* and the dramatised version *Alibi*.

Polonius Chamberlain in the court of Denmark and father of Ophelia (*q.v.*). He is killed by Hamlet who mistakes him for the villainous King Claudius. From *Hamlet* (Shakespeare).

Pooh Bah Pompous Oriental who is the Lord High Executioner and every other official in the state. From Gilbert and Sullivan's *The Mikado*.

Porthos *See* MUSKETEERS, The Three.

Portia Heroine of Shakespeare's *Merchant of Venice*. A beautiful heiress who impersonates a lawyer in order to save the life of her lover, Antonio, who is being sued by Shylock (*q.v.*).

Primrose Doctor. Simple country clergyman. He is the hero of *The Vicar of Wakefield* (Oliver Goldsmith).

Prism Miss. Prudish spinster who sets her cap at a bachelor clergyman. Humorous character in Oscar Wilde's comedy, *The Importance of Being Earnest*.

Pry Paul. Inquisitive idler in John Poole's comedy of the same name. He is always using the phrase, "I hope I don't intrude."

Puck Mischief-making elf of English fairy-legend. He confuses several pairs of lovers in Shakespeare's *Midsummer Night's Dream*. He also appears in Rudyard Kipling's *Puck of Pook's Hill*. He is sometimes known as Robin Goodfellow.

Pujol Aristide. Humorous Frenchman, hero of *The Joyous Adventures of Aristide Pujol*, by William J. Locke.

Pure Simon. Quaker who is taken for the impostor of Colonel Feignwell when the reverse is actually true. He loses the hand of his lady-love to the same rascal. From *A Bold Stroke for a Wife*, by Mrs. Centlivre.

Quasimodo One-eyed dwarf, hunchbacked but of prodigious strength, who dwelt on the roof of Notre Dame, Paris. He was official bell-ringer and the protector of the heroine Esmeralda (*q.v.*). From Victor Hugo's *Hunchback of Notre Dame*.

Quatermain Allan. Hunter hero of several of Rider Haggard's novels, including *King Solomon's Mines*.

Quex Lord. Hero of the play *The Gay Lord Quex*, by Sir Arthur Pinero.

Quickly Mistress or Dame. Hostess of the tavern in Eastcheap frequented by Falstaff (*q.v.*). She marries his ensign, Pistol (*q.v.*), and appears in three of Shakespeare's plays, *Henry IV.*, *Henry V.* and *The Merry Wives of Windsor*.

Quilp Daniel. Hideous and malicious dwarf in *The Old Curiosity Shop* (Dickens). He lives by petty crimes and money-lending, and is finally drowned in the Thames when fleeing from the law.

Rab Dog hero of Dr. John Brown's *Rab and his Friends*. An affectionate mastiff with an almost human regard for his master, an old Scottish carrier.

Raffles Mr. Justice. Gentleman-burglar, hero of the novel *Raffles* and a series of crime stories by E. W. Hornung.

Ralph Roister Doister Conceited, blustering hero of *Ralph Roister Doister*, by Nicholas Udall, written at the beginning of the 16th century.

Random Roderick. Sensual, selfish Scottish adventurer. He is a fortune-seeker and traveller who mixes with the most questionable characters, and hero of a novel of that name by Smollett.

Rebecca Beautiful daughter of Isaac of York. She is a Jewess who loves Ivanhoe but loses him to her rival, the Lady Rowena. From Scott's *Ivanhoe*.

Red Cross Knight The. Hero of Spenser's *The Faerie Queene*. To him Gloriana entrusted the care of Una (*q.v.*). He is the personification of holiness, who fights and slays the dragon (Sin).

Reeder J. G. Detective-inspector of Scotland Yard. He is the central figure in the murder investigation in many of Edgar Wallace's mystery "thrillers."

Remus Uncle. Negro story-teller on a cotton plantation who relates fables about animals. From J. C. Harris's *Uncle Remus's Stories*.

Reynard the Fox Hero of John Masefield's great poem of the hunting field. The name comes from the central character in a famous beast-epic of the Middle Ages.

Ridd John. Tall, robust Devonshire farmer, a famous wrestler. Hero of R. D. Blackmore's *Lorna Doone*.

Rima Forest maiden of great beauty, the chief figure of W. H. Hudson's South American romance, *Green Mansions*. The protectress of the birds, she is the subject of a piece of sculpture by Jacob Epstein in the bird sanctuary in Hyde Park, London.

Roderick Dhu Gallant chief of a band of outlaws who figures in Scott's poem, *The Lady of the Lake*.

Romeo Son of the Montagues, a noble family of Verona. He is the hero of Shakespeare's *Romeo and Juliet*. *See* JULIET.

Rosalind Heroine of *As You Like It* (Shakespeare). She is the beautiful daughter of the banished duke who disguises herself as a boy and seeks refuge in the forest of Arden. She meets and finally marries Orlando (*q.v.*).

Rose Mary. Heroine of Sir J. M. Barrie's play of that name. She is mysteriously spirited away while on a picnic to a lonely island off the West Coast of Scotland.

Rosinante Clumsy cart-horse upon which Don Quixote rode on his search for adventure. From Cervantes' *Don Quixote*.

Sampson Dominie. Village schoolmaster who described everything as "Prodigious;" from *Guy Mannering* (Scott).

Sawyer Bob. Medical student often nicknamed "Sawbones" in *The Pickwick Papers* (Dickens).

Sawyer Tom. Boy born and brought up in the Southern States of America. The mischievous and lovable hero of Mark Twain's novel, *Tom Sawyer*.

Scheherazade Bride of the Caliph who saves herself from the fate of his previous wives by telling the stories known as *The Arabian Nights Entertainments*.

Schlemihl Peter. Man without a shadow, having sold it to the devil. He is the hero of the German story by Chamisso.

Scrooge Ebenezer. Heartless miser from Dickens's *Christmas Carol*. He suddenly becomes a model of generosity and goodwill after a vivid ghost-dream.

Shallow Justice. Absurd and boastful country magistrate from Shakespeare's *Merry Wives of Windsor*.

Shandy Tristram. Hero of Sterne's novel of the same name. He is the nephew of Uncle Toby (*q.v.*).

Sharp Becky. Fascinating adventuress whose ambition was to marry money and become good. Heroine of Thackeray's novel, *Vanity Fair*.

She Mystical African queen and priestess, Ayesha; in full, She-who-must-be-obeyed. She is the central figure in Rider Haggard's novel, *She*.

Shylock Jew of Venice who insists on the pound of flesh which is his, according to a bargain with an unfortunate merchant. He loves before everything his "ducats and his daughter." From Shakespeare's *Merchant of Venice*.

Sikes Bill. Rough, cruel burglar who murders Nancy, his mistress, in Dickens's *Oliver Twist*. He is the accomplice of the thief Fagin (*q.v.*).

Silver Long John. One-legged cook aboard the treasure-hunting ship, in Stevenson's *Treasure Island*. He is an old pirate who heads a mutiny.

Sinbad the Sailor Voyaging merchant of Bagdad from *The Arabian Nights Entertainments*.

Smike Poor, ill-nourished boy found in a Yorkshire school and taken with Nicholas in his travels; from *Nicholas Nickleby* (Dickens). He proves to be the illegitimate son of the hero's uncle, Ralph.

Snodgrass Mr. Poetical member of the Pickwick Club from Dickens's *Pickwick Papers*.

Squeers Mr. Wackford. Crafty, cruel bogus schoolmaster of Dotheboys Hall, Yorkshire, sometime employer of Nicholas. From Dickens's *Nicholas Nickleby*.

Stalky Schoolboy hero of Kipling's school story, *Stalky and Co.*

Standish Miles. Puritan captain who does his love-making by proxy. He is the hero of Longfellow's *The Courtship of Miles Standish*.

Stiggins The Rev. Mr. Drunken hypocrite who poses as spiritual adviser of Mrs. Weller. A Methodist minister from Dickens's *Pickwick Papers*.

Svengali Villainous Jewish musician and mesmerist who hypnotises Trilby (*q.v.*) in George Du Maurier's novel, *Trilby*.

Swiveller Dick. Dissipated, scatter-brained young law apprentice who finally marries money. From Dickens's *Old Curiosity Shop*.

Tam o' Shanter Hero of Robert Burns's poem of that name. He sees a dance of witches in a ruined church, led by Old Nick (Satan) himself, when returning drunk from market.

Tanqueray Paula. Heroine of the play, *The Second Mrs. Tanqueray*, by Sir Arthur Pinero.

Tapley Mark. Stable-boy in Dickens's *Martin Chuzzlewit*. A body-servant to the hero, he was cheerful in the most difficult situations.

Tartarin Humorous and boastful hero of Alphonse Daudet's novel, *Tartarin de Tarascon*, and its sequels, *Tartarin sur Les Alpes*, etc.

Tarzan Hero of Edgar Rice Burroughs's *Tarzan of the Apes*, etc. He is reared by a she-ape when his parents die on a desert island, lives in the trees and becomes king of the jungle.

Teazle Lady. Roguish, coquettish young wife of Sir Peter Teazle in Sheridan's *School for Scandal*. She becomes involved in an intrigue with Surface.

Tess Tragic heroine of Thomas Hardy's *Tess of the D'Urbervilles*. She is betrayed by her lover and afterwards hanged for his murder.

Teufelsdröck Herr. Professor with a special philosophy concerning clothes. He is the central figure in Carlyle's *Sartor Resartus*.

Tiny Tim Delicate child of Bob Cratchit, a hard-working clerk in Dickens's *Christmas Carol*.

Toad of Toad Hall. Character of *The Wind in the Willows*, by Kenneth Grahame. His rash conceit leads him continually into trouble. He celebrates his own exploits and honour in boastful verses.

Toby Uncle. Lovable old soldier wounded in the French wars. He is noted for his charitable, Christian character. From Sterne's *Tristram Shandy*.

Tom Uncle. Aged and venerable negro-slave, hero of *Uncle Tom's Cabin*, by H. Beecher Stowe.

Topsy Mischievous young slave-girl of unknown parentage, who describes herself as having "just growed." From Mrs. Beecher Stowe's *Uncle Tom's Cabin*.

Another Topsy is the modern heroine of *The Trials of Topsy*, and *Topsy, M.P.*, by A. P. Herbert.

Touchstone Jester or clown in Shakespeare's *As You Like It*. He combines philosophy with his wit.

Trilby Artist's model who becomes, under the influence of Svengali (*q.v.*), a noted opera singer. She is the heroine of George Du Maurier's *Trilby*.

Tristram Sir. One of the knights of Arthurian legend. He falls in love with *Isolde* (*q.v.*), the wife of King Mark, his uncle. He is the hero of Arnold's *Tristram and Iseult* and Swinburne's *Tristram of Lyonesse*, and he also appears in Tennyson's *Idylls of the King* and Malory's *Morte D'Arthur*.

Trotwood Betsy. Old woman with a sharp tongue and a soft heart, great-aunt of David and his "second" mother. From Dickens's *David Copperfield*.

Twist Oliver. Poor orphan boy, reared in a workhouse, the young and innocent accomplice of a gang of thieves. He is the hero of Dickens's *Oliver Twist*.

Tyltyl Youthful hero of Maurice Maeterlinck's play, *The Blue Bird*.

Una Heroine of Spenser's *Faerie Queene*. She is the personification of truth, and finally marries her champion, the Red Cross Knight (*q.v.*).

Van Winkle Rip. Man who falls asleep for twenty years and wakes to find very changed manners and customs in the same old world. He is the hero of Washington Irving's story, *Rip Van Winkle*.

Varden Dolly. From Dickens's *Barnaby Rudge*. Pretty heroine dressed in a flower-trimmed hat and a little flowery gown now called after her. She marries the landlord of the Maypole Inn.

Vathek From the Eastern romance of the same name by William Beckford. A gifted caliph with an uncontrolled ambition which leads him to sell his soul for a throne to Eblis, or Satan.

Vernon Diana. Heroine of Scott's *Rob Roy*. A maiden who knows no fear in her fight for the Jacobite cause.

Viola From *Twelfth Night* (Shakespeare). Disguised as a page, she becomes the servant of the duke, Orsino, with whom she falls in love.

Vivien The Lady of the Lake (*q.v.*). An enchantress in Arthurian legend (*See* MERLIN.)

Vox Valentine. Ventriloquist hero of Henry Cockton's novel of the same name. He uses his powers largely to play amusing pranks.

Watson Doctor. Friend of Sherlock Holmes (*q.v.*). From Conan Doyle's series of mystery novels.

Weller Sam. Cockney boots of the White Hart Inn, who becomes personal servant to Mr. Pickwick (*q.v.*) in Dickens's *Pickwick Papers*.

Wendy Heroine of Barrie's *Peter Pan*. She becomes Peter's sweetheart and shares his home in the tree-tops.

Wilson Pudd'nhead. Hero of a humorous novel of the same name by Mark Twain. He was so nicknamed by his fellows on account of his stupid remarks.

Wimble Will. Simple, happy member of the De Coverley Club with a love for fishing, cutting willow wands and innocent country pursuits. He appears in the essays of Addison and Steele in *The Spectator*.

Winkle Mr. Member of the Pickwick Club who claimed to be a sportsman, but who made dismal failures as an ice-skater and as a horseman. From Dickens's *Pickwick Papers*.

Winkle Rip Van. *See* VAN WINKLE.

Yellowplush Mr. Footman to smart London society, the hero-author of *The Yellowplush Papers*.

Yeo Salvation. Devonshire "Old salt" from Kingsley's *Westward Ho*.

Yorick Jester to the King of Denmark, Hamlet's father, in Shakespeare's *Hamlet*. His skull is discovered by Hamlet in the graveyard, prompting the now proverbial remark, "Alas, poor Yorick!"

GUIDE TO THE CINEMA

THE early history of the cinematograph is a fruitful source of controversy, mainly because the moving picture may be said to have emerged from the chrysalis of the "still" magic lantern. America claims that Thomas Edison was responsible for the practicable invention of the motion picture in 1887, but an Englishman, John A. Roebuck Rudge, had in 1868 introduced movement in connection with picture projection, naming the resultant invention "The Light in the Lantern."

William Friese-Greene, another English pioneer, also was ahead of the Edison invention with a moving picture recorded in 1885 on paper which he rendered transparent by immersion in castor oil. It was not until 1889 that Friese-Greene evolved his first celluloid film. Their discoveries created world-wide interest but although developments had, by 1903, presented the film of the story-telling medium—"The Great Train Robbery" was made in that year—it is doubtful whether any one could at that stage have foreseen the creation of any industry such as resulted.

Edison was also responsible for some of the earliest talkies, which he obtained by the simple process of synchronising the film with his famous Edison-Bell records.

To-day close on £850,000,000 is invested in the motion-picture industry of the world. During the year ended 1934 the total number of paid admissions in Great Britain was 963 millions. The amount paid by the public for these admissions was £41,120,000, and of this sum about £6,800,000 was deducted on account of the Entertainment Tax then in force.

The average weekly attendance is about 18½ millions.

The rate of progress of the cinema in public favour gained momentum during the years 1914 to 1920 until to-day it is the greatest entertainment medium in the world. Film producing companies floated their own distributing agencies and acquired or built chains of cinemas—a movement which spread to Britain, now the second-best film market in the world.

With the fast-growing popularity of films here American companies or their subsidiaries sought financial interest in British cinemas, and even to-day have strong holdings in one of the major circuits consisting of about 400 cinemas.

A reversal to this procedure was made early in 1936, when Lord Portal, at the head of a big group, acquired through General Film Distributors a very considerable holding in Universal Pictures, one of the most important major independent production units of America.

Another phase in this trend is noticed in the adoption by United Artists of Alexander Korda as an owner-producer of United Artists, thereby coming into association with Chaplin, Goldwyn and Fairbanks.

The main object of American investors who have placed finance in British cinemas has always been to secure such control of the cinemas as would ensure a maximum outlet in the country for the film production of Hollywood, which represents 65 per cent. of the world's output of films, judged by volume, and about 75 per cent. of the world's total, estimated in terms of cash.

In the United States there are 15,378 cinemas. Great Britain has a total of 4,712, in addition to approximately 200 places where are exhibited occasionally.

Approximately 650 British cinemas, including a large percentage of the best in the country, are owned or controlled by film combines, the rest being owned singly or in groups, by companies or individuals with no interest in film production or distribution.

Since the Cinematograph Films Act came into force, the length of British feature films registered has increased steadily from 624,000 feet in the year ending March 31, 1930, to 1,183,000 feet five years later.

This Act decrees that of the total footage of film exhibited in every cinema in Great Britain a percentage shall be of British origin, and of the total footage stocked by every film distributor a slightly higher percentage shall be of British origin. This percentage, which started at 5 per cent. for the cinema owners and 7½ per cent. for the film distributors in 1927, has risen progressively year by year until 1936, when it reaches a total of 20 per cent. British film in both.

This large percentage in exhibition and distribution is often difficult to fulfil and in a number of instances has resulted in the production of cheap films (Quota quickies). These are universally condemned, and it is anticipated that when the Act expires in 1938 there will be a drastic overhauling. The wishes of the trade are being consulted, and it is safe to assume that as a result an entire redraft of the Act will ensue.

Immediately following the introduction of the Films Act of 1927 a large number of new British production companies was floated, principally on public subscription, which was in many cases generally taken up. Of nearly twenty such flotations only six or seven are now functioning successfully. This fact is due largely to the introduction by Warner Brothers Pictures of America, and the Vitaphone Corporation of America, of the synchronised talking film, and the consequent public demand for talking pictures in preference to silent ones. After recovering from the early setback the production side has made vast strides. With a total in the neighbourhood of 200 films 1935 was a boom year, and 1936 promises even a greater output. New and bigger studios are being erected, challenging the best in Hollywood.

The first British talkie film was shown in 1924 at the British Empire Exhibition by Dr. Lee de Forest.

On September 27, 1928, the first public exhibition of American talking films (Vitaphone) was given at the Piccadilly Theatre, London, the programme including one full-length feature film, the "Jazz Singer," the first in its class seen in this country, and a number of short talking and musical films.

On September 28, 1928, some short talking films recorded in the British Acoustic system exploited by Gaumont-British were shown at the Capitol Theatre, London. A month earlier "Seventh Heaven" had been seen at the New Gallery, London, with Fox Movietone recorded music but no dialogue.

It was nearly a year after the first Vitaphone film reached this country that the first important British talking film, Alfred Hitchcock's "Blackmail" was completed at British International Studios, Elstree.

Since the earliest days of cinematography, the aim has been the presentation of moving pictures in natural colours. For about twenty years the studios in England, America and the Continent have been experimenting with colours, trying to arrive at a system that would be nearly perfect in the reproduction of natural colours and economic to produce.

Since Charles Urban in 1912 produced his celebrated film of the Delhi Durbar there have been numerous systems invented, some like Urban's cinemacolor separating the primary colours in camera work and joining them together in projection; some firms even resorted to hand tinting.

Until the season 1934–5 little progress was made in developing colour as a commercial proposition. Now it promises to play an increasingly important part in film entertainment. Many subjects in colour are announced by American producers, and close on a score will be made in English studios during 1936.

The system to be used for the majority of these will be Technicolor. Dufaycolor, a British system, which will also be employed, was used by Associated British Pictures for a sequence of "Radio Parade of 1935"—first commercial use of British colour process.

In the near future television is expected to play an important part in the film world. At the moment the news reel movement is perhaps the most actively interested in television development, and undoubtedly within the immediate future an attempt will be made to intersperse television programmes with the usual film fare. In Germany daylight television vans, operating on the intermediate film system, are employed in the films of topical events.

The film as an educational force is now receiving recognition in all parts of the country, especially in Scotland, where many of the town educational authorities have made grants for the installation of cinematograph equipment in schools. The L.C.C. have also devoted a large sum for experiments in this direction.

Much valuable work in educational film development is also being carried out by the British Film Institute.

One of the countries outside of Great Britain to make the biggest advance in film production during recent years is India. Here there are from forty to fifty production companies.

The most accurate production data available is an estimate based on the pictures censored by the Bombay and Calcutta Boards. During the period January to October, 1935, a total of 346 Indian pictures was examined by these boards. This total compares with 321 during April and March, 1933–4.

The total number of cinemas in India is 675.

WHO'S WHO IN THE CINEMA

A glossary of facts regarding the more important film actors, actresses, producers, and directors of the day. The following abbreviations have been used in the text: *b.* born; *m.* married; *div.* divorced; *r.n.* real name.

Astaire Fred. *b.* May, 10, 1900, Omaha, Nebraska. Brown hair and eyes. 5 ft. 9 ins. tall. Married Evelyn Potter. Made debut with Adele Astaire, his sister, in vaudeville in New York in 1912. First appearance in London in 1925, in "Stop Flirting." They appeared together in London and since 1931 Fred has appeared alone in "Flying Down to Rio," "Dancing Lady," "The Gay Divorce," "Roberta," "Top Hat," and "Follow the Fleet." Address, c/o RKO-Radio Studios, 780 Gower Street, Hollywood, California.

Arliss George. *b.* April 10, 1868, Bloomsbury, London. Grey hair and brown eyes. 5 ft. 9 in. tall. Married Florence Montgomery. He scored many successes on the American stage. Made his film debut in the silent version of "Disraeli." He next made "The Green Goddess" (silent). Other films include—"Disraeli," "Old English," "Alexander Hamilton," "Voltaire," "The House of Rothschild," "Cardinal Richelieu," "The Guv'nor," "The Tunnel," "The Mind of Mr. Reeder." Address, c/o Gaumont British Studios, Lime Grove, Shepherd's Bush, W. 12.

Barrymore John. *b.* February 15, 1882, Philadelphia. 5 ft. 10 ins. tall. Brown hair and blue eyes. His films include—"Beau Brummel," "Grand Hotel," "Cardigan's Last Case," "A Bill of Divorcement," "Rasputin, the Mad Monk," "Dinner at Eight," "Twentieth Century," "Wednesday's Child," "Romeo and Juliet" and others. Address, c/o Metro-Goldwyn-Mayer Studios, Culver City, California.

Barrymore Lionel. *b.* April 28, 1878, Philadelphia. 6 ft. tall. Dark hair and blue eyes. On New York stage scored hits in "The Copperhead" and other plays. Films include—"Friends" (in which he made his screen debut), "Rasputin," "The Stranger's Return," "Dinner at Eight," "David Copperfield," "Little Colonel," "The Return of Peter Grimm." Address, c/o Metro-Goldwyn-Mayer Studios, Culver City, California

Baxter Warner. *b.* Columbus, Ohio, March 29, 1893. 5 ft. 11¼ in.; dark brown hair and eyes. Married Winifred Bryson. Among his films are—"Those Who Dance," "A Son of His Father," "Ramona," "In Old Arizona," "Daddy Long Legs." "Paddy the Next Best Thing," "Such Women are Dangerous," "Strictly Confidential." Address, c/o Fox Studios, Movietone City, Hollywood, California.

Beery Wallace. *b.* April 1, 1889, Kansas City. 6 ft. tall. Brown hair and blue eyes. Married (1) Gloria Swanson (mar. dis.); (2) Rita Gilman. Was with a circus for two years. Went to New York and joined musical comedies as a chorus man. Films include—"The Four Horsemen," "Robin Hood," (his favourite picture), "The Sea Hawk," "Min and Bill," "The Champ." "Grand Hotel," "Tug Boat Annie," "Dinner at Eight," "Treasure Island," "The Mighty

Barnum," "West Point of the Air," "China Seas," "Mutiny on the Bounty," and "O'Shaughnessy's Boy." Address: c/o Metro-Goldwyn-Mayer Studios, Culver City, California.

Brook Clive. *b.* London, June 1, 1891. Ed. Dulwich College. 5 ft. 11 ins., brown hair and grey eyes. Married Mildred Evely, English actress. Secretary, newspaper reporter and soldier, he took up stage work after the war; played for a time in England, then as a free lance played in Hollywood. He made, among others, "The Four Feathers," "A Dangerous Woman," "The Return of Sherlock Holmes," "The Laughing Lady," "East Lynne," "Cavalcade," "The Gallant Lady," "Dover Road," "Dictator," "Love in Exile," "Lonely Road." Address: c/o Associated Talking Pictures Ltd., Ealing Green, W. 5.

Cantor Eddie. *b.* January 31, 1893, New York. 5 ft. 8 ins.; dark brown eyes. Married Ida Tobias. Became star of Ziegfeld Follies in 1920. Made his film debut in 1926 in "Kid Boots." Continues his stage career. Films include—"The Kid from Spain," "Roman Scandals," "Kid Millions," "Strike Me Pink." Address: c/o United Artists Studios, 1041 N. Formosa Avenue, Hollywood, California.

Cagney James. *b.* July 17, 1904, New York. 5 ft. 9 in. tall. Weighs 155 lbs. Red hair and brown eyes. Father—Irish. Married Frances Vernon. Films include—"The Millionaire," "Jimmy the Gent," "Devil Dogs of the Air," "G Men," "A Midsummer Night's Dream," "The Irish in Us," "'Frisco Kid." Address: c/o Warner Bros., First National Studios, Burbank, California.

Chaplin Charlie. *b.* April 16, 1889. London. Educated there. 5 ft, 6 ins. tall; dark hair, blue eyes. Married (1) Mildred Harris; (2) Lita Grey (both marriages were dissolved). He toured in "Sherlock Holmes," as Billy, the page, and played in pantomime. Went to America and later made "Tillie's Punctured Romance," with Marie Dressler. His films since include the "Charlie" pictures, and since the war, "Carmen," "Circus," "The Kid," "The Gold Rush," "City Lights," "Modern Times." Address: c/o United Artists Studios, Hollywood, California.

Chevalier Maurice. *b.* September 12, 1894, Menilmontant, France, 5 ft. 11½ in. tall; brown hair and blue eyes. Married Yvonne Vallee (divorced). Chevalier became dancing partner to Mistinguette at the Folies Bergere and continued the partnership after active war service. Films include—"The Love Parade," "Playboy of Paris," "The Merry Widow," "The Man from Folies Bergere." He came to England to make "The Beloved Vagabond." Address: c/o Toeplitz Productions, 32 St James' Street, London, S.W. 1.

Colbert Claudette. *b.* September 13, 1905, Paris. Real name—Caludette Cauchoin. Black hair and brown eyes. 5 ft. 5 in. tall. Stage debut—1924. Pictures include—"The Lady Lies," "The Misleading Lady," "The Man from Yesterday," "The Sign of the Cross," "The Gilded Lily," "Private Worlds," "She Married Her Boss." Address: c/o Paramount Studios, Hollywood, California.

Colman Ronald. *b.* Feb. 9, 1891, Richmond, Surrey. 6 ft. tall. Black hair; brown eyes; and great deal of amateur acting and made his professional debut in 1914. After war service he played in "The Misleading Lady"; subsequently went to America, 1920. Gave up stage for film work. Films include—"Romola," "The Dark Angel," "Lady Windermere's Fan," "Beau Geste," "Bulldog Drummond," "Raffles," "Bulldog Drummond Strikes Back," "Clive of India," "A Tale of Two Cities," "Under Two Flags." Address: c/o Twentieth-Century Fox Studios, 1401 N. Western Avenue, Hollywood, California.

Cooper Gary. *b.* May 7, 1901, Helena, Montana, of English descent. 6 ft. 2¼ ins. tall. Light blue eyes and brown hair. Started as an extra and in Westerns. Films include—"The Lives of a Bengal Lancer," "The Wedding Night," "Peter Ibbetson," "Desire," "Opera Hat," "The General Died at Dawn," "The Light that Failed." Address: c/o Paramount Studios, Hollywood, California.

Courtneidge Cicely. *b.* April 1, 1893. Sydney, N.S.W. Brown hair and eyes. Married Jack Hulbert. Has had a great number of stage successes. Films include—"The Ghost Train," "Jack's the Boy," "Soldiers of the King," "Things are Looking Up," "Me and Marlborough," "The Imperfect Lady." Address: c/o Gaumont British Studios, Lime Grove, Shepherd's Bush, London. W. 12.

Crawford Joan. *b.* March 23, 1906. San Antonio, Texas. Reddish hair and dark-brown eyes. 5 ft. 4 ins. tall. Real name, Billy Cassin. Married Douglas Fairbanks, junr., 1929 (divorced). Married Franchot Tone, 1935. Made her debut in revue in Chicago. Films include—"Our Dancing Daughters," "Untamed," "Montana Moon," "Dance, Fools, Dance," "Grand Hotel," "Dancing Lady," "Sadie McKee," "Forsaking All Others," "I Live My Life," "Elegance," and "The Demi-Widow." Address: c/o Metro-Goldwyn-Mayer Studios, Culver City, California.

Dietrich Marlene. *b.* December 27, 1906, Berlin. 5 ft. 5 ins. tall. Red-gold hair and blue eyes. Married Rudolf Sieber. Made her debut in the German version of "Broadway" and spent the next three years of her life playing in German films and on stage in musical comedy. Films include—"Morocco," "Dishonoured," "Shanghai Express," "The Blonde Venus," "Song of Songs," "The Scarlet Empress," "The Devil is a Woman," "Desire." Address: c/o Paramount Studios, Hollywood, California.

Disney Walt. *b.* December 5, 1901, Chicago. Studied at a local art school and served as a camouflage expert in the Great War. Unsuccessful as a commercial artist, he produced the "Alice" comedies for the screen 1923-26. In 1928 he began the Mickey Mouse pictures. He also created the "Silly Symphonies." In 1935 won Academy Award for best short cartoon of 1934 with "The Tortoise and the Hare."

Gable Clark. *b.* February 1, 1901, Cadiz, Ohio. 6 ft. 1 in. tall. Brown hair and grey eyes. Made film debut as an extra. Films include—"The Rise of Helga," "Forsaking All Others," "Call of the Wild," "Mutiny on the Bounty," "China Seas," "Wife Versus Secretary," and "San Francisco." Address: c/o Metro-Goldwyn-Mayer Studios, Culver City, California.

Garbo Greta. *b.* September 18, 1906, Stockholm, Sweden. 5 ft. 6 ins. tall. Blonde hair and green eyes. Daughter of Sven Gustafson. Eric Pertscher, Swedish comedy director, gave her a test. First picture "Erik the Tramp," a comedy, brought her to the attention of Mauritz Stiller, the greatest director in Sweden. First American role in "The Torrent." An immediate success, followed by "The Temptress," "The Kiss," "Flesh and the Devil," with John Gilbert. Also appeared with Gilbert in "Love." Other pictures include "The Divine Woman," "Wild Orchids," "The Mysterious Lady," "The Single Standard," "A Woman of Affairs." All these were silents. Talkies include "Anna Christie," "Romance," "Inspiration," "The Rise of Helga," "As You Desire Me," "Grand Hotel," "Queen Christina," "The Painted Veil," "Anna Karenina," "Canaille." Address: c/o Metro-Goldwyn-Mayer Studios, Culver City, California.

Gaynor Janet. *b.* Philadelphia, Pa. October 6, 1907. Golden-brown hair and brown eyes. 5 ft. tall. Married Lydell Peck, September 11, 1929. (Divorced.) In 1924 she made her screen debut as an extra. "Seventh Heaven"(1927), a film which followed soon after, made her a star overnight. Other films are "Midnight Kiss," "Street Angel," "Sunny Side Up," "Daddy Long Legs," "Tess of the Storm Country," "Paddy the Next Best Thing," "The Farmer Takes a Wife," "Small Town Girl." Address: c/o Fox Studios, Movietone City, Hollywood, California.

Harding Ann. *b.* August 7, 1904, Fort Sam Houston, Texas. Golden hair and blue eyes. 5 ft. 2 ins. Married Harry Bannister (mar. dis.). A screen test led to starring contract. Pictures include—"Holiday," "Paris Bound," "The Girl of the Golden West," "Condemned," "East Lynne," "Life of Vergie Winters," "The Flame Within," "Peter Ibbetson," "The Lady Consents," and "Witness Chair." Address: c/o Radio Studios, 780 Gower Street, Los Angeles, California.

Hardy Oliver. *b.* Atlanta, Georgia. Son of a politician. 6 ft. 1 in. tall. Dark hair and eyes. Married. Hobby—golf. Films include—"Blotto," "The Laurel and Hardy Murder Case," "Chickens Come Home," "Pack Up Your Troubles," "Scram," "Fraternally Yours," "Hollywood Party," "Babes in Toyland," "Bonnie Scotland," "Bohemian Girl." Address: c/o Metro-Goldwyn-Mayer Studios, Culver City, California.

Harlow Jean. *b.* Kansas City, March 3, 1911. Real name Harlean Carpentier. 5 ft. 2½ ins. Platinum blonde hair; blue-green eyes. Married (1) Charles McGrew of Chicago; (2) Paul Bern, well-known Hollywood director, who committed suicide in 1932, soon after their marriage; (3) Hal Rossen, the cameraman, now divorced. Went to Hollywood where she was offered "extra" work. Later played for about two years in Hal Roach comedies, bits, etc., and had a role in Clara Bow's "Saturday Night Kid." Other pictures are "The Iron Man," "The Secret Six," "Enemies of the Public," "Dinner At Eight," "Hold Your Man," "Blonde Bombshell," "100 Per Cent. Pure," "Wife Versus Secretary." Address: c/o Metro-Goldwyn-Mayer Studios, Culver City, California.

Hepburn Katharine. *b.* November 8, 1909, daughter of Mr. Hepburn of Hertford, Connecticut. Auburn hair and green eyes. Married Ludlow Smith (marriage dissolved). First film "A Bill of Divorcement." Others are "Morning Glory," "Spitfire." Went to New York to star in stage production of "The Lake." Latest films—"The Little Minister," "Breaker of Hearts," "Alice Adams," "Sylvia Scarlett," and "Mary of Scotland." Address: c/o Radio Studios, 780 Gower Street, Los Angeles, California.

Hopkins Miriam. *b.* October 18, 1902, Georgia, U.S.A. 5 ft.; golden hair; blue eyes. Made stage debut in 1921. Films include "The House Between," "Dr. Jekyll and Mr. Hyde," "The World and the Flesh," "The Richest Girl in the World," "Becky Sharp," "Barbary Coast," "Splendour," "These Three," "The Princess and the Pauper." Address: c/o Samuel Goldwyn Studios, 1041 N. Formosa Avenue, Hollywood, California.

Hulbert Jack. *b.* April 24, 1892, Ely, Cams. 6 ft. Brown hair and blue eyes. Married Cicely Courtneidge. Now famous on London stage, also well known as producer and writer. Films include—"Elstree Calling," "The Ghost Train," "Sunshine Susie," "Jack's the Boy," "Love on Wheels," "Happy Ever After," "Jack Ahoy," "The Camels are Coming," "Bulldog Jack," "Jack of All Trades." Address: c/o Gaumont British Studios, Lime Grove, Shepherd's Bush, W.12.

Laughton Charles. *b.* July 1, 1899, Scarborough. Educated Stonyhurst College and Royal Academy of Dramatic Art. Served during War. Married Elsa Lancaster. 5 ft. 10 ins.; fair hair; blue eyes. Stage debut Barnes Theatre, 1926. Talkie film debut as drunk in "Piccadilly." Other films include "Comets," "Devil and the Deep," "The Sign of the Cross," "The Island of Lost Souls," "Henry VIII.," "The Barretts of Wimpole Street," "Marie Antoinette," "The Prince of Darkness," and "Good-bye Mr. Chips." Address: c/o Metro-Goldwyn-Mayer Studio, Culver City, California.

Laurel Stan. *b.* June 16, 1895, Ulverston, England. Educated King's Grammar School, Bishop Auckland. Married Lois Neilsin. 5 ft. 9 ins. tall; fair hair; blue eyes. Films include—"The Laurel and Hardy Murder Case," "Hollywood Party," "Babes in Toyland," "Bonnie Scotland," "Bohemian Girl." Address: c/o Metro-Goldwyn-Mayer Studios, Culver City, California.

Lloyd Harold. *b.* April 21, 1894, Burchard, Nebraska, U.S.A. Educated public schools, Omaha, Denver, and San Diego. Married Mildred Davis. 5 ft. 10 ins. tall; black hair; blue eyes. Stage experience. Began film career 1900. Pictures include "Grandma's Boy," "Safety Last," "Kid Brother," "Speedy," "Welcome Danger," "The Cat's Paw," "The Milky Way." Address: c/o Paramount Studios, Hollywood, California.

Loy Myrna. *b.* August 2, 1905, Helena Montana. 5 ft. 4 ins. tall. Red hair and green eyes. Began screen career 1925. Films include—"The Desert Song," "Body and Soul," "Connecticut Yankee," "Transatlantic," "Skyline," "Married in Haste," "Dr. Fu Manchu," "Thirteen Women," "Wings in the Dark," "Wife Versus Secretary," "The Great Ziegfeld," "The Whipsaw." Address: c/o Metro-Goldwyn-Mayer Studios, Culver City, California.

Lynn Ralph. *b.* March 18, 1882, Manchester. 5 ft. 10 ins. Sandy hair and blue eyes. Stage partnership with Tom Walls in Aldwych farces became famous.

Pictures include "Rookery Nook," "Tons of Money," "Mischief," "Thark," "Turkey Time," "Cuckoo in the Nest," "A Cup of Kindness," "Dirty Work," "Fighting Stock," "Stormy Weather," "In the Soup." Address: c/o Gaumont British Studios, Lime Grove, Shepherd's Bush, London, W.12.

McLaglen Victor. *b.* December 11, 1886, London. Brown hair and blue-grey eyes. 6 ft. 5 ins. tall. Father, former Bishop of Claremont, Rt. Rev. Andrew McLaglen. Travelled considerably and became champion boxer of Eastern Canada. Served with Irish Fusiliers as Lieutenant in the War. Made film debut in British picture, "The Call of the Road." Pictures include—"The Glorious Adventure," "Beau Geste," "Loves of Carmen," "Rackety Rax," "Hot Pepper," "Dick Turpin," "Klondyke Annie," "Under Two Flags," "Soldiers Three" (in England). Address: c/o Twentieth Century-Fox Studios, 1401 N. Western Avenue, Hollywood; c/o Gaumont British Studios, Lime Grove, Shepherd's Bush, W.12 (whilst in England).

March Fredric. *b.* Racine, Wis., on August 31, 1897. Graduated from University of Wisconsin in 1920. Brown hair and brown eyes. Favourite recreations—horseback riding, tennis and swimming. Married Florence Eldredge. Stage experience. Films include "To-night Is Ours," "Design For Living," "The Barretts of Wimpole Street," "Les Miserables," "The Dark Angel," "Anthony Adverse," "Zero Hour," "Mary of Scotland." Address: c/o United Artists Studios, 1041 N. Formosa Avenue, Los Angeles, California.

Montgomery Robert. *b.* May 21, 1904, Beacon, New York. 6 ft. 1 in. Brown hair and blue eyes. Film debut in "So This is College." Others are "Their One Desire," "Free and Easy," "The Divorcee," "Private Lives," "Riptide," "Vanessa," "Death on the Diamond," "Biography of a Bachelor Girl," "Love On the Run." Address: c/o Metro-Goldwyn-Mayer Studios, Culver City, California.

Moore Grace. *b.* December 5, 1901, Jellicoe. Married to Valentin Perera. Blonde hair and blue eyes. 1929 made debut at Metropolitan Opera House, New York, in *La Boheme*. Acted on the stage in *The Dubarry*. Her films are "New Moon," "Jenny Lynd," "One Night of Love," "On Wings of Song," "The King Steps Out," "Love Tales of Hoffman." Address: c/o Columbia Studios, 1438 Gower Street, Hollywood, California.

Shearer Norma. *b.* August 10, 1904, Montreal, Canada. 5 ft. 3 ins tall. Brown hair and blue eyes. Married Irving Thalberg. Started screen career 1920 in a college picture; next lead in a Western. Films include—"Last of Mrs. Cheyney," "Private Lives," "Smilin' Through," "Riptide," "The Barretts of Wimpole Street," "Romeo and Juliet." Address: c/o Metro-Goldwyn-Mayer Studios, Culver City, California.

Temple Shirley. *b.* April 23, 1929. Fair hair and blue eyes. Her film debut was made in "Stand Up and Cheer." Other films include "Baby Take a Bow," "Curly Top," "The Littlest Rebel," "Captain January," "Poor Little Rich Girl." Address: c/o Fox Studios, Movietone City, Hollywood, California.

Veidt Conrad. *b.* January 22, 1893, Berlin. Brown hair and blue eyes. 6 ft. 2 ins. tall. Educated Berlin High School. Married to Lili Praegar (second wife). Distinguished career in theatre. Entered pictures 1919. Later went to Hollywood. Films include "Rome Express," "F.P.I.," "I Was a Spy," "The Wandering Jew," "Jew Suss," "Bella Donna," "King of the Damned," "The Passing of the Third Floor Back." Address: c/o London Film Productions.

Walls Tom. *b.* February 18, 1883, Kingsthorpe, Northants. Dark hair and eyes. 5 ft. 11 ins. tall. Married Hilda Edwardes. Hobby—the Turf. Made first stage appearance at Glasgow, Christmas, 1905. Made screen debut in "Rookery Nook." Other films include "Thark," "Chance of a Night Time," "Turkey Time," "A Cup of Kindness," "Lady in Danger," "Fighting Stock," "Me and Marlborough." Address: c/o Gaumont British Studios, Lime Grove, Shepherd's Bush, London W.12.

West Mae. *b.* Brooklyn, New York 5 ft. 4 ins. tall. Blue eyes; yellow hair. Made first stage appearance at the age of five, and wrote several plays before going to Hollywood to play in feature role in "Night After Night." Starred in "She Done Him Wrong," "I'm No Angel," "Belle of the Nineties," "Going to Town." Address: c/o Paramount Studios, Marathon Street, Los Angeles, California.

COMPETITION HINTS

CROSSWORD PUZZLES

THAT Crosswords can be made a profitable pastime as well as an absorbing hobby has been proved by scores of big winners in the prize competitions conducted by newspapers and periodicals in India. The widespread appeal of these fascinating puzzles may largely be accounted for by the fact that they vary from literary problems calculated to tickle the mental palate of the most erudite professor to cunningly contrived sets of Clues whose answers can readily be debated by the average man.

HOW CROSSWORDS COMMENCED.—First the rage in America, Crosswords soon became popular in Great Britain not only as brain teasers but also as a means of making money. Though their square form is new, Crosswords are distinctly related to the Double Acrostic, the fashionable puzzle of London in the last century.

Acrostics themselves are of great antiquity. The term was first applied to the obscure prophecies of the Erythræan sibyl; these were written on loose leaves and the initial letters made a word when the leaves were sorted and laid in order. Certain old Hebrew poems were written in the form of Acrostics, consisting of twenty-two lines, beginning with succeeding letters of the alphabet.

MAKING THEM BETTER.—The essential difference between the prize Crossword, in which a large sum of money is offered for arriving at a correct solution, and what might be termed the "purely pastime" puzzle which is provided "just for fun," lies in the nature of certain of the Clues. In the "purely pastime" puzzles each clue is made a severe test of the solver's ingenuity, but once an answer is found all doubts are ended. With the prize puzzle, however, the finding of an answer is only half the battle, for many of the Clues admit of two or more possible answers and the knotty question lies in deciding which of these alternative answers is the most apt.

When prize Crosswords first achieved popularity there was seldom any rational principle on which competitors could go to work. Clues were apt to be ordinary and obvious; continual repetition of the same questions tended to make answering them a dull business. Nor, in those days, was there often any appreciable difference in merit between the various alternative answers. Competitors just had to pay their entry-fee, take their choice of alternatives and hope for the best.

Typical Clues and alternative answers of this type were: *Short for Edward*—TED or NED and *A Girl's Name*—ADA or IDA.

COMMON SENSE CONQUERS.—In recent years a marked improvement has taken place in the framing of prize Crossword puzzles. A racy, entertaining type of Clue has been introduced in which slang and colloquialisms both figure within reason: this makes the answering of every Clue amusing, regardless of whether or not an alternative answer is possible.

The most important change for the better which has taken place is the deliberate basing of Crosswords on common-sense reasoning. In selecting one alternative answer as the correct solution, the Competition Editor takes that which can be argued to be better and in some cases he even explains afterwards the reason for his choice.

With the new kind of common-sense Crossword, it clearly pays competitors to study closely the style of the Clues. Often the key to the apter of two answers may lie in some insignificant-looking word like "may" or "sometimes": one Compiler may have a liking for humorous answers whereas another may generally bind himself rigidly to sober facts. Success, then, is partly a matter of getting to know the Compiler's mental characteristics and this can best be done by confining your activities to one paper's puzzles.

OUTRIGHT VICTORIES.—So cunningly are the better class of modern prize Crosswords compiled that, though arriving at a winning solution actually is a matter of using care and common sense, it is no easy matter to produce an entirely correct square. This is obviously as it should be, for unless the puzzles were made difficult to solve, so many entrants would succeed that the prize money would not be worth winning.

A striking instance of clever compiling is afforded by the famous London paper, *John Bull*. In 350 Crossword Contests a single outright winner has captured the first prize once in every five times.

SUCCESS IN INDIA.—The national interest in the English language, coupled with a general aptitude for argument and deduction, makes the average Indian eager to draw swords with the keen-witted Compiler.

Apart from vast cash prizes that must be won, there is a fascination about Crosswords which makes them particularly popular with those whom old age has left lonely and others whose work takes them to outlying stations. Women find Crosswords a mental stimulant that mixes well with housework and their natural intuition helps them frequently to beat all their male rivals.

ILLUSTRATED WEEKLY OF INDIA CROSSWORDS.—The popular puzzles conducted by the *Illustrated Weekly of India* are common-sense Crosswords which have a wide appeal throughout the country. Handsome prizes are offered, a typical one-week offer consisting of a Rs. 10,000 First Prize, with Rs. 5,000 for distribution amongst runners-up (those with one error more than the First Prize winner or winners). Additional awards consisted of a Rs. 100 Portable Gramophone for every sender of an entirely correct solution, a Rs. 50 Kodak camera for each one-error winner and special consolation awards for entrants with two and three errors.

A typical result of an *Illustrated Weekly of India* Crossword shows four senders of all-correct solutions receiving Rs. 2,125 each as well as a Portable Gramophone. One-error solutions were received from 7 solvers, to each of whom went Rs. 214–5–0 and a Rs. 32 Wrist Watch. Cash prizes of Rs. 35–11–0 each were awarded to 42 entrants with two errors who also received bonus awards value Rs. 10, and finally, 148 three-error entries were rewarded with Rs. 6–12–0 apiece as well as bonuses value Rs. 3. The winning entries came from such widely scattered places as Bombay, Srinagar, Kandy and Lahore.

After the appearance of the official correct solution, the *Illustrated Weekly of India* publishes arguments from competitors showing why they decided on various correct alternative answers to the Clues, as well as comments by the Compiler himself. These helpful notes form a valuable guide to winning form and prove clearly that it is profitable to study closely the common-sense principles on which the puzzles are based.

INTERLOCKING WORDS.—A typical Clue seen in an *Illustrated Weekly of India* Crossword was, *Constant repetition of this at social gatherings will not increase your popularity*, for the answer to which entrants had to decide between YARN or YAWN. Linked with this downward Clue was this across : *Responsible for many couples becoming acquainted*, to which alternative answers were RINK or WINK.

It will be noticed that the answers to these Clues could be made to "interlock." In this case the entrant's choice of the former answer's third letter (R or W) affected his decision to commence the other answer with R or W.

In this connection it is important to realise that each wrong *word* counts as one error and one wrong letter which makes two words wrong (as it would in this instance were the wrong two answers chosen) counts as two errors. An ingenious Compiler can arrange his puzzle so that one word interlocks with several others, but the number of alternatives in any one puzzle is always kept within reasonable bounds.

READ THE RULES.—It is of course possible to achieve success by haphazard methods, and a hastily considered solution dashed down on a coupon at the last minute may turn out to be entirely correct. In the vast majority of cases, however, it is going to work on the Clues in a careful and systematic manner that commands success. There is nothing to prevent the same entrant winning time after time and one frequently sees the same names reappearing amongst the winners. Such consistent winning is invariably the result of carefully planned and regular entries.

Every entrant's first step on the road to the prize list should be to make himself thoroughly familiar with the rules. At first glance the regulations governing the completion of squares, method of entry and so on may seem unreasonably rigid. It must be remembered, however, that conducting a Crossword is a complicated matter, demanding a time-table which must be adhered to relentlessly. With big amounts of prize-money to be distributed, it is only fair to all competitors that each one should be called upon to fulfil the requirements laid down.

First of all, a stated entry-fee is required. Indian Postal Orders or Indian Money Orders must be sent to cover the number of Crossword square coupons submitted. To facilitate sorting and checking, competitors are requested to attach Postal Orders to their entry coupons and write the official number of the Postal Order in the space provided on the coupons. Post Office receipts for Money Orders must also be attached to coupons.

TAKE CARE WITH COUPONS.—All entries must be submitted on coupons provided. Coupons must be filled in with ink in block letters or else typewritten. Pencilled entries are disqualified.

No alterations or corrections are permitted once a square is completed, and any letter space left blank will cause the whole square to be disqualified. Copy squares are provided for competitors and, to avoid spoiling a valuable entry, it is advisable to use the copy squares for preliminary work.

The surname of each entrant is required to be written on the back of the envelope containing his entry.

CLAIMS AND SCRUTINIES.—In the past competitors were usually expected to submit claims of successful solutions when the winning square was published. Now, in order to save entrants this trouble, most journals undertake to scrutinise every coupon received and notify winners. This is the method now in force with the *Illustrated Weekly of India.*

No claims are required in these contests but should any competitor not announced as a winner consider that he has entered a coupon eligible for a prize, he can submit a Scrutiny Claim. Such claims must be entered by a stated date and, in order to avoid unnecessary searching caused by frivolous claims, a Scrutiny Fee of Rs.5 is required: this fee is returned to the competitor should his claim prove correct. If a Scrutiny Claim does prove correct, the distribution of that contest's prize money has to be re-adjusted accordingly.

CLOSING DATE.—All entries must be received by a specified closing date and Crossword squares arriving too late are disqualified. A one-week contest conducted by the *Illustrated Weekly of India* usually closes 12 days after date of publication, but an extension of 2 days is allowed to competitors in distant parts of India : this extension privilege applies to all districts 48 hours or more by mail from Bombay.

FAMILY ENTRIES.—Many winners find that besides providing entertainment for the home, it pays to make Crosswords a family affair. Two heads are better than one and debating the Clues at a family conference often reveals unexpected angles on the Clues.

Family entries are accepted as a combined entry, provided all members entering bear the same surname. Coupons may be sent in one envelope with the family's surname and number of coupons submitted written on the back of the envelope. The surname and separate initials of each member of the family competing must be clearly written on their entry coupons. Such family entries may be covered by one Postal or Money Order.

Even the young folks can have their Crossword fun, for special Children's Crosswords are provided with attractive prizes.

DICTIONARY HELP.—Although no uncommon or far-fetched words are used in common-sense Crosswords, a good dictionary can be of great service to competitors. Chambers's Twentieth Century Dictionary is the standard dictionary used by the Compiler of the *Illustrated Weekly of India's* Crosswords. At the back of this volume will be found a Supplement Section : this contains many slang words and up-to-date colloquialisms which figure in common-sense Crosswords.

FINAL HINTS.—The surest way of improving your skill as a Crossword solver is to keep your copy squares and when the winning solution appears, note your errors carefully. Re-examine the Clues and you will be able to see why you went wrong as well as where.

Regular entry provides the finest training for would-be winners and here is an excellent axiom to remember : If you do not enter, you cannot possibly win !

INDIAN CONSTITUTIONAL REFORM

(UNOFFICIAL.)

THE existing Indian Constitution had its origin in the announcement made by Mr. Montagu, the then Secretary of State for India, in the House of Commons on the 20th August, 1917, when he said :—

"The policy of His Majesty's Government, with which the Government of India are in complete accord, is that of the increasing association of Indians in every branch of the administration and the gradual development of self-governing institutions with a view to the progressive realisation of responsible government in India as an integral part of the British Empire."

The announcement proceeded :—

"I would add that progress in this policy can only be achieved by successive stages. The British Government and the Government of India, on whom the responsibility lies for the welfare and advancement of the Indian peoples, must be judges of the time and measure of each advance, and they must be guided by the co-operation received from those upon whom new opportunities of service will thus be conferred, and by the extent to which it is found that confidence can be reposed in their sense of responsibility."

This announcement was followed by the Government of India Act of 1919, under which India is administered to-day. The Royal Proclamation on the passing of that Act gives the story in brief of the political development of the country :—

"The Act of 1833 opened the door for Indians to public office and employment. The Act of 1858 transferred the administration from the (East India) Company to the Crown and laid the foundations of public life which exist in India to-day. The Act of 1861 sowed the seed of representative institutions, and the seed was quickened into life by the Act of 1909. The Act which has now become law entrusts the elected representatives of the people with a definite share in the government and points the way to full responsible government hereafter."

The 1919 Act provided that an inquiry should be made into the working of the system of government and as to whether and to what extent it was desirable to establish the principle of responsible government. In pursuance of this provision the Indian Statutory Commission, under the Chairmanship of Sir John Simon, was appointed in 1927 to carry out this inquiry and the Commission presented its Report to Parliament in May, 1930.

But Sir John Simon, in a letter to the Prime Minister (Mr. Ramsay MacDonald) in October, 1929, pointed out that the Commission, in considering the direction which the future constitutional development of India was likely to take, had been impressed with the need for a full examination of the possibilities of the relationship which might develop in the future between British India and the Indian States. The Commission therefore recommended that, after they had completed their Report, His Majesty's Government should meet representatives of British India and of the Indian States "for the purpose of seeking the greatest possible measure of agreement for the final proposals which it would later be the duty of His Majesty's Government to submit to Parliament."

This recommendation was accepted by the Government; and the Indian Round Table Conference, of which there were three sessions, was inaugurated by His Majesty the King in London, in November, 1930. This Conference laid the foundations of a Federation of the Indian States and of the Provinces of British India. The Burma Round Table Conference, which was called for the purpose of considering a separate Constitution for Burma, was opened by the Prince of Wales in November, 1931.

These Conferences were followed by the presentation to Parliament in March, 1933, of the Government's proposals for the new Constitution. These proposals were founded on the following principles :—

(*a*) Autonomy for the Provinces of British India, with certain special powers in the hands of Governors;

(*b*) A Federation of the Indian States and British India; and

(*c*) Central responsibility, subject to certain safeguards, e.g., the reservation of Defence and Foreign Affairs, and the placing of powers in the hands of the Governor-General to enable him to carry out certain special responsibilities.

The House of Commons, after a three days' debate, commencing on 29th March, 1933, passed a Resolution in the following terms :—

"That, before Parliament is asked to take a decision upon the proposals contained in Command Paper 4268, it is expedient that a Joint Select Committee of Lords and Commons, with power to call into consultation representatives of the Indian States and of British India, be appointed to consider the future government of India and, in particular, to examine and report upon the proposals in the said Command Paper."

On 6th April, after a three days' debate, the Peers concurred in this Resolution and a Joint Committee composed of 16 members of each House was ultimately constituted. With the Committee were brought into consultation seven delegates from the Indian States, 21 delegates from British India and 12 delegates from Burma. The delegates took part in over

70 of the meetings. The Committee held over 150 meetings, examined over 120 witnesses and the volumes of evidence record over 17,000 questions.

The Report of the Committee was published on 21st November, 1934, and was debated by the House of Lords and by the House of Commons on the following motion :—

" That this House accepts the recommendations of the Joint Committee on Indian Constitutional Reform as the basis for the revision of the Indian Constitution and considers it expedient that a Bill should be introduced on the general lines of the Report."

The motion was carried in the House of Lords by 239 votes to 62, and in the House of Commons by 410 to 127.

GOVERNMENT OF INDIA ACT

The Act provides for the establishment of an All-India Federation constituted by linking eleven British Indian Provinces (two of them new) in a Federal system with those Indian States prepared to enter the Federation by the voluntary act of their Rulers. The establishment of the Federation is dependent on the accession of States containing not less than half the total States' population, and entitled to fill at least half the seats provided for States' representatives in the Federal Upper House. No change is made in the internal régime of the States, nor in the relationship between their Rulers and the Crown outside the Federal sphere. The provisions of the Bill enable the Provinces to manage their own affairs to a greater extent than at present. The great majority of the departments of Government which affect individuals from day to day (among them Law and Order), as well as certain items of revenue (for example, Land Taxes) are made the business of the Provinces. The Federation deals with matters such as Currency and Tariffs, which concern India as a whole. Two questions of great importance, however, Defence and Foreign Relations, remain the direct responsibility of the Governor-General.

Each of the Provinces has a directly elected Legislative Assembly, and in five Provinces there is an Upper as well as a Lower House. The Federation itself will have an Upper and a Lower House, composed of members indirectly elected by the Provinces and representatives nominated by the States. In all the Assemblies, Federal and Provincial, a quota of seats is ensured to the various minorities.

Both at the Federal Centre and in the Provinces, Governments will be formed of Ministers responsible to their Legislatures in much the same sense in which the Cabinet in this country is responsible to Parliament. Except in the three reserved Federal Departments of Defence, External Affairs, and Ecclesiastical Affairs, the Governor-General and the Governors at the heads of the Federal Government and Provincial Governments, respectively, will be guided by the advice of their Ministers, so long as they are satisfied that to do so does not conflict with certain special responsibilities imposed on them in the Bill. These cover a wide field and include such duties as the prevention of " grave menace to peace and tranquillity," the safeguarding of minorities, and (in the case of the Governor-General) the safeguarding of financial stability and credit. Special provision is made to deal with the problem of Terrorism.

The general political effect of the Act is to provide that in the Provinces and, with certain reservations, at the Federal Centre, there will be a system of " Parliamentary " government, except when circumstances call for the exercise of the overriding powers of the Governor-General or the Governor.

Provision is made that recruitment in the United Kingdom for the Indian Civil and the Police Services shall continue, and that Service rights shall be preserved. The discipline of the Police, and the independence of the Judiciary, are protected from the effects of political influences. A safeguard is introduced against the fiscal freedom of India being used deliberately to damage British trade with India.

Burma is to be separated from India, and the Act provides for a new constitution for Burma on the general lines of that proposed for India.

Provision is made for the transfer of the powers proposed to the Provinces before the establishment of the Federation, and for the changes consequentially necessary in the Central Government during the transitional period. Powers are also provided for the assumption by the Governor-General of all the powers of government in the event of a breakdown in the Constitution.

(The number of Provinces in British India was, in 1936, increased to eleven by the creation of new Provinces of Sind and Orissa.)

FAULTS & REMEDIES IN WIRELESS RECEIVERS

THE faults which may occur in a radio receiver may result in (1) complete cessation of sounds from the loudspeaker; (2) intermittent reception; (3) low volume and poor selectivity; (4) distorted reproduction; or (5) reproduction marred by crackles and other interfering noises.

(1) CESSATION OF SOUNDS FROM LOUDSPEAKER.

This does not necessarily mean complete failure of the receiver. The set itself may be in perfect order and the breakdown due to some external cause. First make sure that the aerial and earth wires are properly connected to the sockets or terminals at the back of the receiver.

Next, ascertain that the receiver is getting its supply of current whether this be drawn from batteries or the mains. In a battery set, the leads making the connections to the batteries are particularly liable to become corroded. These should be scraped with a pocket-knife and a file may be used for final burnishing. The corrosion is caused by the "creeping" of the acid. This can be retarded by keeping the top of the accumulator clean and dry and by smearing a little vaseline round the bases of the terminals.

With a mains receiver, make sure that the supply is "on." The particular circuit to which the set is connected may have fused. The best check is to try an electric lamp on the same outlet.

Secondly, see that the leads from the set are making contact inside the connector which is plugged into the power point or lamp socket.

Proceeding to the set itself, see that the mains leads are properly joined to the switch, transformer or other component to which they go. Fuses may be found in circuit at this point and if they are blown, search should be made for the cause.

It is essential while handling components or any internal part of the set to switch off the mains—otherwise a severe shock may be picked up.

Most mains receivers have illuminated tuning scales. As long as the lamp behind the dial lights up one can assume that the "low-tension" side of the receiver and at least a part of the mains transformer are satisfactory. The trouble, therefore, is likely to be in the "high tension" or high voltage section—that is, the section of the circuit associated with part of the mains transformer, the rectifier (which may be either a valve or a "metal" unit), the smoothing choke and condensers (the smoothing choke may be a winding on the magnet of the loud-speaker) and the leads to the anodes of the valves.

Before examining these parts of the set, however, make certain that the loudspeaker is connected. With sets fitted with reaction or a pick-up a simple test which facilitates location of a fault is available. If the reaction or pick-up operates satisfactorily, the fault is situated in the high-frequency part of the set—that is between the aerial and the detector valve.

Unless a fair knowledge of electricity and a certain amount of testing equipment is possessed, it is not advisable or, indeed, possible to carry the testing of a receiver much further. It cannot be overstressed that mains receivers are highly dangerous to any except the expert.

(2) INTERMITTENT RECEPTION

This is usually due to an intermittent connection in the aerial, earth, current supply or loudspeaker wires. These should be examined as described above.

The trouble may also be caused by a fault in the set itself. A badly soldered joint or fractured connection between components may have this result, although constant crackles are more likely to be the symptom in this case. Valves, particularly mains types, are liable to intermittent trouble and sometimes by watching the glow of the heaters it is possible to discover which is faulty.

Intermittent troubles are often introduced by components which become warm after a set is switched on. The resulting expansion fractures a wire or connection. Transformers, chokes and resisters are the components to suspect of this behaviour.

When a pick-up is fitted, this can be used roughly to localise the source of the trouble. If the breakdowns occur only during radio reception it is clear that the cause lies between the aerial input and the point to which the pick-up is connected—usually the grid of the detector valve. If the trouble occurs even while the pick-up is in use, it is located between the pick-up and the loudspeaker.

(3) LOW VOLUME AND POOR SELECTIVITY

Low volume can be caused by a poor connection in any external lead associated with the receiver, and preliminary tests should be devoted to the aerial, earth, current supply and loudspeaker wires.

Low volume may also result from loss of efficiency in the loudspeaker or deterioration of the valves, particularly the output valve and, in mains sets, of the rectifier valve.

Loudspeaker and rectifier are best tested by substituting new ones, other valves by measuring, with a milliammeter, the current passing in the anode circuits.

If a set loses its volumes suddenly, this may be due to a run-down accumulator, or in mains sets, providing the external leads are satisfactory, a breakdown in a condenser or resister. This can be found only by systematic testing with meters.

When, simultaneously with loss of volume, a loss of selectivity becomes noticeable, the trimmers should be adjusted. But if the

receiver is a superhet, the trimmers and, in fact, all small adjustable "screws" should not be touched. They can only be set by a service engineer possessing elaborate equipment.

During the summer months it is natural for radio transmissions to become weaker.

(4) DISTORTED REPRODUCTION

When this coincides with low volume the remarks made under (3) apply. High-pitched reproduction at normal volume, particularly if a grating sound is noticeable, is probably due to the loudspeaker being out of adjustment. If the speaker is a moving-iron type the adjusting knob should be regulated. If it is a moving-coil, the cone needs re-centering or the gap is obstructed. To remedy either of these latter is a matter for the manufacturer.

Harsh, metallic jarring noises at ordinary volume suggest that (*a*) the output valve is not obtaining sufficient current (in a battery set, due to a run-down battery; in a mains set, to a failing rectifier), (*b*) that the output valve is not properly biassed, and (*c*) that the valve is "dying."

Distortion at maximum volume is only to be expected—there is a natural limit to the undistorted volume every receiver can produce.

(5) CRACKLES AND INTERFERING NOISES

These may be due to causes similar to those mentioned under (2). Nowadays, however, as often as not, such noises are due to interference from external electrical appliances—from trams to vacuum cleaners and from dynamos to light switches.

With a battery set, one can discover whether the cause is in the set or external by disconnecting the aerial and earth. If the trouble ceases, it is being picked up from outside. With a mains set the noises may be introduced *via* the mains. In this case a cure may be effected by fitting a suppressor unit where the electricity mains enter the house. It may be necessary to fit additional units in neighbours' houses (if possible) and also near to the receiver itself.

Where the interference comes in as soon as the aerial is connected the remedy lies in the installation of an anti-static aerial.

Cases of interference are investigated by the Post Office upon request. The Post Office does not, however, take any practical measures to remedy the trouble.

Care and Maintenance of Batteries

To ensure long life, freedom from breakdowns, and efficient service, strict attention must be given to the following points:—

(1) The battery must be properly charged and the charging current must be carefully watched.

(2) It must not be over-discharged; the voltage should never be allowed to fall below 1·8 volts per cell.

(3) Short circuits between the plates, whether from separator failure or accumulation of sediment under the plates, must be avoided.

(4) The acid solution must be made up of pure sulphuric acid and distilled water, and its specific gravity must be right. The maximum specific gravity for a fully charged cell is about 1·27 to 1·30. The sulphuric acid must be water-clear in colour and show no sediment on standing.

(5) The plates must be kept covered with electrolyte and only pure water used to replace evaporation.

(6) Battery must not be left in discharged condition, and even if put away fully charged it should have a refresher-charge periodically, say every three months.

Sulphation can be cured by long, slow charge and discharge. A good charging rate in this case is about one-fifth of normal. High charging rates cause gassing and heating and do not hasten the process. The length of the charge will depend upon the degree of sulphation.

Radio in India

The listener in India is now well provided for as regards both programmes and suitable receivers.

The Indian State Broadcasting Service has made and is making great strides in the provision of a widespread service of programmes designed to appeal to every taste. At the same time the country has its own special transmissions broadcast on the short waves by the British Broadcasting Corporation from Daventry, England.

To some extent short-wave reception depends on local conditions. In most parts of India, however, three B.B.C. transmissions are receivable regularly. These take place daily at 8.30–9.40 a.m., 4.30–7.15 p.m., and 7.30–10.30 p.m. (Indian Standard Time.)

Where circumstances permit it is often possible to receive other B.B.C. Empire transmissions during other hours of the day.

In India itself, the Indian State Broadcasting Service radiates programmes daily from Delhi, Bombay and Calcutta. In the words of the State Service, the programmes are intended to interest every one "from the coolie and jemadar, business-man and mannequin to pedicurist and surgeon, judge, lawyer, clerk and priest."

Private broadcasts are radiated from Allahabad, Madras and Peshawar.

As the B.B.C. broadcasts are on the short waves (between 16 and 50 metres) and the Indian broadcasts are on the medium waves (200 to 500 metres) the best set for the Indian listener is one that will receive on all these wavelengths—that is, an "all-wave" set. To receive the programmes well over long distances it is advisable to have a sensitive superheterodyne receiver. This type of set is fitted with automatic volume control which does much to banish the annoyance of fading programmes.

All the best British and American and other makes of receiver are available from the principal stores in India. Receivers for the short waves only are also obtainable and many of these are specially designed and built for use under the most exacting climatic conditions.

SPORTS RECORDS

ATHLETICS—World's Records

RUNNING.

Event.	Time.	Holder.	Nation.	When Made.
100 yds.	— 9⅘	F. Wykoff	U.S.A.	1930
220 yds.	— 20⅘	R. A. Locke	U.S.A.	1926
440 yds.	— 46¼	B. Eastman	U.S.A.	1932
880 yds.	1 49⅗	B. Eastman	U.S.A.	1934
1 mile	4 6½	G. Cunningham	U.S.A.	1934
2 miles	8 59¾	P. Nurmi	Finland	1931
3 miles	13 50⅗	L. Lehtinen	Finland	1932
4 miles	19 1	V. Iso Hollo	Finland	1933
5 miles	24 6½	P. Nurmi	Finland	1924
10 miles	50 15	P. Nurmi	Finland	1928
1 hour	11 m. 1648 yds.	P. Nurmi	Finland	1928
2 hours	20 m. 952 yds.	H. Green	Great Britain	1913

HURDLES.

120 yds.	— 14⅕	P. Beard	U.S.A.	1934
220 yds.	— 23	C. Brookins / N. Paul	U.S.A.	1924 / 1934
440 yds.	— 52	J. A. Gibson	U.S.A.	1927

WALKING.

Event.	Time.	Holder.	Nation.	When Made.
1 mile	— 6 22	C. Cummings	Great Britain	1913
2 miles	— 13 11⅘	G. E. Larner	Great Britain	1904
3 miles	— 20 21⅗	J. W. Raby	Great Britain	1883
4 miles	— 27 14	G. E. Larner	Great Britain	1905
5 miles	— 35 10	J. W. Raby	Great Britain	1883
10 miles	1 14 30⅘	F. J. Redman	Great Britain	1934
50 miles	7 44 47⅕	H. H. Whitlock	Great Britain	1935
1 hour	8 m. 438 yds.	G. E. Larner	Great Britain	1905
2 hours	15 m. 147 yds.	A. Valente	Italy	1930

FIELD EVENTS.

Event.	Distance. ft.	in.	Holder.	Nation.	When Made.
High Jump	6	9	W. Marty	U.S.A.	1935
Long Jump	26	8½	J. Owens	U.S.A.	1935
Hop, Step and Jump	51	7	C. Nambu	Japan	1932
Pole Vault	14	5⅝	W. Graber	U.S.A.	1935
Weight Put (16 lb.)	57	1	J. Torrance	U.S.A.	1934
Hammer Throw (16 lb.)	225	10	H. Marty	U.S.A.	1934
Slinging the Weight (56 lb.)	40	6⅝	M. J. M'Grath	U.S.A.	1911
Discus Throw	174	2½	Schroder	Germany	1935
Javelin Throw	251	6½	M. Jarvinen	Finland	1934

Athletics—British Native Amateur Records

RUNNING.

Event.	Time. h. m. sec.	Holder.	When Made.
100 yds.	— — 9½	J. C. Heap	1932
220 yds.	— — 21⅕	W. R. Applegarth	1914
440 yds.	— — 48	G. L. Rampling	1934
880 yds.	— 1 53½	T. Hampson	1930
1 mile	— 4 7⅘	J. Lovelock	1932
2 miles	— 9 9¾	A. Shrubb	1904
3 miles	— 14 17⅘	A. Shrubb	1903
4 miles	— 19 23¾	A. Shrubb	1904
5 miles	— 24 33¾	A. Shrubb	1904
10 miles	— 50 20	W. G. George	1884
15 miles	1 20 4⅘	F. Appleby	1902
20 miles	1 51 54	G. Crossland.	1894
25 miles	2 29 29⅘	H. Green	1913
Marathon (26m. 385 yds.)	2 30 57⅘	H. W. Payne	1929
50 miles	6 13 58	E. W. Lloyd	1913
1 hour 11 m.	1137 yds.	A. Shrubb	1914
2 hrs. 20 m.	1640 yds.	E. Harper	1933

HURDLES.

Event.	Time. h. m. sec.	Holder.	When Made.
120 yds.	14⅗ sec.	Lord Burghley	1930
220 yds.	24⅗ sec.	Lord Burghley	1927
300 yds.	36⅘ sec.	O. Groenings	1907
440 yds.	53¾ sec.	L. Facelli	1929

WALKING.

1 mile	— 6 26	G. E. Larner	1904
2 miles	— 13 11⅘	G. E. Larner	1904
3 miles	— 20 25⅘	G. E. Larner	1905
4 miles	— 27 14	G. E. Larner	1905
5 miles	— 35 47⅕	A. H. G. Pope	1932
10 miles	1 14 30⅘	F. J. Redman	1934
20 miles	2 46 10	G. T. Galloway	1934
50 miles	7 44 47⅕	H. H. Whitlock	1935
100 miles	18 4 10⅕	T. E. Hammond	1908

Walking—*Continued.*

Event.	*Distance.*	*Holder.*	*When Made.*
1 hr.	8 m. 474 yds.	A. H. G. Pope	1932
2 hrs.	15 m. 701 yds.	R. Bridge	1914
3 hrs.	21 m. 868 yds.	G. T. Galloway	1934
10 hrs.	61 m. 1237 yds.	E. C. Horton	1914
12 hrs.	73 m. 145 yds.	E. C. Horton	1914
24 hrs.	131 m. 580 yds.	T. E. Hammond	1908

NOTEWORTHY PERFORMANCES.— 100 miles in 14 hrs. 22 min. 10 sec. by A. Newton (1928). *London to Brighton* (walking) in 8 hrs. 1 min. 6 sec. by J. H. Ludlow (Sept. 1932); in 7 hrs. 53 min. 5 sec. by H. W. Whitlock (1935).

FIELD EVENTS.

Event.	*ft.*	*in.*	*Holder.*	*Year.*
High Jump	6	5	B. H. Baker	1921
Long Jump	25	1	B. Hamm	1928
Pole Vault	13	9	L. Barnes	1928
Hop, Step and Jump	50	9	W. Peters	1928
Hammer Throw	178	11	F. D. Tootell	1924
Weight Put	47	8½	R. H. Howland	1932
Javelin Throw	222	9	S. A. Lay	1928
Discus Throw	147	—	E. Paulus	1928

Aviation

World speed record—423·76 m.p.h.—F. Agello (Italy), 1933.

SCHNEIDER TROPHY.

Year.	*Nation.*	*Pilot.*	*Speed m.p.h.*
1913	France	Prevost	47·75
1914	Britain	Pixton	86·80
1920	Italy	Bologna	107·00
1921	Italy	Briganti	111·00
1922	Britain	Biard	145·70
1923	U.S.A.	Rittenhouse	177·38
1925	U.S.A.	Doolittle	232·57
1926	Italy	De Barnardi	246·49
1927	Britain	Webster	281·65
1928	Britain	Waghorn	328·63
1931	Britain	Boothman	340·08*

* Trophy won outright by Britain.

KING'S CUP WINNERS.

Year.	*Pilot.*	*Speed m.p.h.*
1922	F. L. Barnard	124
1923	F. T. Courtney	150
1924	A. J. Cobham	106·6
1925	F. L. Barnard	140·5
1926	H. S. Broad	90·4
1927	W. L. Hope	92·4
1928	W. L. Hope	105·5
1929	D. F. W. Atcherley ..	150·3
1930	Miss W. Brown ..	102·7
1931	E. C. T. Edwards ..	117·8
1932	W. L. Hope	124·25
1933	Capt. G. de Havilland ..	139 5
1934	F.-Lt. H. M. Schofield ..	134·16
1935	F.-Lt. T. Rose ..	176·28

FIRST FLIGHT.—1890, 54 yards—C. Ader (France).

FIRST DISTANCE FLIGHT.—1905, 11 m. 211 yds.—O. Wright (U.S.A.).

FIRST ENGLISH CHANNEL FLIGHT.—1909—L. Blériot (France).

FIRST AIR MAIL.—1929, England-India (London to Karachi).

ATLANTIC RECORDS.—*First Flown*—1919, Sir J. Alcock and Sir J. W. Brown (Newfoundland to Ireland).

First East-West Flight.—1928, Hunefeld and Fitzmaurice (Ireland to Labrador).

First Solo Flight.—1927, Col. Lindbergh (U.S.A.) (New York to Paris).

First Woman Solo.—1932, Miss A. Earhart.

Aviation—*Continued.*

Quickest Crossing.—1932, Bennett Griffin and J. Mattern (U.S.A.) (Newfoundland to Ireland), 11½ hours.

First Solo East-West Flight and First Light Plane Crossing.—J. A. Mollison, Aug. 18, 1932.

First woman to cross South Atlantic.—Miss Jean Batten, Nov. 13, 1935.

LONGEST FLIGHT (cross-country).—1933, New York to Rayack (Syria) 5,657 miles—non-stop)—M.M. Codos and Rossi (France).

LONGEST DURATION FLIGHT (enclosed area)—1931—90 hours, Bossoutrot and Rossi (France).

FIRST ENGLAND-AUSTRALIA.—1919, Sir Ross Smith and Sir Keith Smith (Great Britain).

FIRST ENGLAND-AUSTRALIA AND BACK.—1926, Sir Alan Cobham.

FIRST WOMAN — ENGLAND-AUSTRALIA.—1930, Miss Amy Johnson (Great Britain).

HIGHEST DISTANCE REACHED.—NOV. 11 1935, American stratosphere balloon taking off near Rapid City, S. Dakota, attained a height of 74,000 ft.

Billiards

WORLD RECORD BREAK.—4,137, by W. Lindrum, January, 1932.

WORLD SNOOKER RECORD.—114, by Joe Davis, 1933.

BRITISH CHAMPIONS UNDER EXISTING RULES:

1920	W. Smith.	1928	J. Davis.
1921	T. Newman.	1929	J. Davis.
1922	T. Newman.	1930	J. Davis.
1923	W. Smith.	1931	No contest.
1924	T. Newman.	1932	J. Davis.
1925	T. Newman.	1933	W. Lindrum.
1926	T. Newman.	1934	J. Davis.
1927	T. Newman.	1935	J. Davis
WORLD'S CHAMPION		1934	J. Davis.

SNOOKER CHAMPION:
1931–1935 J. Davis

Boxing (1935)

Weight.	*British Champion.*	*World's Champion.*
Fly (8 st.)	Benny Lynch	Benny Lynch (Scotland)
Bantam (8 st. 6 lb.)	Johnny King	Baltazar Sangchili (Spain)
Feather (9 st.)	Nel Tarleton	Fred Miller (U.S.A.)
Light (9 st. 9 lb.)	Jack (Kid) Berg	Tony Canzoneri (U.S.A.)
Welter (10 st. 7 lb.)	Pat Butler	Barney Ross (U.S.A.)
Middle (11 st. 6 lb).	Jock McAvoy	Marcel Thil (France)
Light-Heavy (12 st. 7 lb.)	Eddie Phillips	John H. Lewis (U.S.A.)
Heavy	Jack Petersen	J. J. Braddock (U.S.A.)

Cricket

HIGHEST INDIVIDUAL SCORE (*First-class Matches*).—452, D. G. Bradman, New South Wales *v.* Queensland, at Sydney, 1929-30.

RECORD HIT.—175 yards (from hit to pitch), Rev. W. Fellows, at practice, Christchurch, Oxford, 1856.

NUMBER OF CENTURIES.—197, J. B. Hobbs (Surrey). (Up to 1934).

Cricket—*Continued.*

TWO HUNDREDS IN ONE MATCH.—6, Hobbs (Surrey).

BIGGEST SEQUENCE OF CENTURIES (*First-class Matches*).—6, C. B. Fry (Sussex), 1901.

MOST HUNDREDS IN A SEASON.—16, Hobbs (Surrey), 1925.

FAST SCORING.—189 in 90 minutes, Alletson (E.), for Notts *v.* Sussex at Brighton, 1911.

HIGHEST AGGREGATE IN A SEASON.—3518, J. Hayward in 1906.

LONG PARTNERSHIPS.

First Wicket.—555—Holmes and Sutcliffe for Yorkshire *v.* Essex at Leyton, 1932.

Second Wicket.—481—W. H. Ponsford and D. G. Bradman, Australia *v.* England, at the Oval, 1934.

Third Wicket.—389—W. H. Ponsford and S. J. McCabe, Australia *v.* M.C.C. at Lord's in 1934.

Fourth Wicket.—448—Abel and Hayward, Surrey *v.* Yorkshire, at Oval, 1899.

Fifth Wicket.—397—W. Bardsley and C. Kelleway, New South Wales *v.* S. Australia, at Sydney, 1920-21.

Sixth Wicket.—428—W. W. Armstrong and M. A. Noble, Australians *v.* Sussex, at Brighton, 1902.

Seventh Wicket.—344—W. Newnham and K. S. Ranjitsinhji, Sussex *v.* Essex, at Leyton, 1902.

Eighth Wicket.—433—V. T. Trumper and A. Sims, Australians *v.* Canterbury, at Christchurch, 1913-14.

Ninth Wicket.—293—E. A. C. Druce and V. P. Johnstone, Trinity Wanderers *v.* Eastbourne, at Eastbourne, 1900.

Tenth Wicket.—307—A. F. Kippax and J. E. H. Hooker, New South Wales *v.* Victoria, at Melbourne, 1928-9.

BOWLING FEATS.

ALL TEN WICKETS in one innings has been accomplished on 46 occasions. The best of these achievements was that of Verity, for Yorkshire *v.* Notts, at Leeds in 1932, whose analysis reads: O. 19·4, M. 16, R. 10, W. 10.

CONSECUTIVE WICKETS.—*First-class Matches.*—Four wickets with consecutive balls has been accomplished twenty-one times, most recently by R. Tyldesley for Lancashire *v.* Derbyshire, at Derby, in 1929.
All Matches.—Six wickets in six balls, J. Wisden, for England *v.* XXII. of the United States and Canada, at Rochester (U.S.A.), 1859.

BEST ANALYSIS.—Nine wickets for 2 runs—G. Elliott, Victoria *v.* Tasmania, at Launceston, 1857-8.

MOST WICKETS IN SEASON.—304—Freeman, Kent, in 1928. His average was 18·05.

WICKET-KEEPING.—12 wickets in a match—Pooley for Surrey against Sussex at the Oval, 1868 (caught 8, stumped 4).

HIGHEST MATCH TOTAL.—1107—Victoria *v.* New South Wales, at Melbourne, 1926-7.

CATCHES IN MATCH.—10—Hammond, for Gloucestershire *v.* Surrey at Cheltenham, 1928.

LOWEST MATCH TOTAL.—12—Oxford University *v.* M.C.C. and ground, at Oxford in 1877, and Northamptonshire *v.* Gloucestershire at Gloucester, 1907.

HIGHEST AGGREGATE.—1929, New South Wales *v.* South Australia, Sydney, 1925-6.

TEST MATCH RESULTS.

England v. Australia.—First played in 1876. In England—England won 20, lost 15, drawn 27. In Australia—England won 32, lost 38, drawn 2.

England v. South Africa.—First played in 1888. In England—England won 9, lost 0, drawn 7. In S. Africa—England won 19, lost 11, drawn 8.

THROWING CRICKET BALL.—140 yds. 2 ft.—R. Percival, on the Durham Sands Racecourse, 1884.

CHAMPION COUNTY.—Yorkshire, 17 times; Surrey, 9; Notts, 8; Lancs. 8; Middlesex and Kent, 4; Gloucestershire, 2; Derbyshire and Warwickshire, 1. *Ties*—Gloucestershire and Notts, in 1873; Notts and Lancashire, in 1879; Notts and Lancashire, in 1882. *Triple Tie*—Surrey, Lancashire and Notts—1889. *See also text under* CRICKET.

Cycling

WORLD RECORDS.

(*Unpaced Standing Start.*)

Distance.	*Time.*	*Holder.*	*Year.*
¼ mile	28 sec.	V. L. Johnson	1933
½ mile	56½ sec.	L. Michard	1931
1 mile	2 min. 2½ sec.	F.W.Southall	1929
2 miles	3 min. 35½ sec.	F. W. Southall	1931
3–40 miles		F. W. Southall.	1929
3 miles	5 min. 31 sec.		
4 miles	7 min. 20½ sec.		
5 miles	9 min. 12 sec.		
6 miles	11 min. 1½ sec.		
7 miles	12 min. 51½ sec.		
8 miles	14 min. 52 sec.		
9 miles	16 min. 44 sec.		
10 miles	18 min. 42½ sec.		
20 miles	37 min. 33½ sec.		
30 miles	56 min. 32½ sec.		
40 miles	1 hr. 17 min. 55 sec.		(1928)

Greatest Speed Ever Attained on a Cycle.—Leon Vanderstuft in one hour rode 76 miles 504 yards at Montlhery, Paris, in Sept., 1928. He was motor cycle paced, but made a standing start.

ROAD RECORDS.—24 hours—H. Opperman, in 1935, 466 miles. Land's End to John o' Groat's—H. Opperman, 2 days 9 hours in 1934.

Football

ASSOCIATION.

F. A. CUP WINNERS (1934-5).—Sheffield Wed, *Runners-up*, W. B. Albion, (*For F. A. Cup winners since* 1900, *see entry* ASSOCIATION CUP *in text.*)

LEAGUE CHAMPIONS (1934-5).—Arsenal. *Runners up*—Sunderland.

INTERNATIONAL CHAMPIONS (1934-5) England and Scotland tied with 4 points each, Wales and Ireland with 2 points.

AMATEUR CUP (1934–5).—Bishop Auckland. *Runners-up*—Wimbledon.

INTERNATIONAL CAP RECORDS.—England—R. Crompton (Blackburn Rovers), 34; Scotland—A. L. Morton (Rangers), 35; Ireland—O. M. Stanfield (Belfast Distillery), 30; Wales—W. Meredith (Manchester City and United), 51.

RECORD GATES.—136,259. Scotland *v.* England at Hampden Park, Glasgow, 1933.
League Record.—77,582. Manchester City *v.* Arsenal, Feb. 23 1935.

Football—*Continued.*

RUGBY UNION.

INTERNATIONAL CHAMPIONS.

England—1909-10, 1912-13-14, 1920-21, 1922-23-24, 1927-28, 1929-30, 1933-4.
Scotland—1900-1, 1902-3-4, 1906-7, 1924-25, 1928-29, 1932-33.
Wales—1901-2, 1904-5, 1907-8-9, 1910-11, 1921-22, 1930-31, 1935-6.
Jointly held.—Ireland, Wales, 1905-6; England, Ireland, 1911-12; England, Scotland, Wales, 1919-20; Scotland, Ireland, 1925-26, 1926-27; England, Ireland Wales, 1931-32; England, Ireland, Wales, 1934-5.
No Championship was held for the seasons 1914-15 to 1918-19.
RECORD NUMBER OF CAPS.—G. V. Stephenson (Queen's University, Belfast), capped 42 times for Ireland.

Golf

BRITISH OPEN CHAMPIONS.

1900	J. H. Taylor.	1920	G. Duncan.
1901	J. Braid.	1921	J. Hutchison.
1902	A. Herd.	1922	W. Hagen.
1903	H. Vardon.	1923	A. G. Havers.
1904	J. White.	1924	W. Hagen.
1905-6	J. Braid.	1925	J. Barnes.
1907	A. Massy.	1926-7	Mr. R. T. Jones.
1908	J. Braid.	1928-9	W. Hagen.
1909	J. H. Taylor.	1930	Mr. R. T. Jones.
1910	J. Braid.	1931	T. D. Armour.
1911	H. Vardon.	1932	G. Sarazen.
1912	E. Ray.	1933	D. Shute
1913	J. H. Taylor.	1934	T. H. Cotton.
1914	H. Vardon.	1935	A. Perry.
1915-19	Not Played.		

BRITISH AMATEUR CHAMPIONS.

1900	H. H. Hilton.	1920	C. J. H. Tolley.
1901	H. H. Hilton.	1921	W. I. Hunter.
1902	C. Hutchings.	1922	E. W. Holderness
1903	R. Maxwell.	1923	R. H. Wethered.
1904	W. J. Travis.	1924	E. W. Holderness
1905	A. G. Barry.	1925	R. Harris.
1906	J. Robb.	1926	J. Sweetser.
1907	J. Ball.	1927	Dr. Tweddell.
1908	E. A. Lassen.	1928	T. P. Perkins.
1909	R. Maxwell.	1929	C. J. H. Tolley.
1910	J. Ball.	1930	R. T. Jones.
1911	H. H. Hilton.	1931	E. Martin-Smith.
1912	J. Ball.	1932	J. de Forest.
1913	H. H. Hilton.	1933	Hon. M. Scott
1914	J. L. C. Jenkins.	1934	W. L. Little
1915-19	Not Played.	1935	W. L. Little

WALKER CUP.

(*America v. Great Britain—Amateurs.*)

1922	America (8-4).	1928	America (11-1).
1923	America (6-5).	1930	America (10-2).
1924	America (9-3).	1932	America (9½-2½).
1926	America (6-5).	1934	America (9½-2½)

RYDER CUP.

(*America v. Great Britain—Professionals.*)

1926	Gt. Britain (13½-1½)	1932	Gt. Britain (6½-5½)
1927	America (9½-2½)		
1929	Gt. Britain (7-5)	1933	Gt. Britain (6½-5½)
1931	America (9-3)		

1935 U.S.A. (8-2) 2 halved.

R. T. Jones set up a record in 1930 by winning the British and American Open Championships and the British and American Amateur Championships.
Gene Sarazen, the American, is the only professional who has won both Open Championships in the same year (1932).

Hockey

INTERNATIONAL CHAMPIONS (1934-5).—England, Scotland, Ireland and Wales tied.

Record score in International Match.—11, by England against Wales at Rathlin, 1923-4, Wales scored twice. Record aggregate—14 (England 10, Wales 4), at Merton Abbey, 1924-25.

Indian Records

Marathon	3 hrs. 13 min. 34 secs.
5,000 Metres	16 min. 50⅘ secs.
Shot Putt	42 ft. 6 in.
Discus	116 ft. 3⅘ in.
Running Broad Jump	22 ft. 10⅘ in.
Hop, Step and Jump	46 ft. 4 in.
100 Metres	10⅘ secs.
Running High Jump	6 ft. ⅘ in.
400 Metres	50⅘ secs.
110 Metres High Hurdles	15⅘ secs.
800 Metres	1 min. 59⅘ secs.
200 Metres Low Hurdles	28 secs.
Pole Vault	12 ft. 0⅘ in.
200 Metres	22⅘ secs.
Javelin	170 ft. 11⅘ in.
1,500 Metres	4 min. 28⅘ secs.
400 Metres Shuttle Relay	47⅘ secs.
1,600 Metres Medley Relay	3 min. 53⅘ secs.
3,000 Metres Cycle ..	5 min. 16⅘ secs.
1,500 Metres Steeplechase	4 min. 41⅘ secs.
10,000 Metres.. ..	32 min. 2⅘ secs.
5,000 Metres Walk ..	28 min. 4⅘ secs.

WOMEN.

100 Metres	12 $\frac{8}{10}$ secs.
83 Metres Hurdles ..	16 secs.
Running Broad Jump	13 ft. 8⅘ in.
Shot Putt (8⅘ lbs.) ..	22 ft. 6⅘ in.
Running High Jump	4 ft. 5⅘ in.
Javelin	64 ft. 3 in.
1,500 Metres Cycle ..	3 min. 18⅘ secs.

Lawn Tennis

DAVIS CUP RECORDS.

America—1900-2, 1913, 1920-26 (11 wins).
Australia—1907-11, 1914, 1919 (7 wins).
France—1927-32 (6 wins).
British Isles—1903-6, 1912, 1933-5 (8 wins).

No matches were played in 1915-18.

WIMBLEDON CHAMPIONS—MEN.

1897-1900	R. F. Doherty	1924	J. Borotra.
1901	A. W. Gore.	1925	R. Lacoste.
1902-6	H. L. Doherty.	1926	J. Borotra.
1907	N. E. Brookes.	1927	H. Cochet.
1908-9	A. W. Gore.	1928	R. Lacoste.
1910-13	A. F. Wilding.	1929	H. Cochet.
1914	N. E. Brookes.	1930	W. T. Tilden.
1915-16-17-18		1931	S. B. Wood.
	No Competition.	1932	Ellsworth Vines.
1919	G. L. Patterson.	1933	J. B. Crawford.
1920-1	W. T. Tilden.	1934	F. J. Perry.
1922	G. L. Patterson.	1935	F. J. Perry.
1923	W. M. Johnston.		

Lawn Tennis—*Continued.*

WIMBLEDON CHAMPIONS—WOMEN.

1899-1900 Mrs. Hillyard.	1915-18 No Contest.
1901 Mrs. Sterry.	1919-23 Mlle. Lenglen.
1902 Miss M. E. Robb.	1924 Miss K. McKane.
1903-4 Miss D. K. Douglass.	1925 Mlle. Lenglen.
1905 Miss M. Sutton.	1926 Mrs. L. A. Godfree.
1906 Miss D. K. Douglass.	1927-30 Miss H. Wills.
1907 Miss M. Sutton.	1931 Frl. C. Aussem.
1908 Mrs. Sterry.	1932 Mrs. F. S. Moody (Helen Wills).
1909 Miss D. Boothby.	1933 Mrs. F. S. Moody.
1910-11 Mrs. Lambert-Chambers.	1934 Miss D. E. Round.
1912 Mrs. Larcombe.	1935 Mrs. F. S. Moody.
1913-14 Mrs. Lambert-Chambers.	

Motoring

WORLD SPEED RECORD.—301.12 m.p.h.—Sir Malcolm Campbell (Great Britain), 1935.

MOTOR CYCLING.

WORLD RECORD.—157.12 m.p.h.—E. Henne in Sept., 1935 on the Frankfurt-Darmstad Motor Road, Germany.

INTERNATIONAL CLASS RECORDS

(One mile solo.)

Capacity not exceeding	*Rider.*	*Machine*	*m.p.h.*	*Date.*
250 c.c.	W. Winkler (Germany)	D.K.W. 248 c.c.	89·01	Dec. 1935
350 c.c.	W. Winkler (Germany)	D.K.W. 248 c.c.	89·01	Dec. 1935
500 c.c.	P. Taruffi (Italy)	Rondine 500 c.c.	151·8	Nov. 1935
750 c.c.	E. Henne (Germany)	B.M.W. 744 c.c.	152·866	Oct. 1934
1000 c.c.	E. Henne (Germany)	B.M.W. 744 c.c.	157·12	Sept. 1935

(One mile, sidecar outfits)

350 c.c.	Melichar	Sunbeam	90·66	Oct. 1930
600 c.c.	E. Henne (Germany)	B.M.W.	113·60	April 1932
1000 c.c.	E. Henne (Germany)	B.M.W.	128·847	Oct. 1934

MOTOR BOAT RACING.

WORLD SPEED RECORD.—128·98 m.p.h.—Gar Wood on Michigan Lake, U.S.A. (U.S.A., 1934).

OUT-BOARD MOTOR BOAT RECORD.—70·196 m.p.h.—G. Coleman, Jun., (U.S.A.) at Miami, 1935.

Rowing

OXFORD AND CAMBRIDGE BOAT RACE WINNERS. (Oxford 40 wins; Cambridge 46; 1 dead heat).

Oxford.—1829, 1842, 1849 (b), 1852, 1854, 1857, 1859, 1861-9, 1875, 1878, 1880-83, 1885, 1890-8, 1901, 1905, 1909-13, 1923.

Cambridge.—1836-41, 1845-46, 1849 (a), 1856, 1858, 1860, 1870-4, 1876, 1879, 1884, 1886, 1887-9, 1899, 1900, 1902-4, 1906-8, 1914, 1920-22, 1924-35.

Notes.—1846—Outriggers first used. 1849 (b) Won on a foul. 1857—Keelless boats first used. 1873—Sliding seats first used. 1911 Record time for race, 18 m. 29 sec. (Oxford), 1912—First race void; both boats sank. Oxford stroke, R. C. Bourne, the only stroke to win four races. 1915-19—No race.

Swimming

CHANNEL RECORDS.—First swum—1875 by Capt. M. Webb (Dover to Calais), in 21 h. 45 m. First woman—1926—Miss G. Ederle (U.S.A.), 14 h. 34 m. Record—1926—G. Michel (France), 11 h. 5 m. (Grisnez to Dover).

WORLD RECORDS.

Distance.	*Time. min. sec.*	*Holder.*	*Nation.*
100 yds.	0 51	J. Weissmuller	U.S.A.
150 yds.	1 25	W. Laufer	U.S.A.
220 yds.	2 9	J. Weissmuller	U.S.A.
300 yds.	3 6¼	J. R. Gilhula	U.S.A.
440 yds.	4 49⅔	J. R. Gilhula	U.S.A.
880 yds.	10 15⅔	J. Medica	U.S.A.
1000 yds.	11 37⅔	J. Medica	U.S.A.
1 mile	21 6¼	Arne Borg	Sweden

The Turf

THE DERBY.—Record time for the Derby (2 min. 34 sec.) is shared by Lord Derby's Hyperion (1933) and the Maharajah of Rajpipla's Windsor Lad (1931).

CLASSICS.—Only one horse has ever won four of the five classics. This was Mr. R. S. Sievier's filly, Sceptre, who won the One Thousand Guineas, Two Thousand Guineas, the Oaks and the St. Leger in 1902.

JOCKEYS' DERBY RECORD.—Stephen Donoghue who rode the winner six times. They were Pommern ("War Derby" at Newmarket, 1915); Gay Crusader ("War Derby," 1917); Humorist (1921); Captain Cuttle (1922); Papyrus (1923) and Manna (1925).

RECORD TIMES.—5 *furlongs*—54⅘ sec. (Epsom). 6 *furlongs*—1 min. 6⅘ sec. (Brighton). 7 *furlongs*—1 min. 20 sec. (Hurst Park). 1 *mile*—1 min. 32⅘ sec. (Brighton). 1¼ *miles*—2 min. 0⅘ sec. (York). 1½ *miles*—2 min. 26⅘ sec. (Derby, Leicester). 2 *miles*—3 min. 15 sec. (Salisbury).

RECORD STAKE WINNINGS (British).—£57,455, by Isinglass in 1893.

RECORD FIELD (for two-year-old race).—43, at Newmarket, 1915.

RECORD PRICE (for horse).—£60,000, by Sir H. Mallaby Deeley for Call Boy, the Derby winner of 1927.

(For yearling).—17,000 guineas by the Aga Khan for a colt by Hurry-On—Ecurie, bred at the National Stud (never won a race). *Record Price at Public Auction.*—47,000 guineas for the late Sir John Rutherford's stallion Solario, at the Newmarket Second July Sales, 1932. Lord Glanely, acting for a syndicate of British breeders, was the purchaser.

JOCKEY'S WINNING RECORD.—G. Richards, 259 winners, in 1933.

Yachting

THE AMERICA'S CUP.—First won by America in 1851 and held since by U.S.A. In 1899 *Columbia* beat *Shamrock I.*; in 1901 *Columbia* beat *Shamrock II.*; in 1903 *Reliance* beat *Shamrock III.*; in 1920 *Resolute* beat *Shamrock IV.* in 1930 *Enterprise* beat *Shamrock V.*, and in 1934 *Rainbow* beat *Endeavour*.

TRANS-ATLANTIC RACE.—(1931)—*Dorade* (O. J. Stephens, U.S.A.), 15 days from Rhode Island to Plymouth.

FASTNET CUP (COWES).—(1931)—*Dorade* (U.S.A.).

POSTAL INFORMATION

INDIAN POST AND TELEGRAPH RATES.

Inland Rates.

Post Cards.—Single, ½ anna; Double, 1½ anna.

Letters.—Not exceeding 1 tola, one anna. Exceeding 1 tola, but not exceeding 2½ tolas, 1½ annas. For every additional 2½ tolas or part of that weight, 1½ annas.

Books and Pattern Packets.—For the first 5 tolas or fraction thereof, ½ annas. For every additional 5 tolas or fraction thereof, in excess of 5 tolas, ½ annas.

Registered Newspapers. (Prepayment compulsory).—Not exceeding 8 tolas, ½ anna. Exceeding 8 tolas, but not exceeding 20 tolas, ½ anna. For every additional 20 tolas or part of that weight, ½ anna.

Parcels.—(*a*) Parcels not exceeding 440 tolas in weight :—

Not over Tolas	Postage Rs.	As.	Not over Tolas	Postage Rs.	As.
20	0	2	210	1	8
40	0	4	280	1	12
80	0	8	320	2	0
120	0	12	360	2	4
160	1	0	400	2	8
200	1	4	440	2	12

(*b*) Parcels exceeding 440 tolas in weight :—

Not over Tolas	Postage Rs.	As.	Not over Tolas	Postage Rs.	As.
480	3	0	680	4	4
520	3	4	720	4	8
560	3	8	760	4	12
600	3	12	800	5	0
640	4	0			

Registration Fee.—In addition to the postage, a fee of three annas will be charged for the registration of any postal article. Parcels weighing over 440 tolas must be registered.

Insurance Fees.—In addition to the postage and the fee for registration, the following further fees are charged for Insurance :—

	Annas
Value insured does not exceed Rs. 100	3
Value insured does not exceed Rs. 150	4
Value insured does not exceed Rs. 200	5
For every additional Rs. 100 or fraction thereof over Rs. 200 and up to Rs. 1000	2
For every additional Rs. 100 or fraction thereof over Rs. 1000	1

V.P. Charges.—In addition to the postage a fee calculated according to the schedule below on the amount specified for remittance to the sender :—

Not exceeding Rs. 10, 2 annas. Exceeding Rs. 10, but not exceeding Rs. 25, 4 annas.

Annas 4 for each complete sum of Rs. 25, and 4 annas for the remainder, provided that if the remainder does not exceed Rs. 10, the charge for it shall be only 2 annas.

INLAND MONEY ORDER FEES.

(Maximum amount, Rs. 600.)

	Annas
On any sum not exceeding Rs. 10 ..	2
On any sum exceeding Rs. 10 and not exceeding Rs. 25	4
On any sum exceeding Rs. 25	4 for each complete sum of Rs. 25, and 4 as. for the remainder, provided that, if the remainder does not exceed Rs. 10, the charge for it shall be only 2 as.

TELEGRAPHIC MONEY ORDER FEES.

The amount for which a single telegraphic money order may be issued must not exceed Rs. 600 and must not include fraction of a rupee.

The fee for the issue of a T.M.O. is the same as the fee for an ordinary Money Order plus a telegraph charge calculated at the rates for inland telegrams for the actual number of words used in the telegram advising the remittance, according to whether an "Express" or "Ordinary" Message.

FOREIGN POSTAGE RATES.

Post Cards.	Annas
International Post Card, each ..	2
International Reply Post Card, each ..	4
Letters.	
For United Kingdom and all British Possessions and Egypt, including Sudan, not exceeding 1 oz.	2½
Every additional oz. or part	2
For any other part of the world—not exceeding 1 oz.	3½
Every additional oz. or part.. ..	2

FOREIGN PARCEL RATES.

For Great Britain and N. Ireland.

Direct in connection with the British Post Office via Gibraltar.

	Via Gibraltar Rs.	as.	Overland Rs.	as.	p.
Not over 3 lbs. ..	1	8	1	13	6
,, 7 ,, ..	2	12	3	1	6
,, 11 ,, ..	3	15	4	2	6
,, 20 ,, ..	6	3	7	3	0

Parcels exceeding 11 lbs., but not exceeding 50 lbs., may also be forwarded from Bombay through the medium of P. & O. S. N. Co., at 12 annas per pound or fraction of a pound. And the limit of value is £50.

CHARGES FOR INLAND TELEGRAMS.

	For delivery in India. Express Rs.	as.	p.	Ordinary Rs.	as.	p.
First 8 words or less ..	1	2	0	0	9	0
Each additional word..	0	2	0	0	1	0
	For delivery in Lhasa, Tibet. Express Rs.	as.	p.	Ordinary Rs.	as.	p.
First 12 words or less..	1	8	0	0	12	0
Each additional word ..	0	2	0	0	1	0
	For delivery in Ceylon. Express Rs.	as.	p.	Ordinary Rs.	as.	p.
First 12 words or less ..	2	0	0	1	0	0
Each additional word ..	0	3	0	0	2	0

The address is charged for.

Note 1.—The rate for State Raj or Private Telegrams to Kabul, Jalalabad, Kandahar and Torkhan in Afghanistan is three annas per word including the address. These telegrams are classed "Express." Press telegrams are not accepted.

Note 2.—In addition to the charges on telegrams shown above, a fee of one anna is charged in respect of each telegram accepted by a village postman.

FOREIGN TELEGRAMS.

Per Word. (From India or Burma.)

Australia, via Madras.

Urgent.	Ordinary	Deferred	D.L.T.
Rs. as.	Rs. as.	Rs. as.	Rs. as.
4 8	2 4	1 2	0 12

Gt. Britain and Northern Ireland, via Moulmein.

Urgent	Ordinary	Deferred	D.L.T.
Rs. as.	Rs. as.	Rs. as.	Rs. as.
1 14	0 15	0 7½	0 5

Honkong, via Madras.

Urgent	Ordinary	Deferred	D.L.T.
Rs. as.	Rs. as.	Rs. as.	Rs. as.
2 12	1 6	0 11	0 7½

Japan, via Madras.

Urgent	Ordinary	Deferred	D.L.T.
Rs. as.	Rs. as.	Rs. as.	Rs. as.
4 6	2 3	1 1½	0 12

South Africa, via Zanzibar.

Urgent	Ordinary	Deferred	D.L.T.
Rs. as.	Rs. as.	Rs. as.	Rs. as.
3 14	1 15	0 15½	0 10½

AIR MAIL SERVICES.

Indian Internal Air Services. (Inland Articles).

Inland articles, both registered and unregistered (but not insured articles or parcels), are accepted for transmission by air between any air stations on the Indian internal air services, Gwadur and Bahrein, subject to the existing conditions applicable to inland articles. No superscription regarding the route is necessary on inland articles. A blue air mail label (obtainable free at the post office) should be affixed to the article on the left-hand top corner of the address side. The air fees on such articles are as shown below. The prepayment of Air Fee is compulsory.

For a post card	9 pies
For a letter or packet—	
Up to ½ tola	1 anna
Over ½ tola but not over 1 tola	2 annas
Every additional tola or fraction of a tola	2 ,,
For a money order (irrespective of the amount)	1 ,,

The above Air Fees are payable on Air Mail articles in addition to ordinary postage, and the Registration Fee in the case of a registered article, and in the case of a Money Order, in addition to the money order commission.

SINGAPORE-CROYDON AIR SERVICE.

The Air Fee per article which is provisionally fixed is 4 annas for Iraq, Palestine and Egypt, and 6 annas for any country in Europe including England, for every half-ounce or part of that weight.

Air Mail correspondence for countries in the East, viz., Siam, Malay States and Straits Settlements, as well as for countries served from the airport of Singapore, viz., the Dutch East Indies, Sarawak, the Philippine Islands and Japan, is accepted for despatch by air from any aerodrome on Indian Internal Air Services maintaining connection with the Croydon-Singapore Service.

AIR MAIL PARCELS.

Air Mail parcels for despatch by air from Karachi are accepted at such post offices in India as accept foreign parcels for despatch for any post office in Great Britain and Northern Ireland. Air Mail parcels for any other country or inland parcels for delivery in India are not accepted.

	Rs.	as.	p.
For the first half-pound ..	3	2	0
For every additional half-pound or fraction thereof up to a weight not exceeding 11 lbs.	1	14	0
For every additional half-pound or fraction thereof above 11 lbs. up to a maximum of 20 lbs. ..	1	8	0

Insurance is not available.

Each parcel must bear on the left-hand top corner of the address side a blue Air Mail label obtainable free of charge at any post office, and must be clearly and conspicuously superscribed in ink above or below the blue label with the words "Karachi-Croydon," as parcels are not carried by Indian Internal Air Services.

Indian Interest Table.

From 2 to 12 per cent on Rs. 100.

Calculated for 1 Year, 1 Month, 1 Week and 1 Day (365 days to a year).

Per Cent.	1 Day.				1 Week.				1 Month.			1 Year.		
	Rs.	as.	p.	d.p.	Rs.	as.	p.	d.p.	Rs.	as.	p.	Rs.	as.	p.
2	0	0	1	052	0	0	7	384	0	2	8	2	0	0
2½	0	0	1	315	0	0	9	230	0	3	4	2	8	0
3	0	0	1	578	0	0	11	076	0	4	0	3	0	0
3½	0	0	1	841	0	1	0		0	4	8	3	8	0
4	0	0	2	104	0	1	3		0	5	4	4	0	0
4½	0	0	2	367	0	1	5		0	6	0	4	8	0
5	0	0	2	630	0	1	6		0	6	8	5	0	0
5½	0	0	2	893	0	1	8		0	7	4	5	8	0
6	0	0	3	156	0	1	10		0	8	0	6	0	0
6½	0	0	3	419	0	1	11		0	8	8	6	8	0
7	0	0	3	682	0	2	1		0	9	4	7	0	0
7½	0	0	3	945	0	2	3		0	10	0	7	8	0
8	0	0	4	208	0	2	5		0	10	8	8	0	0
8½	0	0	4	471	0	2	7		0	11	4	8	8	0
9	0	0	4	734	0	2	9		0	12	0	9	0	0
9½	0	0	4	997	0	2	10		0	12	8	9	8	0
10	0	0	5	260	0	3	0		0	13	4	10	0	0
10½	0	0	5	523	0	3	2		0	14	0	10	8	0
11	0	0	5	786	0	3	4		0	14	8	11	0	0
11½	0	0	6	049	0	3	6		0	15	4	11	8	0
12	0	0	6	312	0	3	8		1	0	0	12	0	0

USEFUL TABLES, SCIENTIFIC DATA, Etc.

Chemical Symbols.

Element.	Symbol.	Element.	Symbol.
Aluminium	Al.	Molybdenum	Mo.
Antimony	Sb.	Neodymium	Nd.
Argon	A.	Neon	Ne.
Arsenic	As.	Nickel	Ni.
Barium	Ba.	Nitrogen	N.
Bismuth	Bi.	Osmium	Os.
Boron	B.	Oxygen	O.
Bromine	Br.	Palladium	Pd.
Cadmium	Cd.	Phosphorus	P.
Caesium	Cs.	Platinum	Pt.
Calcium	Ca.	Potassium	K.
Carbon	C.	Praseodymium	Pr.
Cerium	Ce.	Radium	Ra.
Chlorine	Cl.	Rhodium	Rh.
Chromium	Cr.	Rubidium	Rb.
Cobalt	Co.	Ruthenium	Ru.
Columbium	Cb.	Samarium	Sa.
Copper	Cu.	Scandium	Sc.
Dysprosium	Dy.	Selenium	Se.
Erbium	Er.	Silicon	Si.
Europium	Eu.	Silver	Ag.
Fluorine	F.	Sodium	Na.
Gadolinium	Gd.	Strontium	Sr.
Gallium	Ga.	Sulphur	S.
Germanium	Ge.	Tantalum	Ta.
Glucinum	Gl.	Tellurium	Te.
Gold	Au.	Terbium	Tb.
Helium	He.	Thallium	Tl.
Hydrogen	H.	Thorium	Th.
Indium	In.	Thulium	Tm.
Iodine	I.	Tin	Sn.
Iridium	Ir.	Titanium	Ti.
Iron	Fe.	Tungsten	W.
Krypton	Kr.	Uranium	U.
Lanthanum	La.	Vanadium	V.
Lead	Pb.	Xenon	Xe.
Lithium	Li.	Ytterbium	Yb.
Magnesium	Mg.	Yttrium	Yt.
Manganese	Mn.	Zinc	Zn.
Mercury	Hg.	Zirconium	Zr.

Principal Moneys of the World.

The following list gives the values in British currency of the legal standard *coins* in the countries named at gold standard rates. The value of paper currency in most countries of the world is much below that of the legal standard coins and fluctuates widely :—

MONEYS OF FOREIGN NATIONS.

Note.—Gold Standard suspended in U.K. on Sept. 21, 1931. Par Value is based on rates before that date.

Country.	Monetary Unit.	Par. Value. £ s. d.
Argentina ..	Peso	0 1 8½
Austria ..	Schilling ..	6·939
Belgium ..	Belga of 5 Francs	6·858
Brazil	Milreis ..	5·899
Chile ..	Peso	6
China	Dollar .. (72 Taels = 100 Dollars)	varies with price of silver.
Czechoslovakia	Crown ..	1·22
Denmark ..	Krone ..	1 1½
Egypt	Pound ..	1 0 6½
France.. ..	Franc ..	1·932
Germany ..	Reichsmark ..	11·748
Greece	Drachma ..	0·64
Hungary ..	Pengo ..	8·62
Italy	Lira	2·6
Japan ..	Yen	2 0½
Mexico.. ..	Peso	2 0½
Netherlands ..	Florin or Gulden	1 7·824
Norway ..	Krone ..	1 1½
Peru	Sol	1 1½
Poland.. ..	Zloty ..	5·5
Portugal ..	Escudo ..	2½
Rumania ..	Len	0·3
Spain	Peseta ..	9·516
Sweden ..	Krona ..	1 1½
Switzerland ..	Franc.. ..	9·516
Turkey ..	Lira of 100 piastres ..	18 0
United States..	Dollar ..	4 1·32
Yugoslavia ..	Dinar.. ..	0·9

Roman Numerals.

I.	1	XX.	20
II.	2	XXX.	30
III.	3	XL.	40
IV. or IIII.	4	L.	50
V.	5	LX.	60
VI.	6	LXX.	70
VII.	7	LXXX.	80
VIII.	8	XC.	90
IX.	9	C.	100
X.	10	CC.	200
XI.	11	CCC.	300
XII.	12	CCCC. or CD.	400
XIII.	13	D.	500
XIV.	14	DC.	600
XV.	15	DCC.	700
XVI.	16	DCCC.	800
XVII.	17	CM.	900
XVIII.	18	M.	1000
XIX.	19	MM.	2000

The Metric System of Weights and Measures.

MEASURE OF LENGTH.

10 Millimetres	=	1 Centimetre.
10 Centimetres	=	1 Decimetre.
10 Decimetres	=	1 Metre.
10 Metres	=	1 Dekametre.
10 Dekametres	=	1 Hectometre.
10 Hectometres	=	1 Kilometre.
10 Kilometres	=	1 Myriametre.

One Metre = 1 094 yards = 39·371 inches.

MEASURE OF SURFACE.

10 Centiares	=	1 Deciare.
10 Deciares	=	1 Are (100 sq. metres)
10 Ares	=	1 Dekare.
10 Dekares	=	1 Hectare.
100 Hectares	=	1 Sq. Kilometre.

One Hectare = 2 acres, 1 rood, 35 poles.

MEASURE OF WEIGHT.

10 Milligrams	=	1 Centigram.
10 Centigrams	=	1 Decigram.
10 Decigrams	=	1 Gram.
10 Grams	=	1 Dekagram.
10 Dekagrams	=	1 Hectogram.
10 Hectograms	=	1 Kilogram.
10 Kilograms	=	1 Myriagram.
1 Kilogram	=	2 lb. 3½ oz.
1 Pound Avoir.	=	·4535 Kilogs.

MEASURE OF CAPACITY.

10 Millilitres	=	1 Centilitre.
10 Centilitres	=	1 Decilitre.
10 Decilitres	=	1 Litre.
10 Litres	=	1 Dekalitre.
10 Dekalitres	=	1 Hectolitre.
10 Hectolitres	=	1 Kilolitre.
1 Litre	=	1¾ pints.

USEFUL DATA.

1 Kilogramme (Kilo)	= 2·204 Lb.
1 Hectolitre	= 22 Imperial Gal.
1 Pood	= 36 Lb.
1 Ton (2240 lb.)	= 62·22 Poods.
United States Gallon	= 0·883 Imperial Gal.
6 United States Gallons	= 5 Imperial Gal.
1 Metric ton (1000 Kilos.)	= 2204 Lb.
1 Metre	= 3 Feet 3¾ Inches.
1 Kilometre	= 0·621 Mile.
1 Verst	= 0·663 Mile.
1 Dessiatine	= 2·7 Acres.
1 Sagene	= 7 Feet.

1 Oz. (Avoir.)	=	437·5 Grains.
Do.	=	28·35 Grammes.
1 Lb. (Avoir.)	=	16 Oz.
Do.	=	7000 Grains.
Do.	=	453·59 Grammes.
1 Gramme	=	·002204 Lb.
Do.	=	·03527 Oz.
Do.	=	15·432348 Grains.
1 Fl. Oz.	=	28·396 Cc.
Do.	=	1·7329 Cub. In.
1 Pint	=	567·919 Cc.
Do.	=	·56792 Litre.
Do.	=	·020057 Cub. Ft.
Do.	=	34·659 Cub. In.
Do.	=	20 Oz.
1 Gallon	=	·16046 Cub. Ft.
Do.	=	277·274 Cub. In.
Do.	=	4·537 Litres.
Do.	=	10 Lb. of distilled water.
1 Cc.	=	·0610270734 Cub. In.
Do.	=	·282 Fl. Drams.
Do.	=	·00176 Pint.
Do.	=	·0352 Fl. Oz.
1 Litre	=	·035216 Cub. Ft.
Do.	=	·220096 Gallon.
Do.	=	61·027 Cub. In.
Do.	=	1·761 Pint.
1 Cub. In.	=	16 386 Cc.
Do.	=	·0164 Litre.
Do.	=	·577 Fl. Oz.
Do.	=	·02885 Pint.
1 Cub. Ft.	=	28315·3 Cc.
Do.	=	28·3153 Litres.
Do.	=	6·2321 Gallons.
Do.	=	997·1364 Fl. Oz.
Do.	=	49·8569 Pints.

To convert	Inches	to Metres	multiply by ·0254.
Do.	Centimetres	to Inches	do. ·3937.
Do.	Kilograms	to Pounds	do. 2·2046.
Do.	Litres	to Gallons	do. ·22.
Do.	Gallons	to Litres	do. 4·548.

Table of Income or Expenditure.

Per Year.	Per Month.			Per Week.			Per Day.		
Rupees	*R*	*a.*	*p.*	*R*	*a.*	*p.*	*R*	*a.*	*p.*
10	0	13	4	0	3	1	0	0	5
20	1	10	8	0	6	2	0	0	11
30	2	8	0	0	9	5	0	1	4
40	3	5	4	0	12	4	0	1	9
50	4	2	8	0	15	5	0	2	2
60	5	0	0	1	2	6	0	2	8
70	5	13	4	1	5	6	0	3	1
80	6	10	8	1	8	7	0	3	6
90	7	8	0	1	11	8	0	3	11
100	8	5	4	1	14	9	0	4	5
110	9	2	8	2	1	10	0	4	10
120	10	0	0	2	4	11	0	5	3
130	10	13	4	2	8	0	0	5	8
140	11	10	8	2	11	1	0	6	2
150	12	8	0	2	14	2	0	6	7
160	13	5	4	3	1	3	0	7	0
170	14	2	8	3	4	4	0	7	6
180	15	0	0	3	7	5	0	7	11
190	15	13	4	3	10	6	0	8	4
200	16	10	8	3	13	2	0	8	9
210	17	8	0	4	0	7	0	9	3
220	18	5	4	4	3	8	0	9	8
230	19	2	8	4	6	9	0	10	1
240	20	0	0	4	9	10	0	10	6
250	20	13	4	4	12	11	0	11	0
260	21	10	8	5	0	0	0	11	5
270	22	8	0	5	3	1	0	11	10
280	23	5	4	5	6	2	0	12	3
290	24	2	8	5	9	3	0	12	9
300	25	0	0	5	12	4	0	13	2
310	25	13	4	5	15	5	0	13	7
320	26	10	8	6	2	6	0	14	0
330	27	8	0	6	5	6	0	14	6
340	28	5	4	6	8	7	0	14	11
350	29	2	8	6	11	8	0	15	4
360	30	0	0	6	14	9	0	15	9
370	30	13	4	7	1	10	1	0	3
380	31	10	8	7	4	11	1	0	8
390	32	8	0	7	8	0	1	1	1
400	33	5	4	7	11	1	1	1	6
420	35	0	0	8	1	3	1	2	5
440	36	10	8	8	7	5	1	3	3
460	38	5	4	8	13	6	1	4	2
480	40	0	0	9	3	8	1	5	0
500	41	10	8	9	9	10	1	5	11
520	43	5	4	10	0	0	1	6	10
540	45	0	0	10	6	2	1	7	8
560	46	10	8	10	12	4	1	8	7
580	48	5	4	11	2	6	1	9	5
600	50	0	0	11	8	7	1	10	4
650	54	2	8	12	8	0	1	12	6
700	58	5	4	13	7	5	1	14	8
750	62	8	0	14	6	9	2	0	11
800	66	10	8	15	6	2	2	3	1
900	75	0	0	17	4	11	2	7	5
1000	83	5	4	19	3	8	2	11	10
2000	166	10	8	38	7	5	5	7	8
5000	416	10	8	96	2	6	13	11	2
10000	833	5	4	192	5	6	27	6	4
15000	1250	0	0	288	7	5	41	1	6
20000	1666	10	8	384	9	10	54	12	9
25000	2083	5	4	480	12	4	68	7	11
30000	2500	0	0	576	14	9	82	3	1

To the nearest pie.

Comparison of Centigrade and Fahrenheit Thermometer Scales.

Centigrade.	Fahrenheit.	Centigrade.	Fahrenheit.	Centigrade.	Fahrenheit
−90°	−130°	40°	104°	170°	338°
85°	121°	45°	113°	175°	347°
80°	112°	50°	122°	180°	356°
75°	103°	55°	131°	185°	365°
70°	94°	60°	140°	190°	374°
65°	85°	65°	149°	195°	383°
60°	76°	70°	158°	200°	392°
55°	67°	75°	167°	205°	401°
50°	58°	80°	176°	210°	410°
45°	49°	85°	185°	215°	419°
40°	40°	90°	194°	220°	428°
35°	31°	95°	203°	225°	437°
30°	22°	100°	212°	230°	446°
25°	13°	105°	221°	235°	455°
20°	4°	110°	230°	240°	464°
15°	+ 5°	115°	239°	245°	473°
10°	14°	120°	248°	250°	482°
− 5°	23°	125°	257°	255°	491°
0°	32°	130°	266°	260°	500°
+ 5°	41°	135°	275°	265°	509°
10°	50°	140°	284°	270°	518°
15°	59°	145°	293°	275°	527°
20°	68°	150°	302°	280°	536°
25°	77°	155°	311	285°	545°
30°	86°	160°	320°	290°	554°
35°	95°	165°	329°	295°	563°

To convert from one scale to the other:

$\frac{(°F. - 32) \times 5}{9} = °C.$ $\frac{°C. \times 9}{5} + 32 = °F.$

Table of the Corresponding Heights of the Barometer in Millimetres and English Inches.

Millimetres	English Inches	Millimetres	English Inches	Millimetres.	English Inches.
720	28·347	739	29·095	758	29·843
721	28·386	740	29·134	759	29·882
722	28·425	741	29·174	760	29·922
723	28·265	742	29·212	761	29·961
724	28·504	743	29·252	762	30·000
725	28·543	744	29.292	763	30·039
726	28·583	745	29·331	764	30·079
727	28·622	746	29·370	765	30·118
728	28·662	747	29·410	766	30·158
729	28·701	748	29·449	767	30·197
730	28·740	749	29·488	768	30·236
731	28·780	750	29·528	769	30·276
732	28·819	751	29·567	770	30·315
733	28·858	752	29·606	771	30·355
734	28·898	753	29·645	772	30·394
735	28·937	754	29·685	773	30·433
736	28·976	755	29·724	774	30·473
737	29·016	756	29·764	775	30·512
738	29·055	757	29·803		